UConn John Dempsey Hospital IV Medication Guidelines
Department of Pharmacy

Pharmacy Website

Medication Shortage Information on Pharmacy Website

This document maintained by the department of pharmacy is meant to act as a guide in the administration of intravenous medications at UConn John Dempsey Hospital. It should be used as a reference, in combination with other available drug information sources. This document is a guideline and is subject to frequent changes in information. The most recent version will be available electronically. Always refer to the electronic version for the most updated guidelines. Previously printed copies will likely be older versions. Sound clinical judgment needs to be considered, along with one's professional scope of practice. If administration of a medication is found to be outside the scope of this manual, consult current references (professional journals, Micromedex, Lexi-Comp, American Hospital Formulary Services), unit-specific nursing policies, pharmacy services and Clinical Nurse Specialists. Approval from the Chairman of the Pharmacy and Therapeutics Committee may be necessary. The Alaris Guardrail software has been updated based on the information included in this document. Please contact pharmacy for any noted discrepancies. For any further administration information, please consult your floor pharmacist.

Related Policy: Medication Administration IV Guidelines: Medications Not Listed in JDH IV Medication Guidelines

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ORIGINAL DATE: 9/9/08
REVISION DATES:11/1/08, 7/09, 10/09, 12/09, 2/10, 4/10, 5/10, 6/10, 9/10, 1/26/11, 2/15/11, 3/22/11, 4/29/11, 5/2/11, 5/3/11, 5/26/11, 6/30/11, 8/5/11, 8/30/11, 10/19/11, 10/31/11, 11/22/11, 1/01/12, 3/12/12, 4/11/12, 4/18/12, 6/5/12, 7/1/12, 7/13/12, 8/6/12, 8/21/12, 9/6/12, 9/25/12, 2/7/13, 2/27/13, 3/12/13, 3/28/13, 4/10/13, 4/18/13, 4/23/13, 5/10/13, 7/2/13, 8/27/13, 10/31/13, 12/10/13, 2/27/14, 3/6/14, 3/24/14, 4/2/14, 4/4/14, 4/8/14, 4/9/14, 4/11/14, 4/17/14, 4/18/14, 4/28/14, 4/29/14, 4/30/14, 5/6/14, 5/9/14, 6/16/14, 6/18/14, 7/15/14,7/16/14, 7/18/14, 9/2/2014, 9/18/14, 9/24/2014, 10/27/14, 11/7/2014, 11/13/2014, 11/17/2014, 11/24/2014, 11/26/2014, 1/14/2015, 1/15/2015, 2/12/2015, 2/13/2015, 3/9/2015, 3/16/2015, 4/1/2015, 4/6/2015, 4/28/2015, 5/4/2015,5/6/2015, 6/8/2015, 6/16/15, 6/18/15, 6/29/15, 6/30/15, 7/8/2015, 7/17/2015, 8/7/2015, 8/28/2015,9/17/2015, 9/23/2015, 12/7/2015, 12/24/2015, 12/30/2015, 1/11/2016, 1/12/2016, 1/13/2016, 1/25/2016, 2/2/2016, 2/11/2016, 2/26/2016, 3/16/2016, 3/29/2016, 5/13/2016, 6/6/2016, 6/10/2016, 6/16/2016, 6/28/2016, 8/4/2016, 9/21/2016, 10/13/2016, 10/21/2016, 10/31/2016, 11/4/2016, 11/6/16, 11/20/16, 11/21/16, 11/30/16, 1/12/17, 2/15/17, 6/2/2017, 6/29/17, 7/17/17, 7/25/17, 8/3/17, 8/25/17, 8/29/17, 9/5/17, 9/27/17, 10/6/17, 11/13/17, 11/15/17, 12/11/17, 2/2/18, 2/7/18, 3/30/18, 4/28/18, 5/7/18, 5/23/18, 5/31/18, 6/27/18, 6/28/18, 6/29/18, 8/27/18, 12/4/18, 1/3/19, 1/26/19,1/29/19, 5/31/19, 6/17/19, 8/5/19, 11/4/19, 1/29/20, 4/3/20, 4/23/20, 6/11/20, 8/13/20, 11/11/20, 11/25/20, 11/27/20, 2/9/21, 3/26/21, 4/16/21, 4/27/21, 7/27/21, 10/26/21, 1/11/22, 1/25/22, 2/25/22, 3/4/22, 3/15/22, 4/7/22, 5/18/22, 6/29/22, 7/15/22, 10/28/2022, 1/17/2023, 2/8/2023, 4/20/2023, 4/24/2023, 4/28/2023, 5/4/2023, 7/31/2023, 10/26/2023

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

IV Medication Guidelines Summary of Recent Changes for Revisions (minimum of 3 Months)		
Topic	**Page(s)**	**Comments**
Bamlanivimab	13, 30	Added new medication approved at November P&T meeting (11/25/20)
Casirivimab & imdevimab	13, 36	Added new medication approved at November P&T meeting (11/25/20)
Alteplase	14, 20, 21	Added "Avoid in Midline Cath" (11/27/20)
COVID-19 Surge/Overflow	4	Removed example of PACU Surge for HT1-ICU overflow (11/27/20)
Dexmedetomidine	8, 47	Added nursing titration guidance as approved by Critical Care Committee and Medication Safety Committee (2/9/21)
Cisatracurium	8, 43	Added concentration of 200mg/ 100ml (2mg/ml) as approved by Medication Safety Committee (2/9/21)
Tranexamic Acid	139	Changed total volume from 50mL to 100mL for compatability with mini-bag PLUS system (3/26/2021)
Bamlanivimab/Etesevimab	16, 35	Added new medication under EUA (3/26/21)
Bamlanivimab	34	Changed total volume per EUA update to 270mL (3/26/21)
Emergency Department Resuscitation Room Medications	5, 11	Added icon to legend and throughout document to show which medications are also found on the Emergency Department Resuscitation Room Medication list (3/26/21) Added section after approved at February P&T Meeting (3/26/21)
Bamlanivimab	13, 30	Removed from IVMG due to FDA revoking EUA for monotherapy effective (4/16/2021)
Sodium Bicarbonate	130	Added IVP for indication of urinary alkalinization for patients receiving high dose MTX approved at Med Safety Committee (4/27/2021)
Rasburicase	127	Added UT2 as an approved unit for administration approved at Med Safety Committee (4/27/2021)
Casirivimab/Imdevimab	40	Dosing changed from 2400mg to 1200mg per EUA update (7/27/21)
Bezlotoxumab	17, 36	Added new medication approved at September P&T meeting (10/26/21)
Naloxone	110	UT2 removed as an approved unit for continuous naloxone infusion used for the reversal of narcotics approved at Med Safety Committee (10/26/21)
Lorazepam	98	Indication added for catatonia benzodiazepine challenge approved at Med Safety Committee (10/26/21)
Sotrovimab	17, 133	Added new medication under EUA (1/11/22)
Bamlanivimab/Etesivimab	35	All inpatient units added as approved units for administration per hospital leadership (1/11/22)
Casirivimab/Imdevimab	42	All inpatient units added as approved units for administration per hospital leadership (1/11/22)
Oxytocin	116	UT1-ICU and UT2-IU added for postpartum use of oxytocin approved at Med Safety Committee (1/25/22)
Vancomycin	146	Changed 1000mg final volume from 200mL to 250mL based on product availability (2/25/22)
Gentamicin	77	Added two premix products- 80mg/50mL and 100mg/50mL (2/25/22)
Fosaprepitant	75	Removed 150mg/100mL concentration as not supported by package insert and increased risk of phlebitis (2/25/22)
Levetiracetam	94	Added dosing up to 4.5g x 1 dose for status epilepticus (2/25/22)
Bebtelovimab	36	Added new medication under EUA (3/4/22)
Labetalol	94	Removal of UT3 as an approved unit for IVP labetalol per CNO and Director of Quality (3/15/22)
Vancomycin	147	Changed 1000mg final volume from 250mL to 200mL based on product availability (4/7/22)
Nitroglycerin	115	Corrected typo error for UT2-IU maximum titratrion rate for chest pain is 50 mcg/min (was erroneously 50 mg/min) (5/18/22)
Vasopressin	10, 147	Concentration for continuous infusion updated to reflect new premixed product on formulary, 40 units/100mL (0.4 units/mL). Stability information removed.
Diazepam	55	Added indication, approved units, and dosing for alcohol withdrawal during time of IV Lorazepam shortage (7/15/22)
Insulin Regular	93	Replaced "protocol" with "guideline" for approved units for indication of hyperglycemia per Med Safety Committee recommendations (10/28/2022)
Nitroglycerin	118	Added clarifying statement to titratable orders on UT-2 (Intermediate) - approved by Med Safety Committee 10/25/2022 (10/28/2022)

Tecovirimat	146	Added new medication approved at September P&T meeting (10/28/2022)
Levetiracetam	104	Updating dilution instructions to remain within recommend concentration limits, updated minimum admin over time for doses > 3750mg, and updated stability information
Non-formulary restricted antimicrobials	46, 54, 56, 67, 94, 100, 104, 111, 128,129, 142, 143, 150, 159	Added entries for non-formulary restricted antimicrobial items not already present in guideline based on review of Restricted and Concurrently Monitored Antimicrobials Clinical Policy (1/17/2023)
Restricted antimicrobials	4, 26, 29, 44, 47-50,53,55, 67	Updated various antimicrobials (added or removed restricted designation, added or removed non-formulary designation, or updated "restricted antibiotic" to "restricted antimicrobial" to be more in line with Restricted and Concurrently Monitored Antimicrobials Clinical Policy (1/17/2023)
Hydroxocobalamin	88	Added new entry for indications of Cyanide poisoning, and newly approved off label indication for vasoplegia approved P&T (2/8/2023)
Oxytocin	123	Updating dosing information to reflect order changes made to consolidate postpartum third stage management (4/20/2023)
Brivaracetam	5	Added new medication entry approved by P&T in March 2023 (4/24/2023)
OR/PACU	4	Updating OR/PACU designiation by replacing SDS-critical care trained with Pre-op; approved by Med Safety Committee in April (4/28/2023)
UT4-SURGE & UT4-TELE	4	Addition of UT4-SURGE unit to hospital units and included in Med/Surge/Onc pool' approved by Med Safety Committee in April (4/28/2023)
Enalaprilat	60	Adding UT4-TELE as approved unit (4/28/2023)
Medications allowed on PSY	1, 4, All	Added PSY as a hospital unit and clarified which medications would be allowed to be administered on PSY as approved by the Medication Safety Committee in April. Mediation NOT allowed on Psy will be designated as "ALL Units (Except Psy)".
Footnote	All	Added Foot note to all pages referencing nursing policy for items that do not appear within IVMG; approved at Med Safety Committee in July (7/31/2023)
Lacosamide	7	Added IVP administration information; reviewed by Med Safety Committee in July (7/31/2023)
Levetiracetam	7	Added IVP administration information; reviewed by Med Safety Committee in July (7/31/2023)
Alteplase	24, 25	Removed UT2-IU as approved unit for use; approved by Med Safety Committee in July (7/31/2023)
Phentolamine	15, 16	Removing verbiage regarding availability of product (7/31/2023)
Rasburicase	141	Added OP-NCCC as an approved unit for use; approved by Med Safety Committee in July (7/31/2023)
Tocilizumab	154	Added additional inidication and approved units for use; approved by Med Safety Committee in July (7/31/2023)
Tranexamic Acid	156	Added ED as approved unit for use for indication of reduction of bleeding for knee arthroplasty (7/31/2023)
UT-BMT	5	Addition of UT-BMT unit to hospital units and included in Med/Surge/Onc pool; approved by Med Safety Committee in October (10/26/23)
Calcium gluconate	43	Added new concentration of 4g/250mL for apheresis and approved unit of UT-BMT; approved by Med Safety Committee in October (10/26/23)
Lacosamide	108	Updated dosing/admixture instructions to include IVP preferred guidance (10/26/23)
Levetiracetam	109	Updated dosing/admixture instructions to include IVP preferred guidance (10/26/23)
Magnesium sulfate	113	Added UT-BMT as approved unit for use; approved by Med Safety Committee in October (10/26/23)
Meropenem	115	Updated duration of infusion to 30 mins (10/26/23)
Pentamidine	139	Added indication and dosing for PCP prophylaxis and approved unit of UT-BMT (10/26/23)
Tocilizumab	169	Added UT-BMT as approved unit for use; approved by Med Safety Committee in October (10/26/23)

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

List of Abbreviations and Acronyms

Hospital Units

CCL/EP	Cardiac Catheterization Lab / Electrophysiology
ECHO	Echocardiography Lab
ECT-A	Electroconvulsive Therapy with Anesthesia Present
ED	University Tower Basement Emergency Department
EMU	Epilepsy Monitoring Unit
ENDO	Endoscopy
HD	University Tower 3 Dialysis
UT1-ICU	University Tower 1 Intensive Care Unit
UT2-IU	University Tower 2 Intermediate Unit
UT3-MED	University Tower 3 Medicine Unit
UT3-TELE	University Tower 3 Medicine Unit Patients with Telemetry
UT4-SURGE	University Tower 4 Medicine Surge Unit
UT4-TELE	University Tower 4 Medicine Surge Patients with Telemetry
UT-BMT	University Tower Bone Marrow Transplant
IRAD	Interventional Radiology
UJDH HA	JDH Holding Area – Med/Surg trained
PSY	Connecticut Tower Psychiatry
L&D/OB-GYN	Connecticut Tower Labor & Delivery / Obstetrics & Gynecology
MED/SURG/ONC	University Tower 6 Medical/Surgical/Oncology University Tower 5 Surgical/Orthopedics University Tower 4 Medicine Surge University Tower 3 Medicine University Tower Bone Marrow Transplant Connecticut Tower 5 Medical/Surgical
OP-CARD	Cardiology Outpatient Clinic
OP-INFC	Outpatient Infusion Center (formerly AACU)
OP-NCCC	Outpatient Neag Comprehensive Cancer Center
OR/PACU	University Tower, Ground OR/PACU/Pre-op
PULM	Pulmonary Outpatient Clinic
UHSC	UConn Health Surgery Center (formerly FSC)

Miscellaneous

BP	Blood Pressure
C.I.	Continuous Infusion
CRNA	Certified Registered Nurse Anesthetist
D5W	5% Dextrose / Water
I&O	Input & Output
I.I.	Intermittent Infusion
L.D.	Loading Dose
LIP	Licensed Independent Practitioner
NS	Normal Saline
RRT	Rapid Response Team
SW	Sterile Water
TOF	Train of Four
*	On direct order AND in the presence of Anesthesia Provider Only

Interim guideline for medication administration on Surge / Overflow units during COVID-19 pandemic: An RN working on an **overflow or surge unit** may administer medications that are deemed appropriate by the practitioner for the patient's level of care and condition, provided that staff (RNs, Practitioners, Pharmacists) who normally provide care to that patient population are available as resource. *(Effective 4/2020)*

Alerts

LOOK ALIKE / SOUND ALIKE

HIGH ALERT / DOUBLE CHECK

TITRATE MED

NON-FORMULARY

RESTRICTED ANTIMICROBIAL

NOT ON GUARDRAIL

ADS MIXTURE (Due to short stability or emergent need, this is mixed on the hospital unit)

Approved 04/08/2008
Revised: 04/01/11, 03/13/12 4/11/12, 2/27/2014, 11/13/2017, 3/26/2021

Requires Cardiac Monitor/Telemetry

Avoid in midline cath
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Designates a hazardous medication. See this link for PPE info: Medication Handling Safety	BKC: Dispose in Black Bin; PBKC: Place Packaging & Waste in Zip-Lock and dispose in Black; SPLP/SPC: Place Packaging & Waste in Zip-Lock and return to pharmacy; DEAP: Contact RPh for Proper waste disposal
Designates that the product must be filtered during infusion. See filter guidelines on page 12&13.	See link for Pharm Waste Info: Pharmaceutical Waste
Designates that the medication is also part of the Emergency Department Resuscitation Room Medication List.	
If Extravasation, see Pages 10&11 / If Extravasation, see Pages 10&11	Designates extravasation information can be found on pages 10&11. Blue indicates cold compress and red indicates warm compress

IV PUSH MEDICATIONS AND DOSES **UConn John Dempsey Hospital**

DRUGS APPROVED FOR IV PUSH ADMINISTRATION for ADULTS BY ALL RNs on *all UNITS (except PSY).*

This list is not all inclusive. Consult IV Med Guidelines for further details.

NOTE:

- **SWFI (Sterile water for injection) is used in some instances to help minimize osmolality, reconstituting with NS or D5W may produce significant phlebitis, and increase the risk for extravasation injry.**
- **Upon mixing , syringe must be properly labeled for administration per policy**
- **IV push too fast can result in infiltration or systemic reactions such as headache, flushing, tightness in chest. All IV push have Phlebitis risk.**
- **Undiluted Meds should be flushed slowly with 5 mL NS to avoid rapid infusion of medication that remains in the catheter or tubing.**

Related Policies/Links: **HAM Policy on Medication Admnistration (Includes Information on Labeling of Syringes)**
Nursing Policy on IV Push Medications
Medication Shortage Information on Pharmacy Website

Generic Name/Brand Name	UP TO MAXIMUM ALLOWABLE DOSE	RECOMMENDED DILUTIONS FOR ADMINISTRATION	IV PUSH OVER	Comments
AcetaZOLAMIDE (Diamox®)	500 mg	Dilute in 10mL NS	1-2 min	
Aztreonam (Azactam®)	2 gm	1gm in 10 mL SWFI 2gm in 20 mL SWFI	3 – 5 min	As of 4/28/18, use MINI-BAG Plus
Benztropine (Cogentin®)	2 mg	Undiluted	1 mg / min	
Brivaracetam (Briviact®)	100 mg	Undilited	2 – 15 min	
Bumetanide (Bumex®)	2 mg	Dilute in 10 mL NS	1 mg / min	> 2 mg as IVPB

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Generic Name/Brand Name	UP TO MAXIMUM ALLOWABLE DOSE	RECOMMENDED DILUTIONS FOR ADMINISTRATION	IV PUSH OVER	Comments
Butorphanol (Stadol®)	2 mg	Undiluted	1 mg / min	
Calcitriol (Calcijex®)	2 mcg	Undiluted	1 min	
Cefepime (Maxipime®)	2 gm	1gm in 10 mL SWFI 2gm in 20 mL SWFI	3 – 5 min	As of 4/28/18, use MINI-BAG Plus
Cefotaxime (Claforan®)	2 gm	0.5 gm in 10 mL SWFI 1gm in 10 mL SWFI 2gm in 20 mL SWFI	3 – 5 min	Arrthythimias have occurred following rapid bolus administration (<60 sec) As of 4/28/18, use MINI-BAG Plus or mixture by pharmacy
CefOXitin (Mefoxin®)	2 gm	1gm in 10 mL SWFI 2gm in 10 mL SWFI	3 – 5 min	As of 4/28/18, use MINI-BAG Plus
Cefuroxime (Zinacef®)	1.5 gm	750 mg in 10mL SWFI 1.5 gm in 20mL SWFI	3 – 5 min	As of 4/28/18, use MINI-BAG Plus
Cosyntropin (Cortrosyn®)	0. 25 mg	Dilute in 1 mL NS	1 min	
Dextrose 50%	25 gm/50 mL	Undiluted	1 - 2 min	
Dexamethasone (Decadron®)	12 mg	Dilute in 5 mL NS	1 - 2 min	> 12 mg as IVPB
Digoxin	0.5 mg	Dilute in 10 mL NS	3 - 5 min	Monitor BP,HR before & after q 15 min x 2
DiphenhydrAMINE (Benadryl®)	100 mg	Undiluted	25 mg over 2 - 3 min 50 mg over 2 - 3 min 100 mg over 4 - 5 min	≤ 25 mg/min
Dihydroergotamine (Migranal®)	1 mg	Undiluted	1 – 4 min	
Famotidine (Pepcid®)	40 mg	20 mg in 10 mL NS 40 mg in 20 mL NS	2 min	
Flumazenil (Romazicon®)	1 mg	Undiluted	15 - 30 sec	
Folic Acid	5 mg	Undiluted	≥ 1 min	Dose ≤ 5mg can be given IV push.
Furosemide (Lasix®)	100 mg	Undiluted	1 – 2 min, given ≤ 40 mg/min	> 100 mg as IVPB
Glucagon	1 mg	Undiluted	1 min	

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Generic Name/Brand Name	UP TO MAXIMUM ALLOWABLE DOSE	RECOMMENDED DILUTIONS FOR ADMINISTRATION	IV PUSH OVER	Comments
Granisetron (Kytril®)	1 mg	Undiluted	30 sec	
Heparin	10,000 units	Undiluted	1 min	
Hydrocortisone (Solu-CORTEF®)	500 mg	≤ 100 mg Undiluted > 100 mg in 10 mL NS	1 – 2 min	
HYDROmorphone (Dilaudid®)	2 mg*	Dilute in 10 mL NS	2 - 3 min	Check RR & sedation level in 5-15 mins. *Up to 8 mg in extreme opiate tolerance (ex: sickle cell)
Iron Sucrose (Venofer®)	200 mg	Undiluted	5 min	As of 4/28/18, can be mixed as an infusion
Ketorolac (Toradol®)	60 mg	Undiluted	1 - 2 min	
Lacosamide (Vimpat®)	400 mg	Undiluted	2 – 5 mins	Monitor HR, BP, PR interval prolongation
LevETIRAcetam (Keppra®)	4500 mg	Undiluted	Doses ≤2000 mg over 2-5 mins Doses > 2000 mg up to 4500 mg over 5 mins	Monitor vital signs and mental status
Levothyroxine (Synthroid®)	200 mcg	Dilute in 10 mL NS	1 - 2 min	
LORazepam (Ativan®)	4 mg (ETOH W/D)	Diluted in equal volume NS	≤ 2 mg/min given no more frequently than q 15 mins per CIWA protocol	Ex: 4 mg = 2 mL drug + 2 mlL NS over minimum 2 min
	2mg (Other Indications)	Diluted in equal volume NS	≤ 2 mg/min	
Meperidine (Demerol®) Restricted to shivering/rigors or opioid intolerance/allergies with notification to pharmacy as such	100 mg **NOTE**: 25mg/mL dose only hospital approved available product	Dilute in 10 mL NS	2 - 3 min	Check RR & sedation level in 5-15 mins
Meropenem (Merrem®)	1 gm	0.5 gm in 10 mL SWFI 1 gm in 20 mL SWFI	3 – 5 min	As of 4/28/18, use MINI-BAG Plus
MethylPREDNISolone (SOLU-Medrol®)	125 mg	Undiluted	1 - 2 min	> 125 mg as IVPB
Metoclopramide (Reglan®)	10 mg	Undiluted	1 - 2 min	

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Generic Name/Brand Name	UP TO MAXIMUM ALLOWABLE DOSE	RECOMMENDED DILUTIONS FOR ADMINISTRATION	IV PUSH OVER	Comments
Morphine	10 mg*	Dilute in 10 mL NS	2 – 3 min	Check RR & sedation level in 5-15 mins *Up to ≤ 40 mg in extreme opioid tolerance (ex: Sickle cell patients)
Naloxone (Narcan®)	0.8 mg	Undiluted	15 - 30 sec	For a concentration of 0.04mg/mL: Mix 1mL naloxone (0.4mg) with 9mL NS for a total volume 10mL
Ondansetron (Zofran®)	12 mg	Dilute in 10 mL NS	1 - 2 min	
Palonosetron (Aloxi®)	0.25 mg	Undiluted	30 sec	
Pantoprazole (Protonix®)	80 mg	Dilute 40 mg in 10 mL NS Dilute 80 mg in 20 mL NS	2 - 3 min	
Thiamine	100 mg	Undiluted	5 min	
Torsemide (Demadex®)	≤ 40 mg	Undiluted	≤ 20 mg/min	

IV TITRATABLE MEDICATION GUIDELINES

These are dosing guidelines only.
Prescriber is required to order each medication with the following parameters:
1. Loading dose if applicable; **2**. Initial rate; **3**. Titration rate (incr./decr.) with time interval; **4**. Maximum Dose; **5.** Reason/goal.
Parameters can be modified by the ordering prescriber.

Medication	Admixture Concentration (s)	Initial Rate of Infusion	Titration Rate (Increase/Decrease)	Order Reason/Desired Patient Response	Maximum Dose for Specified Time	Call LIP Parameter
Cisatracurium (Nimbex®)	100 mg/100 mL NS or D5W (1mg/mL) 200 mg/100 mL NS or D5W (2mg/mL)	Load: 0.1 - 0. 2 mg/kg then 2 mcg/kg/min	Titrate by: 1 mcg/kg/min q 10 mins	Neuromuscular Blockade /To achieve specified Train of four 2 to 3 out of 4	10 mcg/kg/min	Specified Train of four not achieved at maximum dose
Dexmedetomidine (Precedex®)	200mcg/50ml NS (4mcg/ml) 400mcg/100ml NS (4mcg/ml)	Load: 1mcg/kg over 10 minutes Then 0.2mcg/kg/hr	Titrate by: 0.1mcg/kg/hr every 30 minutes	Sedation / to achieve specified sedation level RASS 0-(-1)	1mcg/kg/hr	Specific sedation not achieved at maximum dose

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DiltiaZEM	125 mg/125 mL NS or D5W (1mg/mL)	5 mg/hr	Do Not Titrate	Rate Control	15 mg/hr	20 mg/hr with Cardiology input
DOBUTamine (Dobutrex®) **LOOK ALIKE / SOUND ALIKE**	250 mg/250mL D5W (1 mg/ mL) 500 mg/250mL D5W (2 mg/ mL) 1000 mg/250mL D5W (4 mg/ mL)	2.5 mcg/kg/min	Titrate by: 2.5 mcg/kg/min q 5 mins	Decreased CI To achieve specified increase in CI , CI > 2 . 0	CSDU: 10 mcg/kg/min ICU/ED: 20 mcg/kg/min	Specified increase of C I not achieved at maximum dose, HR > 140 or Ventricular tachyarrhthymias
DOPamine **LOOK ALIKE / SOUND ALIKE**	400mg/ 500 mL D5W (0.8 mg/mL) 800 mg/500mL D5W (1.6mg/mL)	Renal : 1 mcg/kg/min Inotrope : 2 mcg/kg/min, Pressor: 5 mcg/kg/min.	Renal & Inotrope by: 1 mcg/kg/min q 5-10 min Pressor by: 2.5 mcg/kg/min q 5 min	Hypotension / Renal perfusion To achieve specified U/ O or U/O > 30 mL/hr , or specified increase in SBP SBP 100-120 or MAP > 60	CSDU- 5 mcg/kg/min ICU - 30 mcg/kg/min	Specified increase of SBP or U/O or not achieved at maximum dose
EPINEPHrine **LOOK ALIKE / SOUND ALIKE**	4mg/250mL D5W (16 mcg/ml) 8 mg/250mL D5W (32 mcg/ml)	0.02 mcg/kg/min	Titrate by: 0.02 mcg/kg/min q 5 mins	Hypotension /Low CI / To achieve specified increase of SBP, HR SBP 100-120 or MAP> 60 or CI > 2 . 0	0.2 mcg/kg/min	Specified increase of SBP, CI or HR not achieved at maximum dose
Esmolol (Brevibloc®)	2500mg/250mL NS (10 mg/ml)	Load: 500 mcg/kg over 1 min, & repeat PRN q 5 mins for a total of 3 boluses CI: 50 mcg/kg/min	Titrate by: 50 mcg/kg/min q 5 mins with reload of 500 mcg/kg over 1 min	Tachycardia/HTN / To achieve specified reduction of SBP,HR or decreases of 15-20% HR 60-80, SBP 100-120 or MAP> 60	200 mcg/kg/min	Specified decrease of HR or SBP not achieved at maximum dose
FentaNYL	2500 mcg/ 250 mL NS (10 mcg/mL)	25 mcg/hr	Titrate by : 25 mcg/hr q 30 mins	Pain / Sedation To achieve specified sedation level Pain Level as ordered	200 mcg / hr	Specified sedation not achieved at maximum dose
Labetalol	500 mg/ 500 mL D5W (1 mg/mL) 1000 mg/ 500 mL D5W (2 mg/mL)	Load: 5-20 mg over 2 min, may repeat q 10 mins as 40, 80, 160 mg. max. of 300 mg for goal BP. CI: 0. 5 mg/min	Titrate by: 0. 5 mg/min q 15 mins	Hypertension / To achieve specified reduction of SBP SBP 100-120 or MAP > 60 or HR 60-80	2 mg/min = 120 mg/hr	Specified decrease of SBP or HR not achieved at maximum dose

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

LORazepam (Ativan®)	100mg/100mL D5W (1mg/mL)	Sedation –Vented Patient/ ETOH W/D 1 mg/hr	Titrate by: 1 mg/hr q 30 minutes	Sedation / To achieve specified Sedation Level RASS 0 to -1	15 mg/hr	Specified Sedation not achieved at maximum dose
Midazolam	100mg/100mL D5W (1 mg/mL)	0.5 mg/hr	Titrate by : 0.5 mg/hr q 10 mins	Sedation / To achieve specified Sedation Level RASS 0 to -1	20 mg/hr	Specified Sedation not achieved at maximum dose
Milrinone	40mg/200mL D5W (200mcg/mL)	Bolus of 50 mcg/kg then C.I.: 0. 375 mcg/kg/min	Do Not Titrate	Decreased CI / to achieve specified increased of Cardiac Output, decrease PAOP, CI>2	0.75 mcg/kg/min	Specified Increase of CI not achieved at Maximum Dose
Nitroglycerin	50mg/250mL D5W (200 mcg/mL)	10 mcg/min	Titrate by: 10 mcg/min q 5 min	CP/ Dyspnea/ HTN / To achieve specified decrease of Chest Pain, SOB Chest Pain Free, SBP >100 or MAP > 60	200 mcg/min (50 mcg/min on UT2-IU)	Specified decrease of chest pain or SPB not achieved at maximum dose
Nitroprusside (Nipride®)	50mg/250mL D5W (200mcg/mL) 100mg/250mL D5W (400mcg/mL)	0. 3 mcg/kg/min	Titrate by: 0.3 mcg/kg/min q 5 min	Hypertension / To achieve specified decrease of SBP 100-120 or MAP > 60	10 mcg/kg/min	Specified decrease of SBP not achieved at maximum dose
Norepinephrine (Levophed®)	4mg/250mL D5W (16 mcg/mL) 16mg/250mL D5W (64 mcg/mL)	0.03 mcg/kg/min	Titrate by: 0.03 mcg/kg/min q 2 min	Hypotension /To achieve specified increase of SBP. SBP 100-120 or MAP > 60	0. 3 mcg/kg/min	Specified increase of SBP not achieved at maximum dose
Phenylephrine (Neosynephrine®)	10mg/250mL NS (40 mcg/mL) 40mg/250mL D5W (160 mcg/mL)	10 mcg/min	Titrate by: 20 mcg/min q 2 minutes to 180 mcg/min, as SBP stabilizes decrease to 40-60 mcg/min	Hypotension / To achieve specified increase of SBP 100-120 or MAP 60-70	180 mcg/min	Specified increase of SBP not achieved at maximum dose
Propofol (Diprivan®)	500 mg/50 mL DW (10 mg/mL) 1,000 mg/100 mL DW (10 mg/mL)	10 mcg/kg/min (0.3mg/kg/hr)	Titrate by: 10 mcg/kg/min q 5 minutes & MD to select Wean or Hold For Daily Sedation Holiday	Sedation / To achieve specified sedation level RASS 0 to -1	50 mcg/kg/min	Specified sedation not achieved at maximum dose

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

Vasopressin (Pitressin®) **LOOK ALIKE / SOUND ALIKE**	40 units/ 100 mL NS (0.4 units/mL)	0. 04 units/min	Do Not Titrate	Hypotension / To achieve specified increase of SBP 100-120 or MAP > 60	0.04 units/min	Specified increase of SBP not achieved @ Maximum Dose

Medication Administration Guidelines: Emergency Department Resuscitation Room Medications

FOR RESUSCITATION ROOM USE ONLY: Considerations for medications in locations other than the Emergency Department should be reviewed upon transfer to another level of care. This section was added to the Medication IV Guidelines on 3/26/2021 after approval from the Pharmacy & Therapeutics Committee meeting held 2/24/2021.
This list is not all inclusive. Consult IV Med Guidelines for further details.

	Medication	Loading Dose/Bolus	Starting Dose (Continuous Infusion)	Titration Parameters	Maximum Dose
Vasopressor	**DOPamine**	X	1-5 mcg/kg/min	1-2.5 mcg/kg/min q 5 minute	30 mcg/kg/min
	EPINEPHrine	X	0.02 mcg/kg/min	0.02 mcg/kg/min q 5 minute	0.2 mcg/kg/min
	Norepinephrine Levophed®	X	0.03 mcg/kg/min	0.03 mcg/kg/min q 2 minute	0.3 mcg/kg/min
	Phenylephrine Neosynephrine®	X	10 mcg/min	20 mcg/min (~0.05-0.1 mcg/kg/min) q 2 minute Can decrease to 40-60 mcg/min as SBP stabilizes	180 mcg/min (~2.5-5 mcg/kg/min)
Cardiac	**Clevidipine** Cleviprex®	X	1-2 mg/hr	Double dose q 90 seconds to desired SBP (i.e. 2mg, then 4mg, then 8mg) If approaching SBP goal, increase by less than double the dose q 5-10 minutes	21 mg/hr
	DiltiaZEM Cardizem®	IV Push: 0.25 mg/kg (~20 mg) over 2 minutes After 15 minutes, may follow by second 0.35 mg/kg (~25 mg)	5 mg/hr	**Do not titrate**. Call MD/LIP for order to increase/decrease by usual of 5 mg/hr to achieve rate control if indicated.	15 mg/hr
	DOBUTtamine Dobutrex®	X	2.5 mcg/kg/min	2.5 mcg/kg/min q 5 minute	20 mcg/kg/min
	Esmolol Brevibloc®	IV Push: 500 mcg/kg over 1 min Repeat q5 min PRN for total of 3 boluses	50 mcg/kg/min	50 mcg/kg/min q 5 minute with reload of 500 mcg/kg over 1 minute	200 mcg/kg/min

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

	Labetalol Normodyne®, Trandate®	IV Push: 5-20 mg over 2 mins Repeat q 10 mins as 40, 80, 160 mg (max of 300 mg)	0.5 mg/min	0.5 mg/min q 15 minute	2 mg/min = 120 mg/hr
	Lidocaine	IV Push (cardiac arrest): 1-1.5 mg/kg (= 50-100) mg undiluted over 2-3 minutes, may repeat q 3-5 minutes up to 3 mg/kg Non cardiac arrest (stable VT, wide complex tachycardia, ectopy): 1-1.5 mg/kg (= 50-100 mg) undiluted over 2-3 minutes, may repeat at 0.5-0.75 mg/kg q5-10 minutes up to 3 mg/kg	1-4 mg/min	**Do not titrate,** may repeat bolus dose at 0.5 mg/kg if arrhythmia appears	Bolus: 3 mg/kg CI: Max 4 mg/min
	Milrinone	50 mcg/kg over 10 min	0.375 mcg/kg/min	**Do not titrate**. MD/LIP order required	0.75 mcg/kg/min
	NICARdipine Cardene®	X	2.5-5 mg/hr	2.5 mg/hr q 5 minute up to desired BP goal May decrease rate slowly to 3 mg/hr after achieving BP control	15 mg/hr
	Nitroglycerin NTG	X	10 mcg/min (may require higher doses per MD for CHF)	10 mcg/min q 5 minute	200 mcg/min (~50 mcg/min expect chest pain relief)
	Nitroprusside Nipride®	X	0.3 mcg/kg/min	0.3 mcg/kg/min q 3-5 minute	10 mcg/kg/min
	Procainamide	Slow IV push: 100 mg over 2-3 minutes q 5 minutes	1-6 mg/min	**Do not titrate.** Administer bolus until: 1) arrhythmia is controlled 2) hypotension occurs, or 3) qRS complex widens by 50% to a total dose of 1 gram Wait 5 to 10 minutes after bolus before starting CI	Loading dose: 15-18 mg/kg CI: 9 gm/24 hours
Sedation	**Dexmedetomidine** Precedex®	Load (optional): 1 mcg/kg over 10 mins (caution: hypotension), then 0.2mcg/kg/hr	0.2-0.7 mcg/kg/hr	0.1mcg/kg/hr q 30 minutes	1 mcg/kg/hr
	FentaNYL	IV Push: 12.5-100 mcg IV undiluted (may be 200 mcg for pain control/sedation)	25 mcg/hr	25 mcg/hr q 30 minute	200 mcg/hr
	Etomidate (Rapid Sequence Intubation) Amidate®	IV Push**:** 0.2 – 0**.**6mg/kg over 30-60 secs	X	X	X
	Ketamine	Intubation: 1-2 mg/kg IV/IO Post Advanced Airway Analgesia & Sedation: 1 mg/kg IBW IV/IO, repeat q5-15 minutes prn Sedation IM: 4 mg/kg (rounded to nearest 50 mg), max single dose 500 mg (may administer additional 100mg in 5-10 minutes)	X	X	For IV bolus dose in sedation: 2 mg/kg

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		IV: 1 mg/kg IV/IO over 2 minutes, may administer additional 0.5-1 mg/kg IV/IO in 5 minutes			
	LORazepam Ativan®	Agitation/anxiety: ≤ 2 mg (range 0.25-2 mg) diluted with equal volume NS @ 1 mg/min IV push	Sedation (mechanically ventilated): 1 mg/hr	1 mg/hr q 30 minute Infusion requires 0.22 micron filter	15 mg/hr unless higher max is ordered by MD/LIP
	Midazolam Versed®	IV Push (Conscious sedation): 0.5 - 2 mg over 1-2 minutes, repeat q 2-3 minutes prn IV Push Loading Dose (sedation following intubation): 0.5 – 4 mg slowly over 2mins	0.5 mg/hr	0.5 mg/hr q 10 minute	20 mg/hr unless higher max is ordered by MD/LIP
	Propofol Diprivan®	IV Push (sedation): 10-20 mg over 3-5 mins	10 mcg/kg/min (0.3 mg/kg/hr)	10 mcg/kg/min q 5 minute	50 mcg/kg/min unless higher max is ordered by MD/LIP
Paralysis	**Succinycholine** (Rapid Sequence Intubation) **Caution Paralyzing Agent**: Patient must be placed on ventilator following administration if not already	IV Push by MD/CRNA: 0.5-1 mg/kg undiluted over 15-30 secs	X	X	X
	Rocuronium (Rapid Sequence Intubation) **Caution Paralyzing Agent**: Patient must be placed on ventilator following administration if not already	IV Push: 0.6- 1 mg/kg undiluted over 5-10 secs then	5 mcg/kg/min	1 mcg/kg/min q 10 mins or as ordered.	16 mcg/kg/min
	Cisatracurium Nimbex® **Caution Paralyzing Agent**: Patient must be placed on ventilator following administration if not already	IV Push: 0.1-0.2 mg/kg over 5-10 sec	2 mcg/kg/min	1 mcg/kg/min q 10 minute	10 mcg/kg/min unless higher max is ordered by MD/LIP
	Vecuronium **Caution Paralyzing Agent**: Patient must be placed on ventilator following administration if not already	IV Push: 0.1 mg/kg (2-10 mg) over 1-2 mins q 1-2 hours	CI: 1 mg/mL at 0.8-1.2 mcg/kg/min	X	X

Extravasation Guidelines

In the event of an extravasation, the following procedure should be followed:

1. Stop the injection/infusion immediately. Disconnect IV tubing and allow the needle/catheter to stay in place.
2. Slowly aspirate as much drug as possible with 3-5 ml of blood. Do not apply pressure to the area where extravasation has occurred.

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

3. Remove IV catheter during aspiration. Use of this site for additional IV access is not recommended.
4. Assess the extravasation site as well as any accompanying symptoms. Consider marking area of discoloration. Notify the LIP promptly.
5. Apply warm or cold compress depending on the drug extravasated (see Table 1). Compresses should be applied for 20 minutes 3-4 times daily for the first 24-48 hours after extravasation
6. Keep the area elevated for 48 hours to reduce swelling
7. Initiate drug-specific measures in accordance with Table 1.
8. Consider the need for a wound care or plastic surgery consult in the setting of pain and/or tissue breakdown
9. Debridement and excision of necrotic tissue should be evaluated if pain persists for 1 to 2 weeks.

Antidotes:

Hyaluronidase is a protein enzyme that enhances the permeability of tissue, facilitating absorption of extravasated IV fluid. Hyaluronidase is used for vesicant solutions, hyperosmolar infusates and infusates with extreme pH. It is not appropriate for vasopressor infiltration.

Phentolamine is an alpha-adrenergic blocker that produces peripheral vasodilation by direct relaxation of vascular smooth muscle; the vasodilation reverses local ischemia caused by vasopressor infiltration. Phentolamine is used for vasoactive infusates.

Nitroglycerin Topical Ointment is also a peripheral vasodilator and can be used to treat vasoactive extravasation.

Terbutaline is a beta$_2$-selective adrenergic agonist. It has been used to reverse peripheral ischemia caused by the extravasation of vasoconstrictive agents when phentolamine was unavailable.

Extravasation by Non-Chemotherapy Medications & Treatment

Generic	Compresses		Antidote Procedure (see next section for further instructions)
	Warm[1]	Cold[1]	
Acyclovir (≥ 7 mg/ml)	X		A
Amiodarone	X		A
Aminophylline		X	A
Calcium salts (> 10%)	to comfort	to comfort	A
Contrast media		X	A
Dextrose (> 10%)		X	A
Dobutamine	X		B
Dopamine	X		B
Doxycycline	X		A
EPINEPHrine	X		B
Esmolol		X	A
Foscarnet		X	A
Ganciclovir		X	A
Mannitol (> 5%)		X	A
Methylene blue	X		B
Norepinephrine	X		B
Oxacillin		X	A
Penicillin		X	A
Phenobarbital		X	A
Phenylephrine	X		B
Phenytoin	X		A
Potassium salts (> 2 mEq/ml)	to comfort	to comfort	A
Promethazine	X		A
Propylene glycol containing medications[2]		X	A
Sodium bicarbonate	X		A

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

(≥8.4% or (≥ 1 mEq/ml)			
Sodium chloride (> 1%)	X		A
Theophylline		X	A
TPN (final concentration of amino acids ≥ 5% or dextrose ≥ 10%)		X	A
Vancomycin	X		A
Vasopressin	X		B

1 = warm or cold compresses: Gently apply warming pack/heating pad (low setting) OR cold packs/ice wrapped in towel for 20 minutes every 6-8 hours for 24-48 hours. Be careful to avoid extended exposure to heat/cold that can cause further tissue damage.

2 = propylene glycol containing medications include: Etomidate, Lorazepam, DiazePAM, Nitroglycerin, Digoxin, Phenobarbital.

Procedure A: Administer Hyaluronidase

Hyaluronidase

1. Draw up 1 ml of 150 unit/ml hyaluronidase into a 1-ml syringe.
2. Make 5 subcutaneous injections of 0.2 mL hyaluronidase (150 units/mL) around the edge of the extravasation area using a 25-gauge needle, changing needle with each injection.

***Hyaluronidase should be administered as early as possible, but no later than 1 hour after extravasation

Procedure B: Administer phentolamine, terbutaline or nitroglycerin topical ointment

Phentolamine:

1. Reconstitute phentolamine 5 mg vial with 1 ml of 0.9% sodium chloride, draw into 10mL syringe, and dilute to total of 10mL (0.5mg/mL).
2. Inject the contents as five separate subcutaneous injections around the edge of the extravasation area using a 25-gauge needle, changing the needle with each injection. Normal skin color should return within one hour,

***Phentolamine should be administered as early as possible, but no later than 12 hours after extravasation.

Terbutaline:

For small/distal extravasations:

1. Dilute terbutaline 1 mg/mL with 1 mL of 0.9% sodium chloride (total volume = 2 mL)
2. Administer multiple subcutaneous injections of approximately 0.25 ml around the edge of the extravasation site using a 25-gauge needle, changing the needle with each injection.
3. Total volume administered should be in the range of 0.5-1 mL.

For large extravasations:

1. Dilute terbutaline 1 mg/ml with 9 ml of 0.9% sodium chloride (total volume = 10 ml).
2. Administer multiple subcutaneous injections of approximately 0.25 mL around the edge of the extravasation site using a 25-gauge needle, changing the needle with each injection.
3. Total volume administered should be in the range of 3-10 mL.

Nitroglycerin topical ointment:

1. Apply 1-2 inches of nitroglycerin topical ointment to extravasation site.
2. Allow ointment to remain on the site for 6-8 hours before cleansing.
3. May reapply every 8 hours as needed.

References:

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Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

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Anderson J (2015, April 6). What are Current Recommendations for Treatment of Drug Extravasation? Retrieved from: http://dig.pharm.uic.edu/faq/2015/Jan/faq2.aspx.

Filter Guidelines

This filter guideline does not include chemotherapy agents and is only applicable to items contained within these IV medication guidelines

Basic properties of filtration during drug preparation/administration	Filter infusion sets at UConn Health
• 5 micron filter removes large particles, including glass from ampules • 1.2 micron filter removes fungi and other particulate contamination • 0.2 micron filter is designed for sterilization and bacteria retention ***Note***: 0.2 micron and 0.22 micron filters are indistinguishable. Their performance is the same, only the difference being the designation of their pore size rating.	• BD SmartSite 0.2 micron low protein binding extension set (latex free, 5mL fluid path), 20028E • BD SmartSite 0.2 micron low protein binding filter extension set (latex free, DEHP free, 5mL fluid path), 20350E • Churchill 0.2 micron minibore extension set (DEHP free), Warehouse 961012 (Stocked in pharmacy) • Interlink 1.2 micron filter (available from pharmacy)

Drug (Generic Name/Brand Name)	Type of Filter		Comments/Rationale
	Compounding (Pharmacy)	Administration on Units	
Abatacept (Orencia®)	None	In-line 1.2 micron low sorbing (protein) binding filter	
Abciximab (ReoPro)	Aseptically withdraw the required abciximab dose/volume through a 0.22 micron low protein-binding syringe filter into a syringe; this applies to preparation of the bolus dose and the continuous infusion	If a syringe filter was not used when preparing the infusion, administer using an in-line 0.2 or 0.22 micron low protein-binding filter	
Agalsidase Beta (Fabrazyme)	Do NOT use filter needle to prepare	May use an in-line 0.22 micron low sorbing (protein) binding filter	
Albumin	None	*Manufacturer Dependent:*	

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		CSL Behring: A filter is **NOT** required (comes in a bottle) but **be sure** to open the vent on the tubing. Octapharma: A filter is **NOT** required. Baxter: Use 15 micron IV filter set supplied by Pharmacy (comes in a bag or bottle)	
Alglucosidase Alfa (Myozyme)	None	In-line 0.22 micron low sorbing (protein) binding filter	
Alpha-1 Proteinase Inhibitor (Prolastin)	Use filter needle supplied with each vial	*Manufacturer dependent:* See individual package insert for each product dispensed	
Amiodarone	None	For continuous infusions, use an in-line 0.22 micron filter	
Amphotericin B Liposomal (AmBisome)	Withdraw appropriate amount of reconstituted solution into a syringe, attach a 5-micron filter, and inject contents of syringe through filter needle into an appropriate amount of D_5W	An in-line membrane filter (not less than 1 micron) may be used	
Anti-thymocyte globulin, rabbit (Thymoglobuin®)	None	An in-line 0.22 micron filter	
Bamlanivimab/etesevimab	None	An in-line 0.22 micron filter	
Bezlotoxumab (ZINPLAVA®)	None	A 0.2 to 5 micron in-line or add-on filter	
Casirivimab/ imdevimab	None	An in-line 0.22 micron filter	
Epoprostenol (Flolan®, Veletri®)	None	An extension set with a 0.22 micron filter.	
Factor Products	Use filter needle provided by manufacturer	Do not use an in-line filter	
Fat Emulsion for TPNs	None	An in-line 1.2 micron or larger filter	Filters < 1.2 micron pore size must not be used.
Golimumab Aria (Simponi Aria®)	None	An in-line 0.22 micron filter	
Imiglucerase (Cerezyme®)	None	May use an in-line 0.22 micron low sorbing (protein) binding filter	
Immune Globulin (Gammagard S/D®)	None	15 micron filter for S/D product only for patients with IgA deficiency	
InFLIXimab	None	An in-line, low protein-binding ≤1.2 micron filter	
LORazepam	None	An in-line 0.22 micron filter	

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Mannitol	5 micron filter needle (25% diluted mannitol)	An in-line 0.22 micron filter	
Phenytoin	None	An in-line 0.22 micron filter for infusion	
Promthrombin Complex Concentrate, Human (Kcentra®)	Use filter needle provided by manufacturer	None	
Sotrovimab	None	An in-line 0.2 micron filter	
Total Parenteral Nutrition (TPN)	None	An in-line 0.22 micron filter for infusion	

References: *Package inserts for applicable products*

Medication Considerations for Midline Catheters Guideline

Midline catheters, which vary in length, are inserted via the same veins used for PICC placement in the middle third of the upper arm; however, the midline catheter is advanced and placed so that the catheter tip is level or near the level of the axilla and distal to the shoulder.

Midline catheters are *preferred* over PICCs for either: 1. Difficult peripheral venous access and 2. Frequent phlebotomy - for use less than 14 days (Chopra, et al). That said, the FDA approval for midline catheters is up to 30 days though after the first 14 days there is an increasing risk of catheter clotting/malfunction.

Midline catheters are contraindicated when there is a history of venous thrombosis, restricted blood flow to the extremities, and end-stage renal disease requiring peripheral vein preservation. **Recognize a midline is NOT a central venous access device and should never be used for continuous vesicant infusions, total parental nutrition (TPN), chemotherapy, solutions greater than 600 mOsm/L, and those infusions that mandate central line-only administration.**

When determining the optimal venous access, medications and other infusions should be considered on an individual patient basis. The greatest concern is the potential extravasation of vesicant drugs, and any drugs known to be irritants should be avoided whenever possible. If central access cannot be obtained, short courses of therapy may be well tolerated, but risk should be evaluated and staff should be familiar with techniques for the management of extravasation.

The following should also be **avoided** in midline catheters**: *May be ok with **short courses of therapy** (not to exceed 3 days) with close monitoring

acyclovir	**amiodarone**	**alteplase**		**amphotericin B***	**ampicillin/sulbactam***	**azithromycin***
calcium chloride	**calcium gluconate**			**caspofungin***	**contrast media nonionic***	
dextrose concentration ≥10%	**dobutamine**	**epinephrine**		**dexrazoxane***	**foscarnet***	
ganciclovir	**mannitol ≥20%**	**norepinephrine**		**fosphenytoin***	**gentamicin***	**iron dextran***
pentamidine	**pentobarbital**	**phenylephrine**		**levofloxacin***	**meropenem***	**morphine sulfate***
phenytoin	**promethazine**	**sodium bicarbonate**		**nafcillin***	**oxacillin***	**pamidronate***

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

sodium chloride ≥3%	**TPN, exceeding 600mOsm/L**	**vasopressin**	[redacted]	**phenobarbital**	**potassium chloride (≥40 mEq)***	**protein solutions >5%**
				sulfamethoxazole/trimethropim*	**tobramycin***	**vancomycin***
				zidovudine*		

**This is not a comprehensive list and only provides examples of common medications that should not be administered via midline catheters. For specific drugs not found on this list, consult Trissel's Handbook for Injectable drugs, medication package inserts or contact the pharmacy.

References:
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8. Chopra V, Flanders SA, Saint S, Woller SC, O'Grady NP, Safdar N, et al. The Michigan Appropriateness Guide for Intravenous Catheters (MAGIC): Results From a Multispecialty Panel Using the RAND/UCLA Appropriateness Method. Ann Intern Med. ;163

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Abatacept Orencia® [immune modulator] 	Rheumatoid Arthritis	OP-INFC OP-NCCC	**I.I.:** dose/100mL NS over 30 mins with an inline 1.2 micron low sorbing (protein) binding filter **Dose:** Weight < 60 kg = 500 mg Weight 60-100kg = 750 mg Weight > 100 kg = 1000 mg	**Caution/Warning:** **Comments:** Use 1.2 micron low sorbing (protein) binding filter. **Drug Interactions:** **Monitor:** Vital signs before and after infusion. **Side Effects:** Increased risk of exacerbation of COPD & other infections. Possible acute infusion reactions: dizziness, hypertension, and headache were most commonly reported (1-2%) in association with the reaction. **Stability:** 24 hrs at room temperature. Protect from light

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Acetaminophen Ofirmev® [analgesic, antipyretic] **Restricted Use**	Pain, Fevers	ALL UNITS	**I.I.:** Dose infused over 15 mins **Dose**: Adults/adolescents Weight ≥ 50 kg = 1000 mg q 6 hrs) Weight < 50 kg = 15 mg/kg q 6 hrs Max: 4 gm/day	**Caution/Warning:** Contraindicated in severe liver failure **Comments: Restricted** for use patients who can't take oral, enteral or rectal acetaminophen. In CPOE, there will be only the opportunity to order as q6hrs x 2 doses or as one time doses due to restricted formulary status. 1000 mg dose is provided in a bottle with 100 mL of diluent, no further dilution is required. For lower doses remove excess dose from vial and infuse desired dose over 15 mins (e.g. withdraw 35mL from bottle for 650mg dose). Since the manufacturer provided bottle of IV Acetaminophen (OFIRMEV) has negative pressure the following procedure must be followed to assure proper flow. *Step 1:* Using the fully extended hanger provided within the secondary IV set, lower the primary container. Make sure the On-Off clamp of the secondary IV set is closed prior to proceeding. *Step 2:* -Open vent cap on the secondary IV set, and insert spike downward into an upright vial. Allow the upright container to vent for around 5 seconds (no more hissing sounds) to ensure the negative pressure is relieved prior to inverting and hanging. Fully squeeze and hold drip chamber and do not release until after container is inverted and hung. NOTE: If the vial is inverted when spiked or the vent is opened after the vial is inverted, this may result in intermittent or poor flow. *Step 3:* Hang the vial and fill the drip chamber to fill line. Prime the secondary IV set by opening the On-Off clamp to purge air. Once air is purged, close the On-Off clamp. Swab and connect the valve on the primary IV set to the adapter of the purged secondary IV set. Once connected, release and fully open the On-Off clamp. Adjust flow rate to administer the contents of the vial IV over 15 minute. **Side Effects:** **Monitor:** **Side Effects:** **Stability:** Store intact vials at 20°C to 25°C (68°F to 77°F); do not refrigerate or freeze. Use within 6 hours of opening vial or transferring to another container. Discard any unused portion; single use vials only.
AcetaZOLAMIDE Diamox® [carbonic anhydrase inhibitor]	Metabolic Alkalosis	ALL UNITS (Except Psy)	**IVPush:** 125-500mg dilute with 10 mL NS over 1-2 mins .	**Caution/Warning:** Use cautiously in respiratory acidosis & CO_2 retention. **Comments:** Reduce interval if CrCl<50 mL/min. Ineffective if CrCl< 10 mL/min. **Drug Interactions:** **Monitor:** I&O, electrolytes (K+), paresthesias. **Side Effects:** **Stability:** Stable 3 days if refrigerated, 12 hrs at room temperature.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Acetylcysteine (N-AC) Acetadote® [antidote] **Nov 2017: During shortage of SVP 50mL/100mL D5W, only alternative option is ½ NS**	Acetaminophen overdose	ALL UNITS (Except Psy)	**I.I. LD:** 150 mg/kg in 500 mL D5W or ½ NS (caution with osmolarity) over 60 mins, then **C.I.** of 50 mg/kg in 500 mL D5W or ½ NS (caution with osmolarity) at 125 mL/hr for 4 hrs, then 100 mg/kg in 1000 mL D5W or ½ NS (caution with osmolarity) at 65 mL/hr for 16 hrs. Total dose = 300 mg/kg over 20 hrs. Continue for 25-50 hrs if LFT's show liver injury or those presenting > 8 hrs post-ingestion. A toxicology consult is available at any time by contacting the Poison Control Center at 1-800-222-1222. Note: Fluid restricted pts can receive lower volumes of fluid. 100 mL with load dose, 250 ml with 2nd dose and 500 mL with 3rd dose.	**Caution/Warning:** **Comments:** *(Acetaminophen Overdose)* Note: Under Guardrail's as 1st, 2nd then 3rd dose. Pts who ingest more than 150 mg/kg of acetaminophen (10 gm for a 70 kg pt) within 8 hours or have a 4hr level at the 25% hepatic risk level should receive liver prophylaxis with oral acetylcysteine for 72 hrs. Pts < 40 kg or fluid restricted can receive IV Acetadote in 50 % of the stated D5W volumes. Oral therapy has equivalent efficacy to IV therapy and is preferred over IV use due to the drug delivery to the liver from the first pass effect. 48 hr IV therapy = 72 hr oral therapy. Oral therapy: 140 mg/kg x 1 dose then 70 mg/kg q 4 hrs for 17 total doses. Dilute in cold beverage. Re-dose if pt vomits within ½ hr of oral dose. Consider antiemetics (metoclopramide or ondansetron) if vomiting occurs within 1 hr of oral dosing. Select, low-risk pts may receive an abbreviated course of oral therapy (minimum of 24 hrs) which has been shown to be as effective as the 72-hr course. Note: Pts with fulminant hepatic failure should have therapy continued until recovery or death. *(Renal Protection)* Oral/NG acetylcysteine (N-AC) is preferred over IV. IV N-AC is indicated only if patients can not take oral / NG N-AC. Risk factors for Contrast-Induced Nephropathy: Hypotension, CHF, use of IABP, pre-existing renal dysfx- Cr > 1.5 and/or eGFR < 60 , age ≥ 75 yrs, diabetes, HCT < 39 for men < 36 for women, dehydration, concomitant use of nephrotoxic drugs- ACEI's, Aminoglycosides, loop diuretics, NSAID's. High Risk Pts include: ≥ 2 of above risk factors or eGFR < 30 mL/min. Caution with the use of aggressive hydration and sodium bicarbonate in pts with acute CHF/pulmonary edema or hyponatremia. Sodium Bicarbonate 150 mEq in 1 L of D5W as 3 mL/kg bolus 1 hr prior to procedure AND 1 ml/kg/hr during and for 6 hrs post-procedure is an option with N-AC. **Drug Interactions:** **Monitor:** **Side Effects:** IV use can cause anaphylactoid reactions, N/V, itching, flushing or hypotension. Management of anaphylactoid reactions: consider oral therapy. Flushing: no specific treatment. Urticaria: continue treatment if needed and DiphenhydrAMINE 1mg/kg max 50 mg IV. Angioedema: stop or slow infusion, DiphenhydrAMINE1mg/kg max 50 mg IV and restart treatment if no symptoms. Life-Threatening: Stop med, treat symptomatically, reassess need for med. **Stability:** Use one vial IV Acetadote to admix the # 4 doses of diluted 600-1200 mg IV acetylcysteine/ 50 mL D5W and use a 24 hr expiration dating on the final diluted solutions and can be stored at room temperature. The package insert states that acetylcysteine is stable for 24 hours at room temperature in sodium chloride 0.45% (To ensure tolerance of the infusion, osmolarity should be adjusted to a physiologically safe level – 7mg/mL Osmolarity in 1/2NS: 245 mOsmol/L, 24mg/mL Osmolarity in 1/2NS: 466 mOsmol/L)
	Renal protection	ALL UNITS (Except Psy)	**I.I.:** 600 (preferred dose) - 1200 mg in 50 mL D5W or ½ NS (caution with osmolarity) over 10-15 mins bid x 4 doses, optimally 2 doses the day before contrast procedure and 2 doses after the contrast procedure. Emergent Procedure: 600 mg X 1 dose before procedure and continue 3 doses q 12 hrs post procedure. Hydration is highly recommended: NS or 0.45% saline at 1 mL/kg/hr or 0.5 mL/kg/hr in patients with overt heart failure or EF < 40%. Start 12 hours before procedure and continue for 12 hrs post-procedure (total of 24hrs). For emergent procedure, fluid bolus of 0.5 – 1 L prior to procedure. Hydration depends on clinical status.	

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Acyclovir Zovirax® [antiviral] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS** If Extravasation, see Page 10 Avoid in midline cath see Page 14	Anti-viral- herpes simplex, zoster encephalitis	ALL UNITS	**I.I.:** 5-10 mg/kg q 8 hr over ≥ 1 hr. Doses: ≤ 350 mg / 50 mL NS or D5W over 1 hr. 351-700 / 100 mL NS or D5W over 1 hr. > 700 mg / 250 mL NS or D5W over 1 hr. Max. Conc. 7 mg/mL Patient must have adequate hydration (e.g. IVFs) while on this medication. Dose on ideal body weight. If patients total body weight is less than ideal body weight, use total body weight.	**Caution/Warning:** **Comments:** Dose reductions required in renal failure (<50mL/min). Maintain hydration. **Drug Interactions:** **Monitor:** SrCr. **Side Effects:** Phlebitis, rash. **Stability:** Keep bag at room temperature to avoid precipitation, administer in separate IV line. Do not refrigerate. Reconstitute 500 mg vial w 10 mL SW and 1000 mg vial with 20 mL SW. Do not reconstitute with bacteriostatic water. **P&T Therapeutic Interchange List** See Appendix XV for Dose and Renal dose Adjustment
Adenosine Adenocard® [antiarrhythmic]	Antiarrhythmic Agent for SVT	In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS OR/PACU UHSC	**IV Push (Peripheral line)**: SVT Initial dose: 6 mg rapid undiluted over 1 -3 secs at lowest port and rapid flush with 20 mL NS. After 1-2 mins if PSVT persists give 12 mg rapid IV Push undiluted over 1 -3 secs and may repeat 12 mg in 1-2 mins if needed. Max dose = 30 mg **IV Push (Central line)**: Use 50 % of peripheral dose. SVT Initial dose: 3 mg rapid undiluted over 1 -3 secs at lowest port and rapid flush w 20 mL NS. After 1-2 mins if PSVT persists give 6 mg rapid IV Push undiluted over 1 -3 secs, may repeat 6 mg in 1-2 mins if needed. Max dose = 30 mg	**Caution/Warning:** **Comments:** With appropriate monitoring, may be given by the MD/LIP as a diagnostic intervention. Theophylline & caffeine antagonizes effects. Persantine potentiates effects. When administered through a central venous line, adenosine has a faster onset of action and may be subjected to less degradation as compared to administration through a peripheral line so use 50% of dose that would administer peripherally. **Drug Interactions:** **Monitor:** Patient must be on a continuous cardiac monitor/telemetry. Requires code cart, defibrillator at bedside. **Side Effects:** Transient AV block, chest pain, bronchospasm, palpitations, headache, flushing, dyspnea. **Stability:** Store at room temperature. Do not refrigerate; crystallization may occur (may dissolve by warming to room temperature).

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Agalsidase beta Fabrazyme® [endocrine-metabolic agent] 	Fabray Disease	OP-INFC OP-NCCC	**I.I.:** 1 mg/kg IV in 500 mL NS q 2 wks, infuse over 1.5 -3 hrs as tolerated	**Caution/Warning:** **Comments:** May administer through in-line low protein-binding 0.22 micron filter. **Drug Interactions:** **Monitor:** Report any signs of respiratory infection to MD/LIP before initiating infusion. V/S pre-infusion and 1 min after infusion. **Side Effects**: **Stability**: Stable for 24 hrs if refrigerated.
Albumin [volume expander]  **(see comments)**	Hypovolemia, shock, renal failure, cirrhosis & burns	ALL UNITS (Except Psy)	**I.I.:** 25% at max of 2-3 mL/min or over 15-30 min 5% at max of 2-4 mL/min or over 15-30 min (see comments section for information if a filter is needed or not needed as this is dependent upon the product used)	**Caution/Warning:** **Comments:** A filter is **NOT** required for *CSL Behring* product (comes in a bottle) but **be sure** to open the vent on the tubing. A filter is **NOT** required for *Octapharma* product. Use 15 micron IV filter set supplied by Pharmacy for *Baxter* Product (comes in a bag or bottle) **ONLY**. Filter Information Link Max. Dose 250 gm over 48 hrs. May infuse more rapidly in emergency. **Drug Interactions:** **Monitor:** for rare anaphylactoid reactions: urticaria, skin rash, pruritus, edema, hypotension and bronchospasm. May cause nausea, vomiting, increased salivation, chills and febrile reactions. **Side Effects:** **Stability:** Discard unused solution after 4 hrs.
Alglucosidase alpha Myozyme® [enzyme replacement] 	Pompe disease	OP-INFC OP-NCCC	**I.I.:** 20 mg/kg over 4 hrs, start @ 1mg/kg/hr for 1st 30 min then 3 mg/kg/hr next 30 min then 5 mg/kg/hr next 30 min then 7 mg/kg/hr for duration of infusion	**Caution/Warning:** **Comments:** Requires 0.22 micron low protein binding filter & light protection overlap. May require filter change if occlusion alarms. No titration needed with MD/LIP orders. **Drug Interactions:** **Monitor:** V/S pre-infusion and with q step increase, & post-infusion and hourly until discharge. If reaction, stop infusion and call MD/LIP. Requires MD/LIP order to resume. **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Allopurinol [xanthine oxidase inhibitor]	Gout, Tumor Lysis syndrome	ALL UNITS (Except Psy)	**I.I.:** Gout: 100 -300 mg daily over 30 minutes. Tumor Lysis: 200-400 mg/m^2/day - should be initiated at 24-48 hours before the start of chemotherapy known to cause tumor lysis (including adrenocorticosteroids).	**Caution/Warning:** **Comments:** IV daily dose can be administered as a single infusion or in equally divided doses at 6-, 8-, or 12-hour intervals. Maintain urine output > 2 liters/ day and maintain neutral or slightly alkaline urine is desirable. **Drug Interactions:** **Monitor:** **Side Effects:** CV- arteritis, vasculitis Derm.: various types of skin rashes, fever, chills, arthralgia, pruritus, Blood disorders **Stability**: Reconstitute each 500 mg vial with 25 mL of sterile water for injection. Solution should be clear and almost colorless with only slight opalescence. Dilute to ≤ 6 mg/ml concentration with 0.9% NaCl or D5W. Administer within 10 hr of reconstitution; do not refrigerate. Do not administer solutions that are discolored or contain particulate matter
Alpha1- proteinase inhibitor Aralast NP® [antitrypsin deficiency agent]	Alpha1- proteinase inhibitor deficiency	OP-INFC	**I.I.:** 60 mg/kg weekly infused at a rate of ≤ 0.2 mL/kg/min (Aralast NP®)	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** Vital signs during infusion. Monitor for anaphylactic reaction. **Side Effects:** **Stability:** 3 hours from preparation
Alpha 1-Proteinase inhibitor Prolastin® [blood modifier agent]  (manf dependent)	Alpha1-Antitrypsin def.	OP-INFC OP-NCCC	**I.I.:** 60-120 mg/kg ,infuse over 60-120 mins, start at 50 mL/hr for 15 mins then increase per order.	**Caution/Warning:** **Comments:** Pharmacy to use filter needle supplied with each vial. **Drug Interactions:** **Monitor:** Baseline V/S, 15 mins after start, then 15 mins after infusion is complete. **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Alprostadil Prostin VR® [Prostaglandin E] TITRATE MED BKC: Dispose in Black Bin	Raynaud's disease	UT1-ICU UT2-IU OP-INFC OP-NCCC	**C.I.:** 500 mcg/ 500 mL NS (1 mcg/ml) Start @ 2 ng/kg/min x 2 hrs, if tolerated increase to 4ng/kg/min x 2 hrs, if tolerated increase to 6 ng/kg/min x 2 hrs, if tolerated increase to 8 ng/kg/min x 1-2 hrs - NS @ 50 mL/hr to be infused separately is recommended to decrease blood viscosity and improve microcirculation.	**Caution/Warning:** **Comments:** Via peripheral vein unless a central line is needed for access. The optimal rate is one that produces vasodilation as evidenced by increased skin temp and improved digit color without side effects. **Drug Interactions:** **Monitor:** Document V/S (BP, HR, RR) q 15 mins x 1 hr then q 20-30 mins after initial rate changes, once stable infusion rate V/S may be done 1 hr, affected extremity temp & size of ulceration & gangrene, affected area appearance - color, pain, discomfort. Hold infusion if hypotension (SBP<90) & call MD/LIP. PRN prochlorperazine, loperamide, acetaminophen and/or narcotics may be required for drug related side effects or disease symptoms. **Side Effects:** Hypotension, bradycardia/tachycardia, flushing dizziness, nausea & vomiting, diarrhea & headaches. If significant changes in V/S, decrease infusion rate & call MD/LIP. **Stability:**
Alteplase = TPA Activase® Cathflo Activase® [tissue plasminogen activator] HIGH ALERT / DOUBLE CHECK	MI	CCL/EP ED UT1-ICU OR/PACU	**I.I.:** Mix 100 mg/ 100 mL SW (1mg/mL) with IV Push 15mg (15mL) over 1-2 minutes then If weight: < 67 kg: 0.75mg/kg (not > 50mg) over 30 mins, then 0.5 mg/kg (not > 35mg) over 1 hr with a total dose including bolus not to exceed 100mg ≥ 67 kg: 50 mg over 30 mins, then 35mg over 60 mins with a total dose of 100mg including the bolus	**Caution/Warning:** Contraindications include active internal bleeding, hypersensitivity to alteplase, severe uncontrolled hypertension, recent intracranial or intraspinal surgery or trauma (within 3 months), intracranial neoplasm, arteriovenous malformation, aneurysm, known bleeding diathesis, history of cerebrovascular accident, history of intracranial hemorrhage (ischemic stroke), seizure at the onset of stroke (ischemic stroke), platelet count less than 100,000/mm^3 (ischemic stroke) and administration of heparin within 48 hours preceding the onset of stroke and have an elevated activated partial thromboplastin time at presentation (ischemic stroke). **Comments:** Use dedicated line. See protocols for each indication. **Drug Interactions:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
(Activase® including bolus dosing)  Avoid in midline cath Page 15	Acute stroke	ED UT1-ICU OR/PACU ALL UNITS by Critical Care RN during Stroke Alert/RRT	**I.I.:** (Stroke Kit) 100 mg/100mL SW (1mg/mL) as 0.9 mg/kg (90 mg max) with 10% of total dose as IV Push over 1-2 mins then remainder of total dose as CI over 60 mins. Alteplase (t-PA) for Acute Stroke must be administered within 3 hours of the onset of signs and symptoms. Run infusion on a primary line and flush line after infusion. • **Ischemic and Hemorrhagic Stroke HAM CCG Protocol** • **Pharmacist Instructions for Stroke Kit** • **Alteplase Dosing Chart** • **Alteplase on Guardrails**	**Monitor:** for bleeding, hypotension. Monitoring for use with MI and to assess for evidence of cardiac reperfusion includes resolution of chest pain, resolution of baseline EKG changes, appearance of reperfusion arrhythmias (e.g. accelerated idioventricular rhythm, bradycardia, nonsustained ventricular tachycardia), cardiac enzyme washout phenomenon (earlier CPK peak), reduced total CPK release and preserved left ventricular function. **Related Policies:** Policies put with corresponding diagnosis. Refer to Nephrology for specific protocols for infusions of alteplase for clotted arterial or venous lines/grafts. **Side Effects:** **Stability:** Dilute with Sterile Water without preservative and prepare just before use. 8 hrs at room temperature for final solution per package insert. Dilution with Normal Saline has a 24 hour expiration per reference: Semba, Charles et al. "Alteplase: Stability and Bioactivity after Dilution in Normal Saline Solution" *Journal of Vascular and Interventional Radiology.* Vol 14, Issue 1, Jan 2003: 99-102 **Information on Alteplase continues on the next page.** **See prior page for comments on Alteplase.**
	Pulmonary Embolism	ED UT1-ICU OR/PACU	**I.I.:** 100 mg/100 mL SW over 2 hr, then start IV heparin.	
	Pulmonary Embolism Catheter Directed Treatment	ED UT1-ICU OR/PACU	**I.I.:** Catheter directed infusion *Bilateral:* 12.5mg/125mL infused at 10mL/hr for 12 hours (with Heparin 25,000 units/500mL at 500 units/hr) *Unilateral*: 25mg/250mL infused at 10mL/hr for 24 hours (with Heparin 25,000 units/500mL at 500 units/hr) Reference: A Prospective, Single-Arm, Multicenter Trial of Ultrasound-Facilitated, Catheter-Directed, Low-Dose Fibrinolysis for Acute Massive and Submassive Pulmonary Embolism: The SEATTLE II Study	
	Peripheral Artery Occlusion	ED UT1-ICU IRAD OR/PACU	**I.I.:** Catheter directed infusion of 15 mg in 500 mL NS (0.03mg/mL) with a rate from 0.5mg/hr (16.7ml/hr) to 1 mg/hr (33.3mL/hr)	
Alteplase = TPA Activase® Cathflo Activase®	Empyema	ALL UNITS (Except Psy)	**Via Chest Tube:** 10 mg in 50 mL NS (syringe) via chest tube, may flush chest tube with 50 mL NS, roll pt. to ensure distribution and clamp with water seal for 4 hrs and may be repeated daily (usually 2-4 doses required	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
[tissue plasminogen activator] **HIGH ALERT / DOUBLE CHECK** (Activase® including bolus dosing)  Avoid in midline cath Page 15	complicated deep venous thrombosis by vascular surgery, using a Trellis device/thrombectomy with thrombolytic alteplase or management of peripheral arterial occlusion	LIP on the sterile field during procedures	**Catheter directed bolus administration:** 2 mg vial or multiples of 2mg in the procedural area immediately before use. (Add 2.2 mL SWFI to vial; do not shake. Final concentration: 1 mg/mL.)	
	Clotted catheters	ALL UNITS (Except Psy)	**Via Clotted Catheters**: Cathflo 2mg/ 2 mL draw up with a 10 ml syringe. Studies have indicated that needle Central venous catheters: instill volume to fill catheter and dwell 30 mins before aspirating, if not patent increase dwell time to 2 hrs, If catheter function has been restored, aspirate 4-5 mL of blood to remove alteplase and residual clot, and gently irrigate the catheter with 0.9% NS HD access Grafts: instill 2 mg/ 2ml HD Cath Cond.: add volume to fill arterial and veno catheter then aspirate & discard before next dialysis	
Amikacin Amikin® [aminoglycoside] **RESTRICTED ANTIMICROBIAL** **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Bacterial infection	ALL UNITS (Except Psy)	**I.I.:** 15 mg/kg/day (maximum 1500 mg/day) mixed in 100 mL NS or D5W and administer over 30 -60 mins.	**Caution/Warning:** **Comments:** Pharmacy to mix. Dose based on weight, renal function & diagnosis. Dose divided q 8 to 12 hrs. Contact RPh for assistance in dosing. Trough before 3rd dose, or 10 hrs random after 1st dose if using daily dosing. **Drug Interactions:** **Monitor:** **Side effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Aminocaproic acid Amicar® [plasmin inhibitor]	Systemic hemostatic	UT1-ICU OR/PACU	**I.I. LD (Cardiopulmonary bypass):** 50-80 mg/kg over 20-30 mins, then **C.I.:** 25-30 mg/kg/hr PLUS 10 mg/kg in the priming solution of the cardiopulmonary bypass pump AS **I.I. LD:** 5 gm / 250 mL D5W or NS over 1st hr then 5 gm/ 250 mL D5W or NS at 50 mL/hr for 5 hrs then reassess need. **C.I.:** Maintenance dose of 1-2 gm/hr. Dilute 20 gm in 1000 mL D5W or NS (2Gm/100 mL) and infuse at 50-100 mL/hr **Systemic hemostatic:** **I.I. LD (Systemic hemostatic):** 4-5 gm / 250 mL D5W or NS over 1st hr then 1 gm/hr with maximum of 30 gm/ 24 hrs, 10 gm/ 500 mL D5W or NS at 50 mL/hr x 6-8 hrs then reassess need.	**Caution/Warning:** **Comments:** Avoid rapid IV push to lower risk of hypotension, bradycardia & arrhythmias **Drug Interactions:** **Monitor:** **Side Effects:** Dizziness, headache, monitor HR, BP, coag's and for bleeding. Use cautiously in renal /hepatic disease. Max 30 gm/day = 1.25gm/hr. **Stability:**
Aminophylline [methylxanthine] If Extravasation, see Pages 10&11	Bronchodilator	ALL UNITS (Except Psy)	**I.I. LD:** 5.7 mg/kg in 100 mL NS or D5W over 30-60 mins, max < 25mg/min **C. I.** : 1 g Aminophylline/500 mL NS or D5W 0.25mg/kg/hr Cardiac, Hepatic, etc 0.38 mg/kg/hr adults >60 0.51 mg/kg/hr adults 16-60	**Caution/Warning:** **Comments:** Aminophylline 1 g/500 mL D5W = Theophylline 800 mg/500 mL D5W (Theophylline is 80% of Aminophylline dose). Doses should be individualized based on peak serum concentrations and should be based on ideal body weight. The treatment of asthma exacerbations with aminophylline is not supported or recommended by current clinical practice guidelines. Therapeutic range of 5-20 mcg/ml. Draw level 24-48 hrs after starting or dose change. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
	Reversal of vasodilation with Persantine nuclear stress test	CCL/EP	**IV Push:** 125 mg over 20 secs, may repeat X 1	
	For prevention of bradyarrhythmias induced by rheolytic thrombectomy.	CCL/EP	**IV Push**: 125 mg over 20 secs, may repeat X 1	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Amiodarone Cordarone® [class 3 antiarrhythmic]   If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Atrial Fib./Flutter, V. Tachy., V. Fib.	ED UT1-ICU UT2-IU OR/PACU In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	Atrial Fib./Flutter & Ventricular Arrhythmias **I.I. LD:** 150mg in 100 mL D5W over 10 mins then **C.I.:** 450mg/250mL D5W (1.8mg/mL) at 1mg/min (33.3mL/hr) for 6 hrs then 0.5 mg/min (16.7mL/hr) for 18 hrs With consent of cardiology or EP MD/LIP's: Higher dose of 2 mg/min may be used for atrial flutter, recent onset a. fib, ventricular tachycardia Pulseless V. Tach/ shock-refractory V. Fib (Cardiac Arrest) **IV Push LD:** Cardiac arrest: 300mg over 3-5 mins. For all above indications if recurrent/ refractory arrhythmias may be treated with a 2nd dose of 150 mg over 10 mins then follow CI as above.	**Caution/Warning:** **Comments:** Pharmacy Admixture: Mix continuous infusion in D5W polyolefin bags. Central line preferred due to high rate of phlebitis with peripheral veins. Use volumetric infusion pump. For C.I., use an in-line 0.22 micron filter. Evaluate for change to oral therapy after 24 hrs infusion. No tapering needed. Start oral dose prior to discontinue continuous infusion. **Drug Interactions:** Drug interactions with amiodarone can occur up to 4-5 months after discontinuation of chronic amiodarone dosing and up to 2 months after a single dose due to the extremely long half-life of the med. **Monitor:** Continuous EKG, BP & HR every 5 minutes pre and post bolus and initiation of continuous infusion then every 4 hours and PRN. QT interval at initiation and every 4 hours (notify practitioner if QT interval lengthens to > 500 milliseconds or defined parameter. **Side Effects:** Hypotension - manage by reduce rate by 50%, if unresolved hold therapy and then restart at the lower rate. Try volume expansion. May need vasopressors. **QTc prolongation**, Bradycardia & AV block: slow rate or DC Asystole, cardiogenic shock, CHF, inc. LFT's, VT, Pul. Disorders Contra: cardiogenic shock, marked sinus bradycardia, 2nd or 3rd degree AV block unless a functioning pacemaker is available. **Stability:**
Ammonium chloride [urinary acidifier]	For severe hypochloremic Metabolic Acidosis	UT1-ICU	**C.I.:** Calculated mEq added to NS to a concentration < 0.4 mEq/ml 100 to 200 mEq to 500 to 1000 mL isotonic 0.9% NS. Do not exceed 5 milliliters/minute	**Caution/Warnings:** **Comments:** Not with significant renal or hepatic disease **Drug Interactions:** **Monitor:** CL, ABG's, serum ammonium if renal disease. Local irritation, diaphoresis, vomiting. **Side effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Amphotericin B Conventional Fungizone® **LOOK ALIKE / SOUND ALIKE** **RESTRICTED ANTIMICROBIAL** [antifungal] Avoid in midline cath see Page 14 (may be ok w/ short course)	Fungal infection	ALL UNITS (Except Psy)	**I.I. Test Dose** NOT REQUIRED **I.I.:** 0.3-1 mg/kg/day or 1.5 mg/kg every other day in 500 mL D5W over 2-6 hrs Max concentration of 0.1 mg/ml via peripheral line and 0.25 mg/ml via central line. Flush line with D5W only. Dosing is based on total body weight and adjusted body weight in obesity.	**Caution/Warnings:** **Comments:** Central line is preferred. Flush line with D5W. Incompatible with NS. May premedicate with Meperidine to lessen shivering, chills and rigors that may occur within the first hour of infusion. Have available: acetaminophen, diphenhydramine, +/- hydrocortisone, oxygen and suction apparatus to lessen reactions. **Drug Interactions:** **Monitor:** V/S q 15 mins for 1st hr & q hr until completion, temp, HR, BP, RR, electrolytes, Cr. Assess pt for fever, chills, rigors & signs/symptoms of respiratory distress q hr during infusion. Provide comfort measures for fever, chills or rigors (extra blankets, distraction, reassurance that the reactions will subside after infusion. Monitor & record I&O q 2-4 hrs. Monitor serum electrolytes, BUN, creatinine and magnesium. **Side Effects:** Fever, chills, nausea & vomiting, urticaria, headache, headache; Myalgias/arthralgias Thrombophlebitis pain secondary to thrombophlebitis, Nephrotoxicity, weight gain, fluid imbalances; Respiratory distress: tachypnea, shortness of breath, wheezing, bronchospasms; Cardiovascular: hypotension, tachycardia; Electrolyte balance: hypokalemia, hypomagnesemia; GI manifestations: anorexia, nausea, vomiting, diarrhea. **Stability:** 24 hrs at room temperature
Amphotericin Liposomal AmBisome® [antifungal] **LOOK ALIKE / SOUND ALIKE** **RESTRICTED ANTIMICROBIAL**	Aspergillosis Invasive Candidiasis Inf. Disease Restricted	ALL UNITS (Except Psy)	**I.I. Test Dose** NOT REQUIRED **I.I.:** 3- 5 mg/kg daily (1-2 mg/mL conc in D5W) over 2 hrs. Flush line with D5W only. Dosing is based on total body weight and adjusted body weight in obesity.	**Caution/Warning:** **Comments:** Pharmacy to filter with 5 micron filter provided with med. Invert bag to remix several times prior to hanging & during infusion. Incompatible with NS. Keep refrigerated until hung. Stable 48 hrs in refrigerator and an additional 6 hrs at room temperature. Protect from light. May premedicate with acetaminophen, diphenhydramine, +/- hydrocortisone to lessen reactions. Treat rigors with meperidine. Central line is preferred. Flush line with D5W. Do not filter **Drug Interactions:** **Monitor:** V/S q1 hr x 2 hrs - temp, HR, BP, RR, electrolytes, Cr., s&s's of reactions. Vitals signs can be discontinued if the patient hasn't had a reaction or significant change in BP or HR. **Side Effects:** **Stability:**
Ampicillin [antibiotic] **ADS MIXTURE**	Bacterial Infection	ALL UNITS	**I.I.:** 1 gm in 100 mL NS (Minibag Plus) over 30 mins (concentration 10mg/mL), 2 gm in 100 mL NS (Minibag Plus) over 30 mins (concentration 20mg/mL). Use within 1 hr of reconstitution	**Caution/Warning:** **Comments:** Do not mix with D5W. Reduce dose and frequency with renal failure. Incompatible with Gentamicin & tobramycin. *Contraindications:* severe anaphylaxis to Penicillin (Type 1 PCN allergy). **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If mixed by pharmacy: 8 Hours at room temperature and 24 hours under refrigeration (concentration 30mg/mL) or 48 hours (concentrations up to 20 mg/mL)

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Ampicillin/ sulbactam Unasyn® [antibiotic] **ADS MIXTURE** Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1.5 gm in 100 mL NS (Minibag Plus) over 20-30 mins 3 gm in 100 mL NS (Minibag Plus) over 20-30 mins Use within 1 hr of reconstitution.	**Caution/Warning:** **Comments:** Do not mix with D5W. Reduce dose and frequency with renal failure. Incompatible with Gentamicin & tobramycin. *Contraindications:* severe anaphylaxis to Penicillin (Type 1 PCN allergy). **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If mixed by pharmacy: Solutions made in NS are stable up to 72 hours when refrigerated.
Angiotensin II Brand Name Giapreza® **TITRATE MED** [Vasoactive agent]	Septic or other distributive shock	UT1 - ICU	**C.I.: 2.5mg in 500ml NS (5,000ng/ml) or 2.5mg in 250ml NS (10,000ng/ml)** Initial: 20 ng/kg/minute; monitor response and titrate every 5 minutes by increments of up to 15 ng/kg/minute as needed. Once the underlying shock has sufficiently improved, down-titrate every 5 to 15 minutes by increments of up to 15 ng/kg/minute based on response. Doses as low as 1.25 ng/kg/minute may be used. Maximum initial dose: 80 ng/kg/minute during the first 3 hours of treatment. Maximum maintenance dose: 40 ng/kg/minute.	**Caution/Warning:** There are no known contraindications. Thrombosis events have been reported with use; use concurrent VTE prophylaxis as appropriate. **Comments:** No renal or hepatic dose adjustments. **Drug Interactions:** ARBs may diminish therapeutic effects and ACE-inhibitors may enhance therapeutic effects. **Monitor:** BP response **Side Effects:** Cardiovascular: Thrombosis (13%), Tachycardia (9%), deep vein thrombosis (4%), peripheral ischemia (4%) Central nervous system: Delirium (6%) Endocrine & metabolic: Acidosis (6%), hyperglycemia (4%) Hematologic & oncologic: Thrombocytopenia (10%) Infection: Fungal Infection (6%) **Stability:** Vials to be stored under refridgeration. Once diluted, can be stored at room temperature or under refrigeration up to 24 hours.
Antithrombin III Thrombate III [coagulation inhibitor]	Antithrombin III deficiency, Hereditary - Thromboembolic disorder	ALL UNITS (Except Psy)	**I.I.:** 3,000-8,000 units daily or q 12 hrs infused over 10-60 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Antithymocyte globulin Thymoglobulin [immune suppressant]	Prevent Transplant rejection	ALL UNITS (Except Psy)	Usual dose: 1.5 mg/kg/day **I.I.:** Reconstitute 25 mg with 5 mL Sterile water, further dilute in 50 mL NS or D5W.	**Caution/Warning:** **Comments:** Nursing to use in-line 0.22 micron filter sent supplied by Pharmacy with product. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Aprepitant Cinvanti® [P/NK1 receptor Antagonist]	Prevention of Chemotherapy induced nausea and vomiting	ALL UNITS (Except Psy)	**IV Push:** over 2 minutes approximately 30min prior to chemo. Flush infusion line with NS before and after administration.	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Argatroban [anticoagulant-direct thrombin inhibitor] **HIGH ALERT / DOUBLE CHECK**  BKC: Dispose in Black Bin	Treatment of Heparin Induced thrombocytopenia	UT1-ICU UT2-IU MED/ SURG/ ONC	250 mg/ 250 mL NS (1mg/1 ml, 1000 mcg/ml) No initial bolus dose required. The below nomograms are **not** nursing protocols but guidelines. MD/LIP must be contacted for any dosing adjustments. Consult UConn Anticoagulation Guidelines on pharmacy website for further information. Draw an aPTT 2 hrs after initiation of infusion times two and 2 hrs after each dose change times two, then follow the titrating chart below using the patient's baseline aPTT value in all of the subsequent titration calculations **C.I:** Initial dose of **2 mcg/kg/min.** Titrate to maintain aPTT 1.5-3 times patient's baseline or 1.5-3 times mean of lab control range (27 sec). Goal aPTT 40-70 sec. **Lab Result** / **Infusion Rate Change** / **Next aPTT** aPTT <30 sec / Increase by 1 mcg/kg/min / aPTT in 2 hrs aPTT 30-39 sec / Increase by 0.5 mcg/kg/min / aPTT in 2 hrs **aPTT 40-70 sec** / NO CHANGE / aPTT in 24 hours (AM Labs) aPTT 71-90 sec / Decrease by 0.5mcg/kg/min / aPTT in 2 hrs aPTT >90 sec / Decrease by 1 mcg/kg/min / aPTT in 2 hrs **Round PTT to the nearest whole number (If < 0.5 round down, if ≥ 0.5 round up) * **C.I.** for: patients with CHF, multiple organ system failure, severe anasarca or post cardiac surgery. Reduce initial dose to **1 mcg/kg/min**. Titrate to maintain aPTT 1.5-3 times patient's baseline or 1.5-3 times mean of lab control range (27 sec). Goal aPTT 40-70 sec. **Lab Result** / **Infusion Rate Change** / **Next aPTT** aPTT <30 sec / Increase by 0.2 mcg/kg/min / aPTT in 2 hrs aPTT 30-39 sec / Increase by 0.1 mcg/kg/min / aPTT in 2 hrs **aPTT 40-70 sec** / NO CHANGE / aPTT in 24 hours (AM Labs) aPTT 71-90 sec / Decrease by 0.1 mcg/kg/min / aPTT in 2 hrs aPTT >90 sec / Decrease by 0.2 mcg/kg/min / aPTT in 2 hrs **Round PTT to the nearest whole number (If < 0.5 round down, if ≥ 0.5 round up) * **C.I. for:** Patients Moderate Hepatic Impairment (Child-Pugh Grade A or B) or Bilirubin >1.5. Reduce initial dose to **0.5mcg/kg/min**. Titrate to maintain aPTT 1.5-3 times patient's baseline or 1.5-3 times mean of lab control range (27 sec). Goal aPTT 40-70 sec. **Lab Result** / **Infusion Rate Change** / **Next aPTT** aPTT <30 sec / Increase by 0.2 mcg/kg/min / aPTT in 2 hrs aPTT 30-39 sec / Increase by 0.1 mcg/kg/min / aPTT in 2 hrs **aPTT 40-70 sec** / NO CHANGE / aPTT in 24 hours (AM Labs) aPTT 71-90 sec / Decrease by 0.1 mcg/kg/min / aPTT in 2 hrs aPTT >90 sec / Decrease by 0.2 mcg/kg/min / aPTT in 2 hrs **Round PTT to the nearest whole number (If < 0.5 round down, if ≥ 0.5 round up) * Do not USE in severe Hepatic Impairment	**Caution/Warning:** **Comments:** **NOTE:** Use Bivalirudin with Heparin Induced Thrombocytopenia + ACS. Patient at intermediate to high risk for HIT: Unexplained Platelet Count decline ≥ 30-50% within 5-10 days of heparin or LMWH use, or <1 day with heparin/LMWH exposure in last 3 months, suspected or proven new thrombosis, erythematous or necrosis of skin with SC Heparin or enoxaparin, acute systemic reaction after Heparin bolus. Discontinue all sources of heparin (IV, SC, heparin coated catheters & flushes) & LMWH's. Requires RN/LPN verification double check on MAR. Child-Pugh score is recommended to assess liver function. Dose reduction is indicated with moderate to severe liver dysfunction. Not renally cleared. No initial dose adjustment with renal impairment, in absence of factors requiring dose reduction as listed. Can cause false elevations of INR so refer to references for transition to warfarin. Adjust dose for approximate goal of INR 4-5 during first 5 days of concomitant argatroban and warfarin therapy. **Drug Interactions:** **Monitor:** aPTT, bleeding risk, reduce dose in hepatic dysfunction. Hepatic elimination. **Warfarin Overlap with Argatroban** Note: Argatroban will significantly elevate and provide false PT/INR values. Follow warfarin dosing guideline below when determining adjustment of warfarin dosing. If planning to start a patient on warfarin therapy after platelet count has recovered, continue non heparin anticoagulant until the platelet count has reached stable plateau, the INR has reached the intended target range, and have a minimum overlap of at least 5 days between the non heparin anticoagulant and warfarin therapy. **Initiate warfarin only when the platelet count has substantially recovered to ≥ 150,000 cells/mm^3 or greater** Obtain a baseline PT/INR prior to starting the warfarin. Do not give a loading dose of warfarin. Prescribers may order warfarin daily at a low, maintenance daily dose (≤5 mg). Consider starting with a lower daily dose (e.g. 2.5mg) in elderly patients, patients with hepatic impairment, heart failure, malnutrition or receiving interacting medications. Adjust warfarin dose for approximate goal of INR 4-5 during the first 5 days of concomitant argatroban and warfarin therapy. If argatroban dose is ≤ 2 mcg/kg/min . INR should be measured daily • If INR ≤ 4, continue combined warfarin and Argatroban therapy, recheck in 24 hours • If INR >4, Argatroban can be stopped • After Argatroban stopped, repeat INR measurement in 4-6hrs • Below therapeutic range (e.g. INR <2): Resume Argatroban therapy at the previous rate and repeat above steps the following day • Desired INR therapeutic range (e.g. INR 2-3) and minimum of 5 days overlap: Discontinue Argatroban If argatroban dose is >2 mcg/kg/min . INR should be measured daily • If INR ≤ 4, continue combined warfarin and Argatroban therapy, recheck in 24 hours • If INR >4, Argatroban can be temporarily reduced to 2mcg/kg/min • Obtain INR in 4-6 hours, if INR > 4, stop Argatroban • After Argatroban stopped, repeat INR measurement in 4-6 hours • Below therapeutic range (e.g. INR<2): Resume Argatroban therapy at the previous rate prior to reducing dose and repeat above steps the following day • Desired INR therapeutic range (e.g. INR 2-3) and minimum of 5 days overlap: Discontinue Argatroban **Related Policies:** • Medications: High Alert, Double Check of **Side Effects:** **Stability:** Stable in NS for 24 hrs at room temperature.

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Atropine Sulfate [anti-cholinergic]	Bradycardia, asystole, slow PEA	ECT-A ED ENDO UT1-ICU UT2-IU IRAD OP-CARD OR/PACU UHSC In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push:** 0.5- 1 mg undiluted over 1-2 min	**Caution/Warning:Monitor:** EKG, HR for PVC, VT **Comments:** Flush with 20cc NS. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
AzaTHIOprine Imuran® [antimetabolite] HD CAUTION: HAZARDOUS DRUG	Renal transplant immuno-suppressant	ALL UNITS (Except Psy)	**I.I.:** Dilute 3-5 mg/kg dose x1 then 1-3 mg/kg/day in 50 mL D5W over 30-60 mins	**Caution/Warning :** **Comments:** Maximum concentration of 10 mg/ml. Reduce dose for renal failure. Dose based on IBW, stop if WBC < 3,000. Hazardous medication precautions. Carcinogen. Pregnancy Category D. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** CBC, LFT's, signs of liver failure, bleeding **Side Effects:** **Stability:**
Azithromycin Zithromax® [antibiotic] Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS	**I.I.:** 500 mg in 250 mL D5W over 60 mins	**Caution/Warning:** **Comments:** Pharmacy to admix non emergent doses. Vials are in Pyxis for 1st doses. Stable 24 hrs @ room temperature, 7 days refrigerated No dose adjustment in renal failure **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Aztreonam Azactam® [antibiotic] ADS MIXTURE	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1 gm in 100 mL NS (Minibag Plus) over 20-30 mins (concentration 10mg/mL) 2 gm in 100 mL NS (Minibag Plus) over 60 mins (concentration 20mg/mL) **IV Push (when a shortage):** 1 gm in 10 mL SWFI over 3 – 5 min 2 gm in 20 mL SWFI over 3 – 5 min	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Comments:** Reduce dose in renal failure **Drug Interactions:** **Monitor:** **Side Effects**: Rare cross sensitivity w PCN/Ceph allergies **Stability:** If mixed by pharmacy, solutions with concentration not exceeding 20mg/mL should be used within 48 hours at room temp or within 7 days if refrigerated.
Trimethoprim (TMP) Sulfamethoxazole (SMX) Bactrim/Septra® [antibiotic]	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** dose based on TMP component ≤80 mg TMP in 100 mL D5W over 1 hr 81-120 mg TMP in 150 mL D5W over 1.5 hrs 121-240 mg TMP in 250 mL D5W over 1.5 hrs 241-450mg TMP in 500 mL D5W over 2 hrs Non PCP: 10 mg/kg/day given q 6-12 hrs PCP:5-20 mg/kg/day given q6hrs	**Caution/Warning:** **Comments: Nursing to admix due to limited stability (6 hours at room temperature). Mix immediately prior to use** Dosing is based on TMP component 5 mL = 80 mg trimethoprim & 400 mg sulfamethoxazole Mix immediately prior to use. Reduce dose w renal impairment. **Drug Interactions:** **Monitor:** CBC, Cr, K+, LFTs, for skin rashes **Side effects**: rash, immune hypersensitivity reactions, hyponatremia, thrombocytopenia, pancytopenia, hemolysis, hyperkalemia **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Bamlanivimab/etesevimab [Monoclonal Antibody (mAb)]  **RESTRICTED ANTIVIRAL**	FDA issued Emergency Use Authorization (EUA): Mild-to-moderate COVID-19 in adults and pediatric patients with positive results of direct SARS-COV-2 viral testing, and who are at high risk for progression to severe COVID-19, including hospitalization or death.	ALL UNITS (Except Psy)	**I.I.** Single IV infusion of 2100 mg bamlanivimab and etesevimab in 310 mL. Note that this single infusion contains 700mg of bamlanivimab and 1400mg of etesevimab mixed in one infusion bag. For patients weighing < 50 kg: Infuse over 70 minutes For patients weighing ≥ 50 kg: Infuse over 60 minutes Using Polyvinylchloride (PVC) infusion set containing a 0.20/0.22 micron in-line polyethersulfone (PES) filter attach the infusion set to the IV bag. Prime the infusion set. Administer using weight-based infusion times above. Once infusion is complete, flush the infusion line to ensure delivery of the required dose. Discard unused product. Clinically monitor patients during administration and observe patients for at least 1 hour after infusion is complete.	**Caution/Warning:** There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of bamlanivimab/etesevimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive care. Infusion-related reactions have been observed with administration of bamlanivimab/etesevimab. **Drug Interactions:** Bamlanivimab and etesevimab are not renally excreted or metabolized by cytochrome P450 enzymes; therefore, interactions with concomitant medications that are renally excreted or that are substrates, inducers, or inhibitors of cytochrome P450 enzymes are unlikely. **Monitor:** Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete **Side Effects**: Based on Phase 2 data from the BLAZE-1, nausea was the most commonly reported adverse event, reported by 4% of subjects in both bamlanivimab/etesevimab treatment and placebo groups. Pruritus and pyrexia were more frequently reported from subjects treated with both bamlanivimab/etesevimab (2% and 1%) compared to placebo (1% and 0%, respectively). Based on Phase 3 Data from the BLAZE-1 trial, the most common adverse events were nausea, dizziness, and rash. These events each occurred in 1% of subjects treated with bamlanivimab/etesevimab and in 1% of placebo subjects. **Stability:** Diluted infusion solution should be administered immediately. If immediate administration is not possible, store diluted bamlanivimab/etesevimab infusion solution for up to 24 hours refrigerated at 2°C to 8°C (36°F to 46°F) or up to 7 hours at 20°C to 25°C (68°F to 77°F), including infusion time. If refrigerated, allow infusion solution to warm to room temperature for ~20 minutes prior to administration.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Bebtelovimab LY-CoV1404 [Biologic, Monoclonal Antibody] **RESTRICTED ANTIVIRAL**	FDA issued Emergency Use Authorization (EUA): Mild-to-moderate coronavirus disease 2019 (COVID-2019) in adults and pediatric patients (12 years of age and older weighing at least 40kg) with positive results of direct SARS-COV-2 viral testing and who are at high risk for progression to severe COVID-19, including hospitalization or death	ALL UNITS (Except Psy)	**IV Push**: 175mg undiluted over > 30 seconds Use polycarbonate and polyvinylchloride without di-ethylhexylphthalate (DEHP) syringe extension set for administration. Prime the extension set prior to administration. Once IV injection is complete, flush the tubing with 0.9% Sodium Chloride Clinically monitor patients for possible infusion-related reactions during administration and observe patients for at least 1 hour after injection	**Caution/Warning:** There is a potential for serious hypersensitivity reactions, including anaphylaxis. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive care **Drug Interactions:** Bebtelovimab is not renally excreted or metabolized by cytochrome P450 enzymes; therefore, interactions with concomitant medications that are renally excreted or that are substrates, inducers, or inhibitors of cytochrome P450 enzymes are unlikely **Monitor:** Clinically monitor patients during administration and for at least 1 hour after administration is completed **Side Effects:** The most common treatment-emergent adverse events observed in subjects treated with bebtelovimab, alone or in combination with bamlanivimab and etesevimab, at the authorized dose or higher, included nausea (0.8%), rash (0.8%), vomiting (0.7%), pruritus (0.3%) and infusion-related reactions (0.3%) **Stability:** Store unopened vials in a refrigerator at 2°C to 8°C (36°F to 46°F) in the original carton to protect from light. Do not freeze, shake or expose to direct light
Belimumab Benlysta® [human IGG1 antibody]	Lupus erythematous	ALL UNITS (Except Psy)	**I.I.:** 10 mg/kg IV q 2 weeks x 3, then q 4 weeks	**Caution/Warning**: Comments: Advise patient that live vaccines are not to be taken during therapy, and for at least 30 days before, due to potential interference with immunization response. Instruct female patients of childbearing age to avoid getting pregnant during therapy and for 4 months after finishing treatment by using adequate contraception. **Drug Interactions:** **Monitor:** **Side effects**: possible hypersensitivity reactions (e.g., pruritus, hypotension, angioedema, urticaria, bradycardia, myalgia, headache or hypotension) - consider premedication for potential infusion and hypersensitivity reactions. Use is not recommended during an infection. May cause nausea, diarrhea, insomnia, fever, migraine or pain in the limbs. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Benztropine Cogentin® [centrally-acting anticholinergic agent]	Acute dystonic reactions	ALL UNITS (Except Psy)	**IV Push:** 1-2 mg undiluted over 1 mg / min	**Caution/Warning:** **Comments:** To reverse drug-induced extrapyramidal reactions including dystonic reactions, alathisia, and parkinsonian symptoms. **Drug Interactions:** **Monitor:** **Side Effects:** Potential: Confusion, Disorientated, Drug-induced psychosis, Hyperpyrexia, Visual hallucinations, nervousness, tachycardia **Stability:**
Bezlotoxumab ZINPLAVA® [Monoclonal] 	Adjunct therapy in prevention recurrence of CDI in patients treated with standard of care antibiotics	OP-INFC	**I.I.:** 10mg/kg over 60 minutes Compatible in NS or D5W to a final concentration between 1 to 10 mg/mL. Infuse over 60 minutes through a sterile, nonpyrogenic, low-protein binding 0.2 to 5 micron in-line or add-on filter. Do not administer as an IV push or bolus.	**Caution/Warning:** Do not use if discoloration or particulate matter present. Monitor for infusion related pyrexia, nausea/vomiting. **Drug Interactions:** **Monitor:** Monitor for worsening heart failure, infection, and respiratory failure in patients with underlying heart failure. **Side Effects:** **Stability:** Solutions diluted for infusions may be stored at (1) room temperature for up to 16 hours or (2) refrigerated (2°C to 8°C) for up to 24 hours. If refrigerated, allow intravenous bag to come to room temperature prior to administration.

<table>
<tr>
<td>Bivalirudin

Angiomax®

[anticoagulant- direct thrombin inhibitor]

<u>BOLUS OFF BAG</u>: Upon new EMR April 2018, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.</td>
<td>Percutaneous Transluminal Angioplasty PCI/PTCA</td>
<td>CCL/EP
UT1-ICU
UT2-IU
IRAD
LIP on the sterile field during procedures</td>
<td>IV Push: 0.75 mg/kg then

C.I.: 1.75 mg/kg/hr for the duration of the procedure, mix 250 mg with 5 mL SW then dilute in 100 mL NS/D5W (2.5mg/mL). See comments section for rate reduction for patients with renal impairment.</td>
<td><u>Caution/Warning:</u>
<u>Comments:</u> Replaces IV Heparin & usually without 2b3A inhibitor.
If CrCl <30 mL/min: same bolus dose then C.I. of 1 mg/kg/hr. If dialysis-dependent patient: same bolus dose then C.I. of 0.25mg/kg/hr
Note: If pt arrives on unit post PCI with a C.I. at the higher Cath Lab dose of 1.75 mg/kg/hr, call MD/LIP regarding potential discontinuation of med or possible need for lower C.I. at 0.2 mg/kg/hr to finish current bag for up to 20 hrs.
<u>Drug Interactions:</u>
<u>Monitor</u>: ACT, BP, HR, Bleeding. Check ACT or aPTT 5 mins after bolus. Medication is not a vesicant.
<u>Side Effects:</u>
<u>Stability:</u> Diluted Bivalirudin vials 250mg/5mL may be stored at 2 to 8°C for up to 24 hours. Diluted Bivalirudin (0.5 to 5mg/mL) is stable at room temperature for up to 24 hours

Using 250 mg/100 mL (2.5 mg/mL) concentration
<table>
<tr><th colspan="2">Patient Weight</th><th colspan="2">Bolus *
0.75 mg/kg</th><th>Standard Infusion †
1.75 mg/kg/hr</th><th colspan="2">Infusion Rates for Renally Impaired Patients</th></tr>
<tr><th></th><th></th><th></th><th></th><th></th><th>Severe Renal Impairment, CrCl 10 – 29 ml/min * ‡
1 mg/kg/hr</th><th>Hemodialysis *
0.25 mg/kg/hr</th></tr>
<tr><th>lbs</th><th>kg</th><th>mg</th><th>mL</th><th>mL/hr</th><th>mL/hr</th><th>mL/hr</th></tr>
<tr><td>72 - 82</td><td>33 - 37</td><td>26.25</td><td>10.5</td><td>24.5</td><td>14</td><td>3.5</td></tr>
<tr><td>83 - 93</td><td>38 - 42</td><td>30</td><td>12</td><td>28</td><td>16</td><td>4</td></tr>
<tr><td>94 – 104</td><td>43 – 47</td><td>33.75</td><td>13.5</td><td>31.5</td><td>18</td><td>4.5</td></tr>
<tr><td>105 – 115</td><td>48 – 52</td><td>37.5</td><td>15</td><td>35</td><td>20</td><td>5</td></tr>
<tr><td>116 – 126</td><td>53 – 57</td><td>41.25</td><td>16.5</td><td>38.5</td><td>22</td><td>5.5</td></tr>
<tr><td>127 – 137</td><td>58 – 62</td><td>45</td><td>18</td><td>42</td><td>24</td><td>6</td></tr>
<tr><td>138 – 148</td><td>63 – 67</td><td>48.75</td><td>19.5</td><td>45.5</td><td>26</td><td>6.5</td></tr>
<tr><td>149 – 159</td><td>68 – 72</td><td>52.5</td><td>21</td><td>49</td><td>28</td><td>7</td></tr>
<tr><td>160 – 170</td><td>73 – 77</td><td>56.25</td><td>22.5</td><td>52.5</td><td>30</td><td>7.5</td></tr>
<tr><td>171 – 181</td><td>78 – 82</td><td>60</td><td>24</td><td>56</td><td>32</td><td>8</td></tr>
<tr><td>182 – 192</td><td>83 – 87</td><td>63.75</td><td>25.5</td><td>59.5</td><td>34</td><td>8.5</td></tr>
<tr><td>193 – 203</td><td>88 – 92</td><td>67.5</td><td>27</td><td>63</td><td>36</td><td>9</td></tr>
<tr><td>204 – 214</td><td>93 – 97</td><td>71.25</td><td>28.5</td><td>66.5</td><td>38</td><td>9.5</td></tr>
<tr><td>215 – 225</td><td>98 – 102</td><td>75</td><td>30</td><td>70</td><td>40</td><td>10</td></tr>
<tr><td>226 – 236</td><td>103 – 107</td><td>78.75</td><td>31.5</td><td>73.5</td><td>42</td><td>10.5</td></tr>
<tr><td>237 – 247</td><td>108 – 112</td><td>82.5</td><td>33</td><td>77</td><td>44</td><td>11</td></tr>
<tr><td>248 – 258</td><td>113 – 117</td><td>86.25</td><td>34.5</td><td>80.5</td><td>46</td><td>11.5</td></tr>
<tr><td>259 – 269</td><td>118 – 122</td><td>90</td><td>36</td><td>84</td><td>48</td><td>12</td></tr>
<tr><td>270 – 280</td><td>123 – 127</td><td>93.75</td><td>37.5</td><td>87.5</td><td>50</td><td>12.5</td></tr>
<tr><td>281 – 291</td><td>128 – 132</td><td>97.5</td><td>39</td><td>91</td><td>52</td><td>13</td></tr>
<tr><td>292 – 302</td><td>133 – 137</td><td>101.25</td><td>40.5</td><td>94.5</td><td>54</td><td>13.5</td></tr>
<tr><td>303 – 313</td><td>138 – 142</td><td>105</td><td>42</td><td>98</td><td>56</td><td>14</td></tr>
<tr><td>314 – 324</td><td>143 – 147</td><td>108.75</td><td>43.5</td><td>101.5</td><td>58</td><td>14.5</td></tr>
<tr><td>325 – 335</td><td>148 – 152</td><td>112.5</td><td>45</td><td>105</td><td>60</td><td>15</td></tr>
<tr><td>336 – 346</td><td>153 – 157</td><td>116.25</td><td>46.5</td><td>108.5</td><td>62</td><td>15.5</td></tr>
<tr><td>347 – 357</td><td>158 – 162</td><td>120</td><td>48</td><td>112</td><td>64</td><td>16</td></tr>
<tr><td>358 – 368</td><td>163 – 167</td><td>123.75</td><td>49.5</td><td>115.5</td><td>66</td><td>16.5</td></tr>
<tr><td>369 – 379</td><td>168 – 172</td><td>127.5</td><td>51</td><td>119</td><td>68</td><td>17</td></tr>
<tr><td>380 – 390</td><td>173 – 177</td><td>131.25</td><td>52.5</td><td>122.5</td><td>70</td><td>17.5</td></tr>
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<tr><td>402 – 412</td><td>183 – 187</td><td>138.75</td><td>55.5</td><td>129.5</td><td>74</td><td>18.5</td></tr>
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<tr><td>424 – 434</td><td>193 – 197</td><td>146.25</td><td>58.5</td><td>136.5</td><td>78</td><td>19.5</td></tr>
<tr><td>435 – 445</td><td>198 – 202</td><td>150</td><td>60</td><td>140</td><td>80</td><td>20</td></tr>
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<tr><td>468 – 478</td><td>213 – 217</td><td>161.25</td><td>64.5</td><td>150.5</td><td>86</td><td>21.5</td></tr>
<tr><td>479 – 489</td><td>218 – 222</td><td>165</td><td>66</td><td>154</td><td>88</td><td>22</td></tr>
<tr><td>490 – 500</td><td>223 – 227</td><td>168.75</td><td>67.5</td><td>157.5</td><td>90</td><td>22.5</td></tr>
</table>
kg = kilogram; mL = milliliter; mL/hr = milliliter/hour; CrCl = creatinine clearance. Units in milliliters or milliliters/hour are rounded to nearest tenth.
* Five minutes after the bolus dose has been administered, an ACT (activated clotting time) should be performed and an additional bolus of 0.3 mg/kg should be given if needed.
† Infusion is given for the duration of procedure.
‡ If reduction of the infusion rate is considered.</td>
</tr>
</table>

Refer to Policy Number 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Bumetanide Bumex® [Loop diuretic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Edema, CHF Edema, CHF	ALL UNITS (Except Psy)	**IV Push:** ≤ 2 mg dilute in 10 mL NS at ≤ 1 mg/min, flush with 5 mL NS **I.I.:** > 2 – 4 mg in 50 mL NS or D5W over 15- 30 mins **C.I.:** 0.5 - 2 mg / hr Max dose/hr = 4 mg/hr Concentration : 2.5 mg/ 100 mL NS or D5W or 5mg/100mL NS or D5W	**Caution/Warning:** **Comments: Pharmacy to admix non-stat doses > 2 mg. Pharmacy Info**: Final Conc= 0.25 mg/mL by adding undiluted (0.25 mg/mL) to IV empty bag to cover for 24 hrs 1 mg bumetanide = 40 mg furosemide **Drug Interactions:** **Monitor:** BP; May cause hyperglycemia - monitor glucose levels, renal function. Monitor potassium and digoxin levels - may increase risk of digoxin toxicity. **Side Effects:** **Stability:** Stable for 24 hrs at Room temperature or refrigerated.
Butorphanol Stadol® [opioid agonist/antagonist]	Mixed opioid agonist /antagonist	ALL UNITS (Except Psy)	**IV Push**: 0.5- 2mg undiluted , over 1 mg / min q 3-4 hrs PRN pain	**Caution/Warning:** **Comments:** Reduce dose in renal or hepatic failure. Avoid in patients taking chronic opioids. **Drug Interactions:** **Monitor:** BP, HR, RR, sedation, pain relief **Side Effects:** **Stability:**

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C1 Esterase Inhibitor (Human) Berinert® [C1 Esterase Inhibitor]	Hereditary Angioedema (Adult and Pediatric)	ALL UNITS (Except Psy)	**IV Push:** 20IU/kg infused at a rate of 4mL/minute (Prefer to round up to the nearest vial size as approved per P&T. e.g. Administer 1000 units if weight is ≤50 kg. Administer 1500 units if weight is >50 kg and ≤75 kg. Administer 2000 units if weight is >75 kg and ≤100 kg. Administer 2500 units if weight is >100 kg.)	**Caution/Warning:** **Comments:** Reconstitute using provided Mix2Vial® transfer set or a commercially available double ended needle and vented filter spike. If multiple vials necessary may be pooled into single-syringe. More than three vials will be prepared by pharmacy. **Drug Interactions:** **Monitor:** **Side Effects:** Possible hypersensitivity reaction, increased risk of thromboembolic events, and transmission of infectious agents **Stability:** Once reconstituted must be administered within 8 hours and stored at room temperature. Do not refrigerate or freeze the reconstituted solution
Caffeine and sodium benzoate [methylxanthine]	post dural puncture headache	ALL UNITS (Except Psy)	**I.I.:** Post dural puncture headache is 300–500 mg in 1 liter NS over 1 hr, Follow with 1000 mL NS; infuse over 1 hour. May administer I.M. undiluted.	**Caution/Warning:** **Comments:** Pharmacy to admix. Use caffeine and sodium benzoate product. 500 mg caffeine and sodium benzoate = 250 mg caffeine. **Drug Interactions:** **Monitor:** **Side Effects:** central nervous system toxicity and atrial fibrillation **Stability:**
	Caffeine withdrawal or migraine headaches	ALL UNITS (Except Psy)	**I.I.:** 30-100 mg in 250 mL NS over 30-60 mins	
Calcitonin Miacalcin® [calcium regulator]		ALL UNITS (Except Psy)	**I.I.:** 4 units/kg in 100 mL NS, over 30-60 mins	**Caution/Warning:** **Comments: Dispense in Glass bottle** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Calcitriol Calcijex® [vitamin D]	Hypoparathyroid Hypocalcemia	ALL UNITS (Except Psy)	**IV Push:** 1- 2 mcg undiluted over 1 min	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** Ca++, Phos, Mag, Alk phos **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Calcium Chloride 10% 1 amp (10mL) = 1 gm Calcium Chloride = 273 mg Ca++ = 13.6mEq Calcium++ [parenteral mineral] Avoid in midline cath see Page 14	Cardiac resuscitation or Calcium channel blocker toxicity	In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push:** 500 mg - 2 grams undiluted rapid administration during Code Blue	**Caution/Warning:** **Comments:** Large vein preferred Use calcium gluconate for Calcium replacement and Hyperkalemia. Incompatible w Bicarbonate & Phosphate **Drug Interactions:** **Monitor:** EKG, BP, HR, IV site for extravasation **Side Effects:** **Stability:**
Calcium Gluconate 10% 1 amp (10 mL) =1 gm Calcium Gluconate = 93 mg Ca++ = 4.65mEq Ca++ **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS** Avoid in midline cath see Page 14	Calcium replacement	ALL UNITS (Except Psy)	**I.I.:** 1 gm Cal. Gluc. = 4.6mEq in 50 mL NS or D5W over 30 -60 mins. For a 2 gm dose, repeat the 1 gm dose	**Caution/Warning:** **Comments:** Calcium gluconate 1 gm in 50 mLD5W available as premix. For 2 gm doses use #2 Calcium gluconate 1 gm in 50 mL D5W. Do not infuse via same line as phosphate or bicarbonate containing solutions. Consult MD/LIP and/or RPh for change to oral calcium or if IV calcium is required change antibiotic. For Calcium replacement. Check compatibilities before mixing with other medications. Target level Total Ca++ 1.1-1.3. May be given by slow IV Push undiluted in emergencies. **Drug Interactions:** **Monitor:** IV site for extravasation, Ca++, Phos, HR, BP. May require cardiac monitoring/telemetry determined by MD **Side Effects:** **Stability:** **Information on Calcium Gluconate 10% continues on the next page.**
		ED UT1-ICU UT2-IU L&D/ OB-GYN	**C.I.:** 10gm in 500mL D5W or NS over 12- 24 hrs Do not exceed 200mg (1mEq)/min	
		UT-BMT	C.I: 4gm in 250 mL NS over 6 hours. during peripheral blood stem ccell (PBSC) apheresis. Max rate = 85 mL/hr.	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Calcium Gluconate 10% 1 amp (10 mL) =1 gm Calcium Gluconate = 93 mg Ca++ = 4.65mEq Ca++ If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Hyperkalemia	ALL UNITS (Except Psy)	Calcium Gluconate 1 gm in 50 mL NS or D5W X 1-2 doses over 30 minutes each dose.	**See previous page for comments on Calcium Gluconate 10%.** **Caution/Warning:** **Comments:** May require cardiac monitoring/telemetry determined by LIP. The recommendation for patients with K+ > 7 and ECG evidence of severe hyperkalemia is 1 gm/ 100 mL over 2 to 5 minutes with continuous ECG monitoring **Treatment of Hyperkalemia**: Follow MD orders: 1.Stop K+ infusions and oral therapy and Contact MD/LIP to Discontinue K+ infusions. 2. Consider Calcium Gluconate IV Push: 10-20 mL of 10% over 2 mins or 1 gm in 50 mL D5W X 1-2 doses over 5-10 mins) 3. Dextrose IV Push (50 mL of D50 IV Push) undiluted over 1-2 mins 4. Regular Insulin IV Push (10 units) 5. Bicarbonate IVP (50 mEq= 50 mL of 8.4% over 2 mins 6. B2 adrenergics-albuterol nebs (10-20 mg = 12-24 mL nebulized); 7. Loop diuretics 8. Na Polystyrene (15-60 gm) 9. Hemodialysis **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Cangrelor KENGREAL® Reversible ADP $P2Y_{12}$ inhibitor **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails. 	Adjunct therapy to PCI for reducing the risk of periprocedural MI, repeat coronary revascularization, ST in patients in who have not been treated with a $P2Y_{12}$ platelet inhibitor and are not being given a glycoprotein IIb/IIIa inhibitor	CATH LAB	**Dilute a 50mg vial in 250ml of 0.9% NS or 5% d5w (Concentration 200mcg/ml)** **Bolus: 30 mcg/kg** Bolus from bag; never from reconstituted vial, use manual IV push or pump to administer the bolus volume in less than 1 minute, ensure bolus is completely administered before the start of PCI. **C.I.: 4 mcg/kg/min** Begin infusion immediately after the bolus and continue for at least 2 hours or the duration of the procedure, whichever is longer. **200 mcg/mL](bolus) + [()/(200 mcg/mL)] (C.I.)**	**Caution/Warning:** Bleeding/cangrelor is contraindicated in patients with significant active bleeding **Comments:** Reconstitute by adding 5 mL of sterile water for injection to one 50 mg vial. Swirl gently until all material is dissolved; avoid vigorous mixing and allow any foam to settle. Reconstituted cangrelor will be a clear, colorless to pale yellow solution. Product should not contain particulate matter. Do not use reconstituted solution of cangrelor without further dilution. Discard any unused portion of reconstituted solution remaining in the vial. Dose adjustment is not required in elderly patients (>/=75 years) or in patients with renal or hepatic insufficiency. **Drug Interactions:** Thienopyridines (clopidgrel and prasugrel)—do not administer during cangrelor infusion, only administered when infusion is discontinued. Once cangrelor is discontinued, there is no antiplatelet effect after an hour. To maintain platelet inhibition after discontinuation of cangrelor infusion, an oral $P2Y_{12}$ platelet inhibitor should be administered **Monitor:** For side effects and timing of oral antiplatelet (clopidogrel and prasugrel) administration. **Side Effects:** bleeding, hypersensitivity, decreased renal function, dyspnea **Stability:** Diluted cangrelor is stable at room temperature for up to 12 hours in 5% dextrose injection and 24 hours in normal saline.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Casirivimab and imdevimab [Monoclonal Antibody (mAb)]  **RESTRICTED ANTIVIRAL**	FDA issued Emergency Use Authorization (EUA): Mild-to-moderate COVID-19 in adults and pediatric patients with positive results of direct SARS-COV-2 viral testing, and who are at high risk for progression to severe COVID-19, including hospitalization or death.	ALL UNITS (Except Psy)	**I.I.** Single IV infusion of 1200 mg casirivimab and imdevimab in 260 mL NS administered over at least 60 minutes. Note that this single infusion contains 600mg of casirivimab and 600mg of imdevimab mixed in one infusion bag. Using Polyvinylchloride (PVC) infusion set containing a 0.20/0.22 micron in-line polyethersulfone (PES) filter attach the infusion set to the IV bag. Prime the infusion set. Administer over at least 60 minutes. Once infusion is complete, flush the infusion line to ensure delivery of the required dose. Discard unused product. Clinically monitor patients during administration and observe patients for at least 1 hour after infusion is complete.	**Caution/Warning:** There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of casirivimab and imdevimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive care. Infusion-related reactions have been observed with administration of casirivimab and imdevimab. **Drug Interactions:** Casirivimab and imdevimab are not renally excreted or metabolized by cytochrome P450 enzymes; therefore, interactions with concomitant medications that are renally excreted or that are substrates, inducers, or inhibitors of cytochrome P450 enzymes are unlikely. **Monitor:** Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete **Side Effects:** From clinical trials, the adverse events collected were infusion-related reactions and hypersensitivity reactions of moderate severity. Serious adverse events were reported in 4 subjects (1.6%) in the casirivimab and imdevimab 2,400 mg group, 2 subjects (0.8%) in the casirivimab and imdevimab 8,000 mg group, and 6 subjects (2.3%) in the placebo group. None of the SAEs were considered to be related to study drug. SAEs that were reported as Grade 3 or 4 adverse events were pneumonia, hyperglycemia, nausea and vomiting (2,400 mg casirivimab and imdevimab), intestinal obstruction and dyspnea (8,000 mg casirivimab and imdevimab) and COVID-19, pneumonia and hypoxia (placebo). Casirivimab and imdevimab are not authorized at the 8,000 mg dose (4,000 mg casirivimab and 4,000 mg imdevimab). One anaphylactic reaction was reported in the clinical program **Stability:** Diluted infusion solution should be administered immediately. If immediate administration is not possible, store diluted casirivimab and imdevimab infusion solutions for up to 36 hours refrigerated at 2°C to 8°C (36°F to 46°F) or up to 4 hours at 20°C to 25°C (68°F to 77°F), including infusion time. If refrigerated, allow infusion solution to warm to room temperature for ~30 minutes prior to administration.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Caspofungin Cancidas® [antifungal] **RESTRICTED ANTIMICROBIAL**	Fungemia	ALL UNITS (Except Psy)	**I.I. LD:** 70 mg/ 250 mL NS over 1 hr then Maintenance: 50 mg/ 250 mL NS over 1 hr, in 100 mL for fluid restricted pts	**Caution/Warning:** **Comments:** Pharmacy to admix. Stable 24 hrs @ room temperature, 48 hrs refrigerated. Reduce dose to 35 mg in mod-severe hepatic disease. Do not mix with any other medications. **Drug Interactions:** **Monitor:** for histamine reaction. **Side Effects:** hypokalemia, GI, inc. in ALT/AST, phlebitis, headache. **Stability:**
CeFAZolin Ancef/Kefzol® [cephalosporin -1st generation] **ADS MIXTURE**	Bacterial Infection	UJDH HA OR/PACU UHSC	**IV Push:** Pre-mixed 1 gm in 10 mL sterile water, over 1-2 mins	**Caution/Warning:** Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity. **Comments:** Surgery Prophylaxis: 3 total doses includes 1 pre-op dose & 2 post-op doses, reduce dose or interval for renal failure. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
		ALL UNITS (Except Psy)	**I.I.:** 0.5 gm in 50 mL 15-30 mins q8hrs. **I.I.:** 1 gm in 100 mL NS (Minibag Plus) or 2 gm in 100 mL NS over 30 mins q 8 hrs. **I.I. Alternative:** 2gm in 50mL D5W Duplex Premix over 30 mins q 8 hrs **I.I.:** 1.5gm in 50mL NS over 30 mins **I.I.:** 3gm in 100mL NS over 30 mins **IV Push (Alternative when products not available):** 0.5 gm in 10 mL SWFI over 3 – 5 min 1 gm in 10 mL SWFI over 3 – 5 min 1.5 gm in 15 mL SWFI over 3 – 5 min	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
CefoTEtan [anaerobic cephalosporin-2nd generation]	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1-2 gm in 50 mL over 30 mins q 6 hrs	**Caution/Warning: Allergy**: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity. If not available use cefOXitin. **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Cefepime Maxipime® [antibiotic] **ADS MIXTURE**	Bacterial Infection Anti-pseudomonal Anti-pseudomonas Note: replaces cefTAZidime Feb 2012 for all adult patients except NICU (exception: Cefepime medication shortage)	ALL UNITS	**I.I.:** 1 gm in 100 mL NS (Minibag Plus) over 30 mins q 12 hrs 2 gm in 100 mL NS (Minibag Plus) over 30 mins q 12 hrs **IV Push (when a shortage):** 1 gm in 10 mL SWFI over 3 – 5 min 2 gm in 20 mL SWFI over 3 – 5 min	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Allergy**: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity **Comments:** Caution with Penicillin or Cephalosporin allergies.Reduce dose and interval with CrCl< 60 mL/min. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Cefiderocol Fetroja® [cephalosporin antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected complicated urinary tract infections or pneumonia caused by highly resistant multi-drug resistant organisms (e.g., Extended-Spectrum Beta-Lactamase (ESBL)-Positive strain, carbapenemase-producing Enterobacterales, multidrug-resistant *P. aeruginosa*) AND/OR with limited or no alternative treatment options (due to allergies and/or resistance patterns)	ALL UNITS (Except Psy)	**I.I.:** 750mg-2000mg in 100mL NS or D5W over 3 hours Pneumonia, hospital-acquired or ventilator-associated & Urinary tract infection, complicated: 2 g q8 hours Reconstitute 1 g vial with 10 mL of NS or D5W; gently shake to dissolve. Allow the vial to stand until the foaming generated on the surface has disappeared (typically within 2 minutes). The final volume of the reconstituted solution is ~11.2 mL with a concentration of 0.089 g/mL Volume to Withdraw from Reconstituted Vial 750mg: 8.4 mL 1g: 11.2 mL [entire contents of 1 vial] 1.5g: 16.8 mL 2g: 22.4 mL [entire contents of 2 vials]	**Caution/Warning:** β-lactam hypersensitivity history May result in fungal or bacterial superinfection (e.g. Clostridium difficile) Hemolytic anemia and renal impairment related neurotoxicity risk. **Comments:** CrCl ≥120 mL/minute: 2 g every 6 hours. CrCl 60 to <120 mL/minute: 2 g every 8 hours. CrCl 30 to <60 mL/minute: 1.5 g every 8 hours. CrCl 15 to <30 mL/minute: 1 g every 8 hours. CrCl <15 mL/minute: 750 mg every 12 hours HD, intermittent (TIW): Dialyzable (~60% in a 3- to 4-hour hemodialysis session): 750 mg every 12 hours; dose should be given immediately after HD on dialysis days. **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines May increase the effectiveness of warfarin. May increase the nephrotoxicity of aminoglycosides. Chloramphenicol may decrease the effectiveness of this product. **Monitoring:** Monitor serum creatinine and creatinine clearance daily in patients with unstable renal function. Monitor for anaphylaxis initially; LFTs; infusion site reaction **Related Policies:** Restricted and Concurrently-Monitored Antimicrobials **Side Effects:** diarrhea, nausea, and headache, and pyrexia **Stability:** Store intact vials at 2°C to 8°C (36°F to 46°F). Protect from light. Reconstituted vials may be stored at room temperature for ≤1 hour. Diluted solutions for infusion may be stored at room temperature for ≤6 hours or at 2°C to 8°C (36°F to 46°F) for ≤24 hours (and protected from light). Infusion should be completed within 6 hours after removal from refrigeration.
Cefotaxime Claforan-R [cephalosporin- 3rd generation] **Alternative antibiotic could be considered as this is primarily used in NICU** **ADS MIXTURE**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 500mg - 1gm / 50 mL NS or D5W over 15-20 mins. 2 gm/ 100 mL NS (Minibag Plus) over 30 mins. Frequency based on renal function and infection severity **IV Push (when a shortage):** 0.5 gm in 10 mL SWFI over 3 – 5 min 1 gm in 10 mL SWFI over 3 – 5 min 2 gm in 20 mL SWFI over 3 – 5 min	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. Arrythmias have occurred following rapid bolus administration (<60 sec). Caution with Penicillin or Cephalosporin allergies. Allergy: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity. **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** room temperature= 12 hrs, refrigeration= 3 days

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
CefOXitin [anaerobic cephalosporin-2nd generation] **ADS MIXTURE**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1 or 2 gm in 100 mL NS (Minibag Plus) over 30 mins q 6 hrs **IV Push (when a shortage):** 1 gm in 10 mL SWFI over 3 – 5 min 2 gm in 10 mL SWFI over 3 – 5 min	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Allergy**: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6- 8% risk of cross-allergenicity **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If pharmacy mix: 18 hours at room temperature and 48 hours under refrigeration
Ceftaroline Teflaro® [cephalosporin-5th generation] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infection-MRSA	ALL UNITS (Except Psy)	**I.I.:** 600 mg / 250 mL NS over 1 hour q 12 h	**Caution/Warning:** **Comments:** Use the constituted solution in the infusion bag within 6 hours when stored at room temperature or within 24 hours when refrigerated at 2 to 8 degrees. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

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<tr><th>Generic name
Brand name
Med Class</th><th>Indications</th><th>Approved Units for Use</th><th>Dosing/Admixture Information</th><th>Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability</th></tr>
<tr><td>CefTAZidime

Fortaz®

[Cephalosporin 3rd Generation]

ADS MIXTURE</td><td>Bacterial Infection

Note: Replaced by cefepime Feb 2012 for all adult patients except NICU (exception: Cefepime medication shortage)</td><td>ALL UNITS (Except Psy)</td><td>I.I.:
500 mg in 50mL NS over 15-20 mins
1gm in 100 mL NS (Minibag Plus) over 15-20 mins
2 gm in 100 mL NS (Minibag Plus) over 30 mins q 8 hrs

IV Push (when a shortage):
1 gm in 10 mL SWFI over 3 – 5 min
2 gm in 10 mL SWFI over 3 – 5 min</td><td>Caution/Warning: IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration.
Comments: Reduce dose or interval for CRF. Allergy: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity.
Automatic Therapeutic Substitution For Cefepime Orders during Medication Shortage:
Cefepime 2gm q8 hrs — Ceftazidime 2g q8 hrs
Cefepime 2gm q 12hrs — Ceftazidime 2gm q12hrs
Cefepime 2gm q 24 hrs — Ceftazidime 2gm q24hrs
Cefepime 1gm q 8 hrs — Ceftazidime 1gm q8 hrs
Cefepime 1gm q 12 hrs — Ceftazidime 1gm q12hrs
Cefepime 1gm q 24 hrs — Ceftazidime 1gm q24hrs
Cefepime 1 gm post Dialysis — Ceftazidime 1gm post dialysis
Drug Interactions:
Monitor:
Side Effects:
Stability: If pharmacy mix: 12 hours at room temperature and 72 hours under refrigeration</td></tr>
<tr><td>CefTAZidime/ Avibactam

Avycaz ®

[Cephalosporin 3rd Generation/ β-lactamase inhibitor]

RESTRICTED ANTIMICROBIAL

NON-FORMULARY

ADS MIXTURE</td><td>Treatment of complicated intra-abdominal infections (in combination with metronidazole) and complicated urinary tract infections (including pyelonephritis) caused by Enterobacteriacae and Pseudomonas aeruginosa organisms including some multi-drug resistant and extended-spectrum beta-lactamase (ESBL) strains.</td><td>ALL UNITS (Except Psy)</td><td>I.I.:
2.5 gm (2gm/0.5gm) in 100mL NS (minibag plus) over 2 hrs

0.94 (0.75gm/0.19gm) – 1.25gm (1gm/0.25gm) in 100mL NS over 2 hrs

<table>
<tr><th colspan="2">Volume to Withdraw from Reconstituted Vial</th></tr>
<tr><td>2.5gm (2gm/0.5gm)</td><td>12mL (Entire contents)</td></tr>
<tr><td>1.25 Gm (1gm/0.25gm)</td><td>6mL (1/2 vial contents)</td></tr>
<tr><td>0.94 Gm (0.75gm/0.19gm)</td><td>4.5mL</td></tr>
</table>
</td><td>Caution/Warning: β-lactam hypersensitivity history
May result in fungal or bacterial superinfection (e.g. Clostridium difficile)
Hemolytic anemia and renal impairment related neurotoxicity risk
Comments: CrCl 31 to 50 mL/min: 1.25 g every 8 hours
CrCl 16 to 30 mL/min: 0.94 g every 12 hours
CrCl 6 to 15 mL/min: 0.94 g every 24 hours
CrCl 5 mL/min or less: 0.94 g every 48 hours
ESRD on dialysis: dose based on residual kidney function
Drug Interactions: may decrease the effectiveness of BCG and Typhoid vaccines. May increase the effectiveness of warfarin. May increase the nephrotoxicity of aminoglycosides. Chloramphenicol may decrease the effectiveness of this product.
Monitoring: Monitor serum creatinine and creatinine clearance daily in patients with unstable renal function. Monitor for anaphylaxis initially.
Side Effects: diarrhea, nausea, and headache, and pyrexia
Stability: Store intact vials at 25°C (77°F) away from light.
Admixed solutions are stable up to 12 hours at 20°C to 25°C and 24 hours at 2°C to 8°C. Use solutions previously stored at 2°C to 8°C (36°F to 46°F) within 12 hours of subsequent storage at 20°C to 25°C (68°F to 77°F).</td></tr>
</table>

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<tr>
<td>Ceftolozane/ Tazobactam

Zerbaxa®

[Cephalosporin 5th Generation/ β-lactamase inhibitor]

RESTRICTED ANTIMICROBIAL

NON-FORMULARY

ADS MIXTURE</td>
<td>Treatment of complicated intra-abdominal infections (in combination with metronidazole) and complicated urinary tract infections (including pyelonephritis) caused by Enterobacteriacae and Pseudomonas aeruginosa organisms including some multi-drug resistant and extended-spectrum beta-lactamase (ESBL) strains.</td>
<td>ALL UNITS (Except Psy)</td>
<td>I.I.: 1.5gm (1gm/0.5gm) in 100mL NS (minibag plus when off shortage) over 60 mins

150mg (100mg/50mg)-750mg (500mg/250mg) in 100mL NS over 60 mins

<table>
<tr><th colspan="2">Volume to Withdraw from Reconstituted Vial</th></tr>
<tr><td>1.5gm (1gm/0.5gm)</td><td>11.4mL (Entire contents)</td></tr>
<tr><td>750mg (500mg/250mg)</td><td>5.7mL</td></tr>
<tr><td>375mg (250mg/125mg)</td><td>2.9mL</td></tr>
<tr><td>150mg (100mg/50mg)</td><td>1.2mL</td></tr>
</table>
</td>
<td><u>Caution/Warning:</u> β-lactam hypersensitivity history
May result in fungal or bacterial superinfection (e.g. Clostridium difficile)
<u>Comments:</u> CrCl 30 to 50 mL/min: 750 mg every 8 hours
CrCl 15 to 29 mL/min: 375 mg every 8 hours
ESRD on dialysis: 750 mg once immediately post dialysis then 150 mg every 8 hours
<u>Drug Interactions:</u> may decrease the effectiveness of BCG and Typhoid vaccines. May increase the effectiveness of warfarin.
<u>Monitoring:</u> Monitor serum creatinine and creatinine clearance in patients with unstable renal function.
<u>Side Effects:</u> diarrhea, nausea, and headache, and pyrexia
<u>Stability:</u> Use within 24 hours after dilution at room temperature or within 7 days at 2°C to 8°C (36°F to 46°F)</td>
</tr>
<tr>
<td>CefTRIAXone

Rocephin®

[cephalosporin- 3rd generation]

ADS MIXTURE</td>
<td>Bacterial Infection</td>
<td>ALL UNITS</td>
<td>I.I.:
1 gm in 100mL NS (Minibag Plus) or Duplex bag over 30 mins daily or q 12 hrs
2 gm in 100 mL NS (Minibag Plus) or Duplex bag over 30 mins daily or q 12 hrs

IV Push (Alternative when products not available):
1 gm in 10 mL SWFI over 3 – 5 min
2 gm in 20 mL SWFI over 3 – 5 min</td>
<td><u>Caution/Warning:</u>
<u>Comments:</u> Com. Acq. Pneumonia: 1gm IV daily. Allergy: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity.
Duplex bag instructions: Click Link for Instructions for Duplex Bag Admixture
<u>Drug Interactions:</u>
<u>Monitor:</u>
<u>Side Effects:</u>
<u>Stability:</u></td>
</tr>
</table>

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Cefuroxime Zinacef® [cephalosporin- 2nd generation] **ADS MIXTURE**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 750-1500mg in 100 mL (Minibag Plus) over 30mins q 8 hrs **IV Push (when a shortage):** 750 mg in 10 mL SWFI over 3 – 5 min 1.5 gm in 20 mL SWFI over 3 – 5 min	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Comments:** Reduce dose or interval for CRF. **Allergy**: Patients with a documented allergy (urticaria, anaphylactoid or anaphylaxis) to penicillins or B-Lactam antibiotics should not receive a cephalosporin antibiotic due to a 6-8% risk of cross-allergenicity. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability**: Stable 48 hrs at room temperature, 30 days refrigerated.
Chlorothiazide Diuril® [thiazide diuretic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Edema	ALL UNITS (Except Psy)	**I.I.:** 500 – 1000 mg in 50 mL NS or D5W over 15 -30 mins	**Caution/Warning:** **Comments:** Avoid extravasation**. Pharmacy to mix.** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
ChlorproMAZINE Thorazine® [antipsychotic]	Hiccups/ Agitation/ Confusion	ALL UNITS (Except Psy)	**I.I.:** 12.5 - 50 mg in 50 mL NS over < 1 mg / min	**Caution/Warning:** **Comments:** Not IV Push. **Drug Interactions:** **Monitor**: for sedation, hypotension, EPS, may lower seizure threshold. **Side Effects:** **Stability:**
Cidofovir Vistide® [antiviral agent] **RESTRICTED ANTIMICROBIAL** HD CAUTION: HAZARDOUS DRUG	CMV retinitis HSV infection, acyclovir resistant	ALL UNITS (Except Psy)	**I.I.:** 5mg/kg/dose in 100 mL NS over 60 min. Hydrate with 1 L of NS IV over 1-2 hours immediately prior to cidofovir infusion.	**Caution/Warning:** Pre-medicate prior to each infusion with hydration. Administer with concomitant probenecid. **Comments:** **Drug Interactions:** **Monitor:** SrCr, Urine Protein (at baseline and within 48 hours of each dose), WBC w/diff, intraocular pressure and visual acuity, signs and symptoms of uveitis/iritis; metabolic acidosis. **Side Effects:** **Stability:** 24 hours refrigerated.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Ciprofloxacin Cipro® [quinolone antibiotic] NON-FORMULARY	Bacterial Infections	ALL UNITS (Except Psy)	**I.I.:** 200-400 mg as Premix over 60 mins	**Caution/Warning:** **Comments**: Reduced dose / interval in renal dysfunction. Too rapid administration can cause hypotension. **Drug Interactions:** **Monitor:** **Side Effects:** Phlebitis, dizziness, tremor, arthralgia, headache, inj.site inflammation, QTc prolongation. **Stability:**
Cisatracurium Nimbex® [neuromuscular blocker] TITRATE MED **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Skeletal muscle relaxant for Mech. ventilation	ED UT1-ICU OR/PACU	**LD IV Push:** 0.1 -0.2 mg/kg undiluted over 5-10 secs then **C.I.:** 100 mg/ 100 mL (1mg/ml) or 200 mg/ 100ml (2mg/ml) **NS or D5W** 1-10 mcg/kg/min. Start @ 2 mcg/kg/min and Titrate by 1 mcg/kg/min q 10 mins or as ordered to achieve Train of Four 2-3 out of 4 or as ordered. Max: 10 mcg/kg/min unless higher max. is ordered by MD/LIP	**Catuion/Warning:** **Comments**: Pt MUST be on a ventilator. CI requires MD/LIP order for therapeutic goal (ex: Train of Four) or reason. Titrate per order to goal. Requires an analgesic and sedative. **Drug Interactions:** **Monitor**: train of four, RR, BP, HR, apnea, resp. depression. **Related Policies:** • Neuromuscular Blocking Agents (NMBA): IV Administration **Side Efects:** **Stability:** Stable for 14 days refrigerated. Stable for 24 hours at room temperature. 10mL vial contains a preservative. Xu et al. Stability of cisatracurium besylate in vials, syringes, and infusion admixtures. *Am J Health-Syst Pham* 1998: 55:1037-41
Clevidipine Cleviprex® [antihypertensive, calcium channel blocker]	Reduction of blood pressure when oral therapy is not feasible or not desirable.	Cath Lab, ICU, ED, OR	Initial dose: Infusion at 1-2 mg/hour. Titration: The dose may be doubled at short (90 second) intervals. A 1-2 mg/hour increase will generally produce an additional 2-4 mmHg decrease in systolic pressure. Maintenance dose: Desired therapeutic response for most patients occurs at doses of 4-6 mg/hour.	**Caution/Warning:** hypotension and reflex tachycardia, lipid intake, negative inotropy, beta blocker withdrawal, and rebound hypertension **Drug Interactions:** No major drug interactions **Monitor:** blood pressure and heart rate **Side Effects:** headache, nausea, and vomiting. **Stability:** Store clevidipine vials in the refrigerator between 2-8°C (36°F to 46°F) and keep in original cartons to protect from light. Vials in cartons may be transferred to 25°C (77°F, USP controlled room temperature) for a period not to exceed 2 months.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Clindamycin Cleocin® [antibiotic]	Bacterial Infection	ALL UNITS	**I.I.:** 300 mg/ 50 mL NS or D5W over 30 mins 600 & 900 mg / 50 mL NS or D5W over 30 mins q 8 hrs	**Caution/Warning:** **Comments:** Compatible with Gentamicin. 900 mg option for Toxoplamosis, Pelvic Inflammatory Disease, Pre-operative dosing. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Colistimethate Colistin® [antibiotic] **RESTRICTED ANTIMICROBIAL**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 2.5 – 5mg /kg/day in 2-3 divided doses in 50 mL D5W over 30 mins Dosing is based on Ideal or Actual body weight (whatever is lower).	**Caution/Warning:** **Comments: Pharmacy to mix** **Drug Interactions:** **Monitor:** **Side Effects:** neurotoxicity, renal toxicity **Stability:**
Conivaptan Vaprisol® [vasopressin receptor antagonist] **NON-FORMULARY**	Euvolemic & hypervolemic hyponatremia	ALL UNITS (Except Psy)	**I.I.: LD:** 20 mg/ 100 mL D5W over 30 mins then continue once or twice daily for 1 to 2 days or as a CI **C.I.:** 20 mg/ 250 ml D5W over 24 hrs X 2-4 days max.	**Caution/Warning:** Avoid rapid correction of serum Na +. Decrease dose in renal dysfunction. **Comments: Pharmacy**: use filter needle when drawing up from glass ampule **Drug Interactions:** **Monitor:** **Side effects:** Injection site: phlebitis, pyrexia, hypokalemia, Headache, neuro side effects from rapid Na+ correction. **Stability:**
Copper Cupric Chloride [Trace Element]	Copper Deficiency	ALL UNITS (Except Psy)	**I.I.:** 0.3-4mg in 250mL NS over 2- 4 hrs	**Caution/Warning:** Must be diluted. Do not administer IM or by direct IV injection; acidic pH of the solution may cause tissue irritation. **Comments:** For parenteral nutrition per ASPEN, 0.3-0.5mg/day. Per manufacturer's product labeling, 0.5-1.5 mg/day. Each mL of 0.4mg/mL copper solution contains 1.07 mg cupric chloride, dihydrate and 9 mg sodium chloride. The solution contains no bacteriostat, antimicrobial agent or added buffer. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Must dilute in a volume ≥100 mL. **Reference:** Copper Deficiency Clinical Review Wake Forest School of Med

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Cosyntropin Cortrosyn® [diagnostic agent]	Diagnosis of adrenocortical insufficiency	ALL UNITS (Except Psy)	**IV Push:** ≤ 0.25 mg= 250 mcg dilute with 1 mL NS over 1 min, flush with 5 mL NS	**Caution/Warning:** **Comments**: edema, dizziness. Draw baseline serum cortisol then 30 and 60 mins after dose **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Co-trimazole Trimethoprim (TMP) Sulfamethoxazole (SMX) Bactrim/Septra® [antibiotic]	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** Sepsis/Meningitis/PCP: 15-20 mg/kg/day as TMP divided q 6 hrs Non PCP:10 mg/kg/day as TMP divided q 6-12 hrs 0-80 mg TMP in 100 mL D5W over 1 hr 81-120 mg TMP in 150 mL D5W over 1.5 hrs 121-240 mg TMP in 250 mL D5W over 1.5 hrs 241-450mg TMP in 500 mL D5W over 2 hrs	**Caution/Warning:** **Comments: Nursing to mix due to short stability (6 hours at room temperature)** Dosing is based on TMP component 5 mL = 80 mg trimethoprim & 400 mg sulfamethoxazole. Reduce dose with renal impairment. **Drug Interactions:** **Monitor:** CBC, Cr, K+, for skin rashes **Side effects:** rash, immune hypersensitivity reactions, hyponatremia, thrombocytopenia, pancytopenia, hemolysis, hyperkalemia **Stability:**
Crizanlizumab-tmca Adakveo® [monoclonal antibody, anti-P selectin] 	Reduce frequency of vaso-occlusive crises in sickle cell disease patients > 16 years of age	SICKLE	**I.I.:** 5 mg/kg once every 2 weeks for 2 doses (at week 0 and week 2), followed by 5 mg/kg once every 4 weeks thereafter in 100mL NS or D5W. Infuse over 30 minutes through a sterile, nonpyrogenic 0.2-micron inline filter. After infusion is complete, flush the line with ≥25 mL of NS or D5W. Do not mix or administer with other medications.	**Caution/Warning:** infusion related reactions may occur within 24 hours of infusion. May interefere with automated platelet counts (clumping) when blood samples are collected in tubes containing EDTA **Comments:** **Drug Interactions:** **Monitor:** **Side effects:** fever, chills, fatigue, dizziness, pruritus, sweating **Stability:** do not shake diluted solutions. Infusion must be completed within 4.5 hours of preparation (if stored at room temperature) or 24 hours (if refrigerated)
Crotalide polyvalent Immune fab Crofab® [antivenom] BKC: Dispose in Black Bin	Snake bites	UT1-ICU	**I.I.:** 4-6 vials in 250 mL NS over 1 hr	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
CycloSPORINE SandIMMUNE® [immunosuppressant] HD CAUTION: HAZARDOUS DRUG BKC: Dispose in Black Bin	Severe Ulcerative colitis, ORGAN REJECTION PROPHYLAXIS	ALL UNITS (Except Psy)	**I.I. or C.I.:** 1- 6 mg/kg/day mixed as 1-2 mg/ml D5W or NS, give over 2-6 hrs	**Caution/Warning:** **Comments:** Must be put in polyolefin bag with NS or D5W at conc. of 2mg/ml and stable for 12 hrs at room temperature. IV doses of cycloSPORINE are about 1/3 of the oral dose. Hazardous medication precautions. Carcinogen. Pregnancy Category C. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Dalbavancin Dalvance® [glycopeptide antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected skin & skin structure infection (given as a single-dose treatment), bone infection, or endocarditis caused by caused by MRSA in a patient intolerant to or not responding clinically to vancomycin, daptomycin, ceftaroline, or linezolid Patient who needs long-term anti-MRSA therapy for above infections in the outpatient setting for whom traditional outpatient parenteral antibiotic therapy ("OPAT") and/or adherence to oral therapy is not possible)	ALL UNITS (Except Psy)	**I.I.:** IV infusion: 500 to 1,500 mg in 100 to 1,500 mL (concentration of 1 to 5 mg/mL) of D5W over 30 minutes - If a common IV line is being used to administer other drugs in addition to dalbavancin, the line should be flushed before and after each infusion with D5W.	**Caution/Warning:** Glycopeptide hypersensitivity history May result in fungal or bacterial superinfection (e.g. Clostridium difficile) Use with caution in patients with moderate to severe hepatic impairment (Child-Pugh class B or C) Rapid intravenous infusions (<30 minutes) may cause reactions that resemble vancomycin infusion reaction (formerly "red man syndrome") (eg, flushing of the upper body, urticaria, pruritus, rash). Stopping or slowing the infusion may result in cessation of these reactions **Comments**: **CrCl ≥30 mL/minute:** No dosage adjustment necessary. **CrCl <30 mL/minute (not on regularly scheduled dialysis):** *Single-dose regimen*: 1.125 g as a single dose. *Two-dose regimen:* 750 mg as a single dose initially, followed by 375 mg as a single dose 1 week later. **HD (regularly scheduled):** No dosage adjustment necessary; administer without regard to timing of hemodialysis. **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines. May diminish the therapeutic effect of Immune Checkpoint Inhibitors Monitor serum creatinine and creatinine clearance daily in patients with unstable renal function. Monitor for anaphylaxis initially. **Monitoring:** Baseline BUN, Scr, and LFTsMonitor renal function. **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** Pruritis, nausea, vomiting, headache **Stability:** Store intact vials at 25°C (77°F); excursions are permitted between 15°C and 30°C (59°F and 86°F). Reconstituted vials and diluted solution in D5W may be stored refrigerated at 2°C to 8°C (36°F to 46°F) or at room temperature 20°C to 25°C (68°F to 77°F). Do not freeze. The total time from reconstitution to dilution to administration should be ≤48 hours.

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Dantrolene Ryanodex® [skeletal muscle relaxant]	Malignant Hyperthermia Crisis Neuro-Malignant syndrome	UT1-ICU OR/PACU UHSC	**MH Prevention:** 2.5 mg/kg IV over at least 1 minute, starting 75 minutes before surgery - certain patients may require additional doses during surgery **MH Treatment:** 1 mg/kg IV push, repeat if signs continue - MAX cumulative dose = 10 mg/kg Administer into IV catheter with continuous sodium chloride 0.9% IV or dextrose 5% injection or into an indwelling catheter after ensuring its patency. Flush the line after administration.	**Caution/Warning:** **Comments:** Avoid extraversion. Protect from light. Reconstitute each 250 mg vial with 5 mL sterile water for injection = 50 mg/mL shake vial to yield orange color. Inspect for particulates. **Drug Interactions:** **Monitor:** performance, cardiac, BP **Stability:** Stable for 6 hrs at room temperature **Related Policies:** • Malignant Hyperthermia (MH): Perioperative Care of Patients with • Malignant Hyperthermia Association of the United States Website
DAPTOmycin Cubicin® [antibiotic] **RESTRICTED ANTIMICROBIAL**	Antibiotic	ALL UNITS (Except Psy)	**I.I.:** 4 mg/kg in 50 mL NS only, give over 30 mins **I.I.** (Bacteremia): 6 mg/kg in 50 mL NS only, give over 30 mins Dosing is based on Ideal Body Weight (IBW). If the patient's actual Total Body Weight (TBW) is less than IBW, then the patient's daptomycin dose should be calculated using TBW.	**Caution/Warning:** **Comments:** **Pharmacy to admix.** Adjust dose in renal impairment **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Stable for 12 hrs at room temperature, 48 hrs in refrigerator **Related Policies:** Daptomycin Dose Rounding by Pharmacy (See Appendix of Therapeutic Interchange List) • P&T Therapeutic Interchange List
Deferoxamine Desferal® [iron chelator]	Iron Toxicity	ALL UNITS (Except Psy)	**I.I.:** 500 mg- 2 gm in 500 mL D5W or NS, infusion rate should NOT exceed 15 mg/kg/hr although rates up to 40-50 mg/kg/hr maybe attempted in pts with massive iron intoxication , Infusion time = 12 hrs. **SC Infusion:** 500 mg – 3 gm, as 200 mg/mL conc. with option of adding Hydrocortisone 10-20 mg, given over 10-16 hrs/day.	**Caution/Warning:** **Comments:** Stable for 24 hrs @ Room Temperature **SC Use**: Dispense as syringe, connect via butterfly needle and given via PCA pump for SC use. Protect from light. Pharmacy: Reconstitute 500 mg vial with 5 mL of sterile water. = 95 mg/ml, reduce dose w Crcl<10 mL/min. Change SC site, tubing and syringe q 72 hrs. **Drug Interactions:** **Side Effects:** Urticaria, hypotension, shock following rapid IV. Adverse ocular effects from long term deferoxamine therapy may include decreased visual acuity, blurred vision, night blindness, impairment or loss of color vision, optic neuropathy, and retinal pigmentation changes. **Stability:**

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Delafloxacin Baxdela® [Fluoroquinolone antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected infection caused by MRSA or Vancomycin-Resistant Enterococci (VRE) in a patient intolerant to or not responding clinically to other formulary / formulary-restricted options Patient receiving delafloxacin prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** IV infusion over 60 minutes. -Do not administer with any solution containing multivalent cations (eg, calcium and magnesium) through the same IV line. -Do not co-infuse with other medications. -If a common IV line is being used to administer other drugs in addition to delafloxacin, the line should be flushed before and after each infusion with NS or D5W	**Caution/Warning:** Boxed warning: tendinopathy and tendon rupture, peripheral neuropathy, and CNS effects; may exacerbate muscle weakness in patients with myasthenia gravis Aortic aneurysm and dissection, disturbances in glucose regulation, Hypersensitivity reactions; May result in fungal or bacterial superinfection (e.g. Clostridium difficile) **Comments**: **eGFR 30 to 89 mL/minute/1.73 m2:** No dosage adjustment **eGFR 15 to 29 mL/minute/1.73 m2:** 200 mg every 12 hours **eGFR <15 mL/minute/1.73 m2:** Use is not recommended. **ESRD on hemodialysis:** Use is not recommended. **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines. may enhance the QTc-prolonging effect of other agents **Monitoring:** WBC, signs of infection, serum creatinine; signs and symptoms of disordered glucose regulation, renal function tests, and LFTs with prolonged therapy **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** nausea, vomiting, headache, increased transaminases/hepatotoxicity **Stability:** Store at 20°C to 25°C (68°F to 77°F); excursions permitted to 15°C to 30°C (59°F to 86°F). The reconstituted powder may be stored under refrigeration (2°C to 8°C [36°F to 46°F]) or at 20°C to 25°C (68°F to 77°F) for up to 24 hours and then further diluted for IV infusion. The reconstituted solution in the infusion bag may be stored under refrigeration (2°C to 8°C [36°F to 46°F]) or at 20°C to 25°C (68°F to 77°F) for up to 24 hours. Do not freeze.
Desmopressin DDAVP [vasopressin]	Control of surgical hemorrhage , uremic bleeding, Hemophilia A, Von Willeb.	ALL UNITS (Except Psy)	**I.I.:** 0.3 mcg/kg diluted in 50 mL NS, over 15- 30 mins	**Caution/Warning:** **Comments:** *Contraindications:* Crcl < 50 mL/min. The comparable IV dose is about 1/10 the intranasal dose. **Drug Interactions:** **Monitor:** BP, HR, Lytes, SOB **Side Effects:** **Stability:**
	Diabetes Insipidus	ALL UNITS (Except Psy)	**IV Push:** 1-4 mcg diluted in 10 mL NS over 1 min	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Dexamethasone Decadron® [adrenal glucocorticoid] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Anti-inflammatory, Antiemetic	ALL UNITS (Except Psy)	**IV Push**: **≤ 12 mg** dilute with 5 mL NS over 1-2 mins, flush with 5 mL NS. **I.I.:** doses > 12 mg in 50 mL NS or D5W over 10-15 mins	**Caution/Warning:** **Comments:** Rapid administration may cause perianal discomfort. **Pharmacy info:** Anti-inflammatory potencies: Dexamethasone 4mg = 2 0 mg MethylPREDNISolone **Drug Interactions:** **Monitor:** Hyperglycemia **Side Effects**: Tingling, sodium & fluid retention, inc. glucose, Neuropsychiatric symptoms- sleep disturbances. **Stability (pharmacy mix >12mg doses):** 14 days at room temperature
Dexmedetomidine Precedex® [alpha-2 adrenergic agonist] TITRATE MED  **BOLUS OFF BAG:** Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	ICU sedation	UT1-ICU	**I.I. LD:** 1 mcg/kg infused over 10 minutes then **C.I.:** 0.2-1 mcg/kg/hr , max; @ 1.5mcg/kg/hr -Nurse may titrate per MD order up to 1mcg/kg/hr. -Dose increases >1mcg/kg/hr require MD rate change order. 200 mcg / 50 mL NS (4 mcg/mL) 400 mcg / 100 mL NS (4 mcg/mL)	**Caution/Warning:** **Comments:** Use beyond 5 days, provider should consider risks vs. benefits. CI requires MD/LIP order for therapeutic goal (ex: RASS or explanation of desired level of sedation) or reason. Titrate per protocol to goal. Infusions are reserved for ICU patients both intubated and extubated patients with continuous monitoring of oximetry and capnography. Dexmedetomidine infusions are permitted in monitored extubated ICU patients who: a.) still need sedation after extubation b.) for ETOH withdrawal or c.) for patients, **NOT** previously intubated, requiring sedation. Notify practitioner if unable to achieve desired level of sedation at the ordered maximum dose. **Drug Interactions:** **Monitor:** BP (hypotension), HR (bradycardia), RR, injection site, mental status, allergic/anaphylactic reaction, nausea/vomiting. **Monitor (Specific to Continous Infusion):** BP, RR and sedation score every 1-2 hours and more frequently during active titration, continuous HR monitoring, injection site, mental status, continuous pulse ox and capnography (if not mechanically ventilated). **Side Effects:** Hypotension, Bradycardia, Hypertension. **Stability:**

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Dextran 10% Dextran 40 in 5 % Dextrose (10% LMD) **LOOK ALIKE / SOUND ALIKE** Avoid in midline cath see Page 14	Thrombosis Prophylaxis status post vascular surgery Note: Not recommended for DVT/PE prophylaxis by 2008 ACCP	ALL UNITS (Except Psy)	**I.I.:** 500 milliliters (mL) of **dextran** 40 (100 mL/hour) during the procedure, followed by another 500 mL (75 mL/hour) immediately after, then equal amounts for three consecutive days.	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side effects**: Rarely: hypotension- monitor BP q 4 hr during infusion. Rarely anaphlactoid like reactions: flushing, erythema, or urticaria; a "strange" feeling; lumbar pain; fever and/or shivering; mild to severe hyptension; gastrointestinal disturbances; respiratory distress; bronchospasm; and/or cardiac or respiratory arrest. **Stability:**
Dextrose 50% **D50** 50 mL= 25 gms Carbohydrate If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Hypoglycemia	ALL UNITS	**IV Push:** 25 grams=50mL of 50% undiluted over 1-2 mins , flush with 5 mL NS, may repeat as ordered	**Caution/Warning:** **Comments:** Be sure of good IV access to prevent extravasation. Do not use if solution is cloudy. **Treatment of Hyperkalemia**: Follow MD orders: 1.Stop K+ infusions and oral therapy and Contact MD/LIP to Discontinue K+ infusions. 2. Consider Calcium Gluconate IV Push: 10-20 mL of 10% over 2 mins or 1 gm in 50 mL D5W X 1-2 doses over 5-10 mins) 3. Dextrose IV Push (50 mL of D50 IV Push) undiluted over 1-2 mins 4. Regular Insulin IV Push (10 units) 5. Bicarbonate IVP (50 mEq= 50 mL of 8.4% over 2 mins 6. B2 adrenergics-albuterol nebs (10-20 mg = 12-24 mL nebulized); 7. Loop diuretics 8. Na Polystyrene (15-60 gms) 9. Hemodialysis **Drug Interactions:** **Monitor:** Blood glucose **Side Effects:** **Stability:**
	Hyperkalemia	ALL UNITS (Except Psy)	**IV Push:** 25 grams=50 mL of 50% undiluted over 1-2 mins with 10 units regular insulin IVPush and if ordered : Calcium Gluconate **IVPush:** 10-20 mL of 10% over 2 mins to antagonize membrane effects, with bicarb when ordered, & with Albuterol 2.5 mg/ 3 mL via neb when ordered	
DiazePAM Valium® [benzodiazepine] If Extravasation, see Pages 10&11 **DEAP:** Contact RPh for Proper waste disposal	Anticonvulsant, Sedation, Anti-anxiety, Muscle relaxant	ED EMU ENDO UT1-ICU IRAD L&D/ OB-GYN OR/PACU LIP on other units	**IV Push:** 5-10mg undiluted at 5mg/min q 5-15 mins as necessary up to a max. dose of 30 mg & may repeat in 2-4 hrs if needed for treatment of seizures, OR After 1st dose wait 2 mins, then give a 2nd dose to total of 10 mg, may repeat in 2-4 hrs up to 30 mg in a 8 hr period	**Caution/Warning:** **Comments:** Do not inject into small veins. If direct injection is not feasible, may inject through infusion tubing as close as possible to the vein insertion. Avoid extravasation. Flush before & after with NS. Not for procedural sedation. Not compatible with any other drugs or solutions.Not for Syringe infusion due to incompatibility with other solutions **Drug Interactions:** **Monitor:** BP, sedation, resp. depression, IV site. Flumazenil must be readily available for reversal of benzodiazepine toxicity. **Side Effects:**

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	Alcohol withdrawal (in response to IV lorazepam shortage)	ED UT1-ICU UT2-IU	**IV Push:** 20mg undiluted at a max rate of 5mg/min (over at least 4 minutes) x 1 dose; follow with 10mg (over at least 2 minutes) q1h x 3 doses starting 1 hour after the initial 20mg dose; follow with 10mg q4h as needed for CIWA>10	**Stability:**
Digoxin Lanoxin® [cardiac glycoside] (Digitalizing/Loading Dose) BKC: Dispose in Black Bin	CHF, A. Fib.	ALL UNITS (Except Psy)	**IV Push:** ≤ 0.5MG dilute in 10 mL NS over 3-5 mins, flush with 5 mL NS	**Caution/Warning:** **Comments:** DIGITALIZING/ LOADING DOSE – Pt must be on a continuous cardiac monitor/telemetry. Give ½ total, ¼ of total x 2 doses given 6 hrs apart. Amiodarone & DiltiaZEM inc. dig. Levels. No loading dose change in patients with renal failure. Note: Adult & pediatric strengths **Drug Interactions:** **Monitor:** BP and HR; baseline and periodic ECG monitoring. Monitor HR & BP before and q 15 mins x 2. **Side Effects:** **Stability:**
Digoxin immune FAB Digifab® [digitalis antidote]	Digoxin toxicity	ED HT1-ICU	1. Acute ingestion of unknown amount of digoxin and digoxin level not available: 10 vials= 400 mg intravenous in 50 mL NS over 30-60 mins. A repeat dose may be administered but requires MD evaluation. 2. Acute ingestion of known amount of digoxin: # vials of DIGIFAB ® = mg total digoxin body load X 0.8 / 0. 5 mg of dig bound/vial (Round up to nearest whole vial). Product is mixed in an appropriate volume of NS. 3. Chronic ingestion acute distress with no steady state dig level known: 6 vials. Product is mixed in an appropriate volume of NS. 4. Chronic ingestion, steady state dig level known: # vials= dig level (ng/ml) x weight in kg / 100 (Round up to nearest whole vial). Product is mixed in an appropriate volume of NS.	**Caution/Warning:** **Comments:** Cardiac monitor/telemetry is required. No filter required for Digifab® infusion Each vial = 40 mg will bind 0.5 mg digoxin Check K+, dig level prior to 1st dose. Dig levels will be inaccurate for 1 week. **Drug Interactions:** **Monitor:** Check K+, dig level prior to 1st dose. Monitor for hypokalemia and exacerbations, caused by digoxin withdrawal, of low CP, CHF, or rapid ventricular rate in patients with afib. Digoxin level should be drawn prior to digoxin immune fab administration as they rise after therapy and should not be used to guide continuing therapy. Dig levels will be inaccurate for 1 week. **Side Effects:** Fever, allergic reactions (Due to potential for severe allergic reactions medications for anaphylaxis management should be readily available.) **Stability:** Compatible in 0.9% NaCl to a max conc of 10mg/ml. No known common compatibilities. Use reconstituted product immediately.

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Dihydroergotamine [ergot alkaloid]	Migraines	ALL UNITS (Except Psy)	**IV Push (preffered):** 0.5-1 mg over 1-4 mins OR **I.I. (not preffered; give IV Push if possible):** 0.5-1 mg in 50 mL NS over 15-30 mins	**Caution/Warning:** **Comments:** No greater than 2mg/ 24 hrs or 6 mg/wk. Do not use within 24 hrs of serotonin agonists or if MAOI's within last 2 weeks. *Contraindications:* Severe CRF, HTN, Ischemic Disease **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
DiltiaZEM Cardizem® [Calcium Channel Blocker] TITRATE MED (Do Not Titrate without order)  BOLUS OFF BAG: Upon new EMR April 2018, ability to bolus from continuous infusion bag via Alaris Pump Guardrails. **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	A. Fib/Flutter, PSVT	ED UT1-ICU UT2-IU OR/PACU UHSC In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push:** A.fib/flutter: initial dose 0.25mg/kg undiluted (average 20mg) over 2mins- may repeat in 15 min at a dose of 20-25 mg (0.35 mg/kg) over 2 mins	**Caution/Warnings:** Cautious use with IV Beta Blockers. Do not use CCB's for wide QRS tachy's of unknown origin. **Comments:** Patient must be on a bedside cardiac monitor/telemetry for IV Push/C.I. Requires MD/LIP order for adjustments. Do not titrate. Call MD/LIP for changes. Infusions of 3,5,7,11 mg/hr are equivalent to 120,180,240, 360 mg PO daily of regular or SR. Discontinue continuous infusion 1 hour after first oral dose. **Drug Interactions:** **Monitor:** EKG, BP & HR every 15 minutes x 2 than every 30 minutes x 2 after IVP or C.I. or rate change, arrhythmias, CHF, Bradycardia. **Side Effects:** edema, bradycardia, hypotension, flushing, palpitations **Stability:** Store in refrigerator at 2°C to 8°C (36°F to 46°F); do not freeze. May be stored at room temperature for up to 1 month. Following dilution to ≤1 mg/mL with $D_5½$ NS, D_5W, or NS, solution is stable for 24 hours at room temperature or under refrigeration.
		ED UT1-ICU UT2-IU OR/PACU UHSC In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**C.I.:** 125 mg / 125 mL NS or D5W (1mg/ mL) by adding 125mg (25mL) of diltiaZEM to 100 mL NS or D5W Start @ 5mg/hr to achieve rate control and Do Not titrate. Call MD/LIP for order to increase/decrease by usual of 5 mg/hr to achieve rate control if indicated. Usual max. is 15 mg/hr. Higher doses up to a Maximum of 20 mg/hr may be indicated and a cardiology consult is recommended.	

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DimenhyDRINATE Dramamine® [antihistamine]	Motion sickness - prevention/treatment	ALL UNITS (Except Psy)	**I.I.:** 25-50 mg diluted with 50 mL NS , over 10-15 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
DiphenydrAMINE Benadryl® [antihistamine] **Nov 2017: During shortage of SVP, medication will be given IV Push**	Pruritus Allergic reactions	ALL UNITS	**IV Push**: ≤ 50mg Undiluted given over 2-3 mins, flush with 5 mL NS Doses >50mg-100mg administer at a rate ≤ 25 mg/minute (e.g. 100mg over 4-5 minutes)	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Comments:** Consider nalbuphine (mixed opiate agonist/antagonist) for pruritus due to systemic opioids. Lower dose in geriatric population and renal failure. May be given with metoclopramide in same syringe. **Drug Interactions:** **Monitor:** **Side Effects:** Sedation, dizziness. Benadryl is a respiratory stimulant not a respiratory depressant. Can cause drying of oral secretions and urinary retention in high doses. Monitor for sleep disturbances, Parkinson symptoms- motor restlessness, dyskinesias, and tardive dyskinesias. **Stability:**
		ALL UNITS For patients with Opioid induced pruritus	**I.I:** : 50 mg dilute with 50 mL D5W or NS, over 15-20 mins (During Shortage, Premix Diphenhydramine will be used only in the Sickle Cell Clinic, other units should administer IV Push)	
Dipyridamole Persantine® [vasodilator]	Evaluation of coronary artery disease	EP lab CCL	**I.I.:** 0.57mg/kg diluted as a 1:2 ratio in NS or D5W. Total volume should be approx 20-50 mL.	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** BP, HR, ECG, respiration **Side Effects:** **Stability:**

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DOBUtamine Dobutrex® [adrenergic agonist] **TITRATE MED** (except UT2-IU) **LOOK ALIKE / SOUND ALIKE**  If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	**CHF, Shock**	ED UT1-ICU UT2-IU OP-CARD OR/PACU	**C.I.:** Low : 250 mg/250mL D5W (1mg/mL) Mid : 500 mg/250mL D5W (2mg/mL) High : 1000 mg/250mL D5W (4mg/mL) Start @ 2.5mcg/kg/min and adjust by 2.5 mcg/kg/min q 5 mins to achieve goal CI > 2.0 or MAP, desired BP. Usual dose range: 2-20 mcg/kg/min Max Dose: UT2-IU: 10 mcg/kg/min-**Do Not Titrate** UT1-ICU/ED, Cardiology: 20 mcg/kg/min up to 40 mcg/kg/min if MD/LIP ordered	**Caution/Warning:** **Comments**: Central vein preferred except in emergencies. Cardiac monitor unless outpatient maintenance infusion. Requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP) or reason. Titrate per order to goal. Exp. date for pre-mix bag if bag is out of protective overwrap = 14 days. Correct low BP before use. Avoid when SBP< 90-100. Tachyphylaxis with use > 4-7 days. Taper to DC. **Drug Interactions:** **Monitor**: EKG, Urine O., K+, chest pain, angina, mental acuity, rhythm changes, h/a. Monitor IV site for extravasation. BP & HR with each dose change until desired effect/dose attached, then q 1-2 hours or as ordered. Hemodynamic parameters if titrating to CO/CI. **Side effects**: Ectopic beats, tachycardia, angina pain, palpitations, hypo-hypertension, headache. **Stability:** Incompatible w bicarbonate.
DOPamine [adrenergic agonist-inotrope] **TITRATE MED** (except UT2-IU) **LOOK ALIKE / SOUND ALIKE**  If Extravasation, see Pages 10&11	**Hypotension & shock**	ED UT1-ICU UT2-IU IRAD OR/PACU	**C.I.:** Low: 400mg/500mL D5W (0.8 mg/mL) High: 800mg/500mL D5W (1.6 mg/mL) Renal Dose: 1-5 mcg/kg/min Cardiac Dose: 5-10 mcg/kg/min Vasopressor Dose: 10-20 mcg/kg/min Renal/Cardiac.:Titrate by 1mcg/kg/min q10-30 min Vasopressor: Start @ 5 mcg/kg/min and titrate by 2.5 mcg/kg/min q 5 mins to achieve increase in SBP to 100-120 or MAP> 60 or U/O or > 30 mL/hr, or as ordered. Max. Dose: UT2-IU, MSDU: 5 mcg/kg/min **Do Not Titrate** UT1-ICU: 30 mcg/kg/min- unless higher max. is ordered by MD/LIP for up to 50 mcg/kg/min	**Caution/Warning:** **Comments**: Central vein preferred except in emergencies. Requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP) or reason. Titrate per order to goal.Taper to DC. **Drug Interactions:** **Monitor**: IV site for extravasation. EKG, Urine output every 1-2 hours or hourly if strict I&O. BP & HR with each dose changed until desired effect/dose attained then every 1-2 hours or as ordered. Hemodynamic parameters if titrating to hemodynamic effect. **Side effects**: Ectopic beats, n/v, chest pain, tachy, hypo-hypertension, tremor, anxiety, headaches, resp. difficulty. **Stability:** Exp. date for pre-mix bag if bag is out of protective overwrap = 14 days. Bicarbonate will inactivate DOPamine.

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Doxycycline [antibiotic] If Extravasation, see Pages 10&11	Bacterial Infection	ALL UNITS	**I.I.:** 100mg /250mL D5W/ NS over 2 hrs q 12 hrs 200 mg/250 mL D5W/ NS over 2 hrs q 12hr	**Caution/Warning:** **Comments: Pharmacy to mix**. Avoid extravasation. May cause severe vein irritation. Central line is preferred. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Solutions are stable for 12 hrs @ Room Temperature, 72 hours if refrigerated and protected from light.
Eccalantide Kalbitor® [kallikrein inhibitor]	Hereditary angioedema	ED UT1-ICU UT2-IU	Acute Attacks: 30 mg SC in three 10 mg (1 mL) injections using the same or in different anatomic locations (abdomen, thigh, upper arm; an additional dose of 30 mg may be administered within a 24 hr period if attack persists	**Caution/Warning:** **Comments:** Available in ED and Pharmacy **Drug Interactions:** **Monitor**: Monitor patients for improvement in symptoms of acute attacks of hereditary angioedema and above side effects. **Side effects:** local injection site reactions: local pruritus, erythema, pain, irritation, urticarial. Possible hypersensitivity reactions including anaphylaxis. **Stability:**
Eculizumab Soliris® [monoclonal antibody]	Atypical hemolytic uremic syndrome Paroxysmal nocturnal hemoglobinuria	OP-INFC	**I.I.:** 300 mg to a total volume of 60 mL, 600 mg in a total volume of 120 mL, 900 mg in a total volume of 180 mL, or 1,200 mg to a total volume of 240 mL over 35 minutes. Do not exceed a maximum 2 hour duration of infusion.	**Caution/Warning:** **Comments:** Allow to reach room temperature prior to administration. **Drug Interactions:** **Monitor:** CBC w/diff, LDH, SrCr, AST, U/A, meningococcal infection, infusion reaction **Side Effects:** **Stability:** 24 hours refrigerated or room temperature. Do not shake.
Enalaprilat Vasotec® [ACE Inhibitor] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Hypertension Hypertension	ALL UNITS (Except Psy)	**I.I.:** 0.625 – 5 mg in 50 mL NS or D5W over 10-15 mins	**Caution/Warning:** **Comments**: Dosage must be reduced with renal impairment. Hypotension is more common when hyponatremia is present.The dose for pt's being converted from oral to IV is the same total dose per day. **Drug Interactions:** **Monitor**: BP q 1 hr x 2, K+, BUN, Cr. Blood pressure per unit standards. **Side Effects:** **Stability:** Stable for 24 hrs @ R.T.
		ED UT1-ICU UT2-IU UT3-TELE UT4-TELE OR/PACU	**IV Push**: 0.625- 5 mg diluted in 5 mL NS over 2-3 mins	

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ePHEDrine [sympathomimetic] **LOOK ALIKE / SOUND ALIKE** 	Vasoconstrictor, bronchodilator	ECT-A ED ENDO UT1-ICU UT2-IU IRAD OR/PACU UHSC	**IV Push**: 5-25mg/dose undiluted over 2 mins, titrate to response. Do Not Exceed 150 mg in 24 hrs	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** Cardiac monitor/telemetry is required. Monitor BP, HR, U/O. **Side Effects:** Palpitation, arrhythmias, tachycardia, increased BP, anxiety, tremors. **Stability:**
EPINEPHrine [sympathomimetic] **TITRATE MED** **LOOK ALIKE / SOUND ALIKE**  If Extravasation, see Pages 10&11 BKC: Dispose in Black Bin	Anaphylaxis, cardiac arrest, symptomatic bradycardia, bronchocon-striction	ECT-A ED UT1-ICU UT2-IU IRAD OR/PACU In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push ACLS**: 1 mg , may repeat q 3-5 mins **IV Push Anaphylaxis**: 0.3- 0.5mg , repeat q 5-10 mins	**Caution/Warning:** **Comments**: **ACLS:** 10mL of 1:10,000=1mg/10mL Syringe, follow with NS flush. **C.I.:** Continuous Infusion requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP) or reason. Titrate per order to goal.Cardiac monitor/telemetry is required. Central line preferred. **Anaphylaxis:** Note: Pre-filled syringes (Epi-Pen) 0.3 mg IM for adults with anaphylaxis. Pre-filled syringes (Epi-Pen) 0.15 mg IM for children under 40 pounds with anaphylaxis. For anaphylaxis with severe Hypotension: Use 0.3-0.5 mL (0.3-0.5mg) of 1:10,000= 0.1mg/ml if IV ordered **Drug Interactions:** **Monitor**: EKG, HR, BP. For C.I.: BP and HR with each dose change until desired effect/dose attained, then q30 min x2 and then hourly if stable. Hemodynamic parameters if titrating to hemodynamic effect. Urine output every 1 to 2 hours; hourly if strict I&O. IV site for extravasation. **Side effects**: Tachycardia, arrhythmias, hypertension, decreased renal blood flow, dizziness, headache, anxiety. **Stability:** Bicarbonate will inactivate EPINEPHrine. Stability when mixed by JDH pharmacy when Protected from Light in refrigerator is 14 days. Protect from light. Discard vials or solutions if turns pink or brown.

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Avoid in midline cath see Page 14		ED UT1-ICU OR/PACU	**C.I.:** Low: 4 mg in 250mL D5W [Premix] or NS (16mcg/mL) High: 8 mg in 250mL D5W or NS (32 mcg/mL) Inotrope: Start at 0.02 mcg/kg/min, titrate by 0.02 mcg/kg/min q 5 mins to achieve increase of SBP to 100-120 or MAP>60 or Cardiac Index > 2.0 as ordered by MD/LIP. Max: 0.2 mcg/kg/min unless MD/LIP orders higher max. Vasoconstriction: ≥0.2mcg/kg/min, titrate to desired response EndoTracheal: 2-2.5 mg diluted in 10mL NS	Reference on stability: The stability of four catecholamines in 5% glucose infusions. *J Clin Phar Ther.* 1991 Oct;16(5):337-40 Premix products not mixed by JDH pharmacy are good for 45 days at room temperature.

Epoprostenol for inj. Veletri® (Flolan® is no longer on formulary) **Room temperature stable** [vasodilator & inhibitor of platelet aggregation] **HIGH ALERT / DOUBLE CHECK**  (during transition)   SPLP/SPC: Place Packaging & Waste in Zip-Lock and return to pharmacy	Pulmonary Arterial Hypertension NYHA Class III & IV	ED UT1-ICU UT2-IU IRAD OR/PACU	**C.I.:** Usual initiation rate: 2 ng/kg/min. Maintenance rate: 2- 150 ng/kg/min. Some patients may require higher doses. Mixed in CADD pump reservoir in a dose (mg)/100mL with Sterile water or Epoprostenon diluent as diluent. Higher concentrations may be prepared for patients who receive Veletri ® long-term. Patients own infusion may be administered until Pharmacy sends the initial infusion plus a backup for emergency use. Initially may be infused with Alaris pump in new patient or if CADD is not available. Rate changes by practitioner only based on symptoms not weight changes. CADD pump will read rate as mL/24hrs versus Alaris as mL/hr. Requires Pharmacy admixture based on current admixture and dosing information obtained by calling the patient's speciality pharmacy (e.g Accredo 1-866-344-4874 or CVS Caremark 1-877-242-2738). Infusion rate in **mL/24 hr** with CADD pump = dose (ng/kg/min) X Wt.(kg) X 60 mins ÷Final conc. (ng/mL)= mL/hr mL/hr x 24= **mL/24hr** Dose Calculator and Pharmacy Worksheet for Dosing Calculation: Epoprostenol Calculator Epoprostenol Pharmacy Worksheet	**Caution/Warning: Comments**: RPh or Practitioner must call the patient's speciality pharmacy to verify current concentration, dose delivered, and dosing weight (not current weight). Orders must be written in ng/kg/min, concentration of the CI (ng/mL) and mL/24 in CADD pump and mL/hr via Alaris Pump by Practitioner and verified by RPh and RN. Central line is preferred. CI requires use of a CADD pump. A second CADD must be admixed for possible emergency use. The concentration may be increased to facilitate the 100 mL CADD bag size limit. After reconstitution with diluentsVeletri ® must be administered through a sterile 0.22 micron filter. The CADD pump is sent by pharmacy with an extension set that has a 0.2 micron filter (REF 21-7106-24). Change tubing three times per week. **Procedure**: Cassettes MUST BE numbered in sequence. Coordination must be done with nursing and pharmacy staff to prevent waste. The back-up bag is delivered once the new cassette is hung. *Day 1*: Make two Epoprostenol per MD/LIP order and first bag sent to nursing unit for immediate patient use. Second bag stored in pharmacy refrigerator until the first cassette is running then bring to the nursing unit refrigerator *Day 2*: Use second bag Epoprostenol in nursing unit refrigerator 24 hrs after first bag is dispensed. Mix third bag and store for next day's dose *Day 3 and subsequent days*: Continue sequence *Day of Discharge*: Discard extra cassette. A back-up peripheral line designated for emergent (lost access or dysfunctional line) use must be present at all times. The line must have NO piggyback meds, NO blood draws and NO flushing. A tag should be placed on the line indicating: "Epoprostenol: DO NOT FLUSH". Med has a short half-life (approximately 3-5 minutes); therefore, the continuous infusion must not be interrupted or stopped. Abrupt withdrawal or sudden large reductions in dosage even for several minutes can precipitate symptoms associated with rebound PAH (dyspnea, dizziness, asthenia). Do not slow or stop infusion without Pulmonary order and guidance. **Drug Interactions:** Concomitant use with anticoagulants (warfarin, enoxaparin, dalteparin, lepirudin, argatroban) or antiplatelet agents (NSAIDS, salicylates) may increase risk of bleeding. Diuretics, antihypertensives, vasodilators may result in added reductions in BP when given with epoprostenol. **Monitor:** S&S's of PAH: chest pain, dyspnea, palpitations, orthopnea, syncope. Monitor for changes in Pulmonary function dyspnea, syncope, chest pain, flushing, tachycardia, hypoxia, nausea/vomiting, hypotension. Monitor for side effects of insufficient medication: cyanosis, chest pain, cough, fatigue/weakness, palpitations, shortness of breath. Monitor for excess medication: diarrhea, headache, lightheadedness/fainting, nausea, vomiting Monitor for side effects of chronic medication: depression, diarrhea, jaw pain, hypotension, muscle pain, sensitivity to light, ascites. **Related Policies:** • Epoprostenol Sodium (Flolan) / Epoprostenol for Injection (Veletri) / Treprostinil Sodium (Remodulin) Transition to New Med, Route, and/or New Central Line • Epoprostenol Pharmacy Policy and Procedure • Medications: High Alert, Double Check of **Side Effects:** **Stability:** No ice packs are required due to enhanced stability due to higher PH from arginine. Light protection required for drug stability. All reconstituted solutions must be stored in a refrigerator until time of use. See below table for maximum duration of administration (hours) at room temperature for fully diluted solutions in the drug delivery reservoir.

<table>
<tr><th>Generic name
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Med Class</th><th>Indications</th><th>Approved Units for Use</th><th>Dosing/Admixture Information</th><th>Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability</th></tr>
<tr><td></td><td></td><td></td><td></td><td><table>
<tr><th>Final concentration range</th><th>Immediate administration</th><th>If stored for up to 8 days at 36° to 46°F (2° to 8°C)</th></tr>
<tr><td>0.5mg vial</td><td></td><td></td></tr>
<tr><td>≥3,000 ng/mL and <15,000 ng/mL</td><td>48 hours</td><td>24 hours</td></tr>
<tr><td>1.5mg vial</td><td></td><td></td></tr>
<tr><td>≥15,000 ng/mL and < 60,000 ng/mL</td><td>48 hours</td><td>48 hours</td></tr>
<tr><td>≥60,000 ng/mL</td><td>72 hours</td><td>48 hours</td></tr>
</table></td></tr>
<tr><td rowspan="2">Eptifibatide

Integrilin®

[platelet (G2b3a) inhibitor]
  </td><td>ACS:Unstable angina or non-Q wave MI</td><td>ED
UT1-ICU
UT2-IU
OR/PACU</td><td>IV Push Bolus (Normal Renal Function): 180mcg/kg over 1-2 mins using 20mg/10 mL vial
C.I. (Normal Renal Function): Premix of 75mg/100 mL at 2mcg/kg/min up to 72 hrs or as directed
IVPush Bolus (Renal Function <50mL/min): 180mcg/kg over 1-2 mins using 20mg/10 mL vial
C.I. (Renal Function < 50mL/min): Premix of 75mg/100 mL at 1mcg/kg/min up to 72 hrs or as directed</td><td rowspan="2"><u>Caution/Warning:</u>
<u>Comments</u>: Requires RN/LPN verification double check on MAR.
. Use vented set.
Reduce dose for creatinine >2 (if CrCl is unavailable). Compatible with alteplase, DOBUTtamine heparin, lidocaine, morphine, nitroglyerin, potassium. Not compatible with furosemide.
<u>Drug Interactions:</u>
<u>Monitor</u>: Bleeding, thrombocytopenia, anaphylaxis. Avoid unnecessary arterial & venipunctures. Cardiac monitor/telemetry is required.
<u>Side Effects:</u>
<u>Stability:</u> Must be refrigerated until used</td></tr>
<tr><td>PCI Procedure</td><td>CCL/EP</td><td>IV Push Bolus (Normal Renal Function): 180mcg/kg over 1-2 mins using 20mg/10 mL vial. 2nd bolus 10 mins after 1st bolus
C.I.(Normal Renal Function): Premix= 7 5mg/100 mL at 2 mcg/kg/min up to discharge, or for 18-24 hrs or as directed. Minimum 12 hr infusion.
IV Push Bolus (Renal Function <50mL/min): 180mcg/kg over 1-2 mins using 20 mg/10 mL vial. 2nd bolus 10 mins after 1st bolus
C.I.(Renal Function < 50mL/min): Premix= 75mg/100 mL at 1mcg/kg/min up to discharge, or for 18-24 hrs or as directed. Minimum 12 hr infusion.</td></tr>
</table>

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Eravacycline Xerava® [tetracycline antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected infection caused by a proven-susceptible multidrug-resistant gram-positive or gram-negative pathogen for which other formulary / restricted formulary agents are inactive Salvage therapy for certain non-TB Mycobacteria Patient receiving eravacycline prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Infuse over ~60 minutes through dedicated line or via Y-site. -If the same IV line is used for sequential infusion of several drugs, flush line with NS before and after eravacycline administration. -Do not mix with other drugs or add to solutions containing other drugs.	**Caution/Warning:** Hypersensitivity reactions; May result in fungal or bacterial superinfection (e.g. Clostridium difficile); antianabolic effects: hepatotoxicity; pancreatitis; photosensitivity; pseudotumor cerebri **Comments**: **Altered kidney function**: no dosage adjustment necessary. **Hepatic Impairment:** Mild to moderate impairment (Child-Pugh class A or B): No dosage adjustment necessary **Severe impairment (Child-Pugh class C):** 1 mg/kg every 12 hours on day 1, then 1 mg/kg every 24 hours **Concomitant use of strong CYP3A inducer:** 1.5 mg/kg every 12 hours **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines; may enhance the adverse/toxic effect of Retinoic Acid Derivatives; CYP3A4 Inducers (Strong) may decrease the serum concentration of eravacycline **Monitoring:** Monitor hepatic function periodically **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** Hypotension nausea, vomiting, diarrhea; infusion site reaction, wound dehiscence **Stability:** Store intact vials in original carton at 2°C to 8°C (36°F to 46°F). Reconstituted vial may be stored at room temperature (≤25°C [77°F]) but must be further diluted within 1 hour. Diluted solutions for infusion may be stored at room temperature (≤25°C [77°F]) for up to 24 hours or refrigerated (2°C to 8°C [36°F to 46°F]) for up to 10 days. Do not freeze.
Ertapenem INVanz® [antibiotic] **RESTRICTED ANTIMICROBIAL** **ADS MIXTURE**	Bacterial infections	ALL UNITS (Except Psy)	**I.I.:** 1000 mg in 100 mL NS (Minibag Plus) over 30 mins daily.	**Caution/Warning:** Caution if prior anaphylactic reactions to beta-lactams. **Comments:** CrCl< 30 mL/min- 500 mg daily. Do not mix with other medications or use diluents containing dextrose. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If mixed by pharmacy, 6 hours room temp or 24 hours refrigerated (used within 4 hours after removal from refrigeration)
Erythromycin [antibiotic]	Bacterial Infection, Gastroparesis	ALL UNITS (Except Psy)	**I.I.:** 250-1000 mg in NS over 60 min (concentration between 1-5mg/mL) Gastroparesis Agent: 3mg/kg (usual doses 125- 250 mg) in NS (concentration between 1-5 mg/mL)	**Caution/Warning:** **Comments**: Central line is recommended due to phlebitis risk. **Drug Interactions:** **Monitor:** **Side Effects:** Phlebitis, abdominal Pain, N/V **Stability:** Stable for 24 hrs @ Room Temperature with NS or 7 days in refrigerator. If D5W is used must be buffered.

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Erythropoietin Procrit® or Epogen® [RBC stimulator]	Anemia assoc. with CRF & malignance	ALL UNITS (Except Psy)	**IV Push:** 1,000-20,000 units undiluted over ≥ 1 min. SC preferred	**Caution/Warning:** **Comments**: Flush before and after w NS. No not dilute. Do Not Shake Vial. More effective when given subcutaneously. Withhold dose if Hg > 12g/dl- increased risk of thrombotic event, may exacerbate Hypertension, CHF, seizures. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Esmolol Brevibloc® [beta blocker] **TITRATE MED**  **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails. If Extravasation, see Pages 10&11	PSVT, Rate control for Afib, A.Flutter	ED UT1-ICU IRAD OR/PACU	**IVPush LD**: PSVT: load 500 mcg/kg (remove dose from pre-mix bag) over 1min then **C.I.:** Pre-Mix 2500 mg/250 mL NS = 10 mg/ml Start @ 50 mcg/kg/min X 5 mins & if desired HR (goal HR reduction of 15-20%) is not achieved by 5 mins, repeat above LD & inc. CI by 50 mcg/kg/min to 100 mcg/kg/min for 5 mins. May repeat above LD and CI in increments of 50 mcg/kg/min until therapeutic response (decrease of HR to 60-80 or SBP to 100-120) or as ordered. Max of 200 mcg/kg/min, unless higher max. is ordered.	**Caution/Warning:** **Comments**: Use 25 mg /5 ml for bolus only. CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP) or reason. Titrate per order to goal. Central line preferred but peripheral line for emergencies until central line can be inserted. Calculation of drip rate (mL/hr)= wt (kg) X mcg/min X 0.006. Maximum duration is 48 hours. Decrease rate by 50% after administration of alternative antiarrhythmic. Titrate off slowly. **Drug Interactions:** **Monitor**: EKG, BP and HR every 5 minutes for first 30 minutes and during active titration then hourly once stable. If SBP <90 or more than 30 mmHg drop in BP decrease infusion to last level. Continue decreasing rate until BP stabilizes. If hypotension is severe, stop infusion and notify MD/LIP. Monitor for signs of decreased C.O., BP, U/O, mental acuity. Bradycardia may require atropine on pacing. **Side Effects**: hypotension, bradycardia, chest pain, CHF, bronchospasm, nausea & vomiting **Stability:**
Esomeprazole NexIUM® [Proton Pump Inhibitor]	Stress ulcer Prophylaxis, GERD, PUD	ALL UNITS (Except Psy)	**IV Push:** 40mg dilute with 5mL NS over 3-5 min, flush with 5 mL NS. Severe hepatic failure 20mg OR **I.I.:** doses > 40 mg in 50 mL NS over 10-15 mins	**Caution/Warning:** **Comments**: May store at room temperature. H2 antagonists (famotidine) should be considered for Stress Ulcer Prophylaxis unless the patient has an active upper GI bleed or a Hx of GI bleeding. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Variceal UGIB	ALL UNITS (Except Psy)	**I.I. LD:** 80 mg in 100 mL NS over 15-20 minutes then **C.I.:** 80 mg in 250 mL NS at 8 mg/hr (25mL/hr) for 24- 48 with switch to IV Intermittent or oral 40- 80 mg po bid	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 48 hrs at room temperature, 5 days if refrigerated
Estrogens Conjugated Premarin® [estrogen] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Uterine bleed Uremic bleeding	ALL UNITS (Except Psy)	**I.I.:** 25 mg diluted in 50 mL NS or D5W over 20-30 mins may repeat in 6-12 hr I.I.: 0.6 mg/kg/day diluted in 50 mL NS or D5W over 20-30 mins x 3-5 days	**Caution/Warning:** **Comments**: Reconstitute with 5 mL of sterile water. May cause flushing if given too rapid. **Drug Interactions:** **Monitor:** control of bleeding, nausea & vomiting **Side Effects:** **Stability:**
Ethacrynic acid Edecrin® [loop diuretic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Edema, CHF	ED UT1-ICU UT2-IU OR/PACU	**IV Push**: 0.5-1 mg/kg over 2-5 min	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** BP & HR during rapid administration **Side Effects:** Hypotension, h/a, dizziness, hypovolemia, muscle cramps, hyperuricemia, hyperglycemia, hypokalemia, hypocalcemia, metabolic alkalosis. **Stability:**
		ALL UNITS (Except Psy)	**I.I.:** 0.5-1 mg/kg in 50 mL NS or D5W over 15-2 0 mins	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Ethanol NOT ON GUARDRAIL	Alcohol withdrawal syndrome (AWS) if resistant to benzodiazepines Or if benzodiapines might mask neuro assessments.	UT1-ICU OR/PACU	**C.I.:** 1. Initiate ethanol infusion at 1 mL/kg/hr (10% ethyl alcohol in D5W, NS or ½ NS), via a peripheral or central venous line. If the pt's BAL is unmeasurable at the time of the initiation of the infusion, a loading dose equal to 0.5-1 mL/kg of 10% ethyl alcohol should be given. The MD/LIP should adjust the Ethanol dosage according to the pt's clinical condition. Dose: initial bolus of 0.5-1.0 mL/kg of 10%, followed by an increase in drip rate of 10-20 mL/hr q 4-6 hrs. One or max. two additional boluses of 0.5-1 mL/kg can be given if the pt's clinical condition warrants additional ethanol prior to the next increase in the rate of infusion. The pt generally should not receive > than 100 mL/hr of 10% solution. Usual duration of infusion is 6-7 days as the pt is detoxified.	**Caution/Warning:** Caution should be exercised for the following clinical conditions: Type II diabetics (NIDDM) receiving sulfonylureas such as glyBURIDE or glipiZIDE (hypoglycemia), and metFORMIN (lactic acidosis), gout, pts receiving a continuous infusion of LORazepam to prevent development of alcohol withdrawal syndrome. (LORazepam may only be administered on a prn basis for treatment of anxiety). **Comments:** Inclusion Criteria: Pts consuming large quantities of alcohol on a chronic basis, pts receiving narcotic-based analgesia, or those with compromised respiratory function when use of benzodiazepines may predispose a pt to severe respiratory depression. With Ethanol infusion the goal is to administer a non-sedating dose to prevent Alcohol Withdrawal Syndrome (AWS) and Delirium Tremens. Ideally, the BAL should remain at very low-to-undetectable levels (i.e. BAL < 20 mg/dL), however rare pts may require a higher BAL for control of their AWS. Exclusion Criteria: Active pancreatitis, Active upper GI bleed, Pregnancy, Acute subdural hematoma, pts receiving any of the following medications with Disulfiram-like (Antabuse®) effects: Bromocriptine (Parlodel®), Cefoperazone (Cefobid®), Griseofulvin, MetroNIDAZOLE (Flagyl®), or Procarbazine (Matulane®), Chronic alcoholic end-organ diseases; cirrhosis, portal hypertension, pancreatitis, cardiomyopathy, thrombocytopenia due to splenomegaly, evidence of bone marrow suppression, chronic myopathy, chronic neuropathy, and Wernicke's or Korsakoff's syndrome. **Drug Interactions:** **Monitor:** Per CIWA Protocol. During AWS pts may have fevers & tachycardia. Signs & Symptoms of alcohol withdrawal should be assessed and documented q 2-4 hrs. Notify MD/LIP if BAL>50 mg/dl. **Side Effects:** **Stability:**
Etomidate Amidate® [sedative,/hypnotic/ general anesthetic]  If Extravasation, see Pages 10&11	ER intubation	In presence of Critical Care RN or Action RN and LIP/CRNA for emergency intubation, ALL UNITS	**IV Push:** 0.2 – 0.6mg/kg over 30-60 secs	**Caution/Warning:** **Comments**: IN PRESENCE OF LIP/CRNA.. Full resp. support must be available. Monitor EKG, BP, HR, O2 sat. Monitor for apnea, laryngospasm, tachycardia, bradycardia. Can cause transient venous irritation. Available in Intubation Kit in nursing unit Pyxis. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Factor VII (7) Novoseven RT® [coagulation factor VII]	FACTOR VII deficiency – Bleeding / surgery	ALL UNITS (Except Psy)	**IV Push:** 15-30 mcg/ kg over 2-5 mins q 4-6 hrs until hemostasis CI: 15-20 mcg/kg/hr in NS over 12 hrs	**Caution/Warning:** **Comments:** Nursing to reconstitute bolus doses. Pharmacy will pool bolus doses if more than 3 vials. Follow Package Insert instructions for reconstitution. Bring factor system to Room Temperature, remove caps from vials, wipe with alcohol swab, to avoid foaming inject specified volume of histidine diluent slowly against wall of vial- not directly into powder, gently swirl vial to dissolve contents until clear colorless solution. Swirl vial. Do not shake vial. Do not use inline filter. Flush lines with NS. Frequency & duration of use varies. **Drug Interactions:** **Monitor:** Document baseline TPR and BP on flowsheet, assess pt's prior experience with Factor VII administration and ask about any possible past reactions, instruct the pt about the infusion and the signs and symptoms to report to the RN/LPN, administer the Factor VII as ordered, document TPR and BP 15 minutes after the start of the infusion and then hourly for the duration of the infusion, if temp increases more than 1.8°F or 1°C from baseline, stop the infusion and notify the LIP, observe for and report signs of anaphylaxis (urticaria, chest tightness, rash, pruritus, edema, shock, dyspnea). If present, stop the infusion, notify the MD/LIP if any signs are present and continue to document. VS q 15 minutes as ordered and assess pt as condition warrants. The risk of anaphylaxis is low. Dose, frequency and duration varies with pt weight, extent & type of bleed, levels. The risk of anaphylaxis is low. **Side Effects:** nausea, inj. site pain, fever, chills, headache. Uncommon: allergic/anaphylactic reactions (urticaria, chills, chest tightness, rash, pruritus, edema), thrombosis, bleeding, fever, arthralgia. Stop if acute hypersensitivity reaction **Stability:** Administer within 3 hrs after reconstitution. **Related Guideline:** **UConn John Dempsey Hospital Factor Brochure**
	Inhibitors to Factor VIII or IX- bleeding Episodes		**IV Push:** 90 mcg/ kg over 2-5 mins q 2hrs until hemostasis- modify for severity of bleed +/or response	
	Inhibitors to Factor VIII or IX- surgical bleeding or Treatment of severe bleeding due to Disseminated Intravascular coagulation		**IV Push:** Bolus dosing:90 mcg/ kg over 2-5 mins immediately prior to surgery. Minor surgery: continue q 2hrs X 48 hrs then q 2-6 hrs until hemostasis. Major surgery q 2hrs x 5 days then q 4 hrs until healed . **C.I.:** Mix desired total mg needed per 12 hr period with the factor VIIA diluent only to give a conc. of 1mg/ml in a 60 mL syringe. Administer desired mg/hr= mL/hr via the PCA Guardrail using a PCA pump. Prime line and infuse maintenance IVF's as close to venous access site as feasible. Solution is stable for 24 hrs at room temperature.	

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Factor VIII (8) **Von Willebrand factor (V. W. F.)** Humate-P ® [antihemophilic agent]	Bleeding in V.W.Deficiency	ALL UNITS (Except Psy)	**IV Push:** 40-80 units V.W.F: RCO = 17-33 Int. units of factor VIII) Dose: 15-75 Int. unit FactorVIII/ kg q 8-12 hrs, repeat until hemostasis or appropriate elevation in V.W.F: RCO, VWF contents vary with batch. Use Humate only for V.W. deficiency.	**Caution/Warning:** **Comments:** Nursing to reconstitute bolus doses. Pharmacy will pool bolus doses if more than 3 vials. Follow Package Insert instructions for reconstitution. **Reconstitution:** bring factor system to Room Temperature, remove caps from vials, wipe with alcohol swab, pierce the Sterile Water vial with blue tip of transfer device or with, pull off remaining clear package, turn Sterile Water vial with device and pierce factor powder vial, when Sterile Water is empty unscrew counterclockwise the Sterile Water vial with blue portion, draw air into empty syringe and then screw into the white portion of system by turning it clockwise, push air into vial and then turn upside down to withdraw solution into syringe. The contents of more than 1 vial of factor may be combined into the same syringe. Swirl vial, do not shake vial. Do not use inline filter. Administer within 3 hrs after reconstitution. Flush lines with NS **Recombinate:** follow above procedure, pierce the Sterile Water vial with clear tip of transfer device, turn Sterile Water vial with device and pierce factor powder vial, when powder is dissolved take off blue cap and draw up factor with a syringe. The contents of more than 1 vial of factor may be combined into the same syringe **Drug Interactions:** **Monitor:** Document baseline TPR and BP on flowsheet, assess pt's prior experience with Factor VIII administration and ask about any possible past reactions, instruct the pt about the infusion and the signs and symptoms to report to the RN/LPN,. administer the Factor VIII as ordered, document TPR and BP 15 minutes after the start of the infusion and then hourly for the duration of the infusion, if temp increases more than 1.8°F or 1°C from baseline, stop the infusion and notify the LIP, observe for and report signs of anaphylaxis (urticaria, chest tightness, rash, pruritus, edema, shock, dyspnea). If present, stop the infusion, notify the MD/LIP if any signs are present and continue to document. VS q 15 minutes as ordered and assess pt as condition warrants. The risk of anaphylaxis is low. Dose, frequency and duration varies with pt weight, extent & type of bleed, levels. **Side Effects**: nausea, inj. site pain, fever, chills, headache. Uncommon: allergic/anaphylactic reactions thrombosis, bleeding, arthralgia. **Stability:** **Related Guideline:** UConn John Dempsey Hospital Factor Brochure
	Surgical bleeding in V W deficiency		**IV Push:** 60 int. unit/kg – over 3-20 mins, max. @ 4mL/min 40-80 units V.W.F: RCO = 17-33 Int. units of factor VIII) about 2-2.4 int.	
	Bleeding in Hemophilia A		**IV Slow Push:** Undiluted 15-50 Int. units/kg or max. @ 10 mL/min unless ordered as IV Push, then may repeat q 8-12 hrs. Higher dose for life threatening bleeding. **C.I.:** contact Pharmacy Dept. Diluted to 10 units/ml NS with rate based on weight and labs, infuse within 12 hrs of admixing. Do not use Recombinate- ® in V. W. disease. Keep refrigerated until use.	

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Factor IX (9) Benefix® [antihemophilic agent]	Bleeding in Hemophilia B, with inhibitors to factor VIII	ALL UNITS (Except Psy)	**IV Push:** moderate hemorrhage (desire levels to 25% to 50% of normal Factor IX level), 25-50 international units/kg q 12 to 24 hours for 2 to 7 days, @ 2-4 mL/min, then may repeat q 8-12 hrs	**Caution/Warning:** **Comments:** Nursing to reconstitute bolus doses. Pharmacy will pool bolus doses if more than 3 vials. Follow Package Insert instructions for reconstitution. Bring vial(s) system to Room Temperature., remove caps from vials, wipe vials with alcohol, remove plastic cover from short end of double-needle and insert into diluent vial, remove cap from the long end of needle and insert into the powder vial, to avoid foaming allow the diluent transfer to contact vial wall not the powder, vacuum will withdraw the diluent into the concentrate vial, swirl vial, do not shake vial, and then using a desired syringe remove dissolved Factor IX. The contents of more than 1 vial of coagulant complex may be combined into the same syringe. Do not use inline filter. Administer within 3 hrs after reconstitution. Flush lines with NS. **Drug Interactions:** **Monitor:** Document baseline TPR and BP on flowsheet, assess pt's prior experience with Factor IX administration and ask about any possible past reactions, instruct the pt about the infusion and the signs and symptoms to report to the RN/LPN, . administer the Factor IX as ordered, document TPR and BP 15 minutes after the start of the infusion and then hourly for the duration of the infusion, if temp increases more than 1.8°F or 1°C from baseline, stop the infusion and notify the LIP, observe for and report signs of anaphylaxis (urticaria, chest tightness, rash, pruritus, edema, shock, dyspnea). If present, stop the infusion, notify the MD/LIP if any signs are present and continue to document. VS q 15 minutes as ordered and assess pt as condition warrants. The risk of anaphylaxis is low. **Side Effects:** nausea, inj. site pain, fever, chills, headache. Uncommon: allergic/anaphylactic reactions (urticaria, chills, chest tightness, rash, pruritus, edema), thrombosis, bleeding, fever, arthralgia. Stop if acute hypersensitivity reaction. **Stability:** **Related Guideline:** UConn John Dempsey Hospital Factor Brochure
	Surgery or major trauma	ALL UNITS (Except Psy)	**IV Push:** desire levels to 50-100% of normal Factor IX level- 50-100 unit/kg pre-op and q 12-24 hrs Keep refrigerated until use.	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
ANTI-INHIBITOR COAGULANT COMPLEX Feiba® Autoplex [antihemophilic agent]	Hemophilia A or B Hemorrhage with inhibitors of Factor VIII, XI, or XII -	ALL UNITS (Except Psy)	**IV Push:** 25 to 100 Units/kilogram, max rate of 2 units/kg/min. Max. dose = 200 unit/kg. Joint hemorrhage: 50 units/kg (up to 100 units/kg) q 12 hrs Mucous membrane bleed: 50 units/kg q 6 hrs Soft tissue hem.: 100 units/kg q 12 hrs (max) Severe hem.: 100 units/kg q 12 hrs up to q 6 hrs Keep vials refrigerated until use	**Caution/Warning:** **Comments:** Nursing to reconstitute bolus doses. Pharmacy will pool bolus doses if more than 3 vials. Follow Package Insert instructions for reconstitution. Bring vial(s) system to Room Temperature, remove caps from vials, wipe vials with alcohol, open package of device by peeling away the lid, pierce the Sterile Water diluent vial w tip of transfer device, pull off remaining clear package, turn Sterile Waater vial with device and pierce factor powder vial, vacuum will draw the diluent into the concentrate vial, swirl vial, do not shake vial, turn the device handle down towards the complex vial and remove the cap of syringe connections, draw air into the syringe and connect to device, inject air into the concentrate, turn system upside down and draw concentrate into the syringe, attach desired syringe to side port and remove contents. The contents of more than 1 vial of coagulant complex may be combined into the same syringe. Do not use inline filter. Administer within 3 hrs after reconstitution. Flush lines with NS. **Drug Interactions:** **Monitor:** Document baseline TPR and BP on flowsheet, assess pt's prior experience with ANTI-INHIBITOR COAGULANT COMPLEX administration and ask about any possible past reactions, instruct the pt about the infusion and the signs and symptoms to report to the RN/LPN,. administer the ANTI-INHIBITOR COAGULANT COMPLEX as ordered, document TPR and BP 15 minutes after the start of the infusion and then hourly for the duration of the infusion, if temp increases more than 1.8°F or 1°C from baseline, stop the infusion and notify the LIP, observe for and report signs of anaphylaxis (urticaria, chest tightness, rash, pruritus, edema, shock, dyspnea). If present, stop the infusion, notify the MD/LIP if any signs are present and continue to document. VS q 15 minutes as ordered and assess pt as condition warrants. The risk of anaphylaxis is low. **Side Effects**: nausea, inj. site pain, fever, chills, headache. Uncommon: allergic/anaphylactic reactions (urticaria, chills, chest tightness, rash, pruritus, edema), thrombosis, bleeding, fever, arthralgia. Stop if acute hypersensitivity reaction **Stability:** **Related Guideline:** **UConn John Dempsey Hospital Factor Brochure**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Famotidine Pepcid® [histamine H2 antagonist]	Stress Ulcer Prophylaxis, Duodenal ulcer, GERD	ALL UNITS	**IV Push:** 20 mg dilute with 10 mL NS over 1-2 mins, flush with 5 mL NS, daily – q 12 hrs 40 mg dilute with 20 mL NS over 1-2 mins, flush with 5 mL NS, daily – q 12 hrs **I.I.:** (non-preferred method of administration) 40 mg in 50 mL NS or D5W over 10-15 min-	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. **Comments:** Increase interval for renal impairment. **Drug Interactions:** **Monitor:** Platelet's, mental status changes. **Side Effects:** **Stability:**
Fat Emulsion 20 % 	Calories for TPN	ALL UNITS (Except Psy)	**I.I.:** 250 mL of 20% over 12 hrs (20 mL/hr)	**Caution/Warning:** **Comments:** Infused separately from AA/Dextrose/Electrolytes 20% provides 2 kcal/ml. Infuse with a 1.2 micron filter. Filters < 1.2 micron pore size must not be used. Not to infuse > 12 hrs to lessen risk of bacterial/fungal growth. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Treating Local anesthetic toxicity- Notify Anesthesia/ Medical team/Pharmacy stat	ALL UNITS (Except Psy)	**Bolus**: 1.5 **mL**/kg administered over 1 minute, followed immediately by **C.I.:** 0.25 **mL**/kg/min . Continue chest compressions (lipid must circulate). Repeat the bolus 1-2 times as needed for persistent asystole, pulseless electrical activity, or re-emergence of hemodynamic instability. Increase the infusion rate to 0.5 **mL**/kg/minute if hemodynamic instability persists or recurs. Continue the infusion for at least 10 minutes after hemodynamic stability is restored; discontinue within 1 hour, if possible	**Caution/Warning:** **Comments:** Notify Anesthesia/Medical team/Pharmacy STAT Airway management: Ventilate with 100 % Oxygen Seizure suppression: LORazepam IV Basic & Advanced Life support may require prolonged effort. Continue CI for Local anesthetic toxicity for at least 10 mins after attaining circulatory stability. Max: 10 mL/kg (70kg=350 mL) over first 30 mins. Avoid vasopressin, Beta blockers, calcium channel blockers, or local anesthetics. Complete a SI Report. Infuse with a 1.2 micron filter. Filters < 1.2 micron pore size must not be used. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
FentaNYL [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED**	Moderate Conscious sedation, General anesthetic	CCL/EP ECT-A ED ENDO UT1-ICU IRAD OP-CARD OR/PACU UHSC	**IV Push**: 12.5-100 mcg undiluted over < 1min	**Analgesia for opioid tolerant patient's refractory to other narcotics or severe allergy to morphine/HYDROmorphone derivatives.** **Comments on all routes of Administration of FentaNYL:** **Caution/Warning:** FentaNYL is 100 times as potent as Morphine. **Comments:** Requires RN/LPN verification double check on MAR **for Infusions, Epidural & PCA only.** FentaNYL 100 mcg = Morphine 10 mg = HYDROmorphone 1.5 mg.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
HIGH ALERT / DOUBLE CHECK  	Pain Control, Sedation (Opioid tolerant patients refractory to other narcotics or severe allergy to morphine/ HYDROmorphone derivatives)	ED UT1-ICU OR/PACU UHSC SICKLE	**IV Push:** 12.5 - 200 mcg undiluted over < 1min	Decrease dose in renal failure & elderly. Naloxone must be readily available as a reversal agent for opioid induced respiratory depression. Consider any specific patient risk factors that may contribute to unintended respiratory depression and/or excessive sedation levels. Risk factors may include but are not limited to: age > 55 years; preexisting pulmonary or hepato-renal disease; known or suspected sleep-disordered breathing problems; anatomic oral or airway abnormalities; and comorbidities of systemic disease, renal/hepatic impairment. **Drug Interactions:** **Monitor:** Pain relief, pulse oximetry, level of consciousness, RR & depth, HR, BP, mental status, nausea/vomiting. **Related Policy:** • Medication: High Alert, Double Check of **Side Effects**: Somnolence, coma, resp. depression, CNS depression, arrhythmias, hypotension, bradycardia, pruritus, nausea & vomiting **Stability:**
	Pain Control, Epidural	ALL UNITS (Except Psy)	Requires Continuous Capnography (Exception L&D) **Epidural**: per standard order with Bupivacaine 0.1% Pharmacy prepares: 4 mcg/mL Normal Saline (Surgical Patients) 2 mcg/mL Normal Saline (L&D Patients)	See above comments on FentaNYL. **Related Policies:** • Pain: Epidural Infusion and Patient Controlled Epidural Analgesia (PCEA): Care of the Patient Receiving • Epidural Anesthesia: Care of the Obstetric Patient Information on FentaNYL continues on the next page.
FentaNYL [opioid analgesic] LOOK ALIKE / SOUND ALIKE TITRATE MED HIGH ALERT / DOUBLE CHECK 	Pain control, reduce work of breathing, Sedation	UT1-ICU ALL UNITS (Except Psy) for end of life comfort care	**C.I.:** for Analgesia for opioid tolerant patients refractory to other narcotics or severe allergy to morphine derivatives. Requires Continuous Capnography. **C.I.:** 2500 mcg/250 mL NS = 10 mcg/ml. Start @ 25 mcg/hr, and may titrate if ordered by 25 mcg/hr q 30 mins or as ordered to desired sedation (to ordered pain scale or RASS of -1 to -2 or), analgesia and reduced work of breathing. Max.= 200 mcg/hr, unless MD/LIP orders higher max.	See prior page for comments on FentaNYL. **Related Policies:** • Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving **Exceptions to continuous capnography monitoring:** 1) Patient on mechanical ventilation 2) End-of-life comfort care (e.g. hospice, comfort measures only)

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Pain Control, Sedation, **PCA Bolus Mode Only**	ALL UNITS (Except Psy)	**PCA Bolus Mode only** **PCA**: Opioid Naïve Patients Low Concentration: 500mcg/50mL NS = 10mcg/mL **PCA**: Opioid Tolerant Patients High Concentration 2500mcg/50mL NS = 50mcg/mL	**See prior page for comments on FentaNYL.** PCA bolus doses for patients who do not need the continuous basal infusion and do not have continuous capnography. Use the 10 mcg/mL concentration unless consumption exceeds reasonable rate of PCA change. If patients dosing requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • **Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving** • **Sickle Cell Crisis: Use of Fentanyl in a Continuous + PCA Infusion for Opioid Tolerant Patients with Sickle Cell Anemia** **Information on FentaNYL continues on the next page.**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
FentaNYL [opioid analgesic] LOOK ALIKE / SOUND ALIKE TITRATE MED HIGH ALERT / DOUBLE CHECK  	Pain Control, Sedation, **PCA Dual Mode (Basal Infusion & Bolus)**	ALL UNITS (Except Psy)	**PCA Dual Mode (Basal infusion & bolus)** Requires Continuous Capnography **PCA**: Opioid Naïve Patients Low Concentration: 500mcg/50mL NS = 10mcg/mL **PCA**: Opioid Tolerant Patients High Concentration: 2500mcg/50mL NS = 50mcg/mL	See page 54 for comments on FentaNYL. The FentaNYL continuous + PCA cannot be titrated. Any changes in the dose will require a new order by the MD/LIP. Dose determined by MD's/LIP's/ RPh. Use the 10 mcg/mL concentration unless consumption exceeds reasonable rate of PCA change. If patients dosing requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving • Sickle Cell Crisis: Use of FentaNYL in a Continuous + PCA Infusion for Opioid Tolerant Patients with Sickle Cell Anemia **Exceptions to continuous capnography monitoring:** 1) Patient on mechanical ventilation 2) End-of-life comfort care (e.g. hospice, comfort measures only)
Ferumoxytol Feraheme® [iron salt]	Iron deficiency anemia	OP-INFC	**I.I.:** 510 mg/100 mL NS over at least 15 minutes	**Caution/Warning:** Patient should be in a reclined or semi-reclined position during the infusion. **Comments:** **Drug Interactions:** **Monitor:** Infusion reactions during infusion and for at least 30 minutes after infusion **Side Effects:** **Stability:** 4 hrs at room temperature
Filgrastim Neupogen® [granulocyte colony stimulating factor]	Neutropenia	ALL UNITS (Except Psy)	**NOTE:** See tbo-Filgrastim (Granix ®) section as Filgrastim is only on formulary for the NICU and oncology patients who are receiving STEM cell transplants.	**Caution/Warning:** **Comments:** IV only if SC not feasible. More effective when given subcutaneously. Flush before and after with D5W not NS. Do not dilute with saline at any time as product may precipitate. **Drug Interactions:** **Monitor:** **Side effects:** RARE: ARDS and splenic rupture. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Fluconazole Diflucan® [antifungal]	Fungal Infection	ALL UNITS	**I.I.:** Pre-Mix 100 mg / 50 mL over 1hr 200 mg/ 100 mL Premix over 1hr 400 mg/ 100 mL Premix over 2hr	**Caution/Warning:** **Comments:** Dose based on diagnosis and renal function . **Drug Interactions:** **Monitor:** **Side effects**: May cause abdominal pain, diarrhea, nausea. Possible QT prolongation with high doses and high risk patients. Leukopenia, including agranulocytosis and neutropenia, has been reported. **Stability:** 100 mg dose: 30 hrs at room temperature, 7 days refrigerated. Do not refrigerate.
Flumazenil Romazicon® [benzodiazepine antagonist]	Reversal of benzodiazepine in conscious sedation	ALL UNITS (in the presence of critical care when given on Psy)	**IV Push:** Initial dose of 0.2 mg. Repeat 0.2 mg every minute to a maximum of 4 doses. Maximum total cumulative dose of 1 mg. Given undiluted over 15-30 seconds.	**Caution/Warning:** Flumazenil is a short-acting agent that reverses benzodiazepine-induced sedation. Re-sedation may occur due to its short duration of action; therefore additional doses may be necessary. The duration of action of flumazenil is usually less than 1 hour. The effects of flumazenil may wear off before a long-acting benzodiazepine is completely cleared from the body. In general, if a patient shows no signs of sedation within 2 hours after a 1-mg dose of flumazenil, serious resedation at a later time is unlikely. An adequate period of observation must be provided for any patient in whom either long-acting benzodiazepines (such as diazePAM) or large doses of short-acting benzodiazepines (such as > 10 mg of midazolam) have been used. **Comments:** Compatible with D5W, LR, and NS solutions. **Drug Interactions:** **Monitor:** for extravasation into peripheral tissues. **Side Effects**: Hypotension, bradycardia, agitation, anxiety. Return of sedation. Risk of Seizures if patient on chronic benzo's, Tri Cyclic Antidepressants, cocaine, bupropion . **Stability:**
	Benzodiazepine overdose	ALL UNITS (in the presence of critical care when given on Psy)	**IV Push:** Initial dose of 0.2 mg. If the desired level of consciousness is not obtained 30 seconds after the dose, 0.3 mg can be given. Repeat dose of 0.5 mg at 1 minute intervals. Maximum cumulative dose of 3 mg. Patients with a partial response at 3 mg may require (rare) additional titration up to a total dose of 5 mg. If a patient has not responded 5 minutes after cumulative dose of 5 mg, the major cause of sedation is not likely due to benzodiazepines. Given undiluted over 15-30 seconds.	
		UT1-ICU	**C.I.:** 2.5mg/ 250 mL D5W or NS	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Folic Acid [vitamin]	Vitamin deficiency	ALL UNITS	**IV Push (consider IM or Oral if able to switch order)**: up to and including 1 mg diluted in 3-5 mL NS over 1 min **I.I.:** ≤ 1 mg in large volume IVF's	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration **Comments:** Protect from light. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Fomepizole Antizol® [alcohol dehydrogenase inhibitor] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Ethylene Glycol or methanol ingestion	ED UT1-ICU	LD: 15 mg/kg in 100 mL NS or D5W over 30 mins, then in 12 hours start 10 mg/kg q 12 hrs x 4 doses, then 15 mg/kg q 12 hr thereafter until ethylene glycol levels < 20 mg/dl & pt. is asymptomatic with normal PH	**Caution/Warning:** **Comments:** Fomepizole is dialyzable and is given q 4 hr during HD. Monitor plasma/urinary osmolarity, ethylene glycol levels, lytes, ABG's, fomepizole levels desired 100-300 umol/L = 8-25 mg/L. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Fosaprepitant Emend® [P/NK1 receptor Antagonist]	Prevention of Chemotherapy induced nausea and vomiting	ALL UNITS (Except Psy)	**I.I.:** 150 mg/250 mL NS over 30 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 48 hrs at room temperature or refrigerated
Foscarnet Foscavir® If Extravasation, see Pages 10&11 CAUTION: HAZARDOUS DRUG NON-FORMULARY Avoid in midline cath see Page 14 (may be ok w/ short course)		ALL UNITS (Except Psy)	**I.I.:** 50-120 mg/kg diluted to 12mg/mL peripheral or 24 mg/mL centrally in D5W/NS over 60 mins **NOTE (9/27/17):** Medication taken off hospital formulary	**Caution/Warning:** **Comments:** Max. of 12 mg/mL via Peripheral line. Max. of 24 mg/mL via Central line. Hydration of 1 Liter with dose is suggested. Max. rate: 1mg/kg/min. Handle as cytotoxic. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 24 hrs at room temperature

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Fosphenytoin Cerebyx® [anti-seizure] **LOOK ALIKE / SOUND ALIKE**  Avoid in midline cath see Page 14 (may be ok w/ short course)	Status epilepticus	ALL UNITS (Except Psy)	**I.I.: LD:** 15-20 mg Phenytoin equivalents (PE) /kg in NS at rate of 100-150 PE/ min in conc. of 1-25 PE/mL. DNE rate of 100-150 mg PE/min. For dilution: ≤ 1250mg in 50 mL, > 1250mg in 100 mL, > 2500mg in 250 mL **I.I.: Maintenance:** 4-6 mg PE/kg/day divided in 1-3 doses per day at rate of 100-150 PE/ min. For dilution: ≤ 1250mg in 50 mL, > 1250mg in 100 mL, > 2500mg in 250 mL	**Caution/Warning:** **Comments:** Fosphenytoin 75 mg= Phenytoin equiv 50 mg Use dedicated line. Monitor BP, HR. Can be given IV or IM. Less venous irritation than Phenytoin. May be preferred in patients with no venous access (give IM) to those with PVD. No Filter needed. Conversion from fosphenytoin to phenytoin is complete 2 hours after intravenous administration. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Furosemide Lasix® [loop diuretic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Edema, CHF	ALL UNITS (Except Psy)	**IV Push:** ≤ 100 mg undiluted over 1-2 mins given ≤ 40 mg/min, flush with 5 mL NS. **I.I.:** >100 mg in 50 mL NS or D5W only over 15- 30 mins **C.I.:** 1 - 40 mg/ hr in NS or D5W with concentration of 1mg/mL or 2 mg/mL	**Caution/Warnings:** fluid/electrolyte loss (if given in excessive amounts, furosemide, similar to other loop diuretics, can lead to profound diuresis, resulting in fluid and electrolyte depletion. Close medical supervision and dose evaluation are required), nephrotoxicity, ototoxicity, hyperuricemia **Comments:** Furosemide 40 mg = Bumetanide 1mg = Torsemide 20 mg *Contraindications:* hypersensitivity to furosemide, anuria **Drug Interactions:** **Monitor:** BP & HR during continuous infusions. **Side effects:** Hypotension, headache, dizziness, hypovolemia, muscle cramps, hyperuricemia, hyperglycemia, hypokalemia, hypocalcemia, metabolic alkalosis. Ototoxicity can occur with high IV push doses. **Stability:** CI: 24 hrs at room temperature Protect from light. Do not refrigerate CI's.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Ganciclovir Cytoven® [antiviral]  If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	CMV Infection	ALL UNITS (Except Psy)	**I.I.:** 2-6 mg/kg in 100mL NS or D5W over 60 mins Max. conc. = 10 mg/mL Dosing is based on Ideal Body Weight (IBW). Pharmacy **must** provide infusion bag spiked and with tubing already attached in a ready to use fashion for proper medication handling safety.	**Caution/Warning:** **Comments: Pharmacy mixes.** Hazardous medication precautions. Clinical studies involving animals exposed to Ganciclovir, indicate carcinogenic effects and adverse effects on the reproductive system. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Refrigerate until ready to use. Stable for 7 days in refrigerator
Gentamicin [antibiotic] Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.(Traditional dosing)**: 3-5 mg/kg/day in NS or D5W given q8-12h. Gentamicin premix as 80 mg/ 50 mL, 100 mg/ 50mL, and 120 mg/ 100 mL **I.I. (Once daily dosing)**: per protocol-doses up to 800 mg in 50 mL NS or D5W over 30 mins q daily or doses up to 200 mg in 50 mL over 30 mins q 8-12 hr	**Caution/Warning:** **Comments: Pharmacy mixes.** Consult unit RPh for assistance in dosing multiple doses per day or once daily dosing. Modify dose or interval for renal impairment. Trough levels recommended for monitoring.Renal and/or ototoxic. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 24 hrs at room temperature or 48 hrs in refrigerator
Glucagon [antihypoglycemic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Antihypoglycemic Radiologic Exam	ALL UNITS	**IV Push:** ≤ 1 mg undiluted over 1 min, flush with 5 mL NS. **IV Push:** Radiologic exam:1- 2 mg undiluted over 1 min	**Caution/Warning:** **Comments:** Dissolve with Sterile water not with manufacturer's phenol containing diluent. Solution should be clear and water like. Use immediately.May cause nausea and vomiting. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Reversal of Beta/Calcium Blocker toxicity 	ED UT1-ICU UT2-IU	**IV Push:** Initial bolus dose of 1-10 mg , may repeat in 10 mins. **C.I.:** 1 - 5 mg/hr or 0.07 mg/kg/hour as 5 mg / 100 mL NS or D5W	For BB or CCB toxicity must be on cardiac monitor/telemetry. **Contraindications:** Pheochromocytoma , Insulinoma due to risk of severe hypertension.
Glucarpidase Voraxaze® [Antidote]	Treatment of toxic [MTX], defined as >1um/L, in patients with delayed clearance	ICU, UT6	**I.I.:** 50u/kg IV over 5 minutes	**Caution/Warning:** allergic reactions possibly **Comments**: IV line should be flushed before and after administration of Voraxaze **Drug Interactions:** do not administer leucovorin 2 hours before or after administration of Voraxaze **Monitor:** methotrexate concentrations, use chromatographic method for first 48 hours **Side Effects:** nausea (2%), vomiting (2%), flushing (2%), hypotension (1%) **Stability:** once reconstituted, use immediately or store in refrigeration for up to 4 hours **ORDERING AND PROCUREMENT STEPS Same Day and Emergency Orders Process (after hours)**: • Contact On-Call Service after hours at **1-800-746-6273** available 24/7 After hours is defined as after 6:30 p.m. Monday through Thursday, after 6 p.m. on Friday, and 24 hours Saturday and Sunday and holidays. • Monday through Friday during regular ASD Healthcare operating hours, for same day and emergency hours you may call Customer Service at 1-800-746-6273. • Provide account number, account name, call back number, and contact person (ASD account #: **252764)** • On Call will contact the ASD Rep On Call • ASD Rep On Call will call account back to obtain order • ASD Rep will process order, contact ASD Distribution Center to coordinate delivery • ASD Rep will call account back with eta and tracking information o ETA usually within 14 hours of placing order
Glycopyrrolate **Robinul®** [anticholinergic] SPLP/SPC: Place Packaging & Waste in Zip-Lock and return to pharmacy	Premedication for anesthetic, procedure, Reversal of neuro-muscular blockade	UT1-ICU UT2-IU OR/PACU UHSC ALL UNITS (Except Psy) for end of life comfort care	**IV Push:** 0.1-0.4mg undiluted over <1 min	**Caution/Warnings:** bronchospasm, cardiac arrhythmias, drowsiness/blurred vision, cardiovascular disease, hypertension, hyperthyroidism **Comments:** May administer undiluted. May also be administered via the tubing of a running I.V. infusion of a compatible solution. May be administered in the same syringe with neostigmine or pyridostigmine *Contraindications:* medical conditions that preclude use of anticholinergic medication; severe ulcerative colitis, toxic megacolon complicating ulcerative colitis, paralytic ileus, obstructive disease of GI tract (eg, pyloric stenosis), intestinal atony in the elderly or debilitated patient; unstable cardiovascular status in acute hemorrhage; narrow-angle glaucoma; acute hemorrhage; tachycardia; obstructive uropathy; myasthenia gravis **Drug Interactions:** **Monitor:** Heart rate, anticholinergic effects, bowel sounds; bowel movements, effects on drooling

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
		ALL UNITS (Except Psy)	**I.I:** in 50 mL NS over 10-20 mins	**Side effects**: flushing, vomiting, urinary tract infections, constipation, bradyarrhythmia, tachycardia, ventricular fibrillation, malignant hyperthermia, respiratory arrest. **Stability:** Stable in D51/2NS, D5W, D10W, NS, R; incompatible in LR.
Golimumab Aria Simponi Aria® [immune modulator] 	Rheumatoid Arthritis (in combination with methotrexate)	OP-INFC	**I.I.:** 2mg/kg diluted in 100mL of NS over 30 minutes. Administer with 0.22 micron filter only.	**Caution/Warning:** Opportunistic infections due to bacterial, mycobacterial, invasive fungal, viral, or parasitic organisms including aspergillosis, blastomycosis, candidiasis, coccidioidomycosis, histoplasmosis, legionellosis, listeriosis, pneumocystosis, and tuberculosis have been reported with TNF-blockers. **Comments:** Administer with 0.22 micron filter only. **Drug Interactions:** **Monitor:** CBC with differential, latent TB screening (prior to initiating and periodically during therapy), HBV screening (prior to initiating), during and for several months following therapy [HBV carriers], monitor improvement of symptoms and physical function assessments, signs/symptoms of infection (prior to, during, and following therapy), signs/symptoms/worsening of heart failure signs and symptoms of hypersensitivity reaction, symptoms of lupus-like syndrome, signs/symptoms of malignancy (eg, splenomegaly, hepatomegaly, abdominal pain, persistent fever, night sweats, weight loss) including periodic skin examination **Side Effects:** upper respiratory tract infection, viral infection, bronchitis, hypertension, rash **Stability:** Store intact vials and syringes refrigerated; do not freeze. Do not shake. Protect from light. I.V.: Solutions diluted for infusion may be stored at room temperature for 4 hours.
Granisetron Kytril® [5HT3 antagonist] NON-FORMULARY **Consider Use of Ondansetron**	Antiemetic Antagonist-Chemo only	ALL UNITS (Except Psy)	**IV Push:** 1mg undiluted over 30 sec, flush with 5 mL NS. OR **I.I. (non-preferred method of administration):** 1 mg in 50 mL NS or D5W over 10-20 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side effects** : RARE- headache, dizziness. Watch for fever, rash, pruritus, and restlessness. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Haloperidol Haldol® [antipsychotic] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use D5W (not compatabile in NS)**	Agitation/ Aggression/ End of life comfort care	ED UT1-ICU UT2-IU OR/PACU ALL UNITS (Except Psy) for end of life comfort care	Oral or IM preferred **IV Push:** 0.5-5mg undiluted over 1-2 mins **I.I.:** up to 10mg in 50 ml D5W over 30 mins	**Caution/Warning:** Contraindications include history of Extrapyramidal movements [EPS]. Use lowest dose especially for elderly and consider oral or IM dosing in elderly to control symptoms. Oral to IV conversion (approximate): oral dose x 0.625 = daily IV dose. Other routes: IM. Oral to IV conversion (approximate): oral dose x 0.625 = daily IV dose Other alternatives; oral/IM haloperidol, LORazepam. Correct K & Mg deficiencies if haloperidol is not an emergency. Do not give decanoate form IV. **Comments:** Applies to non-end of life comfort care patients: Recommend baseline Magnesium, potassium and calcium and replace any deficiencies before IV haloperidol is administered to lessen the risk of QTC prolongation and tachyarrthymias/torsade's de pointe. Recommend baseline EKG for QTc. (Avoid if QTc > 470 msec in women & > 450 msec in men or if patient is on interacting meds.) **Drug Interactions:** **Monitor:** Monitor for EPS, NMS. Low risk of EPS, Tardive dyskinesia and neuroleptic malignant syndrome with short term use. Daily EKG / continuous cardiac monitoring/telemetry is recommended (excludes end of life comfort care patients). **Side Effects:** **Stability:** Incompatible with Heparin. NS solutions should not be used due to reports of decreased stability and incompatibility.
	Agitation/ Aggression	ALL UNITS	Oral or IM preferred. **I.I.:** up to 5 mg in 50 ml D5W over 30 mins	
	Agitation/ Aggression/ ICU Psychosis	UT1-ICU	**C.I.:** 100 mg/100 mL D5W: Rates of 1-25 mg/hour An initial bolus dose of 10 milligrams followed by continuous infusion beginning 3-25 milligrams/hr for severely agitated patients.	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Heparin [anticoagulant] **HIGH ALERT / DOUBLE CHECK** **LOOK ALIKE / SOUND ALIKE** 	DVT/PE, Cardiac, Ischemic Stroke, Ultrafiltration/ DIC	ALL UNITS (Except Psy)	**IV Push:** per protocols **C.I.:** 25,000 units in 500 mL D5W (50 units/mL)or ½ NS infused per protocols See dosing Nomograms 1. High Intensity- DVT/PE 2. Low Intensity- Cardiac/Interventional/Stroke 3. Ultrafiltration **Impella Device:** 25,000 units in 500mL D5W (50 units/mL) as machine purge solution	**Caution/Warning:** Bleeding, Heparin Induced Thrombocytopenia (HIT),bleeding, heparin resistance, hyperkalemia, hypersensitivity reactions **Comments:** Requires RN/LPN verification double check on MAR. Pharmacy mixes Impella device solution and have it available for use within an hour. **Drug Interactions:** **Monitor:** hemoglobin, hematocrit, signs of bleeding, fecal occult blood test, aPTT (or antifactor Xa activity levels), platelet counts **Related Policies:** Refer to Protocols. May give bolus dose IV Push. Use with caution if pt has active or recent bleed, severe HTN, endocarditis. • **Medications: High Alert, Double Check of** • **Intravenous Low Intensity Heparin Nomogram** • **Intravenous High Intensity Heparin Nomogram** **Side Effects:** **Stability:** Stability at room temperature and refrigeration: • Prepared bag: 24-72 hours (specific to solution, concentration, and/or study conditions) • Premixed bag: After seal is broken, 4 days. • Out of overwrap stability: 30 days
Hetastarch 6% Hespan® [non-protein colloid] **LOOK ALIKE / SOUND ALIKE**	Volume expansion for Shock	ALL UNITS (Except Psy)	**C.I.:** dose and rate depend on fluid losses and BP. Usual dose: 500 -1000 mL infused 0.5- 4 hrs.	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side effects:** **Immune hypersensitivity reaction** *Contraindications:* **severe bleeding disorders,** renal failure with oliguria or anuria not related to hypovolemia**. May increase risk of bleeding in select patients.** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
HydrALAZINE Apresoline® [peripheral vasodilator] **LOOK ALIKE / SOUND ALIKE**	Anti-hypertensive, Essential HTN emergency	ECT-A ED ENDO UT1-ICU UT2-IU IRAD OR/PACU	**IV Push**: up to 20mg bolus undiluted or in 5 mL NS over 1-2 mins .	**Caution/Warning:** **Comments:** Pt must be on a cardiac monitor/telemetry for IV Push excluding L&D/OB-GYN. Decrease dose in geriatric population & decrease frequency in renal impairment. Will form precipitate with heparin so flush line with NS. Flush line with NS since will form precipitate with heparin. The fall in blood pressure begins within 10 to 30 minutes and lasts from two to four hours. **Drug Interactions:** **Monitor:** BP and HR, Record baseline blood pressure parameters prior to administration. Cardiac monitoring is not required for intermittent infusion or IV Push for L&D/OB-GYN. Consider cardiac monitoring in cardiac patients or those with hypotension or tachycardia. BP & HR Q5 min x 20 mins during IV push loading dose. For continuous Infusion monitor BP and HR Q30 min during hydrALAZINE maintenance. **Side effects:** Hypotension, tachycardia, flushing, edema, malaise, fever **Stability:**
		ALL UNITS (Except Psy)	**I.I:** up to 20 mg in 50 mL NS over 15-30 mins	
		L&D/OB-GYN	**IV push:** 5-10 undiluted over 2 minutes, followed at 20-40 minute intervals by doses of 5-10mg. Maximum total cumulative dose of 25 mg **C.I.:** 100 mg/500 mL= 0.2 mg/ml, start @ 50 mcg/min and adjust per MD order up to 400 mcg/min	
Hydrocortisone Succinate Solu-CORTEF® [adrenal glucocorticoid]	Anti-inflammatory	ALL UNITS (Except Psy)	**IV Push:** Max dose: 500mg ≤ 100mg undiluted over 1-2 min > 100 mg dilute in 10 mL NS over 1-2 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** Fluid & electrolytes changes, hyperglycemia, hypertension, leukocytosis, mental status changes, pancreatitis, muscle weakness, CHF.May mask signs of infection. Restlessness and psychosis in high doses. **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
		ED ENDO UT1-ICU UT2-IU OR/PACU	**IVPush:** Doses up to 10 gms undiluted < 1 min	
HYDROmorphone Dilaudid® [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED** (CI/PCA) **HIGH ALERT / DOUBLE CHECK** 	Pain Control	ALL UNITS (Except Psy)	For Opioid Naïve & Average Patients **IV Push**: Doses ≤ 2mg, dilute in 10 mL NS, over 2-3 mins.	**Comments on all routes of Administration of HYDROmorphone** Requires RN/LPN verification double check on MAR **for Infusions, Epidural & PCA only.** **Caution/Warning**: HYDROmorphone is 5-6 times as potent as Morphine. HYDROmorphone IV 1.5 mg = Morphine IV 10 mg = FentaNYL IV 100 mcg. Naloxone must be readily available as a reversal agent for opioid induced respiratory depression. Consider any specific patient risk factors that may contribute to unintended respiratory depression and/or excessive sedation levels. **Comments:** Risk factors may include but are not limited to: age > 55 years; pre-existing pulmonary or hepato-renal disease; known or suspected sleep-disordered breathing problems; anatomic oral or airway abnormalities; and comorbidities of systemic disease, renal/hepatic impairment. **Drug Interactions:** **Monitor:** Pain relief, pulse oximetry, level of consciousness, RR & depth, HR, BP, mental status, nausea/vomiting. Check RR & sedation level in 5-15 mins. **Related Policies:** • Medication: High Alert, Double Check of **Side effects**: Somnolence, coma, respiratory depression, CNS depression, arrhythmias, hypotension, bradycardia, pruritus, nausea & vomiting **Stability:**
	Pain Control (Opioid tolerant patients)	ALL UNITS (Except Psy)	For Opioid Tolerant Patients **IV Push**: up to ≤ 8 mg in 10 mL NS, over 2-3 mins.	
	Pain Control	ED ENDO UT1-ICU OR/PACU UHSC	**IV Push:** Doses ≤ 4 mg, dilute in 10 mL NS, over 2-3 mins	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
HYDROmorphone Dilaudid® [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED** (CI/PCA) **HIGH ALERT / DOUBLE CHECK**  **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS for infusions**	Pain control, epidural	ALL UNITS (Except Psy)	**Epidural** Requires Continuous Capnography (Exception L&D) Standard: HYDROmorphone 10mcg/mL with Bupivicaine 0.1% in 250mL NS	**See above comments on HYDROmorphone.** **Related Policies:** • **Pain: Epidural Infusion and Patient Controlled Epidural Analgesia (PCEA): Care of the Patient Receiving** **Information on HYDROmorphone continues on the next page.**
	Pain control	ALL UNITS (Except Psy)	**CI:** Opioid Naïve Patients Low Concentration: 20mg/100mL NS or D5W = 0.2mg/mL **CI**: Opioid Tolerant Patients High Concentration: 100mg/100mL NS or D5W = 1mg/mL	**See prior page for comments on HYDROmorphone.** CI: Use the low concentration (0.2mg/mL) unless consumption exceeds reasonable rate of bag change. Alternative is 50mg/250mL D5W (0.2mg/mL). If patients dosing or if fluid restriction requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. Rate of dose escalation must be specified for all CIs. CI is a titrate med if ordered as such. **Related Policies:** • **Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving** • **Sickle Cell Pain: Pain Management Using High Dose Continuous & PCA Narcotic Infusions**
	Pain Control, Sedation, **PCA Bolus Mode Only**	ALL UNITS (Except Psy)	**PCA:** Opioid Naïve Patients Low Concentration: 10mg/50mL D5W = 0.2mg/mL **PCA**: Opioid Tolerant Patients High Concentration 50mg/50mL D5W = 1mg/mL	**See prior page for comments on HYDROmorphone.** PCA bolus doses for patients who do not need the continuous basal infusion and do not have continuous capnography. Use the 0.2mg/mL concentration unless consumption exceeds reasonable rate of PCA change. If patients dosing requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • **Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving** **Information on HYDROmorphone continues on the next page.**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
HYDROmorphone Dilaudid® [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **HIGH ALERT / DOUBLE CHECK** 	Pain Control, **PCA Dual Mode (Basal Infusion & Bolus)**	ALL UNITS (Except Psy) with Continuous Capno-graphy	**PCA Dual Mode (Basal infusion & bolus)** Requires Continuous Capnography **PCA**: Opioid naïve paints Low Concentration: 10mg/50mL D5W = 0.2mg/mL **PCA**: Opioid Tolerant Patients High Concentration 50mg/50mL D5W = 1mg/mL	**See prior page for comments on HYDROmorphone.** Use the 0.2mg/mL concentration unless consumption exceeds reasonable rate of PCA change. If patients dosing requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • **Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving** **Exceptions to continuous capnography monitoring:** 1) Patient on mechanical ventilation 2) End-of-life care (e.g. hospice, comfort measures only) **Information on HYDROmorphone continues on the next page.**
	Pain Control, **PCA SC Route**	ALL UNITS (Except Psy) with Continuous Capno-graphy	**PCA SC Route** Requires Continuous Capnography Indicated for control of sickle cell pain when oral or IV routes can't be utilized Goal: improved pain control **PCA SC**: Concentration: 10mg/mL 30mL of HYDROmorphone drawn up into a 60mL syringe	**See page 60 for comments on HYDROmorphone.** High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • **Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving** **Exceptions to continuous capnography monitoring:** 1) Patient on mechanical ventilation 2) End-of-life care (e.g. hospice, comfort measures only)

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Hydroxocobalamin Cyanokit® [Cyanide Antidote]	Cyanide poisoning	**ED** **ICU**	I.I. 5g as single infusion over 15 min; may repeat a second 5 g dose over 15 min to 2 hours for a total dose of 10 g depending on severity of poisoning and clinical response. Reconstitution with 0.9% NS preferred (LR & D5W also found to be compatible).	**Caution/Warning:** Use caution in patients with known anaphylactic reactions to either hydroxocobalamin or cyanocobalamin. Substantial increases in blood pressure may occur following Cyanokit administration. **Comments:** The recommended diluent is 0.9% Sodium Chloride injection. Diluent is not included with Cyanokit. Each Cyanokit vial consists of 5g of lyophilized hydroxocobalamin dark red crystalline powder for injection. Each vial contains hydroxocobalamin 25 mg/mL after reconstitution. **Drug Interactions:** N/A **Monitor:** Blood pressure and heart rate during and after infusion, serum lactates levels, venous-arterial PO_2 gradient, renal function, and pretreatment cyanide levels. **Side Effects:** transient chromaturia, erythema, rash, increased blood pressure, nausea, headache, and injection site reactions. **Stability:** Store at 25°C (77°F) with excursions permitted to 15-30°C (59 to 86°F). Once reconstituted, stable for up to 6 hours at temps not exceeding 40°C (104°F). Do not freeze. Any reconstituted product not used by 6 hours should be discarded. *Note: there are no monitoring parameters listed in drug databases specific to the off-label indication of vasoplegia*
	Vasoplegia/ Vasoplegic Syndrome *(off-label)*	**ICU OR/PACU**	IV: 5 to 10 g over 10 to 15 minutes. Reconstitution with 0.9% NS preferred (LR & D5W also found to be compatible).	
Ibutilide Corvert® [class lll– anti-arrhythmic]	Recent onset A. Fib.	Ordered by Cardiology Attending or card. Fellow or in EP by LIP and must be present during RN administration in CC Cluster, Cath Lab or EPS.	1. Magnesium-within normal limits, give magnesium 2gm/100NS over 10 mins before Ibutilide 2. Ibutilide PT's ≥ 60 kg: II: 1 mg/50 ml D5W / NS over 10 mins PT's < 60 kg: II: 0.01 mg/kg/50 ml D5W / NS over 10 mins Note: Lower doses should be considered if used via a central line 3. Repeat Magnesium dose to start 10 mins after ibutilide & give over 30- 60 mins 4. A 2nd dose may be admin. 10 mins after the 1st dose if A. Fib. persists.	**Caution/Warning:** **Comments:** Criteria for Use: Baseline Lab values: K+ > 4.0, Mg & Calcium -wnl, EKG w QTc < 450 msec or < 500 msec if on amiodarone, no Hx of Polymorphic VT's, consider not using if on meds that prolong the QTc interval- erythromycin, clarith., azole abx's, phenothiazines, TCA's, consider anticoagulation for several weeks if a. fib. duration is > 3-4 days. No dose adj. with renal or hepatic impairment **Drug Interactions:** **Monitor** required, have intracardiac pacer, a cardioverter/ defibrillator and meds for sustained. V. T's available during and after use of ibutilide. Monitor V/S q 5 mins during infusion and up to 10 minutes after completion of the infusion, then q 30 minutes X2. 12 lead EKG for baseline and 4 hrs after infusion. Stop the infusion as soon as the presenting arrhythmia is terminated of if new or worsened ventricular arrhythmia develops during the infusion, or for significantly prolonged QT interval. Use with extreme caution if C1A anti-arrhythmics have been used due to prolonged Qtc intervals and risk of pro-arrhythmic events. **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
IdaruCIZUmab Praxbind® [dabigatran reversal agent] This agent is restricted for use **ONLY** in patients with a history of recent use of dabigatran AND Life-threatening or significant bleeding OR Need for emergency surgery/urgent procedures	Reversal of anticoagulation effects caused by dabigatran when needed for emergency surgery/ urgent procedures or in life-threatening or uncontrolled bleeding	ALL UNITS (Except Psy)	5g given once. Dose is provided as two separate 50-ml vials each containing 2.5g. **IV Push (preferred):** Inject the contents of both vials (5g/100mls) via syringe. **Infusion:** Hang both vials and administer 5g as two consecutive infusions (two 2.5g/50ml vials) No rate of administration has been recommended by the manufacturer. Dose may be administered as quickly as tolerated.	**Caution/Warning:** Use with caution in patients with a history of Hereditary Fructose intolerance. No dosing adjustments recommended for special populations. **Comments:** Each package contains two 50ml vials each containing 2.5g. A patient should receive the content of both vials (5g/100ml total) for one dose. Dabigatran-treated patients have underlying diseases predisposing them to thromboembolic events. Reversing dabigatran therapy exposes patients to the thrombotic risk of their underlying disease. To reduce risk, resumption of anticoagulant therapy should be considered as soon as medically appropriate. **Drug Interactions:** None identified **Monitor:** Coagulation parameters (e.g. aPTT) have been observed in a limited number of patients. If reappearance of clinically relevant bleeding or need for additional emergency surgery/urgent procedure with elevated parameted, an additional full dose may be considered. **Side Effects:** headache, hypokalemia, delirium, constipation, pyrexia, pneumonia, immunogenicity **Stability:** Store in refrigerator at 2°C to 8°C. Do not freeze. Do not shake. Once solution is removed from the vial it is only good for 1 hour. **Administration:** A pre-existing IV line may be used for administration. The line must be flushed with 0.9% sodium chloride prior to infusion. No other infusion should be administered in parallel via the same intravenous access.
Imiglucerase Cerezyme® [enzyme] 	Gaucher Disease	OP-INFC	**I.I.:** 2.5 -60 units/kg once a week or q 4 weeks in 100mL NS and infuse over 1-2 hours. May used an in-line filter, low protein-binding 0.22 micron filter during infusion.	**Caution/Warning:** **Comments**: Each vial of imiglucerase (Cerezyme (TM)) contains 212 units of enzyme which provides a withdrawal dose of 200 units **Drug Interactions:** **Monitor:** V/S pre-infusion and 15 mins post-infusion. **Side Effects:** **Stability:** Solution diluted for infusion in NS is stable for up to 24 hours when stored under refrigeration.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Imipenem-cilastatin-Relebactam Recarbrio® [carbapenem/β-lactamase inhibitor] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected infection caused by a multidrug-resistant gram-negative pathogen (e.g., Extended-Spectrum Beta-Lactamase (ESBL)-Positive strain, multidrug-resistant (MDR) P. aeruginosa or other MDR gram-negative pathogen not susceptible to other usual treatment options [e.g., Ceftolozane/tazobactam, Ceftazidime/avibactam, etc.]) Patient receiving medication prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Infuse over 30 minutes. Withdraw two 10 mL aliquots of diluent from a 100 mL infusion bag containing an appropriate diluent (NS, D5W, D5NS, D51/2NS, or D51/4NS). Constitute vial with one 10 mL aliquot of diluent; shake well and transfer to the remaining 80 mL of the infusion bag. Add the second 10 mL aliquot of diluent to the vial; shake well and repeat transfer to the infusion solution. Agitate the resulting mixture until clear; constituted solution ranges from colorless to yellow. For patients with renal impairment, prepare a reduced dose by preparing 100 mL of solution containing 1.25 g (imipenem 500 mg, cilastatin 500 mg, relebactam 250 mg) as directed above, then withdraw and discard excess solution as follows: - 1 g (imipenem 400 mg, cilastatin 400 mg, relebactam 200 mg) dose: Withdraw and discard 20 mL (resulting volume to administer: 80 mL). - 750 mg (imipenem 300 mg, cilastatin 300 mg, relebactam 150 mg) dose: Withdraw and discard 40 mL (resulting volume to administer: 60 mL). - 500 mg (imipenem 200 mg, cilastatin 200 mg, relebactam 100 mg) dose: Withdraw and discard 60 mL (resulting volume to administer: 40 mL).	**Caution/Warning:** Hypersensitivity reactions; May result in fungal or bacterial superinfection (e.g. Clostridium difficile); CNS effects: Carbapenems have been associated with CNS adverse effects, including confusional states and seizures (myoclonic) **Comments**: **CrCl ≥90 mL/minute:** No dosage adjustment necessary. **CrCl 60 to 89 mL/minute:** 1 g every 6 hours. **CrCl 30 to 59 mL/minute:** 750 mg every 6 hours. **CrCl 15 to 29 mL/minute:** 500 mg every 6 hours. **CrCl <15 mL/minute:** Do not administer unless HD is instituted within 48 hours. **HD:** 500 mg every 6 hours; administer after HD and at intervals timed from the end of that HD session. **Peritoneal dialysis:** Use is not recommended **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines; may decrease the serum concentration of valproate products; ganciclovir-Valganciclovir may enhance the risk of seizures **Monitoring:** Periodic renal function tests; signs of hypersensitivity/anaphylaxis **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** anemia; increased LFTs; hypokalemia; hyponatremia; constipation; diarrhea **Stability:** Store intact vials at 20°C to 25°C (68°F to 77°F), excursions permitted between 15°C to 30°C (59°F to 86°F). Reconstituted and further diluted solution in infusion bags may be stored for ≤2 hours at room temperature (up to 30°C [86°F]) or ≤24 hours under refrigeration (2°C to 8°C [36°F to 46°F]); do not freeze.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Immune Globulin Privigen Gammagard S/D Gamunex-C NON-FORMULARY [immune serum]  (Gammagard S/D)	Primary Immune def's, Autoimmune ITP, IDP= Inflammatory demyelinating polyradiculoneuropathy	ALL UNITS (Except Psy) (Should not be given in ED unless urgent/ emergent situation and unit has approved to infuse there as preferred to be administered on hospital units)	Dosing: Consult references **I.I.:** consult individual product guides and for inpatient units **contact your floor pharmacist to provide titration information as it is dependent upon individual products.** Consult specific product information for filtration requirements. **Current formulary product is Privigen 10%** that does not require filtration. Gammagard S/D for pt's with IgA deficiency requires 15micron filter. Gamunex-C does not require filtration. Maximum rate is dependent on current formulary product, disease state and renal function. Pharmacy Infusion Rate Calculator for IVIG Privigen Infusion Rate Brochure Gammagard S/D Package Insert Gamunex-C Package Insert	**Caution/Warning:** **Comments**: Privigen® is supplied as individual bottles of Privigen® for total dose to be infused. Use separate IV line. No not shake. Stable for 7 days if refrigerated. Refrigerate. Hydration is recommended before use to lower risk of renal toxicity in pts with pre-existing renal insufficiency, diabetes mellitus, age greater than 65, volume depletion, sepsis, paraproteinemia, or pts receiving known nephrotoxic drugs. Contra: history of severe systemic allergic reaction to IVIG **Drug Interactions:** **Monitor** : V/S (T,P,R,BP) pre-infusion and before each rate change or a minimum of q 30 mins while the rate is being increased. Once the maximum rate is reached, vital signs should be taken hourly until six hours into the infusion If the infusion continues beyond six hours once the max rate is reached, vital signs should be taken q 4 hours or per MD/LIP order for the remainder of the infusion. **Side Effects:** Allergic hypersensitivity reactions: sudden resp. difficulty, tachycardia, hypotension, flushing, C-V & resp. collapse. Tx as anaphylactic reaction. Infusion-related symptoms- muscle pain, malaise, headache, chills, flushing, low back pain, joint pain, fever, tightness of the chest, and nausea. May be pretreated with a nonsteroidal anti-inflammatory agent and antihistamine, along with slowing or interrupting the infusion as needed. Rate related SE's: Do not shake. **Stability:**

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InFLIXimab Remicade® [monoclonal antibody] **LOOK ALIKE / SOUND ALIKE** 	Crohn's, Ulcerative Colitis, Rheum. Arthritis, Psoriasis	ALL UNITS (Except Psy)	**I.I.:** 3 mg-10 mg/kg diluted to 250 mLwith NS over 2-3 hrs using in-line low protein binding 1.2 micron filter. Start @ 10 mL/hr X 15 mins, then Inc. to 20 mL/hr X 15 mins, then Inc. to 40 mL/hr X 15 mins, then Inc. to 80 mL/hr X 15 mins, then Inc. to 150 mL/hr X 15 mins, then Inc. to 250 mL/hr for duration of infusion. Slow infusion for new complaints, stop and notify MD/LIP if dyspnea, hypotension, chest pain, muscle swelling, chills, fever, angioedema, or pruritus.	**Caution/Warning:** **Comments**: Assess for S/S of infection. Report if present and consider holding infusion. Review medical record for TB testing, if not tested notify MD/LIP before infusion is prepared. Do not shake. Use within 3 hrs of preparation. Nursing to use in-line 0.22 micron low protein binding filter dispended with product by pharmacy **Drug Interactions:** **Monitor:** V/S pre-infusion, q 30-60 mins during infusion. **Side Effects:** Mild and transient Acute reactions: urticaria, dyspnea, hypotension, fever, chills, chest pain, headache. If occur lower infusion rate , dc infusion and tx with antihistamines. Pts with a hx of these reactions can be pretreated with hydrocortisone 100 mg IV, diphenhydAMINE 25 mg IV, neb-albuterol 0.5 ml, EPINEPHrine 1:1000 0.3 ml SC, acetaminophen and for rigors meperidine 25 mg in 10 mL NS over 1 min. **Stability:** Must begin infusion within 3 hours of reconstitution
inFLIXimab-dyyb inFLIXimab-dyyb® [biosimilar monoclonal antibody] **LOOK ALIKE / SOUND ALIKE** 	Crohn's, Ulcerative Colitis, Rheum. Arthritis, Psoriasis	ALL UNITS (Except Psy)	**I.I.:** 3 mg-10 mg/kg diluted to 250 mLwith NS over 2-3 hrs using in-line low protein binding 1.2 micron filter. Start @ 10 mL/hr X 15 mins, then Inc. to 20 mL/hr X 15 mins, then Inc. to 40 mL/hr X 15 mins, then Inc. to 80 mL/hr X 15 mins, then Inc. to 150 mL/hr X 15 mins, then Inc. to 250 mL/hr for duration of infusion. Slow infusion for new complaints, stop and notify MD/LIP if dyspnea, hypotension, chest pain, muscle swelling, chills, fever, angioedema, or pruritus.	**Caution/Warning:** **Comments**: Assess for S/S of infection. Report if present and consider holding infusion. Review medical record for TB testing, if not tested notify MD/LIP before infusion is prepared. Do not shake. Use within 3 hrs of preparation. Nursing to use in-line 0.22 micron low protein binding filter dispended with product by pharmacy **Drug Interactions:** **Monitor:** V/S pre-infusion, q 30-60 mins during infusion. **Side Effects:** Mild and transient Acute reactions: urticaria, dyspnea, hypotension, fever, chills, chest pain, headache. If occur lower infusion rate , dc infusion and tx with antihistamines. Pts with a hx of these reactions can be pretreated with hydrocortisone 100 mg IV, diphenhydAMINE 25 mg IV, neb-albuterol 0.5 ml, EPINEPHrine 1:1000 0.3 ml SC, acetaminophen and for rigors meperidine 25 mg in 10 mL NS over 1 min. **Stability:** Must begin infusion within 3 hours of reconstitution

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Insulin-Regular [antidiabetic agent] **HIGH ALERT / DOUBLE CHECK** 	Hyperglycemia	ALL UNITS	**IV Push:** all doses undiluted, flush with NS over < 1 min	**Caution/Warning:** **Comments** : Only regular Insulin may be given IV. Requires RN/LPN verification double check on MAR. Review information on next page for insulin inititation and maintenance. **Drug Interactions:** **Monitor:** Glucose must be monitored (by either glucose meter or lab draw) at least q 6 hrs or as ordered by the practitioner. Must be checked by a second RN or LPN for correct medication, dose, and rate of infusion. The double check must be done when initiating the insulin infusion and with every dose change. Refer to the policy Medications: Double Check, for double check guidelines and documentation of the double check. **CLINICAL ASSESSMENT AND CARE:** 1. Prior to Starting Infusion: a. Obtain baseline laboratory data as ordered.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
BKC: Dispose in Black Bin	Hyperglycemia	UT1-ICU (guideline) UT2-IU (no guideline) L&D (guideline)	**C.I. :** 100 units / 100 mL NS (1unit/mL) Ordered as units/hr in EMR (Note that L & D and ICU have their own protocols for administration) Other Dosing Info : 0.05-0.1 units/kg/hr (**see next page for further information**)	b. Obtain insulin drip from pharmacy. The standard dilution for insulin is 1 unit per mL. c. Prime the IV tubing and flush through an extra 10-15ml. Insulin binds to new IV tubing when an infusion is started or tubing is changed. There is approximately 16% loss if flushing is not done. This can cause false elevations of insulin requirements until the insulin saturates the binding to the tubing. Monitor for hypoglycemia. Reference: Goldberg et al. "Waste not, want not": determing the optimal priming volume for intravenous insulin infusions. *Diabetes Technol Ther*. 2006 Oct;8(5):598-601 2. During the Infusion: a. Monitor the patient's blood glucose (from lab draws or glucose meter) every 1-6 hours, depending on patient response to infusion and LIP orders. b. Notify practitioner of all results outside of parameters. 3. Nursing Considerations: a. Beta Blockers, MAO inhibitors, salicylates and tetracycline increase the hypoglycemic effect of insulin. b. Corticosteroids and thiazide decrease insulin's effect. A change in the corticosteroid dosage can cause wide fluctuations in blood glucose levels. **REPORTABLE CONDITIONS:** 1. Blood glucose levels outside ordered parameters. 2. Significant differences between glucometer and lab value results. **Side effects**: Hypoglycemia. **Stability**: **CI:** 24 hrs at room temperature. 7 days under refrigeration. Reference on stability: Evaluation of the maximum beyond-use-date stability of regular human insulin extemporaneously prepared in 0.9% sodium chloride in a polyvinyl chloride bag. *Diabetes Metab Syndro Obes*. 2013; 6: 389-392. **Related Policies:** • Medications: High Alert, Double Check of **Information on Insulin Regular continues on the next page.**

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Insulin-Regular [antidiabetic agent] HIGH ALERT / DOUBLE CHECK 	Hyperkalemia	ALL UNITS (except Psy)	**IV Push:** 10 units regular insulin in 10 mL NS	See prior page for comments on Insulin Regular. **Treatment of Hyperkalemia**: Follow MD orders: 1.Stop K+ infusions and oral therapy and Contact MD/LIP to Discontinue K+ infusions. 2. Consider Calcium Gluconate IV Push: 10-20 mL of 10% over 2 mins or 1 gm in 50 mL D5W X 1-2 doses over 5-10 mins) 3. Dextrose IV Push (50 mL of D50 IV Push) undiluted over 1-2 mins 4. Regular Insulin IV Push (10 units) 5. Bicarbonate IVP (50 mEq= 50 mL of 8.4% over 2 mins 6. B2 adrenergics-albuterol nebs (10-20 mg = 12-24 mL nebulized); 7. Loop diuretics 8. Na Polystyrene (15-60 gms) 9. Hemodialysis
Iron Dextran Imferon® 50 mg iron / ml [parenteral mineral] Avoid in midline cath see Page 14 (may be ok w/ short course)	Iron Deficiency Anemia	ALL UNITS (Except Psy)	**I.I. (Test dose):** 25 mg in 50 mL NS over 5-10 mins **I.I.:** up to 1000 mg in 250 mL NS over 1-2 hrs	**Caution/Warning:** **Comments**: Stable for 7 days if refrigerated. Iron sucrose is the preferred agent with lower risk of acute reactions **Drug Interactions:** **Monitor**: H&H, serum ferritin, Iron sat, V/S's. Outpatients should remain for ½ hour post infusion to be monitored for signs and symptoms of a reaction. **Side Effects**: Allergic hypersensitivity reactions: sudden resp. difficulty, tachycardia, hypotension, flushing, c-v & resp. collapse. DC infusion & Tx as anaphylactic reaction. Delayed reactions: arthralgia, backache, myalgia, urticaria, flushing, dizziness, malaise, headache, chills, fever, chills, tightness of the chest, and nausea. **Stability:**
Iron Gluconate Ferrlecit® 12.5 mg iron / ml [parenteral mineral]	Iron Deficiency Anemia	ALL UNITS (Except Psy)	**I.I.:** Restricted to 125 mg in 100 mL NS over 90 mins.	**Caution/Warning:** **Comments**: Has lower rate of acute hypersensitivity anaphylactic reactions than iron dextran (listed above). **Drug Interactions:** **Monitor**: H&H, serum ferritin, Iron sat, V/S's. Outpatients should remain for ½ hour post infusion to be monitored for signs and symptoms of a reaction. **Side Effects**: Delayed reactions: arthralgia, backache, myalgia, urticaria, flushing, dizziness, malaise, headache, chills, fever, chills, tightness of the chest, and nausea. Allergic hypersensitivity reactions: sudden resp. difficulty, tachycardia, hypotension, flushing, c-v & resp. collapse. Incidence is reported less than dextran and comparable to iron sucrose. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Iron Sucrose Venofer® 20 mg iron / ml [parenteral mineral]	Iron Deficiency Anemia	ALL INPT UNITS (Except Psy) and for any patient on hemo-dialysis	**I.I.:** 100 mg in 100 mL NS over 15 -30 mins 200 mg / 100 mL NS over 30-60 mins 300 mg / 250 mL NS over 90 mins 400 mg / 250 mL NS over 150 mins start slowly and increase as tolerated **IVPush:** 100-200 mg undiluted over 5 mins	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration **Comments**: Has lower rate of acute hypersensitivity anaphylactic reactions than iron dextran (listed above). **Drug Interactions:** **Monitor**: H&H, serum ferritin, Iron sat, V/S's. Outpatients should remain for ½ hour post infusion to be monitored for signs and symptoms of a reaction. **Side Effects**: Delayed reactions: arthralgia, backache, myalgia, urticaria, flushing, dizziness, malaise, headache, chills, fever, chills, tightness of the chest, and nausea. **Stability:** diluted IV solutions are stable for 7 days in refrigerator Injectafer® is iron sucrose product for use in the outpatient setting ONLY.
Isavuconazole Isavuconazonium sulfate, Cresemba® [azole-derivative antifungal] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Fungal Infections Documented or suspected infection caused by Aspergillus spp. or another voriconazole-susceptible mold in a patient who (1) cannot receive voriconazole, Documented or suspected infection caused by a mold where isavuconazole is expected/documented to have "best" activity Patient receiving medication prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Infuse over a minimum of 1 hour; must be administered via an infusion set with an in-line filter (pore size 0.2 to 1.2 micron). -Flush line with NS or D5W before and after infusion. -Do not administer as an IV bolus injection. -Do not mix or infuse with other medications. Aspergillosis, invasive/Mucormycosis: -**Initial**: 372 mg (isavuconazole 200 mg) **every 8 hours** for 6 doses; -**Maintenance**: 372 mg (isavuconazole 200 mg) **once daily** Start maintenance dose 12 to 24 hours after the last loading dose.	**Caution/Warning:** Hypersensitivity reactions; abnormal liver function; infusion related reaction **Comments**: **Altered kidney and liver function:** No dosage adjustment necessary. **Drug interactions:** CYP3A4 Inducers (Strong) may decrease isavuconazole serum concentrations **Monitoring:** Hypersensitivity reactions with initial doses, LFTs at baseline and periodically during therapy; Infusion-related reactions (eg hypotension, dyspnea, chills, dizziness, paresthesias, hypoesthesia) during IV infusion. **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** Peripheral edema; headache; fatigue; insomnia; hypokalemia; nausea; vomiting; diarrhea; abdominal pain; constipation; increased liver enzymes; dyspnea; cough **Stability:** Store intact vials at 2°C to 8°C (36°F to 46°F). Following reconstitution of the vial with SWFI, use the solution immediately, or stored below 25°C for a maximum of 1 hour prior to preparation of the admixed solution in NS or D5W. The admixed infusion solution should be kept for not more than 6 hours at (20°C to 25°C [68°F to 77°F]) or 24 hours at 2°C to 8°C (36°F to 46°F) prior to use. Do not freeze.

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Isoniazid Nydrazid® [antitubercular]	Tuberculosis	ALL UNITS (Except Psy)	**I.I.:** 150-300 mg 50 mL D5W over 60 mins	**Caution/Warning:** **Comments:** Pharmacy to admix. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Isoproterenol Isuprel ® [sympathomimetic]	Bradycardia (Acute Symptomatic), Cardiogenic shock	UT1-ICU	**I.I.:** 1 mg/ 250 mL D5W (4 mcg/mL) at 1 mcg/min (15mL/hr) to 10 mcg/min	**Caution/warning:** **Comments:** Titrate to heart rate, rhythm response, BP **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Ketamine [anesthetic adjunct]	Anesthesia	ED OR/PACU UHSC	**I.I.:** doses per Anesthesia or ED MD's	**Caution/Warning:** Ketamine can produce severe dysphoric and hallucinogenic sensations/reaction so the use of a benzodiazepine or low dose haloperidol in patients receiving ketamine could be considered. Known contraindications to ketamine are hypersensitivity to ketamine and any conditions where a significant elevation of blood

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 **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	Adjuvant therapy to control severe pain/ Chronic Cancer Pain/ Sickle Cell Pain	UT1-ICU	**C.I. (Pain):** 100 mg/100 mL NS (1mg/mL) or 250mg/250ml NS (1mg/mL) All changes in rate require a separate order Starting rate of 0.05mg/kg/hr to 1mg/kg/hr	pressure is hazardous which include Intracranial hypertension, Cerebral aneurysms and raised intraocular pressure. Ketamine may exacerbate pulmonary hypertension and psychiatric disorders (psychomimetic effects are more pronounced in the presence of schizophrenia and delirium). Ketamine should be used with caution in the presence of ischaemic heart disease because of the risk of increased heart rate and blood pressure. **Comments** : Infusion should be titrated to pain effect or adverse effects. It patient experiences adverse effects prior to acceptable pain relief; the drug should not be continued. Ketamine is an anaesthetic agent known to have analgesic properties in sub-anaesthetic doses. Ketamine analgesia is mediated by its effect on the N-methyl-D-aspartate (NMDA) receptor where it blocks excitatory nerve activity involved in pain transmission. Ketamine is administered in combination with other analgesics, may improve pain and reduce opioid requirements. **Drug Interactions:** **Monitor: C.I.**:All patient must be observed for psychomimetic reactions – e.g. unpleasant dreams, vivid imagery and hallucinations, alterations in perception described as "floating in space" or as a "feeling of unreality". Blood pressure as can cause hypertension. Call MD if BP exceeds SBP> 140 and/or DBP> 90. Respiratory depression/apnea. Patients must be either vented or on continuous capnography **Side Effects:** blood pressure elevation, psychomimetic reactions (hallucations which may require a benzodiazepine along with dose reduction), respiratory depression. **Stability: C.I.:** Stable if stored at room temperature or refrigerator. (See last reference below) REFERENCES • Campbell-Fleming, JM, Williams, A. (2008) The use of ketamine as adjuvant therapy to control severe pain, Clinical Journal of Oncology Nursing, Vol.12, No.1, pp. 102-7. • Craven, R. (2007) Ketamine, Journal of Anaesthesia, Vol.62, No.1, pp.48-53. • Immelseher S., Durieux M., 2005, Ketamine for Perioperative Pain Management, Anaesthesiology, 102(1): 211-20. • Hocking G., Cousins M.J., 2003, Ketamine in Chronic Pain Management: An Evidence-Based Review, Anesth Analg, 97:1730-9. • Kronenberg, R.H. (2002) Ketamine as an analgesic: parenteral, oral, rectal, subcutaneous, transdermal and intranasal administration, Journal of Pain Palliative Care Pharmacotherapy, Vol.16, No. 3, pp.27-35. • Liu, S.S. & Wu, C.L. (2007) The effect of analgesic technique on postoperative patient-reported outcomes including analgesia: a systematic review, Anaesthesia & Analgesia, Vol.105, No.3, pp.789-808. • Subramaniam K., Subramanium B., Steinbrook R.A., Ketamine as Adjuvant Analgesic to Opioids: A Quantitative and Qualitative Systematic Review. Anesth Analg 2004; 99:482-95. • Stucki MC, Fleury-Souverain S, Sautter AM, et al: Development of ready-to-use ketamine hydrochloride syringes for safe use in post-operative pain. Eur J Hosp Pharm Sci: 2008. 14: 14-8
	Sedation in UT1-ICU	UT1-ICU	**C.I. (Sedation):** 100 mg/100 mL NS (1mg/mL) or 250mg/250ml NS (1mg/mL), 500mg/250ml NS (2mg/mL) All changes in rate require a separate order 0.1 to 0.5 mg/kg over 2 to 3 minutes, followed by continuous infusion of 0.05 to 2.5 mg/kg/hr, with rate adjustment every 5 to 20 minutes. Doses up to 4.5mg/kg/hr have been documented as needed for sedation.	

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Ketorolac Toradol® [NSAID]	Anti-inflammatory, Non-Narcotic Analgesic	ALL UNITS (Except Psy)	**IV Push (preferred):** ≤ 60mg undiluted over 1-2 mins Age<65 30 mg then 30 mg q6h Age>65, renally impaired or wt < 50kg: 15 mg then 15 mg q6h **I.I. (non-preferred method of administration):** 15-30 mg in 50 mL NS or D5W over 10-15 mins, 60 mg/50mL NS or D5W over 15 mins	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration. Avoid in aspirin allergic pts. Caution use in hepatic dysfunction. **Comments**: Avoid use in renal failure. PO/IV combined use limited to 5 days. *Contraindications:* severe renal impairment. Has same GI complications as p.o. NSAIDs. **Drug Interactions:** **Monitor:** **Side Effects:** Nausea/vomiting, GI bleeding, decreased renal function, fluid retention. **Stability:**
Labetalol Normodyne® Trandate® [Alpha/Beta-adrenergic blocker] TITRATE MED	Hypertension	ED ENDO UT1-ICU UT2-IU IRAD L&D/ OB-GYN OR/PACU UHSC	**IV Push**: 5 -20mg undiluted over 2 mins, if required follow with a 2nd dose of 10-20 mg in 10 mins, and if a satisfactory response is not obtained in 10 mins follow with a 3rd dose of 20-40 mg in 10 mins.	**Caution/Warning:** **Comments:**Not recommended for rate control. Bedside Cardiac monitoring/telemetry is required for IV Push or infusion for patients other than L&D patients. **IV Push: B/P & HR** should be measure immediately before, and **5 minutes** and **10 minutes** after the initial dose. The maximum effect usually occurs within 5 minutes of each injection. If desired response is not obtained, additional doses (i.e. 40, 80, 160 mg) may be given, at **10 minute intervals** per MD/LIP order, to a **cumulative maximum dose of 300 mg**. Each successive dose is usually double the amount of the prior dose. Notify the physician/LIP if the specified SBP or HR is not achieved at the maximum dose, or if significant hypotension (BP < 90), decreased HR (< 60), intolerable dizziness, seizure activity, or an abnormal glucose occurs . **CI:** requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP) or reason. Titrate per order to goal. **Notify the physician/LIP** if the specified SBP or HR is not Maintain HOB no > 30 degrees up to 3 hours after titration is completed due to potential orthostatic changes. achieved at the maximum dose, or if significant hypotension (BP < 90), decreased HR (< 60), intolerable dizziness, seizure activity, or an abnormal glucose occurs .
		ED ENDO UT1-ICU IRAD OR/PACU UHSC	**C.I.**: Titrate Med if ordered 500 mg/ 500 mL D5W or NS (1 mg/mL)* This Concentration will not be available in EPIC starting April 2018 1000 mg/ 500 mL D5W or NS (2 mg/ml) to start at 0.5 mg/min, if increase is needed re-bolus before increasing CI by 0.5 mg/min q 15-30 minutes to decrease SBP to 100-120 or MAP > 60 or HR 60-80 or as ordered. Max. of 2-3 mg/min = 120-180 mg/hr unless higher max. is ordered by MD/LIP.	

BOLUS OFF BAG: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.

Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
		L&D/ OB-GYN	**IV Push:** Begin with 5- 20 mg undiluted over 2 mins, if required follow with a 2nd dose of 10-20 mg in 10-mins, and if a satisfactory response is not obtained in 10 mins follow with a 3rd dose of 10-20 mg.	Maintain HOB no > 30 degrees up to 3 hours after titration is completed due to potential orthostatic changes. **Potential Complications:** a. Do not use in patients with a history of bronchial asthma. b. Use cautiously in patients with CHF, chronic bronchitis and emphysema. c. Bronchospasm may occur, which may necessitate the administration of EPINEPHrine and/or an aerosolized beta$_2$ – agonist per MD/LIP order. d. If severe hypotension or bradycardia occurs, stop the infusion and notify MD/LIP. e. Excessive bradycardia may be treated with atropine or EPINEPHrine per MD/LIP order. f. The beta adrenergic blockage reduces the release of insulin in response to hyperglycemia. It also may prevent the appearance of premonitory signs and symptoms of hypoglycemia. It is recommended that a serum glucose or a fingerstick glucose be checked every 6 hours. **Drug Interactions:** **Monitor:** Frequent BP monitoring is necessary, as rapid falls in either systolic or diastolic blood pressure may occur. Monitor patient's **BP every 15 minutes** during titration until patient's BP is within desired parameters and then monitor patient's BP. and HR **every 1 hour** and prn. **Side effects:** fatigue, dizziness, hypotension, bradycardia, n/v, bronchospasm . **Stability:** Stable for 72 hrs if refrigerated. Also stable in D5W. Incompatible with bicarbonate.
Lacosamide Vimpat® [Anticonvulsant] NON-FORMULARY	Adjunctively or as monotherapy for partial seizures in patients over 17 years old when oral administration is temporarily unavailable	ALL UNITS (Except Psy)	**IV Push (Preferred):** Up to 400 mg undiluted over 2-5 mins I.I.: in 50 mL NS or D5W over 30-60 mins. (Package insert does not specify volume) Initial dosing of 50mg IV BID; increase weekly by 100mg/day given in two divided doses. Maintenance doses of 200-400 mg/day given twice daily.	**Caution/Warning:** may cause or worsen PR interval prolongation **Comments:** CrCl less than 30 mL/min: MAX 300 mg/day Mild to moderate liver dysfunction: MAX 300 mg/day Severe liver dysfunction: DO NOT USE **Drug Interactions:** orlistat and ketorolac may decrease effectiveness of lacosamide Use with other PR prolonging drugs may potentiate cardiac effects **Monitoring:** ECG at baseline and at maintenance **Side Effects:** nausea, dizziness, diplopia, A fib, suicidal ideation **Stability:** if diluted, store at room temperature and administer within 4hours of dilution (24hours per Canadian package insert)

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Lefamulin Xenleta® [antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Patient with community-acquired pneumonia for which no other formulary / restricted non-formulary treatment options exist Patient receiving lefamulin prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Infuse over 60 minutes. Note: Injection solution in vials must be further diluted with supplied diluent prior to administration Prior to administration, dilute entire 15 mL lefamulin vial into the provided diluent bag (250 mL of 10 mM citrate buffered NS). Mix thoroughly.	**Caution/Warning:** May result in fungal or bacterial superinfection (e.g. Clostridium difficile); QT prolongation; Hepatic impairment **Comments**: **Altered kidney:** No dosage adjustment necessary. **Hepatic Impairment:** Mild to moderate impairment (Child-Pugh class A or B): No dosage adjustment necessary. **Severe impairment (Child-Pugh class C):** 150 mg every 24 hours. **Drug interactions:** Substrate of CYP3A4 (major), P-glycoprotein/ABCB1 (major); Inhibits CYP3A4 (moderate) **Monitoring:** Hepatic function; ECG in patients predisposed to or with risk factors for QT prolongation; pregnancy status in females of reproductive potential **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** diarrhea **Stability:** Injection: Store vials refrigerated at 2°C to 8°C (36°F to 46°F); do not freeze. Store diluent bags in protective overwrap at 2°C to 25°C (36°F to 77°F). After dilution, lefamulin may be stored for ≤24 hours at room temperature and ≤48 hours refrigerated at 2°C to 8°C (36°F to 46°F).
Leucovorin [methotrexate rescue]	Chemo adjunct Megaloblastic anemia	ALL UNITS (Except Psy)	**IV Push:** 10-20 mg/ 20 mL NS over 1-2 mins **I.I.:** 20mg-499mg in 50 mL NS/D5W over 15 mins, > 500 mgin 250 mL NS/D5W over 30-120 min, max 160 mg/min	**Caution/Warning:** **Comments**: Protect from light after reconstitution. Refrigerate. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
LevETIRAcetam Keppra® [anticonvulsant] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Seizures	ALL UNITS	**IV Push (Preferred):** Up to 4500 mg undilted over 2-5 mins. Doses ≤2000 mg over 2-5 mins Doses > 2000 mg up to 4500 mg over 5 mins **I.I.:** 500 – 1500 mg in 100 mL NS or D5W over 15 mins. Doses >1500mg in 250 mL NS or D5W over 15 mins. Doses > 3750 mg in 300 mL NS or D5W over 20 mins. A single dose of up to 4500mg in 300mL NS or D5W over 20 mins may be used for status epilepticus.	**Caution/Warning:** **Comments**:Reduce dose for renal insufficiency. **Drug Interactions:** **Monitor** : for seizure activity & CNS changes. **Side Effects:** **Stability**: 4 hrs at room temperature

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
LevOCARNitine Carnitor® [dietary supplement]	Carnitine deficiency	ALL UNITS (Except Psy)	**IV Push (Dialysis):** 10-20 mg/kg after each dialysis session over 2-3 minutes **IV Push (Carnitine deficiency)**: Bolus over 2-3 minutes **I.I.:** in 500 mL NS over 60 min.	**Caution/Warning:** Use with caution in patients with seizure disorders or in those at risk of seizures; both new-onset seizure activity as well an increased frequency and/or severity of seizures has been observed. **Comments:** **Drug Interactions:** **Monitor:** Valproic Acid toxicity: Evaluate valproic acid concentrations (every 4-6 hours until a downward trend is observed). **Side Effects:** **Stability:** Room Temperature: 24 hours
LevoFLOXacin Levaquin® [antibiotic] Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infections	ALL UNITS	**I.I.:** 250-500 mg Premixed over 60 mins 750 mg Premixed over 90 mins	**Caution/Warning:** **Comments** : Too rapid administration can cause hypotension. **Drug Interactions:** **Monitor:** **Side effects:** Phlebitis, dizziness, tremor, arthralgia, headache, inj.site inflammation, QTc prolongation.Reduced dose / interval in renal dysfunction. **Stability:**
Levothyroxine Synthroid® [thyroxine replacement]	Hypothyroid, Myxedema coma	ALL UNITS	**IV Push:** ≤ 200 mcg dilute with 10 mL NS given over 1-2 mins, flush with 5 mL NS. Maintenance Dose 12.5 – 400 mcg Myxedema coma – Initial dose 200 500mcg, Day 2 100-300mcg	**Caution/Warning:** **Comments**: Reconstitute 100 mcg vial with 5 ml preservative free NS only= 20 mcg/mL, shake well, use immediately (manufacturer labeling suggests reconstituted vial is stable for 4 hours). Discard any unused portions. Note: during shortage Endocrine consult is required for extended interval dosing to conserve supplies. The IV dose of levothyroxine is 50-80% of the expected or previously established oral dose. *Contraindications*: Acute MI, untreated angina, untreated HTN, adrenal insufficiency **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
		ALL UNITS (Except Psy)	**I.I.:** dose in 50 mL D5W / NS over 10-15 min	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Lidocaine [antiarrhythmic]  **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	Arrhythmias	ED UT1-ICU UT2-IU IRAD OR/PACU UHSC .	**IVPush**: **Cardiac Arrest**: from VT/VF 1-1.5 mg/kg=50 -100mg undiluted over 2-3 mins , may repeat in 3-5 mins, max. of 3 mg/kg **IVPush**: **Non arrested pt**: Stable VT, wide c. tachy's, ectopy: 1-1.5 mg/kg=50-100mg undiluted over 2-3 mins, repeat at 0.5-0.75 mg/kg q 5- 10 mins, max total dose of 3 mg/kg ET: 2-4 mg/kg diluted in 10 mL NS **CI**: 2 grams/ 500 mL D5W premix= 4 mg/ml @ 1-4 mg/min. Max 4 mg/min, may bolus @ 0.5 mg/kg while on CI if arrhythmia reappears	**Caution/Warning:** **Comments**: Exp. Date for pre-mix bag if bag is out of protective overwrap = 14 days. Must be on monitor. Prophylactic dose in AMI not recommended. Reduce dose in renal, hepatic, left v. dysfunction Anticipate effect within 30 minutes of bolus and start of infusion; notify MD/LIP if not seen. No tapering needed due to long half-life. **Drug Interactions:** **Monitor:** EKG for reduced or increased ventricular dysrhythmia every 12 hours and as needed. BP & HR pre and post bolus and initiation of C.I with every 5 to 15 minute assessment of VS and rhythm. Check every 2 to 4 hours for possible toxic side effects. **Side Effects:** **Stability:**
Linezolid Zyvox® [antibiotic] **RESTRICTED ANTIMICROBIAL**	Bacterial Infections (MRSA/VRE)	ALL UNITS (Except Psy)	**I.I.:** 600 mg/ 300 mL over 60 mins	**Caution/Warning:** **Comments**: Store at Room Temperature. Dose adjustment not required in renal failure. **Drug Interactions:** **Monitor:** **Side Effects**: Nausea, diarrhea, myelosuppression, including anemia, thrombocytopenia, leukopenia, pure red cell aplasia, and pancytopenia, severe lactic acidosis, headache, Inc. LFT's, Serotonin syndrome – review drug interactions **Stability:**

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LORazepam Ativan® [benzodiazepine]  **TITRATE MED** If Extravasation, see Pages 10&11	Anti-seizure-Status epilepticus, Anxiety, CIWA Protocol	ALL UNITS (Except Psy)	**IV Push (ETOH Withdrawal):** ≤ 4 mg diluted with equal volume NS, given at 2 mg/min, flush with 5 mL NS. Example: 4 mg = 2 mL of drug + 2 mL NS = 4 mL total given over minimum of 2 mins Anxiety/agitation: Maximum dose for IV Push: 4 mg given no more frequently than q 15 min per CIWA protocol **NOTE:** LORazepam dosage may exceed guideline limits at provider's discretion for ETOH withdrawal since this is just a guideline. Should be diluted to an equal volume of NS or D5W for a concentration of 1mg/mL for administration. Maximum infusion rate of 2mg/min. Areas of a higher actuity (e.g. ED, UT1-ICU, UT2-IU) may have orders reflective of these higher doses such as 10mg given IV push over 5 minutes (2mg/min) on UT2-IU. **IV Push (Anxiety, agitation):** ≤ 2 mg diluted with equal volume NS, given at 1 mg/min, flush with 5 mL NS. Example: 2 mg = 1 mL of drug + 1 mL NS = 2mL total given over minimum of 2 mins. **IV Push (Seizure):** ≤ 10 mg or 0.1 mg/kg diluted with equal volume NS and may repeat dose in 5 to 15 min if needed for treatment of seizures.	**Caution/Warning:** Flumazenil must be readily available for reversal of benzodiazepine toxicity. **Comments**: Use lower doses in elderly patients. LORazepam dosage may exceed guideline limits at provider's discretion for ETOH withdrawal. Should be diluted to an equal volume of NS or D5W for a concentration of 1mg/mL for administration. Maximum infusion rate of 2mg/min. IM LORazepam should not be diluted. For CI requires MD/LIP order for therapeutic goal (ex: RASS or explanation of desired level of sedation) or reason. Titrate per protocol to goal. Consider adjunctive valproic acid. When LORazepam CI approaches 10 mg/hr risk of metabolic acidosis increases. Midazolam infusions may be used as an alternative to LORazepam infusions during LORazepam shortages. **Drug Interactions:** **Monitor:** BP, RR, inj. Site, mental status. **Related Policies:** • CIWA-Ar – Alcohol Withdrawal Prevention Protocol (Clinical Institute Withdrawal Assessment for Alcohol) **Side Effects:** hypotension, persistent sedation, resp. depression, apnea, pain at inj. Site , thrombophlebitis. **Stability:** Stable for 7 days if refrigerated. Use glass bottles or polyolefin bag for CI's-stable for 24 hrs. Use standard conc. Of 1 mg/ 1 ml. Monitor for precipitation. Use 0.22 micron filter.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Sedation for Vented patient/ ETOH withdrawal if refractory to or impractical to use of intermittent IV push	ED UT1-ICU OR/PACU ALL UNITS (Except Psy) for end of life comfort care	**C.I.:** 100 mg/ 100 mL D5W (1mg/mL) only in Non-PVC container to minimize absorption and loss of LORazepam. Start at 1 mg/hr & titrate by 1mg/hr q 30 mins to achieve sedation with RASS of 0 to -,1or as MD/LIP orders. Max: 15 mg/hr unless higher maximum is ordered by MD/LIP. Titrate per Order. Infuse with 0.22 micron filter.	
	Catatonia benzodiazepine challenge	ALL UNITS	**IV Push:** 0.5-2mg up to three times a day diluted in equal volume NS. Do not exceed 2mg/min. IV preferred for initial dosing with switch to oral as patient improves.	
Magnesium Sulfate 1gm (2mL) of 50% is 8 mEq Mag++ [electrolyte] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS (if premix not available)**	Electrolyte deficiency	ALL UNITS (Except Psy)	**I.I.:** 1 gm (8mEq) in 100 mL D5W over 30-60 mins	**Caution/Warning:** **Comments**: Magnesium sulfate 1 gm available as premix. For Magnesium sulfate 2 gm use 2 bags of the 1Gm premixes. ICU has 2 gm/50 mL Premix bags available. Rapid infusions may cause Cardiovascular toxicity, CNS and Respiratory depression. Use with caution in patients with renal failure. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
		UT1-ICU UT-BMT	**ICU or UT-BMT Only I.I.**: 2 gm in 50mL D5W over 60 mins	
	Ventricular tachycardia with Torsade de pointes	ED UT1-ICU UT2-IU OR/PACU In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push:** 1-2 gm or 1 gm / 100 mL D5W for 2 doses over 1 -2 mins for Torsade de pointes, may need **C.I.:** 0.5 gm – 1 gm/hr for 5 to 48 hrs	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Preeclampsia HIGH ALERT / DOUBLE CHECK	ED L&D UT1-ICU OR/PACU	**I.I. LD (4 gm):** 4 gm/100 mL set volume at 100 mL, rate at 300 mL/hr administer over 20 minutes **C.I. (2 gm/hr)** 20g/500 mL (0.04 g/mL) Set volume for 1000mL, dose at 2 gm/hour, rate at 50 mL/hr **C.I. (1 gm/hr)** 20g/500 mL (0.04 g/mL) Set volume for 1000mL, dose at 1 gm/hour, rate at 25 mL/hr	**L&D Caution/Warning:** **Comments**: Magnesium sulfate 4 gm and 6 gm available as premix. Recommended therapeutic magnesium levels for pre-eclampsia/seizure prophylaxis between 4.8-8.4 mg/dL (4-7 mEq/L) In pre-term patients (less than 32 weeks gestation) magnesium sulfate may be administered for fetal neuroprotection. **Drug Interactions:** **Monitor:** For signs of Magnesium toxicity. Discontinue magnesium sulfate infusion and obtain a STAT serum magnesium level in the following situations: hypotension, new-onset loss of DTRs, respiratory depression, respiratory arrest, oliguria, shortness of breath, chest pains. **Side Effects:** **Stability:**
	Fetal Neuroprotection and/or Tocolysis HIGH ALERT / DOUBLE CHECK		Dose 4-6 gm IV bolus over 20-30 minutes, followed by maintenance infusion **I.I. LD (6 gm):** 6 gm/100 mL set volume at 100 mL/hr, rate at 200 mL/hr administer over 30 minutes	
Mannitol [osmotic diuretic] If Extravasation, see Pages 10&11 ≥20%: Avoid in midline cath see Page 14	Inc. CNS pressure, Inc. Intraocular pressure	ALL UNITS (Except Psy)	**I.I.:** 0.25 – 2 Gm/kg (12.5 – 200 Gm) over 30-60 mins with an in-line filter.	**Caution/Warning:** Vesicant. Caution in CRF & CHF pts due to volume & electrolyte shifts. **Comments** :Must use an in-line filter. A 5 micron filter is used for compounding 25%. A 0.22 micron filter is used for administration. Do not refrigerate. Available in vials as 25% (12.5gm/50ml). Do not mix with blood, do not add Sodium or potassium. *Contraindications*: severe renal failure, active intracranial bleeding. Note: for infusions containing 20% or more of mannitol at concentrations of 15% or greater, mannitol may crystallize at low temperatures. **Drug Interactions:** **Monitor**: Lytes, Bun/Cr, fluid balance, pulse oximetry/EKG monitoring **Side Effects:** **Stability:** Stable for 24 hrs @ Room Temperature or warmer.
	Renal Prophylaxis w chemotherapy	ALL UNITS (Except Psy)	**I.I.:** 12.5 – 100 Gm using 20% premix 250 ml bag (50 Gms) over 30-90 mins with an in-line filter.	
	Oliguria	ALL UNITS (Except Psy)	**I.I.:** 12.5 – 100 Gm using 20% premix 250 ml bag (50 Gms) over 30-90 mins with an in-line filter.	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Meperidine Demerol® [opioid analgesic]	Shivering/ rigors/ intermittent doses restricted to opioid intolerance and short term therapy without renal failure	ALL UNITS (Except Psy)	**IV Push:** ≤ 100mg diluted with 10 mL NS over 2-3 mins (As of June 2009, P&T approved 25mg dose only for shivering/rigors. Contact Pharmacy if use for another indication)	**Caution/Warning:** As of June 2009, only approved for 25mg injection for shivering/rigors. Covert other meperidine injection or oral dose to equivalent injection or oral dose of morphine or HYDROmorphone. **Comments** : Not indicated for chronic pain. Consider other narcotic analgesics for acute pain. For PCA -Requires RN/LPN verification double check on MAR. May precipitate with Heparin, so flush prior & after with NS. *Contraindications:* pts taking MAOI's, in renal failure and caution in elderly due to accumulation of normeperidine which can cause myoclonus & seizures. **Drug Interactions:** **Monitor:** for pain relief, respiratory depression, loss of consciousness, N/V, CNS changes. Naloxone must be readily available as a reversal agent for opioid induced respiratory depression. Check RR & sedation level in 5-15 mins. **Side Effects:** **Stability:**
	PCA-restricted to opioid intolerance and short term therapy without renal failure	ALL UNITS (Except Psy)	**PCA** (10 mg/ml conc) with pharmacy approval	
Meropenem Merrem® [antibiotic] **RESTRICTED ANTIMICROBIAL** **ADS MIXTURE** Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 500-1000 mg in 100 mL NS (Minibag Plus) over 30 mins. Empiric or documented Pseudomonas A. infections in non-neutropenia: 1gm q 8 hrs or 500 mg q 6 hrs Bacterial meningitis or patients >50% over Ideal Body Weight, Severe edema, pancreatitis, CNS infections, neutropenic hosts: 2 Gm doses q 8 hrs infused over 2 hrs for better efficacy. Non-pseudomonas Infections in non-neutropenia: 500 mg q 8 hr. **IV Push (when a shortage):** 0.5 Gm in 10 mL SWFI 1 Gm in 20 mL SWFI	**Caution/Warning:** **Comments**: **Pharmacy to admix**. Use undiluted reconstituted product within 2 hrs of mixing. Reduce dose with renal insufficiency. HD dosing: 1 gm q 24 hrs after HD. Peritoneal Dosing- 1 gm q 48hrs CVVHD- same as if CrCl ≥ 50 mL/min. May increase seizure risk if Hx of seizures. *Contraindications:* patients with anaphylaxis to beta lactams. **Drug Interactions:** **Monitor:** renal fx, CBC. **Side Effects:** **Stability: in NS**: 6 hrs @ room temperature, 5 days if refrigerated.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Meropenem-vaborbactam Vabomere® **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected infection caused by a multidrug-resistant gram-negative pathogen (e.g., Extended-Spectrum Beta-Lactamase (ESBL)-Positive strain, multidrug-resistant (MDR) P. aeruginosa or other MDR gram-negative pathogen not susceptible to other usual treatment options [e.g., Ceftolozane/tazobactam, Ceftazidime/avibactam, etc.]) Patient receiving medication prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Administer by IV infusion over 3 hours Note: Reserve for patients with or at risk for extensively drug-resistant pathogens (nonsusceptible to ≥1 agent in all but 2 or fewer antimicrobial classes) (eg, carbapenem-resistant Enterobacterales)	**Caution/Warning:** Hypersensitivity reactions; May result in fungal or bacterial superinfection (e.g. Clostridium difficile); CNS effects: Carbapenems have been associated with CNS adverse effects, including confusional states and seizures (myoclonic) **Comments**: **Altered kidney function:** **eGFR ≥50 to 130 mL/minute/1.73 m2:** No dosage adjustment necessary. **eGFR 30 to 49 mL/minute/1.73 m2:** 2 g every 8 hours. **eGFR 15 to 29 mL/minute/1.73 m2:** 2 g every 12 hours. **eGFR <15 mL/minute/1.73 m2:** 1 g every 12 hours **HD:** 1 g every 12 hours; when scheduled doses fall on dialysis days, administer one of the two doses after the hemodialysis session **Drug interactions:** may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines; may decrease the serum concentration of valproate products **Monitoring:** signs of hypersensitivity reaction, including anaphylaxis and serious skin reactions. Periodically monitor renal function; in patients with changing renal function, monitor serum creatinine and eGFR at least daily. **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** headache; diarrhea; nausea; increased LFTs **Stability:** Store intact vials at 20°C to 25°C (68°F to 77°F); excursions are permitted to 15°C to 30°C (59°F to 86°F). Diluted solution for infusion is stable for 4 hours at room temperature or 22 hours when stored at 2°C to 8°C (36°F to 46°F).
Mesna Mesnex® [hemorrhagic cystitis inhibitor]	Urinary Protectant with Ifosfamide & cyclophosphamide	ALL UNITS (Except Psy)	**I.I.:** see Chemo protocol for dose in 100 mL diluent over 5-30 mins	**Caution/Warning:** **Comments**: Verification of orders must be done by a chemotherapy competent nurse when used as part of a chemotherapy regimen. Compatible with Ifosfamide & cyclophosphamide. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Stable in syringe for 9 days. Pharmacy: Vials may be used for 8 days.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Methadone [opioid analgesic]	Opioid maintenance, pain	ALL UNITS (Except Psy)	**I.I.:** dose in 50 mL NS over 10-15 mins	**Caution/Warning:** **Comments**: Not appropriate for most patients due to long duration of action and complex pharmacokinetics may result in cumulative sedation Caution for dosage conversion consult RPh. Reduce dose in renal failure. **QTC prolongation.** **Drug Interactions:** **Monitor**: for pain relief, respiratory & CNS depression, loss of consciousness, N/V, CNS changes. **Side Effects:** **Stability:**
Methohexital Brevital® [barbiturate anesthetic]	Anesthesia	ECT-A	**IV Syringe:** 100 mg/10 mL premix	**Caution/Warning:** **Comments**: **Drug Interactions:** **Monitor**: **Side Effects:** **Stability:**
Methyldopa [alpha-adrenergic agonist]	Hypertension	ALL UNITS (Except Psy)	**I.I.:** 250-500 mg in 100 mL D5W over 60 mins, > 500 mg in 250 mL D5W over 60 mins	**Caution/Warning:** **Comments**: Caution in elderly or renal impairment. **Drug Interactions:** **Monitor:** BP during infusion, CBC, LFT's. **Side Effects:** **Stability:**
Methylene Blue If Extravasation, see Pages 10&11	Methemo-globinemia, Ifosamide toxicity	ALL UNITS (Except Psy)	**IV Push:** over 3-5 mins	**Caution/Warning:** **Comments**: Not to be used for adding to enteral feeds for detecting leaks. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Methylergonovine Methergine® [ergot alkaloid]	Postpartum hemorrhage, associated with uterine atony or subinvolution	L&D	**IV Push:** 0. 2 mg over 1-3 mins	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
MethylPREDNISolone Sodium Succinate SOLU-Medrol® [adrenal glucocorticoid] **LOOK ALIKE / SOUND ALIKE**	Anti-Inflammatory agent	ALL UNITS (Except Psy)	**IV Push:** doses ≤ 125 mg undiluted over 1-2 mins. **I.I.:** mix in 100 mL of D5W or NS - Doses > 125 mg but < 250 mg, administer over 15-60 mins - Doses ≥ 250 mg, administer over 30-60 mins	**Caution/Warning:** **Comments**: Stable for 24 hrs @ R.T. Only the succinate form can be given IV, Rapid administration of high doses can cause circulatory collapse **Drug Interactions:** **Monitor**: electrolytes Na+ and K+, glucose, CNS changes **Side Effects:** **Stability:**
		ED UT1-ICU UT2-IU OR/PACU	Spinal Cord Injury protocol: **I.I. LD:** 30 mg/kg in 100 mL NS or D5W over 15 mins, then wait 45 mins to start maintenance infusion **C.I.** at 5.4 mg/kg/hr for 23 hrs (when < 3 hrs post injury or x 47 hrs (when ≥ 3 hrs-8 hrs post injury Round all doses to nearest 50 mg, use separate IV line.	
Metoclopramide Reglan® [antiemetic, dopamine antagonist] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Antiemetic GI Stimulant	ALL UNITS (Except Psy)	**IV Push:** ≤ 10 mg undiluted given over 1-2 mins, flush with 5 mL NS. **I.I. (ED-Migraines):** 10-20 mg in 50 mL NS or D5W over 5-10 mins.	**Caution/Warning:** **Comments**: Reduce dose to 5mg in renal failure & with elderly. Can be admixed in same syringe with diphenhydramine. *Contraindications*: Pheochromocytoma, Seizure disorder. **Drug Interactions:** **Monitor:** **Side Effects:** Sedation, diarrhea. Chronic use of metoclopramide has been linked to tardive dyskinesia, which may include involuntary and repetitive movements of the body. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Metoprolol Tartrate Lopressor® [beta blocker] 	Rate control-Atrial Fib., Unstable angina, hypertension	ALL UNITS (Except Psy)	 **IV Push:** 1.25 – 10 mg undiluted over 1-2 mins q 4, 6 , or 8 hrs	**Caution/Warning:** **Comments:** *Contraindications:* Pheochromocytoma, Heart block, Cardiac failure. **Drug Interactions:** **Monitor:** Patient must be on a bedside cardiac monitor or telemetry for IV Push. Cardiac monitor or telemetry is not required for Intermittent slow administration Check BP& HR 15 mins before & after med. Obtain hold parameters. Elderly may require lower doses. **Side Effects: Common:** Bradycardia, hypotension **Serious:** Bronchospasm, heart block **Stability:**
	Acute MI	ALL UNITS (Except Psy)	 **IV Push:** 5 mg undiluted over 1-2 mins q 5 mins x 3 doses if tolerated	
	Maintenance dose: Rate control-A. Fib., Unstable angina, hypertension	ALL UNITS (Except Psy)	**I.I.:** ≤ 2.5 - 10 mg in 50 mL NS/D5W @ rate of 1 mg/min or over 10 - 20 mins	
MetroNIDAZOLE Flagyl® [antibiotic] **LOOK ALIKE / SOUND ALIKE** **Oct 2017: Alternative must be considered if shortage. Restrict to severe-complicated C.diff.** **Click Here for Info**	Anaerobic Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 500 mg in 100 mL Premix q 8 hrs over 60 mins	**Caution/Warning:** **Comments**: Usual doses 500 mg q 8 hr, 500 mg IV q12hr. Educate patients to Avoid alcohol to prevent antabuse reaction (N/V, flushing). Do not refrigerate. **Drug Interactions:** **Monitor:** **Side Effects:** Loss of appetite, nausea/vomiting, metallic taste, headache **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Midazolam Versed® [short-acting benzodiazepine] **TITRATE MED**  **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Conscious sedation	ECT-A ED ENDO UT1-ICU IRAD OP-CARD OR/PACU UHSC	**Slow IV Push:** 0.5- 2 mg over 1- 2 mins– and repeat small doses. q 2-3 mins prn to desired sedation. Doses as low as 1 mg may achieve the desired effect for conscious sedation.	**Caution/Warning:** **Comments**: Reduce dose with Liver/Renal failure or if pt. is on narcotics or other sedatives. CI requires MD/LIP order for therapeutic goal (ex: RASS or explanation of desired level of sedation) or reason. Titrate per protocol to goal. Infusions are reserved for ICU patients both intubated and extubated patients with continuous monitoring of oximetry and capnography. Midazolam infusions are permitted in monitored extubated ICU patients who a. still need sedation after extubation or b. for ETOH withdrawal when metabolic acidosis is present from high dose LORazepam. Flumazenil must be readily available for reversal of benzodiazepine toxicity. Notify practitioner if unable to achieve desired level of sedation at the ordered maximum dose. ETOH withdrawal/Sedation: Midazolam infusions may be used as an alternative to LORazepam infusions during LORazepam shortages. Midazolam equivalency to LORazepam is difficult to predict. Conversion ratio of 1:2-3 from LORazepam to Midazolam when used for sedation or treating ETOH withdrawal symptoms. **Drug Interactions:** **Monitor (General/Per Moderate Sedation Guidelines):** BP (hypotension), RR, injection site, mental status, allergic/anaphylactic reaction, nausea/vomiting **Monitor (Specific to Continous Infusion):** BP, RR and sedation score (RASS) with each adjustment and every 1-2 hours once sedation is achieved, injection site (central line is preferred), mental status, continuous pulse ox and capnography if not mechanically ventilated. **Side Effects**: hypotension, resp. depression, apnea, pain at injection site , thrombophlebitis. Transitition to an oral benzodiazepine may be needed to avoid withdrawal symptoms. **Stability:**
	ICU sedation	UT1-ICU In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push LD:** 0.01 to 0.05 mg/kg or 0.5 – 4 mg slowly over 2mins **C.I.:** 50 mg/50 mL D5W or NS or 100 mg/ 100 mL D5W or NS (1mg/mL) Initial 0.02-0.1 mg/kg/hr = 0.5- 2 mg/hr, titrate by 0.5 mg/hr q 10 mins to achieve sedation with RASS of 0 to -1, or per MD/LIP orders. Titrate Med if ordered.	
	ETOH withdrawal if refractory to or impractical to use intermittent IV push	ED UT1-ICU	**C.I.:** 50 mg/50 mL D5W or NS or 100 mg/ 100 mL D5W or NS (1mg/mL) Start at 1 mg/hr & titrate by 1mg/hr q 30 mins to achieve sedation with RASS of 0 to -1, or as MD/LIP orders. Max of 20 mg/hr, unless higher max.is ordered by MD/LIP. Titrate per Order.	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Milrinone [phosphodiesterase inhibitor] TITRATE MED  **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	Cardiogenic shock	UT1-ICU UT2-IU OR/PACU	**I.I. LD:** 50 mcg/kg slowly over 10 mins then **C.I.:** 40mg/200mL D5W Premix (200mcg/mL) start @ 0.375 mcg/kg/min and do not Titrate unless ordered by MD/LIP. Desired response shoud be increase of cardiac output , CI > 2, and decrease PAOP.	**Caution/Warning:** **Comments**: Patient must be on a cardiac monitor/telemetry. CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index) or reason. Due to long half-life of 2-3 hrs expect a duration of action up to 6-8 hrs after the drip is DC'd. Incompatible with furosemide. Reduce dose in renal dysfunction **Drug Interactions:** **Monitor:** BP & HR pre and post loading dose and initiation of C.I. every 5 to 10 minutes then hourly until stable then every 2-4 hours or as ordered. Hemodynamic parameters for desired effect. Urine output every 2 hours. After discontinuation, monitor BP & HR every 2 hours for 8 hours. **Side Effects:** Ventricular arrhythmias, hypotension, angina. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Morphine Sulfate [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED** (CI/PCA) **HIGH ALERT / DOUBLE CHECK**  Avoid in midline cath see Page 14 (may be ok w/ short course)	Pain Control	ALL UNITS (Except Psy)	For Opioid Naïve & Average Patients **IV Push**: Doses ≤ 10mg, dilute in 10mL NS, over 2-3 mins.	**Comments on all routes of Administration of Morphine Sulfate** Requires RN/LPN verification double check on MAR **for Infusions, Epidural & PCA only.** **Caution/Warning**: Naloxone must be readily available as a reversal agent for opioid induced respiratory depression. Consider any specific patient risk factors that may contribute to unintended respiratory depression and/or excessive sedation levels. Risk factors may include but are not limited to: age > 55 years; preexisting pulmonary or hepato-renal disease; known or suspected sleep-disordered breathing problems; anatomic oral or airway abnormalities; and comorbidities of systemic disease, renal/hepatic impairment. **Comments:** **Monitor:** Pain relief, pulse oximetry, level of consciousness, RR & depth, HR, BP, mental status, nausea/vomiting. Check RR & sedation level in 5-15 mins. **Related Policy:** • Medication: High Alert, Double Check of **Side effects**: Somnolence, coma, respiratory depression, CNS depression, arrhythmias, hypotension, bradycardia, pruritus, nausea & vomiting **Stability:**
	Pain Control (Opioid tolerant patients)	ALL UNITS (Except Psy)	For Opioid Tolerant Patients **IV Push**: up to ≤ 40 mg , dilute in 10mL NS, over 2-3 mins.	
	Pain control	ALL UNITS (Except Psy)	**CI**: Opioid Naïve Patients Low Concentration: 100mg/100mL NS/D5W = 1mg/mL **CI**: Opioid Tolerant Patients High Concentration 500mg/100mL D5W/NS = 5mg/mL	**See above for comments on Morphine Sulfate.** CI: Use the low concentration (1mg/mL) unless consumption exceeds reasonable rate of bag change. If patients dosing or if fluid restriction requires a higher concentration specific MD/LIP orders must be written and Pharmacy must be consulted & Nurse Manager/designee notified. Rate of dose escalation must be specified for all CIs. CI is a titrate med if ordered as such. **Related Policies:** • Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving • Sickle Cell Pain: Pain Management Using High Dose Continuous & PCA Narcotic Infusions **Information on Morphine continues on the next page.**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Morphine Sulfate [opioid analgesic] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED** (CI/PCA) **HIGH ALERT / DOUBLE CHECK** 	Pain Control, **PCA Bolus Mode Only**	ALL UNITS (Except Psy)	**PCA: Bolus Mode Only.** **PCA**: Opioid Naïve Patients Low Concentration: 50mg/50mL NS = 1mg/mL **PCA**: Opioid Tolerant Patients High Concentration 250mg/50mL NS = 5mg/mL	**See prior page for comments on Morphine Sulfate.** PCA bolus doses for patients who do not need the continuous basal infusion and do not have continuous capnography. Use the 1 mg/mL concentration unless consumption exceeds reasonable rate of PCA change. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving
	Pain Control, **PCA Dual Mode (Basal Infusion & Bolus)**	All Units (Except Psy) with Continuous Capno-graphy	**PCA Dual Mode (Basal infusion & bolus)** Requires Continuous Capnography **PCA:** Opioid Naïve Patients Low Concentration: 50mg/50mL NS = 1mg/mL **PCA:** Opioid Tolerant Patients High Concentration 250mg/50mL NS = 5mg/mL	**See prior page for comments on Morphine Sulfate.** Use the 1 mg/mL concentration unless consumption exceeds reasonable rate of PCA change. High Dose narcotic syringe may be obtained in one of two ways: 1. Via hand delivery by the pharmacist/and or designee to the RN caring for the patient. The RN must sign a the delivery receipt for hand delivered doses. 2. Via an automated dispensing cabinet in designated areas. The RN must scan the product prior to removal. **Related Policies:** • Pain (Acute): Continuous Opioid Infusions and Patient Controlled Analgesia (PCA): Care of the Patient Receiving **Exceptions to continuous capnography monitoring:** 1) Patient on mechanical ventilation 2) End-of-life care (e.g. hospice, comfort measures only)

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Multivitamin	Vitamin deficiency	ALL UNITS	**C.I.:** 1 vial of vial one and 1 vial of vial two for a total of 10 mL to at least 500 mL of IVF over at least 1 hr	**Caution/Warning:** **Comments**: 1 vial of water soluble & 1 vial of fat soluble vitamins= 1 vial of MVI **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Stable for 48 hrs @ R.T.
Mycophenolic acid Cellcept® [immune suppressant] HD CAUTION: HAZARDOUS DRUG BKC: Dispose in Black Bin	Prophylaxis against cardiac, renal or liver transplant rejection	ALL UNITS (Except Psy)	**I.I.:** 1 Gm in 150 mL D5W, 1. 5Gm in 250 mL D5W, given over 2 hrs. Cardiac transplant rejection; Prophylaxis: 1.5 Gm IV/ORAL twice daily Liver transplant rejection; Prophylaxis 1 Gm IV twice daily Renal transplant rejection; Prophylaxis 1 Gm IV/ORAL twice daily	**Caution/Warning:** **Comments**: Switch to oral therapy as soon as it can be tolerated by the pt. Negative serum or urine pregnancy test (sensitivity of at least 25 mIU/mL) within 1 week prior to initiation in all women of childbearing age required. Consult references for dose reduction in renal failure. Hazardous medication precautions. Increased risk of congenital malformations. Pregnancy Category D. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Possible Serious side effects**: Anemia, Gastric ulcer, Gastrointestinal hemorrhage, Gastrointestinal perforation, Leukopenia, Malignant epithelial neoplasm of skin, non-melanoma, Malignant lymphoma, Neutropenic disorder (Severe), Opportunistic infection, Pleural effusion, Progressive multifocal, leukoencephalopathy, Pulmonary fibrosis, Sepsis, Thrombocytopenia. Others include: Hypotension, peripheral edema, hypo/hyperkalemia, hyperglycemia, hypocalcemia, h ypomagnesemia, GI- abd pain, diarrhea/constipation, N/V, abnormal LFT's, headache, tremors, inc. BUN/Cr, Dyspnea, cough. **Stability:** Only stable for 4 hrs.
Nafcillin [antibiotic] If Extravasation, see Pages 10&11 to follow Oxacillin guidance ADS MIXTURE Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1-2 Gm in 100 mL NS (Minibag Plus) over 30 -60 mins q 4-6 hrs.	**Caution/Warning:** **Comments:** Contraindications: Type 1 hypersensitivity to Penicillin or Cephalosporins **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If mixed by pharmacy: 24 hrs at room temperature, 7 days if refrigerated

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Nalbuphine Hydrochloride Nubain® [opioid analgesic]	Pain Pruritis while on Epidural	ALL UNITS (Except Psy)	**I.I.:** Pruritus: 2.5-5mg IV push undiluted over at least 2 to 3 minutes. **Pain:** 10 mg IV push undiluted over at least 2 to 3 minutes. May titrate to appropriate effect. Maximum dose in nonopioid tolerant patients: 20mg/dose; 160mg/day.	**Caution/Warning:** **Comments**: Other routes: IM, SubQ. Reserve nalbuphine for use in patients for whom alternative treatment options (eg, nonopioid analgesics) are ineffective, not tolerated, or would be otherwise inadequate to provide sufficient management of pain. Taper may be required for discontinuation of therapy for pain. For use in surgical anesthesia supplement, dose of 0.3 to 3 mg/kg administered over 10 to 15 minutes. Recommended to reduce dose in hepatic or renal insufficiency. **Drug Interactions:** **Monitor:** **Side Effects:** similar to other narcotics. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Naloxone Narcan® [narcotic antagonist]	Reversal of narcotics	ALL UNITS	**IV Push:** **Full Reversal:** 0.4 mg undiluted over 15-30 secs, flush with 5 mL NS, may repeat q 2 mins as needed. **Partial Reversal:** For 0.04 mg dose: mix 1mL naloxone with 9mL NS for 0.04mg/mL. 0.04mg over 15-30 secs, flush with 5mL NS, may repeat q2 mins as needed. Use lower doses in patients who are opioid dependent to avoid sudden withdrawal.	**Caution/Warning:** **Comments:** Stable for 24 hrs in refrigerator. Continuous infusions may be required to reverse long acting narcotics. Use cautiously if seizure history, avoid if meperidine induced seizures. If no response after 10 mg, check for other causes. **Drug Interactions:** **Monitor:** BP, HR, RR, return of sedation. **Side effects:** opioid withdrawal (nausea/vomiting, sweating, tachycardia, tremulousness, cardiovascular changes), pulmonary edema, arrhythmias, hyper/hypo-tension **Stability:**
	Reversal of narcotics	ED UT1-ICU OR/PACU	**C.I. (for initial positive response but patient reverses to sedative state or if patient is on long acting narcotics, start ASAP):** 4 mg/ 250mL D5W or NS (16 mcg/mL) , at usual rate of 0.4 mg/hr or 2/3 rd's of initial bolus doses required in 1 hr for reversal or 0.0025 mg/kg/hr. Recommended maintenance rate after pt is arousable is 0.04-0.08 mg/hr (2.5-5mL/hr).	May need additional IV bolus doses after the CI is initiated. Use Pulse Oximetry with CI

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Pruritus (itching) with narcotics if antihistamines fail to control symptoms	ALL UNITS (Except Psy)	**C.I.:** 0.5 mg / 250 mL D5W or NS (2 mcg/ml) infuse @ 0.25 mcg /kg/hr to reduce symptoms of pruritus without causing an increase in pain.	**Comments:** The incidence of pruritus, nausea and vomiting and urinary retention are likely more frequent with morphine than HYDROmorphone or FentaNYL. Monitor for relief of pruritus and pain control per standard pain assessments and frequencies. Doses up to 2.4mcg/kg/hr have been reported in literature (see references). Not for use in patients receiving prn opioids only. **References:** Greenwald PW, Provartaris J, Coffey J, et al. Low-dose naloxone does not improve morphine-induced nausea, vomiting and pruritus. *Amer J Emerg Med.* 2005;23:35-9. Maxwell LG, Kauffmann SC, Bitzer S, et al. The effects of a small-dose naloxone infusion on opioid-induced side effects and analgesia in children and adolescents treated with intravenous patient-controlled analgesia: a double-blind, prospective, randomized, controlled study. *Anest Analg.* 2005;100:953-8. Koch J, Manworren R, Clark L, et al. Pilot study of continuous co-infusion of morphine and naloxone in children with sickle cell pain crisis. *Am J Hematol.* 2008;83:728-31. Gan T, Ginsberg B, Glass PS, et al. Opioid-sparing effects of a low-dose infusion of naloxone in patient-administered morphine sulfate. *Anesthesiology.* 1997;87(5):1075-81. Kjellberg F and Tramer MR. Pharmacological control of opioid-induced pruritus: a quantitative systematic review of randomized trials. *Eur J Anaesthesiol.* 2001;18:346-57.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Natalizumab Tysabri® [recombinant immunoglobulin-4 (IgG4) monoclonal antibody directed against alpha(4) integrin]	Crohn's disease (Moderate to Severe) Multiple sclerosis	MED/ SURG/ ONC OP-INFC OP-NCCC	**I.I.:** 3-6 mg/kg per monthly treatment or 300 mg / 100 mL NS IV given over approximately 1 hr, repeat every 4 weeks (28 days)	**Caution/Warning:** **Comments:** Natalizumab dosing should be withheld immediately at the first sign or symptoms suggestive of Progressive multifocal leukoencephalopathy (PML) which is a an opportunistic viral infection of the brain that usually leads to death or severe disability. PML may manifest as progressive weakness on one side of the body or clumsiness of limbs, disturbance of vision, confusion, and personality changes. Concurrent corticosteroids, antineoplastic, immunosuppressant, or immunomodulator therapy can increase risk of PML. MD evaluation: for Multiple Sclerosis 1) MRI (number of new gadolinium-enhancing lesions); prior to therapy and periodically (e.g., monthly or bimonthly) 2) Evaluate, as required by TOUCH (TM) Prescribing Program, 3 and 6 months after the first infusion and every 6 months thereafter [1] 3) Signs of clinical relapse 4) Improvement in disability (e.g., Kurtzke Expanded Disability Status Scale) 5) Well-being/quality of life assessments (interview **Pharmacy:** Available via restricted distribution program called the TOUCH™ Prescribing Program. To prepare the solution for infusion, withdraw 15 mL concentrate from the single-use vial and admix with 100 mL NS. Infuse over 1 hr. Gently invert the solution to mix; do not shake. Following dilution, natalizumab should be used immediately or kept under refrigeration and used within 8 hours. **Drug Interactions:** **Monitor:** Observe the patient during infusion and for 1 hour after the infusion is complete. Discontinue the infusion at any sign or symptom of a hypersensitivity reaction (urticaria, pruritus, dizziness, headache, rigors). No other medications should be mixed with natalizumab or injected into a side port of the infusion **Side effects:** **Hypersensitivity reactions:** Anaphylaxis/anaphylactoid – bronchospasm, headache, dizziness, fatigue, urticaria, pruritus, rigors, abdominal discomfort, nausea and headache. **Infection Risk** of Respiratory & Urinary tract , opportunistic infections, Arthalgias. **CNS** Progressive multifocal leukoencephalopathy (PML)- may include depression, , drowsiness, inattentiveness, Babinski sign , inability to sit or stand, tendency to fall to left side, impaired cognition, disabling hemiparesis, depressive and aggressive episodes, and dysarthric speech. Antibody-positive to natalizumab included hypertension and tachycardia, along with infusion reactions, myalgia, dyspnea, and anxiety. **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Neostigmine [acetylcholinesterase inhibitor]	Reversal agent for depolarizing muscle relaxants	ECT-A HT1-ICU OR/PACU UHSC	**IV Push:** 0.05 mg/kg or 0.5-2 mg undiluted over < 2-3 mins	**Caution/Warning:** **Comments**: Reduce for renal impairment, elderly. Max. of 10 mg/24hrs for Treatment of Myasthenia Gravis & 5mg for reversal of neuromuscular blockers. Monitor required. **Drug Interactions:** **Monitor:** **Side Effects**: Bradycardia, A-V block, bronchoconstriction, inc. salivation, N/V, diarrhea, diaphoresis, muscle spasms. Atropine or glycopyrrolate must be at bedside to treat bradycardia. **Stability:**
	Colonic Pseudo-obstruction, Myasthenia Gravis	MD/LIP only in HT1-ICU HT2-INT	**IV Push:** 0.5-2.5 mg IV	
NiCARdipine Cardene® [Calcium Channel Blocker] TITRATE MED 	Acute HTN encephalopathies Arterial hypertension in acute ischemic/ hemorrhagic stroke	ED UT1-ICU	**C.I.:** 20 mg/ 200 mL D5W Premix (0.1 mg/mL). Initiate at 2.5 - 5 mg /hr, increase by 2.5 mg/hr q 5 mins up to desired BP goal (25% reduction of MAP) or a max of 15 mg/hr. After achieving BP control decrease rate slowly to 3mg/hr and adjust to BP goals. Titrate med if ordered as such.	**Caution/Warning:** **Comments**: Central vein is preferred due to irritation with peripheral veins. Change IV site q 12hrs if given via peripheral line. CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index) or reason. Titrate per order to goal. Start lowest dose with elderly. Incompatible with furosemide & heparin. Avoid excessive reductions in dose to lower risk of precipitating renal, cerebral or coronary ischemia. May worsen ischemia & CHF in CAD pts. **Drug Interactions:** **Monitor:** Monitor BP, EKG, HR. **Side Effects**: hypotension, edema, flushing, Vent. Premature Contractions, tachycardia, & EKG changes, chest pain. **Stability:** Stable for 24 hrs at room temperature if mixed.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Nitroglycerin NTG [vasodilator] **TITRATE MED**  If Extravasation, see Pages 10&11 BKC: Dispose in Black Bin	Pulmonary HTN, CHG w/ AMI, Angina, HTN crisis Nitroglycerin may be titrated on UT2-IU (Intermediate) only for indication of chest pain, with a maximum titration dose of 50 mcg/min. For all other indications, provider must adjust rate per order up to a maximum dose of 50 mcg/min	ED UT1-ICU UT2-IU OR/PACU	**C.I.:** 50 mg/ 250 mL D5W (200 mcg/ml) Start at 10 mcg/min, increase by 10 mcg/min q 5 mins to usual desired relief of chest pain, decrease of SBP to 100-120 or MAP > 60, or as ordered. **Max of 200 mcg/min in UT1-ICU, ED, PACU** unless MD/LIP orders higher. Recommended > 50 mcg/min for coronary vasodilation if patient tolerates. **Max of 50 mcg/min in UT2-IU.** Titrate Med if ordered as such.	**Caution/Warning:** **Comments**: Pt must be on a cardiac monitor/telemetry. Use glass bottle**.** **CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index, PAOP) or reason. Titrate per order to goal. Do not start if SBP < 90 or PAOP < 12.** Contraindications: head trauma or CNS hemorrhage. Tolerance develops in 24-48 hrs. Titrate off slowly and if asymptomatic can taper at the same dose as upward titration. Also, titrate dose down if headache is severe and patient remains pain free. Compatible w Amiodarone, DOBUTamine, DOPamine, Heparin, DiltiaZEM, Esmolol, Furosemide **Drug Interactions:** **Monitor**: BP, HR, PAOP. For C.I.: BP & HR every 5-10 minutes with each dose titration until positive response then once stable every 30 minutes x 2 then every 1-2 hours. If initiated for chest pain, monitor severity and characteristics of pain with each titration. If SBP < 90 or decreases by 30 mmHg or more decrease rate to prior dose. Continue to evaluate and decrease rate until BP stabilizes. Stop infusion if severe hypotension occurs. **Side effects:** hypotension, headache, flushing, dizziness, reflex tachycardia, bradycardia (may require atropine), n/v, restlessness, diaphoresis, abd. Pain **Stability:**
	Prevention of arterial spasm in catheters	CCL/EP IRAD OR/PACU	**Catheter:** (Diamondback 360 System by CSI). 1000mL NS with 20mL of Viper Slide (lubricant), 5mg of Nitroglycerin, and 5mg of verapamil (or nicardipine).	
	Vasodilator	CCL/EP OR/PACU	**Syringe:** Pharmacy prepares 100mcg/mL, 20mL syringes for use in the cath lab and as well for use in the OR.	Syringe 100mcg/mL stability for CCL is 7 days refrigerated and protected from light. References: https://www.ijpc.com/Abstracts/Abstract.cfm?ABS=3750 Driver, PS. Jarvi EJ, Gratzer PL. Stability of nitroglycerin as nitroglycerin concentrate for injection stored in plastic syringes *Am J Health Syst Pharm* December 1, 1993 50:2561-2563

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Nitroprusside Nipride® [vasodilator] TITRATE MED 	Hypertensive Crisis Pul. HTN Intracranial Hemorrhage	ED UT1-ICU OR/PACU	**C.I.:** 50 mg/ 250 mL D5W (200 mcg/ml) or 100 mg/ 250 mL D5W (400 mcg/ml) Start at 0.3 mcg/kg/min, increase by 0.3 mcg/kg/min q 5 mins to usual desired decrease of SBP to 100-120 or MAP>60 , or as ordered. Max dose: 10 mcg/kg/min, unless MD/LIP orders higher max. Extreme HTN emergency doses up to 10 mcg/kg/min can be used for < 10 mins Titrate med if ordered as such.	**Caution/Warning:** **Comments**: Pt must be on a cardiac monitor/telemetry. CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index) or reason. Titrate to goal per order. May consider to slow the rate of infusion if nausea and vomiting. If hypotension occurs, decrease rate to prior level. Stop for severe hypotension. Notify MD/LIP is desired response not achieved at maximum dose. Avoid in Aortic stenosis, coarctation of aorta. Use with caution in hepatic/renal disease. Risk of cyanide toxicity @ mod-high doses. Consider use of Thiosulfate 1 gm per 100 mg of Nitroprusside. Consult Pharmacy. Consult references for antidotes with thiocyanate toxicity. Incompatible with NS. Keep supine or limit HOB elevation to 30 degrees. **Drug Interactions:** **Monitor:** EKG, BP & HR with each titration then hourly once desired response obtained (Continuous blood pressure monitoring via a-line is preferable, otherwise, non-invasive blood pressure monitoring may be used), Renal function **Side Effects**: hypotension, dizziness, headache, flushing, thiocyanate levels (should be < 10 mg/dL) for prolonged tx > 24-48 hrs. Monitor for metabolic acidosis **Stability:** Stable for 7 days at room temperature. Protect from light by using black bag from manufacturer.
Norepinephrine Levophed® [sympathomimetic, vasopressor] TITRATE MED  If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Severe hypotension or Shock	ED UT1-ICU OR/PACU	**C.I.:** in D5W (preferred) or NS Low: 4 mg/250 mL D5W [Premix] (16 mcg/mL) High: 16 mg/ 250 mL D5W (64 mcg/mL) Pharmacy to label as above Start at 0.03 mcg/kg/min and titrate by 0.03 mcg/kg/min q 2 mins, titrate to achieve usual increase in SBP to 100-120 or MAP > 60, or as ordered. Max dose: 0.3 mcg/kg/min, unless MD/LIP orders higher max. Titrate Med if ordered as such. **Syringes for OR Area (ePHEDrine Shortage replacement):** 20mcg/10mL (2mcg/mL) syringes	**Caution/Warning:** **Comments**: Patient must be on a cardiac monitor/telemetry. CI requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index) or reason. Titrate per order to goal. Central line is preferred. Notify MD/LIP is desired response not achieved at maximum dose. **Drug Interactions:** **Monitor:** EKG, BP, HR, RR, U/O, per. Circulation. For C.I.: BP&HR with each titration then every 30 minutes x 2, every 1-2 hours once desired response obtained. IV site for extravasation. Urine output every 1 to 2 hours; hourly if strict I&O. **Side Effects:** hypertension, palpitations, tachycardia, angina, gangrene at peripheral site Extravasation can cause tissue necrosis. **Stability:** Bicarbonate will inactivate norepinephrine. Stable when mixed by JDH pharmacy and protected from light in refrigerator for 14 days and 24 hours at room tempertature. Syringe stability: 14 day expiration under refrigeration, 2 day expiration if left out of fridge. Protect from light. Reference on stability: The stability of four catecholamines in 5% glucose infusions. *J Clin Phar Ther.* 1991 Oct;16(5):337-40 Premix products not mixed by JDH pharmacy are good for 45 days at room temperature.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Ocrelizumab Ocrevus® [monoclonal antibody] 	Crohn's Disease	OP-INFC	**I.I.:** **First 2 infusions (300 mg dose):** 300 mg/250mL NS: Begin infusion at 30 mL/hour; increase by 30 mL/hour every 30 minutes to a maximum rate of 180 mL/hour with an inline 0.2 micron low sorbing (protein) binding filter. Infusion duration is 2.5 hours or longer. **Subsequent infusions (600 mg dose):** 600 mg/500mL NS: Begin infusion at 40 mL/hour; increase by 40 mL/hour every 30 minutes to a maximum rate of 200 mL/hour with an inline 0.2 micron low sorbing (protein) binding filter. Infusion duration is 3.5 hours or longer.	**Caution/Warning:** Premedicate prior to each infusion with steroid, antihistamine and may also consider acetaminophen. **Comments:** Use 0.2 micron low sorbing (protein) binding filter. Do not infuse in the same IV line with other agents. **Drug Interactions:** **Monitor:** Infusion reactions during infusion and for at least 1 hour following the end of infusion. Signs/symptoms infection, malignancy and progressive multifocal leukoencephalopathy. **Side Effects:** **Stability:** 8 hrs at room temperature; 24 hours refrigerated. Do not freeze. Do not shake.
Octreotide SandoSTATIN® [somatostatin]	Carcinoid Syndrome	ALL UNITS (Except Psy)	**IV Push:** 50-500 mcg then **I.I.:** 50 mcg/hr for 8- 24 hrs	**Caution/Warning:** **Comments**: Refrigerate ampules/vials until used. IV push administration may result in increased gastrointestinal adverse effects. Octreotide may be given as a rapid IV bolus in an emergency situation (e.g. Carcinoid crisis). Can elevate serum glucose in NIDDM and lower serum glucose in IDDM. Clearance of drug reduced by 50% in dialysis patients. Protect C.I. from Light. **Drug Interactions:** **Monitor:** **Side Effects**: flushing, edema, headache, dizziness, glucose changes, nausea, bradycardia, QTC prolongation. **Stability:**
	Diarrhea		**IV Push:** dose undiluted or in 5mL NS over 3 mins **I.I.:** 50-200 mcg q 8 hrs in 50 mL NS over 10- 20 mins	
	Esophageal bleeding		**C.I.:** 500 mcg/100mL NS (5 mcg/mL) start at 25 mcg/hr (5 mL/hr) 1,250 mcg/250mL NS (5 mcg/mL) at 50 mcg/hr (10 mL/hr)	
Ondansetron Zofran® [5HT3 antagonist]	Antiemetic	ALL UNITS	**IV Push:** ≤ 12 mg dilute with 5 mL NS given over 1-2 min, flush with 5 mL NS- given q 6-8 hrs prn n/v.	**Caution/Warning:** **Comments:** Pharmacy to admix doses > 12 mg/ 50 mL D5W Severe Hepatic Impaired do not exceed 8mg/day **Drug Interactions:** **Monitor:** for fever, rash, pruritus, and restlessness **Side Effects:** RARE- headache, dizziness **Stability:**
		ALL UNITS (Except Psy)	**I.I.:** > 12 mg/ 50 mL NS/D5W over 5 mins Chemotherapy Induced Emesis: 8-20 mg or 0.15 mg/kg in 50-100 mL NS/D5W over 2-15 mins	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Omadacycline Nuzyra® [tetracycline antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected infection caused by a proven-susceptible multidrug-resistant gram-positive or gram-negative pathogen for which other formulary / restricted formulary agents are inactive Salvage therapy for certain non-TB Mycobacteria Patient receiving omadacycline prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** If stored under refrigeration, allow diluted infusion solution to reach room temperature prior to infusion. -Infuse 200 mg dose over a total of 60 minutes and 100 mg dose over a total of 30 minutes through a dedicated line or Y-site -If no dedicated line available, flush line with NS or D5W before and after infusion of omadacycline	**Caution/Warning:** May result in fungal or bacterial superinfection (e.g. Clostridium difficile); QT prolongation; Hepatic impairment **Comments**: **Altered kidney, Hepatic Impairment:** No dosage adjustment necessary **Drug interactions:** Substrate of P-glycoprotein/ABCB1 (minor); may decrease the effectiveness of BCG, Cholera, and Typhoid vaccines; may enhance the adverse/toxic effect of Retinoic Acid Derivatives **Monitoring:** Periodic renal and hepatic function tests **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** nausea; vomiting **Stability:** Store intact vials and tablets at 20°C to 25°C (68°F to 77°F); excursions permitted to 15°C to 30°C (59°F to 86°F). Diluted infusion solutions are stable for 24 hours at room temperature (≤25°C) or for 7 days when refrigerated (2°C to 8°C). Do not freeze.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Oritavancin Orbactiv® [glycopeptide antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected skin & skin structure infection (given as a single-dose treatment), bone infection, or endocarditis caused by caused by MRSA in a patient intolerant to or not responding clinically to vancomycin, daptomycin, ceftaroline, or linezolid Patient who needs long-term anti-MRSA therapy for above infections in the outpatient setting for whom traditional outpatient parenteral antibiotic therapy ("OPAT") and/or adherence to oral therapy is not possible	ALL UNITS (Except Psy)	**I.I.:** Infuse over 3 hours. -If a common IV line is being used to administer other drugs in addition to oritavancin, the line should be flushed before and after each infusion with D5W.	**Caution/Warning:** May result in fungal or bacterial superinfection (e.g. Clostridium difficile); hypersensitivity reaction; infusion reactions; osteomyelitis **Comments**: **Altered kidney, Hepatic Impairment:** No dosage adjustment necessary **Drug interactions:** may artificially increase the results of laboratory tests commonly used to monitor IV heparin effectiveness; may decrease the effectiveness of BCG and Cholera vaccines **Monitoring:** Baseline serum urea nitrogen, Scr, and LFTs **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** nausea; vomiting; diarrhea; headache **Stability:** Store intact vials at 20ºC to 25ºC (68ºF to 77ºF); excursions are permitted between 15ºC to 30ºC (59ºF to 86ºF). Reconstituted vials and solution diluted in D5W may be stored refrigerated at 2°C to 8°C (36°F to 46°F) for 12 hours or at room temperature 20°C to 25°C (68°F to 77°F) for 6 hours. The total time from reconstitution and dilution to completed administration should be ≤6 hours at room temperature or ≤12 hours if refrigerated.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Oxacillin [antibiotic] **ADS MIXTURE** If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1-2 Gm in 100 mL NS (Minibag Plus) over 30 -60 mins q 4-6 hrs.	**Caution/Warning:** **Comments**: *Contraindications:* Type 1 hypersensitivity to Penicillin or Cephalosporins **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** If mixed by pharmacy: 4 days at room temperature, 7 days if refrigerated
Oxytocin Pitocin® **TITRATE MED**	Uterine contractions for Labor & increase tone to limit postpartum bleeding	L&D OR/PACU UHSC	**C.I.:** 30 units/ 500 mL (60 milli-units/mL) start at 2 milli-units/min and increase by 2 milli-units/min every 30 min per protocol or as ordered by the LIP until an adequate labor pattern is established.	**Caution/Warning:** **Comments** : Compatible in D5W, NS, LR. **Drug Interactions:** **Monitor**: uterine contractions, HR, BP, intrauterine pressure, I/O's. **Side Effects**: Uterine tachystole, hypertonus, fetal bradycardias, n/v, **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
LOOK ALIKE / SOUND ALIKE **HIGH ALERT / DOUBLE CHECK** [uterine stimulant] **Change in concentration and administration for PPH prevention anticipated start date 12/10/2018** **BOLUS OFF BAG**: ability to bolus from continuous infusion bag via Alaris Pump Guardrails for Prevention of Hemorrhage in Third Stage of Labor for Vaginal Birth	Postpartum third stage management	L&D OR/PACU UHSC UT1-ICU UT2-IU	**C.I.:** 30 units/500 mL (60 milli-units/mL) Adminsiter 10 units over 10 minutes (999 mL/hr for 10 minutes) via a bolus from infusion bag, followed by 20 units over 4 hours (83.33 mL/hr for 4 hours)	
Palonosetron Aloxi® [5HT3 antagonist]	Antiemetic for Chemotherapy	ALL UNITS (Except Psy)	**IV Push:** < 0.25 mg undiluted given over 30 sec, flush with 5 mL NS.	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Pamidronate Aredia® [inpatient IV Biphosphonate] Avoid in midline cath see Page 14 (may be ok w/ short course)	Hypercalcemia associated with malignancy, MM, Paget's disease	ALL UNITS (Except Psy)	**I.I.:** 30, 60 or 90 mg in 500-1000 mL D5W or NS or 0.45% over 2-4 hrs	**Caution/Warning:** **Comments**: Formulary Inpatient IV Biphosphonate. Minimum 7 days between doses. Zoledronic acid (Zometa-®) for outpatient. Hydration is recommended. **Drug Interactions** **Monitor:** Ca++. P, Mg, BUN, Cr, phlebitis, hypersensitivity rxn's, malaise, GI-n/v, bone pain. **Side Effects:** Vein irritation, hypersensitivity reactions, CNS- malaise, fever, N/anorexia, bone pain **Stability:**
Pancuronium Pavulon® [neuromuscular blocking agent]	Paralytic for intubation	MD/LIP in ED UT1-ICU OR/PACU	**IV Push:** 0.04 – 0.1mg/kg undiluted over 1-2 mins with additional doses at 60 min intervals.	**Caution/Warning:** **Comments**: Pt MUST be on a ventilator. Must be sedation before use. Consider analgesia. Reduce dose in renal impairment & w elderly. Contra: with steroids due to high risk for prolonged neuro-muscular blockade. **Drug Interactions:** **Monitor:** TOF, HR, BP, Pulse Ox. **Related Policies:** • Neuromuscular Blocking Agents (NMBA): IV Administration **Side Effects:** Tachycardia **Stability:**
Pantoprazole Protonix® [Proton Pump Inhibitor]	Stress ulcer Prophylaxis, GERD, PUD	ALL UNITS	**IV Push:** 20-40mg dilute with 10 mL NS administered over 2-3 min, flush with 5 mL NS. 80 mg dilute with 20mL NS administered over 2-3 min, flush with 5 mL NS **I.I. (non-preferred method of adminstration):** doses > 40 mg in 100 mL NS over 10-15 mins	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration **Comments**: H2 antagonists (famotidine) should be considered for Stress Ulcer Prophylaxis unless the patient has an active upper GI bleed or a history of GI bleeding. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** May store at room temperature. Infusion 80 mg/ 250 mL NS is stable for 2 days at room temperature, 14 days refrigerated.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Pantoprazole Protonix® [Proton Pump Inhibitor]	Upper GI Bleed (UGIB)	ALL UNITS (except Psy)	**LD (UGIB) IV Push:** 80 mg dilute with 20mL NS administered over 2-3 min, flush with 5 mL NS **LD (UGIB) (non-preferred method of administration):** 80 mg in 100 mL NS over 15-20 minutes then **C.I. (UBIG):** 80 mg in 250 mL NS at 8 mg/hr (25 mL/hr) for 24- 48 hrs with switch to IV Intermittent or oral 40- 80 mg po bid	
Pegloticase Krystexxa® [anti-gout]	Tophaceous Gout refractory to standard agents	OP-INFC	**I.I.:** 8 mg (2mL) in 250 mL NS, infuse over a minimum of 2 hrs	**Caution/Warning:** **Comments:** Requires pretreatment with corticosteroid (methylPREDNISolone) & antihistamine (diphenhydrAMINE). **Drug Interactions:** **Monitor:** Signs and symptoms of anaphylaxis or delayed infusion reactions can be seen during or after the infusion. For infusion reactions slow or stop the infusion and restart at a slower rate. **Side Effects** **Stability:** after dilution is stable for 4 hrs at room temperature or refrigerated
Penicillin K+ [antibiotic] If Extravasation, see Pages 10&11 **Minibag Plus bag for 5 MU (Other doses may require evaluation if D5W shortage)** **ADS MIXTURE**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1, 2, 4 million units / 50 mL D5W (NS – see stability info) over 30-60 mins 3 million units pre-mix given q 4 to 6 hrs in 50 mL D5W over 30-60 mins 5 million units/100 mL NS (minibag plus) over 30-60 minutes	**Caution/Warning:** Penicillin or Severe Type 1 Hypersensitivity/Anaphylaxis to Cephalosporins. Hyperkalemia with Penicillin K+ doses. Pen K+ has 1.7 mEq K/ 1 million units **Comments**: Benzathine PCN & Procaine PCN not IV. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Admixed D5W: room temperature= 24 hrs, refrigeration= 7 days Per Trissel's (NS) Pen G K+ 20,000 units/mL in NS stable for 24hrs RT, 4 days Fridge Pen G K+ 40,000 units/mL in NS stable for 24hrs RT and Fridge Pen G K+ 100,000 units/mL in NS stable 7 days Fridge, RT stability was 18% loss in 2 days

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Pencillin Na+ [antibiotic] If Extravasation, see Pages 10&11 **Minibag Plus bag for 5 MU (Other doses may require evaluation if D5W shortage)** **ADS MIXTURE**	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** 1, 2, 4, 5 million units / 50 mL D5W over 30-60 mins 5 million units/100 mL NS (minibag plus) over 30-60 minutes	**Caution/Warning:** Penicillin or Severe Type 1 Hypersensitivity/Anaphylaxis to Cephalosporins. **Comments**: Benzathine PCN & Procaine PCN not IV. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Admixed D5W: room temperature= 24 hrs, refrigeration= 7 days Per Trissel's (NS) Pen G Na+ 50,000 units/mL in NS stable for 28 days Fridge Pen G Na+ 80,000 units/mL in NS stable for 48 hours Fridge
Pentamidine [antiprotozoal] Avoid in midline cath see Page 14	PCP PCP Prophylaxis	ALL UNITS (Except Psy) UT-BMT	**I.I.:** 4mg/kg/daily in 250 mL D5W over 60 mins I.I: 300mg in 250 mL D5W over 60 mins	**Caution/Warning:** **Comments**: Pharmacy admix. Use Pentam. Dilute to ≤ 6 mg/mL. **Drug Interactions:** **Monitor:** **Side Effects:** Hypotension **Stability:** Stable for 24 hrs in refrigerator.
PENTobarbital Nembutal® [barbiturate]	Mgt. of inc. intracranial pressure, status epileticus	UT1-ICU OR/PACU	**I.I. (Status Epilepticus):** 10-15 mg/kg in 100 mL D5W or NS over 1 hr then CI: 0.5 mg/kg/hr	**Caution/Warning:** **Comments**: Pt MUST be on a ventilator.Consider continuous EEG monitoring. Taper gradually to DC. **Drug Interactions:** **Monitor**: temp, RR, BP, HR, mental status.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
LOOK ALIKE / SOUND ALIKE **DEAP:** Contact RPh for Proper waste disposal **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS** Avoid in midline cath see Page 14		UT1-ICU	**I.I. LD:** 10-15 mg/kg over 1 -2 hrs then **C.I.:** 1-3 mg/kg/hr PENTobarbital. Coma	**Side Effects**: hypothermia, hypotension, resp. depression. **Stability:**

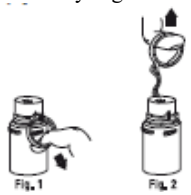
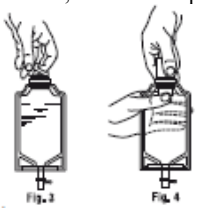
Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Peramivir Rapivab® [antiviral agent] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY** **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Influenza	ALL UNITS (Except Psy)	**I.I.:** 600 mg in 100 mL NS or D5W over 15-30 minutes	**Caution/Warning:** Dermatologic reactions (eg, erythema multiforme, Stevens-Johnson syndrome); Hypersensitivity reactions; Neuropsychiatric events **Comments:** Uncomplicated influenza: -CrCl ≥50 mL/min: No dosage adjustment necessary -CrCl 30 to 49 mL/min: 200 mg as a single dose -CrCl 10 to 29 mL/min: 100 mg as a single dose -ESRD requiring intermittent hemodialysis (IHD): 100 mg as a single dose, administered after dialysis Hospitalized patients with influenza: -CrCl ≥50 mL/min: 600 mg once daily -CrCl 31 to 49 mL/min: 150 mg once daily -CrCl 10 to 30 mL/min: 100 mg once daily -CrCl <10 mL/min (not on renal replacement therapy): 100 mg once daily on day 1, then 15 mg once daily beginning on day 2 -ESRD requiring intermittent hemodialysis (IHD): 100 mg on day 1, then 100 mg given 2 hours after each dialysis session **Drug interactions**: May diminish the therapeutic effect of Influenza Virus Vaccine (Live/Attenuated) -Avoid administration of live influenza virus vaccine (LAIV) within 2 weeks before or 48 hours after administration of antiviral agents. -Consider avoiding LAIV if peramivir was given within the last 5 days or baloxavir was given within the last 17 days **Monitoring**: Baseline BUN and serum creatinine, neurologic abnormalities (eg, abnormal behavior), rash after administration **Related Policies**: Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** constipation, nausea, diarrhea, neutropenia, increased serum glucose, increased LFTs **Stability:** Store intact vials in original carton at 20°C to 25°C (68°F to 77°F); excursions are permitted between 15°C and 30°C (59°F and 86°F). After dilution, administer immediately or store at 2°C to 8°C (36°F to 46°F) for up to 24 hours. **Discard unused diluted solution after 24 hours.**
PERFLUTREN LIPID MICROSPHERE Definity® [radiological contrast media]	To prolong contrast enhancement with ECHO	ECHO UT1-ICU UT2-IU UT3-MED	Withdraw 1.3 mL (1.43 mg) of definity and dilute with 8.7 mL NS= 10 mL total. Administer initial IV injection of up to 2 mL over 30-60 secs. May repeat until optimal image is obtained. Max dose: 20 mL in one patient study.	**Caution/Warning:** **Comments:** Follow manufacturer directions for preparation and handling. Dilute entire vial of Definity® 1.3 mL with 8.7 mL NS = 10 mL. **Drug Interactions:** **Monitor:** **Side Effects:** Hypersensitivity reactions: urticaria, pruritus, dizziness, chest pain, dyspnea, back pain, Headaches, anaphylaxis. **Stability:** **Related Policies:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
PERFLUTREN LIPID MICROSPHERE Optison® [radiological contrast media]	To prolong contrast enhancement with ECHO	ECHO	**Initial dose:** 0. 5ml flush with NS Do not exceed 1 ml over 1 sec May repeat until optimal image is achieved. Max dose: 8.7 ml in one patient study. Do not exceed 5 mL in any 10 min study.	**Caution/Warning:** **Comments:** Follow manufacturer directions for preparation and handling. Dilute entire vial of Optison **Drug Interactions:** **Monitor:** **Side Effects:** Hypersensitivity reactions: urticaria, pruritus, dizziness, chest pain, dyspnea, back pain Headaches, anaphylaxis. DiphenhydrAMINE 25 mg IV for rash. For anaphylaxis: DiphenhydrAMINE 25 mg IV x 1 for rash or anaphylaxis MethylPREDNISolone 125 mg IV x 1 for anaphylaxis EPINEPHrine) 0.3 ml SC x 1 for anaphylaxis **Stability:**
PHENobarbitol [barbiturate] **LOOK ALIKE / SOUND ALIKE** If Extravasation, see Pages 10&11 **DEAP:** Contact RPh for Proper waste disposal Avoid in midline cath see Page 14	Status Epilepticus with repeat dosing	ED UT1-ICU UT2-IU	**I.I.:** Status epilepticus: 10-20 mg/kg in 50 mL NS over 10-15 mins. May repeat with 5 mg/kg q 15- 30 mins. Max 40 mg/kg/day DNE: 50 mg/min	**Caution/Warning:** For emergency situations only. Avoid extravasation/alkaline. Additional respiratory support may be required particularly when maximizing loading dose or if concurrent sedative therapy. Repeat doses administered sooner than 10 to 15 minutes may not allow adequate time for peak CNS concentrations to be achieved and may lead to CNS depression. **Comments:** Reduce dose in renal/liver failure and the elderly. Therapeutic range: 15-40 mcg/mL. **Drug Interactions:** **Monitor:** temp, RR, BP, HR, mental status, PHENobarbital level **Side effects:** drowsiness, residual sedation, apnea, headache, vertigo, resp. depression, hypotension, coma. **Stability**: Protect from light. Stable for 14 days at room temperature.
	Anticonvulsant	ALL UNITS (Except Psy)	**I.I.:** Status epilepticus: 10-20 mg/kg in 50 mL NS over 10- 15 mins **I.I.:** Maintenance dose: 1-3 mg/kg/day in divided doses in 50 mL NS over 10-15 mins DNE: 50 mg/min	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Phentolamine [alpha blocker, antidote]	Prevention and management of hypertensive episodes associated with pheomchromocytoma	OR/PACU	**Preoperative**: 5 mg IV as rapid IV injection 1-2 hours before surgery, repeat if needed **Intraoperative:** 5 mg IV as rapid IV injection as indicated to prevent or control paroxysms of hypertension, tachycardia, respiratory depression, convulsions, or other effects of epinephrine toxicity associated with tumor manipulation **Mix:** Reconstitute a 5 mg vial with 1 mL SWFI.	**Caution/Warning:** contraindications include hypersensitivity to phentolamine, myocardial infarction, history of myocardial infarction, coronary insufficiency, angina, or other evidence suggestive of coronary artery disease. Tachycardia and cardia arrhythmias may occur. **Comments:** **Drug Interactions:** use caution with other alpha adrenergic agents **Monitor:** Blood pressure, heart rate, assess for orthostasis **Side Effects:** bradycardia, hypo/hypertension, MI, cerebrovascular spasm, nausea, cardiac arrhythmia, dizziness, flushing **Stability:** Reconstituted solution should be used immediately after preparation, however are stable at room temperature for 48 hours or 1 week if stored between 2-8°C
Phenylephrine Neosynephrine® [sympathomimetic, vasopressor] **TITRATE MED**  If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Severe hypotension or Shock	ECT-A ED UT1-ICU OR/PACU CATH LAB (for Cath Lab under direct supervision of physician)	**C.I.:** in NS (preferred) or D5W Low: 10 mg/250 mL NS [Premix] (40mcg/mL) High: 40 mg/250 mL D5W (160 mcg/mL) Start at 10 mcg/min and titrate by 20 mcg/min q 2 mins to usual desired increase of SBP to 100-120 or MAP 60-70. Max :180 mcg/min, unless MD//LIP orders higher max. dose. Once BP stabilizes decrease to 40-80 mcg/min. Titrate Med if ordered as such. **Syringes for OR Area (ePHEDrine Shortage replacement)/ECT-A:** 400mcg/10mL (40mcg/mL) syringes	**Caution/Warning:** **Comments** : Patient must be on a cardiac monitor/telemetry. C.I. requires MD/LIP order for therapeutic goal (ex: BP, HR, MAP, Cardiac Index) or reason. Titrate per order to goal. Taper discontinuation can be at same dose as upward titration. Central line is preferred. Extravasation can cause tissue necrosis. **Drug Interactions:** **Monitor:** RR, EKG, IV site every 1-2 hours for infiltration, BP&HR with each dose adjustment until desired effect achieved then every 1-2 hours. U/O every 1-2 hours; hourly if strict I&O. **Side effects:** Vasoconstriction, hypertension, reflex bradycardia decreased renal perfusion, arrhythmias **Stability:** Stable when mixed by JDH pharmacy and protected from light at room temperature for 14 days. Syringe stability when compounded by JDH pharmacy: 14 day expiration under refrigeration, 2 day expiration if left out of fridge. Reference for stability: Chemical stability of Phenylephrine HCL after reconstitution in 0.9% sodium chloride injection for infusion. *International Journal of Pharmaceutical Compounding.* Vol 8 No 2 March/April 2004. Premix products not mixed by JDH pharmacy are good for 45 days at room temperature.
Phenytoin Dilantin® If Extravasation, see Pages 10&11	Anticonvulsant	ED UT1-ICU UT2-IU	**IV Push:** doses ≤100 mg undiluted over 3-5 mins or at rate of 25 mg/min , no filter needed if given undiluted.	**Caution/Warning:** **Comments**: *Loading Dose:*15-20 mg/kg at a max. rate< 50 mg/min *Maintenance:* 5-7 mg/kg/day in 2-3 divided doses. *Load Level:* 2-4 hrs post IV load or 24 hrs post PO load

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
 BKC: Dispose in Black Bin  ADS MIXTURE Avoid in midline cath see Page 14		ALL UNITS (Except Psy)	**I.I.:** up to 500 mg in 100 mL NS over 30mins with 0. 2 micron filter > 500 mg in 250 mL NS over 30- 60 mins with 0.2 micron filter	*Maintenance Levels:* at steady state 10-21 days, 2-4 days post load to estimate of accumulation or deficiency of fixed maintenance.dose , if suspect sub therapeutic response (seizures) or toxicity. *Therapeutic Range:* 10-20 mg/ml Dosing; for each µg/mLdesired increase in the phenytoin serum level, increase the loading dose by 0.75 mg/kg. Do Not Exceed 50 mg/min. Nursing to use 0. 2 micron filter. NS only. Flush before and after with NS. Incompatible in D5W and with other meds. Central line is preferred. To minimize extravasation: dilute med, NS flush before and after med, give slowly, avoid small hand, wrist or foot veins. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** for dose related side effects: drowsiness, confusion, nystagmus, ataxia, slurred speech, nausea, mental changes, hypotension, resp. depression, coma. Non-dose related: IV site for extravasation, medication induced Lupus Erythromatosis. Corrected Phenytoin=Measured Level /(0.2 x albumin)+ 0.1 Consider fosphenytoin for pts with poor venous access. **Side Effects:** **Stability:** Administration should commence immediately after the mixture has been prepared and must be completed within 1 to 4 hours.
Phosphate (K^+ or Na^+)	Phosphorous replacement	ALL UNITS (Except Psy)	**I.I.:** 15 mM in 250mL D5W over 3-4 hrs 15mM as Pre mix 30 mM – Follow the 1st- 15 mM dose with a 2nd- 15mM over 3-4 hrs	**Caution/Warning:** **Comments**: Do not infuse via same line as calcium containing solutions. Each 3 mM of K Phosphate has 4.4 mEq of K Each 3 mM of Na Phosphate has 4 mEq of Na **Drug Interactions:** **Monitor**: P, K, Ca, Na **Side Effects:** **Stability:**
Physostigmine [cholinergic, parasympathomimetic]	Reversal agent for non-depola-rizing muscle agents	MD/LIP only in UT1-ICU OR/PACU UHSC	**IV Push:** 1st dose: 0.5-1 mg up to 20 mg over > 2-5 min, may repeat q 20 mins until response or side effects	**Caution/Warning:** **Comments** : Atropine or glycopyrrolate must be at bedside to treat bradycardia **Drug Interactions:** **Monitor:** EKG, Vitals, bradycardia, AV Block, hypersalivation, inc. salivation, diaphoresis, N/V, diarrhea, resp. distress, muscle spasms. **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Phytonadione [Vitamin K, coagulant]	Bleeding with elevated INR	ALL UNITS (Except Psy)	**I.I.:** 1- 10 mg in 50 mL NS or D5W over 30 Mins **SC:** 1-10 mg	**Caution/Warning:** **Comments**: Rapid IV Push or infusions can cause hypotension and or anaphylactoid reactions. Hypotension is less with I.I. than IV Push. Low doses and slow infusion rates of vitamin K are recommended to prevent overcorrection which can lead to refractory states and systemic reactions. IV reserved for situations where other routes not feasible (oral). IV route is preferred over SC route. **Drug Interactions:** **Monitor**: BP, INR, bleeding. **Side Effects:** **Stability:** Stable for 24 hrs in refrigerator. Protect from light.

Piperacillin/ Tazobactam Zosyn® [antibiotic] **ADS MIXTURE**	Bacterial Infection	ALL UNITS	**I.I.:** 2.25 and 4.5 gm Premix over 30 mins q 6, 8 or 12 hr depending on renal function. 3.375 gm/ 100 mL NS (Minibag Plus /ADD-Vantage) over 30 mins q 6, 8 or 12 hr depending on renal function.	**Caution/Warning:** **Comments**: *Contraindications:* Penicillin allergy & caution with Cephalosporin allergy. Reduce dose or interval in renal failure. Do not mix with gentamicin or tobramycin. 1gm has 2.8 mEq Na. MD/LIP to Monitor Cr, CBC Instructions for Use of the ADD-Vantage® System **Click Here For Instructions To Use ADD-Vantage** To Open Diluent Container: Peel overwrap from the corner and remove container. Some opacity of the plastic due to moisture absorption during the sterilization process may be observed. This is normal and does not affect the solution quality or safety. The opacity will diminish gradually. To Assemble Vial and Flexible Diluent Container (Use Aseptic Technique): 1. Remove the protective covers from the top of the vial and the vial port on the diluent container as follows: A. To remove the breakaway vial cap, swing the pull ring over the top of the vial and pull down far enough to start the opening (SEE FIGURE 1.), then pull straight up to remove the cap. (SEE FIGURE 2.) NOTE: Do not access vial with syringe.  B. To remove the vial port cover, grasp the tab on the pull ring, pull up to break the three tie strings, then pull back to remove the cover. (SEE FIGURE 3.) 2. Screw the vial into the vial port until it will go no further. THE VIAL MUST BE SCREWED IN TIGHTLY TO ASSURE A SEAL. This occurs approximately 1/2 turn (180°) after the first audible click. (SEE FIGURE 4.) The clicking sound does not assure a seal; the vial must be turned as far as it will go. NOTE: Once vial is seated, do not attempt to remove. (SEE FIGURE 4.)  3. Recheck the vial to assure that it is tight by trying to turn it further in the direction of assembly. **Drug Interactions:** **Monitor:** **Side Effects:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
				Stability: Stable for 24 hrs at room temperature or 7 days in refrigerator
Plazomicin Zemdri® [aminoglycoside antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Patient with a complicated UTI caused by a highly multidrug-resistant gram negative bacteria for which no other formulary / restricted non-formulary treatment options exist	ALL UNITS (Except Psy)	**I.I.:** Infuse over 30 minutes. For patients with TBW greater than ideal body weight (IBW) by ≥25%, use 40% adjusted body weight (ABW) for dosing. IV: Dilute in NS or LR to total volume of 50 mL (maximum concentration: 45 mg/mL)._	**Caution/Warning:** **Boxed warnings:** Nephrotoxicity; ototoxicity; neuromuscular blockade; fetal harm May result in fungal or bacterial superinfection (e.g. Clostridium difficile); hypersensitivity reaction **Comments**: **CrCl ≥60 mL/minute:** No dosage adjustment necessary. **CrCl 30 to <60 mL/minute:** 10 mg/kg every 24 hours **CrCl 15 to <30 mL/minute**: 10 mg/kg every 48 hours **Drug interactions:** Cisplatin may enhance the nephrotoxic and neurotoxic effect of Aminoglycosides; Foscarnet, mannitol, and vancomycin may enhance the nephrotoxic effect of Aminoglycosides **Monitoring:** For patients with CrCl ≥15 mL/minute to <90 mL/minute, measure plasma trough concentration within 30 minutes prior to second dose. If trough concentration is ≥3 mcg/mL, extend dosing interval by 1.5 fold (ie, from every 24 hours to 36 hours or from every 48 hours to 72 hours). Urinalysis, urine output, BUN, Scr (prior to initiation of therapy and daily during therapy), plasma plazomicin trough (for patients with CrCl <90 mL/min); symptoms of ototoxicity or neuromuscular blockade **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** nephrotoxicity; ototoxicity; diarrhea **Stability:** Store intact vials refrigerated at 2°C to 8°C (36°F to 46°F). IV infusion solutions mixed in NS or LR at concentrations of 2.5 to 45 mg/mL are stable for 24 hours at room temperature or ≤7 days refrigerated.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Posaconazole Noxafil® [azole antifungal] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY** 	Fungal Infections Documented or suspected infection caused by Aspergillus spp. or another voriconazole-susceptible mold in a patient who (1) cannot receive voriconazole, Documented or suspected infection caused by a mold where posaconazole is expected/documented to have "best" activity Patient receiving medication prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Infuse over 90 minutes via a **central venous line.** -Do not administer IV push or bolus. -Must be infused through an in-line filter (0.22 micron polyethersulfone [PES] or polyvinylidene difluoride [PVDF]). Infusion through a peripheral line should only be used as a one-time infusion over 30 minutes in a patient who will be receiving a central venous line for subsequent doses, or to bridge a period during which a central venous line is to be replaced or is in use for another infusion. May be an irritant. Note: In clinical trials, multiple peripheral infusions given through the same vein resulted in infusion-site reactions.	**Caution/Warning:** Hepatic dysfunction has occurred, ranging from mild/moderate increases of ALT, AST, alkaline phosphatase, total bilirubin, and/or clinical hepatitis to severe reactions; Arrhythmias: Use caution in patients with an increased risk of arrhythmia (long QT syndrome, concurrent QTc-prolonging drugs metabolized through CYP3A4, hypokalemia); Electrolyte abnormalities **Comments**: Do not use injection in patients with eGFR <50 mL/minute/1.73 m2, unless risk/benefit has been assessed. **Drug interactions:** Posaconazole is a strong CYP3A4 and P-gP/ABCB1 inhibitor and may increase serum concentrations of their substrates; alcohol may increase the concentration of posaconazole **Monitoring:** Obtain LFTs, renal function tests (especially patients on IV therapy if eGFR <50 mL/minute/1.73 m2), electrolytes, and CBC at baseline and occasionally during ongoing therapy. Correct electrolyte abnormalities prior to initiating therapy. Obtain ECG (patients with concomitant medications or conditions that prolong the QT); Monitor IV site for thrombophlebitis. **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** thrombophlebitis; pruritus; rash; electrolyte abnormalities; increased LFTs; headache; cough; fever **Stability:** Store intact vials at 2°C to 8°C (36°F to 46°F). Diluted solution for infusion may be stored for ≤24 hours at 2°C to 8°C (36°F to 46°F).
Potassium Chloride [electrolyte replacement] **If on shortage, here is guidance on alternatives:** **Click Here for Info** If Extravasation, see Pages 10&11 ≥40 mEq: Avoid in midline cath see Page 14 (may be ok w/ short course)	Hypokalemia	ALL UNITS (Except Psy)	**I.I. (Peripheral Line):** 10 mEq/100mL over 1 hour to minimize site Burning/ Phlebitis.	*These guidelines are the usual recommended doses and times of infusion for Potassium but they are not definitive in all clinical situations.* **Caution/Warning: Do NOT** administer undiluted or I.V. push; inappropriate parenteral administration may be fatal. Always administer potassium further diluted; refer to appropriate dilution and administration rate recommendations. Close monitoring of serum potassium concentrations is needed to avoid hyperkalemia. **Comments**: Low magnesium needs correction with hypokalemia for proper K+ correction. Recheck K+ level 1- 4 hrs after treatment. Pain & venous irritation can be minimized by administering IVPB K+ with a running IVF's. 10mEq of Potassium Chloride should raise serum K+ by ~0.1mEq/L (Reference: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/485434). Below is a simplified formula to calculate potassium deficit: $\frac{\text{Goal K} - \text{Serum K}}{\text{SrCr}} \times 100 = \text{Total mEq KCL}$
		HT1-ICU	**I.I. (Peripheral Line):** Max: 20 mEq/100 mL over 1 hour IVPB with continuous IVF's infusing is recommended.	
		ALL UNITS (Except Psy)	**C.I. (Peripheral Line):** Max: 40 mEq / Liter. Reassess need for replacement	

Re 08-052: Medication Administration for questions or concerns if unable to locate item in this guidance document.

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
		ALL UNITS (Except Psy)	**I.I (Central Line):** 10- 20 mEq/100mL over 1 hr. **I.I. (Central Line, Rapid response or code or life threatening arrhythmias with hypokalemia):** Max. Rate: 20 mEq /100 mL over 0.5 hr Cardiac monitor/telemetry required with rates > (greater than) 20 mEq/hr. **C.I. (Central Line):** Max: 80 mEq/ Liter	**Cardiac monitor/telemetry required with rates > (greater than) 20 mEq/hr.** **Monitor:** ***Hypokalemia****:* Report signs: ileus, muscle weakness, hypoactive DTR's, prolonged QT or prominent U wave. ***Hyperkalemia:*** Report signs: numbness, tingling, flaccid paralysis, AV block, QRS widening > 25% of baseline. **Side Effects:** rash, hyperkalemia **Stability:** Store at room temperature; do not freeze. Use only clear solutions. Use admixtures within 24 hours.
Potassium Phosphate [electrolyte replacement] If Extravasation, see Pages 10&11	Hypophosphatemia	ALL UNITS (Except Psy)	**I.I.:** 15 mM in 250mL NS or D5W over 3. 3 - 6 hrs For 30 mM – Follow the 1st 15 mM dose with a 2ND 15mM over 3 . 3 - 6 hrs	**Caution/Warning:** **Comments** : Pharmacy mixes but also available as pre-mix as 15 mM in 250 mL NS. For 30 mM doses use two of the 15 mM premix doses. Do not infuse via same line as calcium containing solutions. DNE: 7 mmol/hr Each 3 mM of K Phosphate has 4.4 mEq of K **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Procainamide [antiarrhythmic] **BOLUS OFF BAG:** Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	Advanced cardiac life support - Ventricular arrhythmia Ventricular arrhythmia, Life-threatening	ED UT1-ICU UT2-IU	**Slow IV Push (Load):** 1000 mg/250mL NS at 100 mg over 2-3 mins q 5 mins until rhythm is controlled or hypotension, QRS is prolonged > 50% or a total of 15- 18 mg/kg total dose is given then **C.I. :** 2000 mg/500 mL NS (4mg/mL) at maintenance of 1- 6 mg/min with maximum of 9 grams/ 24 hrs. Wait 5 to 10 minutes after bolus before starting C.I.	**Caution/Warning:** **Comments** : Stable for 24 hrs @ R.T. **12 lead Cardiac monitor/telemetry required.** In cardiac or renal dysfunction, reduce LD to 12 mg/kg and CI to 1-2 mg/min. **Drug Interactions:** **Monitor:** Proarrhthymic esp. in AMI, hypokalemia or hypomagnesemia, Can cause AV block, rarely V. Fib. Monitor BP, HR & EKG interval every 5-10 minutes during bolus then BP, HR & EKG interval every 2-4 hours. Monitor rhythm and BP while tapering and after discontinuation. MD/LIP to Monitor: Procainamide (4-10) and NAPA (10-30-active metabolite) levels. **Side Effects:** GI distress, CNS disturbances, seizures **Stability:**
		CCL/EP	**C.I.:** 10mg/kg in 100mL NS over 30 min Reference: http://circ.ahajournals.org/content/106/19/2514.full	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Prochlorperazine Compazine® [antiemetic, phenothiazine]	Phenothiazine Anti-emetic	ALL UNITS (Except Psy)	**IV Push:** No **I.I.:** doses up to 10mg in 50 mL NS over 15-30 mins	**Caution/Warning:** Caution with seizures. **Comments**: Not recommended for IV use due to High risk for resp. depression, hypotension, sedation, EPS. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Promethazine Phenergan® [antihistamine, phenothiazine] If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Anti-emetic	ALL UNITS (Except Psy)	**IV Push:** No **I.I.:** 12.5 – 25 mg in 50mL of D5W or NS given over 15-30min 6.25-12.5 mg in 50 mL D5W or NS given over 15-30min (elderly dose)	**Caution/Warning:** **Comments**: IM or PO preferred. High Risk for extravasation and tissue damage. Use lowest dose possible to minimize adverse CNS side effects. • Administer through large-bore vein only, no hand, wrist or foot vein. Central vein preferred. • Assure patent venous access and administer into tubing of a running IV due to high risk of extravasation tissue damage. Discontinue at once if extravasation occurs. • Check patency of access site. • Educate patient to inform a health care professional if they experience pain or burning during or after injection • No IV Push due to high risk for respiratorydepression, delirium, hypotension, sedation, EPS, & extravasation. Use IVPB, PO or IM. For adverse EPS: DiphenhydrAMINE 12.5- 25mg IVP or Benztropine 0.5-1mg IM **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Propofol [sedative, anesthetic] **HIGH ALERT / DOUBLE CHECK** **TITRATE MED**  **BOLUS OFF BAG:** Upon new EMR **April 2018**, ability to bolus from continuous infusion bag via Alaris Pump Guardrails.	Sedation of Intubated patients	ECT-A ED UT1-ICU OR/PACU in presence of MD/LIP for intubation	**IV Push:** 10-20 mg over 3-5 mins Use in an emergency to rapidly increase depth of sedation (e.g. to gain ventilatory control) in pts who are hemodynamically stable and when hypotension is unlikely to occur.	**Caution/Warning:** Propofol-related infusion syndrome (PRIS) *Contraindications:* Hypersensitivity to propofol or any component of the formulation; hypersensitivity to eggs, egg products, soybeans, or soy products **Comments**: Patient MUST be on a ventilator since causes respiratory depression (exception: conscious sedation in presence of an anesthesiologist). Use Sedation Holiday (daily awakening)/Spontaneous Breathing Trial (SBT) as indicated. In order to screen for potential vent weaning, propofol should be titrated to achieve a RASS of 0 (alert/calm). Daily evaluation of level of sedation/CNS function is necessary to determine the minimum dose of Propofol required to achieve the desired level of sedation. Consider concomitant narcotic analgesia. Intralipid content should be considered as part of nutritional intake. Follow specific orders for weaning: discontinue infusion 10-15 minutes prior to extubation (Except in case of hypotension/severe reaction, avoid abrupt discontinuation). Replace bottle and tubing q 12hr to decrease fungal contamination using strict aseptic technique. Chlorhexidine will be used as the prep for any access to the bottle, IV tubing or access port in which the med is to be infused using strict aseptic technique. Caution in hypertriglyeridemic pancreatitis IV Push Emergency Use only & in the presence of the MD/APRN **Monitor:** BP, RR, Sedation score every 1-2 hours and more frequently during active titration. Continuous BP monitoring via arterial line is preferrabl during continuous infusion. Monitor for hypotension after IV Push doses. Administration site. Triglyceride level q 2-3 days **Side Effects:** hypotension, bradycardia, MI depression, flushing, rash, hyperlipidemia, phlebitis. If mild hypotension develops, decrease infusion rate, elevate lower extremeties and notify provider. If clinically significant hypotension/cardiovascular depression occurs, administer IV fluids or vasopressor therapy per orders and discontinue the infusion. **Stability:** refrigeration is not required. Do not freeze. If transferred to a syringe or other container prior to administration, use within 6 hours. If used directly from vial/prefilled syringe, use within 12 hours. Shake well before use. Do not use if there is evidence of separation of phases of emulsion.
		ED UT1-ICU OR/PACU UHSC	**C.I.:** 1% (10 mg / mL) Premix (500mg/50mL D5W or 1000mg/100mL D5W) Start at 10 mcg/kg/min, titrate by 10 mcg/kg/min q 5 mins to achieve desired sedation with RASS 0 to -1 or as ordered by MD/LIP. Max dose is 50 mcg/kg/min, unless MD/LIP orders higher max. Titrate Med if ordered as such.	
Protamine [heparin antagonist]	Reversal of elevated aPTT from heparin.	ALL UNITS (Except Psy)	**I.I.:** 10-50 mg in 50 mL NS over 10-15 mins 100 mg in 50 mL over 20-30 mins	**Caution/Warning:** **Comments**: Rapid administration may cause severe hypertension/hypotension and anaphylactoid reactions. Each mg neutralizes 100 units of heparin infused in last 2 hrs. obtain PTT 5-15 min after protamine. If 30-60 mins have elapsed before starting protamine: use 0.5-0.75mg/ 100 units of heparin given in preceding 2 hrs. If > 2 hrs have elapsed: use 0.25-0.375 mg/100 units. Monitor thrombin time with open heart patients. **Drug Interactions:** **Monitor:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
	Regional line reversal of Heparin with CVVH	UT1-ICU UT2-ICU	**C.I.:** 250mg/ 250 mL NS at rate prescribed	**Side Effects:** **Stability:** Stable for 24 hrs at room temperature.

<table>
<tr><th>Generic name
Brand name
Med Class</th><th>Indications</th><th>Approved Units for Use</th><th>Dosing/Admixture Information</th><th>Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability</th></tr>
<tr>
<td>Prothrombin Complex Concentrate

Kcentra®

[vitamin K antagonist]

Formulary Restricted: PCC-Kcentra® is approved for neurosurgery for severe, life-threatening bleeds such as pre-op need for intracranial hemorrhage. Other major bleeding situations other require a HEME/ONC consult for Kcentra® approval. If HEME/ONC attending approves the use of Kcentra® in the situation he/she must directly communicate to pharmacist the approval, patient name, situation and dose. Kcentra® may also be ordered by an Emergency Medicine ATTENDING or Trauma Service ATTENDING or Critical Care ATTENDING.

Change in administration anticipated start date 12/10/2018</td>
<td>urgent reversal of acquired coagulation factor deficiency induced by vitamin K antagonist therapy in adult patients with acute major bleeding.

Bleeding in the setting of direct acting oral anticoagulant use</td>
<td>ALL UNITS (Except Psy)</td>
<td>I.I 1500 units once if INR is above 1.4; repeat INR should be obtained 30 minutes after administration. If INR has not declined adequalty, an additional 1000 units may be adminsitered.

Currently, JDH Pharmacy stocks Kcentra® 500 unit product which is reconstituted with 20mL of Sterile Water of Injection provided in the box. Doses should be pooled into a bag. Maximum infusion rate is 8.4mL/min.

Dosing for bleeding in the setting of direct acting oral anticoagulant (DOAC) use is 25 units/kg, rounded to the nearest 500 with a maximum of 2500 units. See below dosing chart for guidance. Vitamin K administration not needed in the setting of DOAC use.

Direct Oral Anticoagulant Reversal Dosing Chart
<table>
<tr><th colspan="4">Dose = 25 units/kg</th></tr>
<tr><th>Patient weight (kg)</th><th>Dose in units</th><th>Volume to infuse</th><th>Infusion Time</th></tr>
<tr><td>40 - 49 kg</td><td>1000</td><td>40 ml</td><td>5 min</td></tr>
<tr><td>50 - 69 kg</td><td>1500</td><td>60 ml</td><td>8 min</td></tr>
<tr><td>70 - 89 kg</td><td>2000</td><td>80 ml</td><td>10 min</td></tr>
<tr><td>90 or more kg</td><td>2500</td><td>100 ml</td><td>13 min</td></tr>
</table>
*If requested, an additional 25unit/kg or DOAC (Apixaban, Rivaroaban, Edoxaban) reversal may be approved with escalation for life threatening bleeding.</td>
<td><u>Caution/Warning:</u> Arterial and venous thromboembolic complications. Patients being treated with Vitamin K antagonists (VKA) therapy have underlying disease states that predispose them to thromboembolic events. Potential benefits of reversing VKA should be weighed against the potential risks of thromboembolic events (TE), especially in patients with the history of a thromboembolic event.
<u>Comments:</u> Administer vitamin K concurrently with Kcentra® to maintain vitamin K-dependent clotting factors once the effects of Kcentra® have diminished. Single-use only; do not reuse. Contains no preservatives. Reconstitute using aseptic technique with 20mL of diluent provided with the kit; reconstituted Kcentra® should be colorless, clear to slightly opalescent, and free from visible particles. Pharmacy will pool bolus doses in a bag. Once reconstituted Kcentra® should not be further diluted, i.e. should not be added to an infusion bag of fluid. Do not mix Kcentra® with other medicinal products. Kcentra® requires a dedicated line for administration; flush the line prior to administration. Because concurrent therapy with intravenous vitamin K is required, two peripheral lines should be placed prior to administration. If placing two lines is not possible, Kcentra® should be administered first, the line adequately flushed, and vitamin K administered immediately afterward. After the infusion of Kcentra® is complete, remove the empty bag and hang a 50mL NS bag using the same tubing. Run at the same rate as the Kcentra® infusion up to a maximum rate of 8.4 mL/min (~500mL/hr).
<u>Kcentra Reconstitution Video</u>
<u>Drug Interactions:</u>
<u>Monitor:</u> INR (baseline and at 30 minutes post dose); clinical response during and after treatment
<u>Side Effects:</u> hypotension/hypertension, tachycardia, n/v, arthralgia, headache, thromboembolic disorder, pulmonary embolism, hypersensitivity reaction, hypervolemia, mental status changes
<u>Stability:</u> Do not freeze. Do not further dilute. Store at 2°C to 25°C (35°F to 77°F). Protect from light. Reconstituted product may be stored at 2°C to 25°C (35°F to 77°F) and used within 4 hours following reconstitution. If cooled, warm to 20°C to 25°C (68°F to 77°F) prior to administration. A stability and compatibility study showed activity levels of Kcentra® were unaffected when mixed with LR or NS through a y-site infusion line set-up. Stability of Kcentra® was not influenced following storage in an infusion bag (IntraVia container, Baxter) for up to 24 hours.
Herzog E, Niebl P, Beyerle A, Treutlein M, Albers M, Omert L, Hood C. Stability of 4F-PCC after co-administration with crystalloid solutions [poster]. Presented at: American College of Clinical Pharmacy Annual Meeting; Phoenix, AZ. October 7-10, 2017.
<u>Kcentra Manufacturer Website</u>
Kcentra® Hotline 1-855-452-3687</td>
</tr>
</table>

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Pyridoxine [vitamin B6] SPLP/SPC: Place Packaging & Waste in Zip-Lock and return to pharmacy	Vit B6 dependency or deficiency states, Vomiting In pregnancy	ALL UNITS (Except Psy)	**I.I.:** 25-100 mg in 50 mL D5W or NS over 10-15 mins	**Caution/Warning:** **Comments:** Pyridoxine dependency syndrome 10 to 250 mg daily. Vitamin B6 deficiency; 25 mg/day for 3 weeks, followed by maintenance therapy with 1.5 to 5 mg/day in a multivitamin preparation. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Rasburicase Elitek® [Urate oxidase]	Hyperuricemia associated With Tumor Lysis Syndrome (TLS)	UT1-ICU UT2 ONC MS-5 OP-NCCC	**I.I.:** 3 or 6mg/50ml NS over 30 mins. Protect from light	**Caution/Warning:** Contraindicated in patients with G6PD-deficiency. May cause severe hypersensitivity reactions. **Comments:** Uric acid blood samples should be drawn in pre-chilled heparinized tubes, stored in ice water bath and brought to the lab immediately to prevent uric acid from degrading. **Drug Interactions:** **Monitor:** Uric acid levels, K+, Ca+, Phospherous **Side Effects:** Anaphylaxis (<1%), Hemolysis (<1%), and Methemoglobinemia (<1%) **Stability:** Stable for 24 hours at room temperature
Regadenoson Lexiscan® [diagnostic agent]	Non-exercise stress testing	CCL	**IV Push:** 15 sec IV	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Remdesivir Remdesivir® **RESTRICTED ANTIMICROBIAL** [Antiviral]	Coronavirus disease 2019 (COVID-19), severe	ALL UNITS(Except Psy)	**I.I. LD:** 200 mg in 250 mL NS over 30-120 minutes **Maintenance dose**: 100 mg in 250 mL NS over 30-120 mins x 9 days if mechanically ventilated OR x 4 days if not mechanically ventilated	**Caution/Warning:** Inspect product visually for particulate matter and discoloration prior to administration. **Comments:** Do not administered simultaneously with any other medication or IV solution other than NS; After infusion is complete, flush with at least 30 mL of NS **Drug Interactions:** unknown **Monitor:** LFTs, CBC, renal function and serum chemistries; signs and symptoms of infusion reaction **Side Effects:** infusion related reactions, transaminase elevations, **Stability:** prepared diluted solution is stable for 4 hours at room temperature or 24 hours in the refrigerator
Remifentanil Ultiva® [Analgesic, Opioid]	Anethesia	ECT-A OR/PACU		**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Reslizumab Cinqair® [Interleukin-5 receptor antagonist; monoclonal antibody]	Add-on maintenance treatment of severe asthma in adults with an eosinophilic phenotype	OP-INFC	**I.I.:** 3 mg/kg in 50 mL NS over 20-50 mins Administer with 0.22 micron filter only.	**Caution/Warning:** anaphylaxis, malignancies; not for the treatment of acute asthma symptoms or status asthmaticus; helminth infections in patients who are at risk. Comments: Administer with a 0.2 micron in-line filter; do not administer other medications through the same line concomitantly **Drug Interactions:** **Monitor:** anaphylaxis/hypersensitivity reactions during and after infusion; peak flow, and/or other pulmonary function tests; signs of infections **Side Effects:** **Stability:** Store intact vials in the refrigerator, protect from light in original package. Do not freeze or shake. Administer immediately after reconstitution. Reconstituted product may be stored in the fridge or at room temperature for up to 16 hours.
RifAMPin Rifadin® [antibiotic]	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** Doses up to 600 mg in 500 mL NS over 3 hrs	**Caution/Warning:** **Comments**: **Pharmacy admix**. Dilute to max. of 6mg/ml & administer within 24 hrs of preparation. Avoid extravasation. Central line is preferred. Adjust for renal dysfunction. Can increase metabolism of some meds. Caution may stain clothing. Causes red-brown colored stool, sweat, body fluids. Remove contacts during use to avoid permanent staining. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** As of July 2018, the storage of reconstituted vials was changed from 24 hours to 30 hours at room temperature, the stability when admixed in D5W was changed from 4 hours to 8 hours, and the stability when admixed in *NS from 24 hours to 6 hours*
riTUXimab Rituxan® [monoclonal antibody] **LOOK ALIKE / SOUND ALIKE**	Non-Hodgkin's lymphoma, Chronic lymphoid leukemia/ Rheumatoid arthritis (RA)	ALL UNITS (Except Psy)	**I.I.:** 375 mg/m^2 IV infusion to a final concentration of 1 mg/mL NS, start @ 50 mL/hr, if tolerated increase by 50 mL/hr q 30 mins to max. of 400 mL/hr until completed.	**Caution/Warning:** **Comments:** Premedication with acetaminophen, DiphenhydrAMINE & corticosteroid should be considered before each infusion of riTUXimab, as well as withholding of antihypertensive agents 12 hours prior to riTUXimab administration. Dose for Rheumatoid Arthritis is 1000mg. **Drug Interactions:** **Monitor:** CBC, Renal Fx, BP, HR **Side Effects:** Infusion related reactions, severe mucocutaneous reactions, hypotension, neutropenia, N/V, thrombocytopenia. If hypersensitivity or an infusion-related event develops, the infusion should be temporarily slowed or interrupted. **Stability:** Infusion solutions are stable for 24 hrs at refrigerator temps then another 24 hrs at room temperature

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Rocuronium Zemuron® [neuromuscular blocker] TITRATE MED 	Skeletal muscle relaxant for Mech. ventilation	ECT-A ED UT1-ICU OR/PACU UHSC	**IV Push LD**: 0.6- 1 mg/kg undiluted over 5-10 secs then **C.I.:** 500 mg/ 100 mL D5W or NS (5mg/mL) 5-16 mcg/kg/min. Start @ 5 mcg/kg/min and Titrate by 1 mcg/kg/min q 10 mins or as ordered to achieve Train of Four 2-3 out of 4 or as ordered. Max: 16 mcg/kg/min unless higher max. is ordered by MD/LIP	**Caution/Warning:** **Comments:** Use in ICU when other NMB's (cisatracurium or vecuronium) are not available. Has rapid onset and intermediate duration of action and low cardiovascular side effects similar to cisatracurium. Pt MUST be on a ventilator. CI requires MD/LIP order for therapeutic goal (ex: Train of Four) or reason. Titrate per order to goal. Stable for 24 hrs at room temperature. Requires an analgesic and sedative. **Drug Interactions:** **Monitor:** train of four, RR,BP,HR, apnea, resp. depression. **Related Policies:** • Neuromuscular Blocking Agents (NMBA): IV Administration **Side Effects:** **Stability:**
Sarilumab Kevzara® [Monoclonal antibody] RESTRICTED ANTIMICROBIAL NON-FORMULARY	COVID-19 Infections Treatment of severe COVID-19 infection in patient on either "high-flow" oxygen therapy or mechanical ventilation when tocilizumab is unavailable Only requires ID approval for the indication of COVID-19 infection.	ALL UNITS (Except Psy)	**I.I.:** Using SUBQ formulation, dilute in 100 mL NS and administer over 1 hour IV: 400 mg once, as part of an appropriate combination regimen	**Caution/Warning:** **Boxed warnings:** Active TB; invasive fungal infections; opportunistic infections Hypersensitivity reactions **Comments**: CrCl 30 to 90 mL/minute: No dosage adjustment necessary. CrCl <30 mL/minute: No dosage adjustments provided in the manufacturer's labeling. Not recommended for use in patients with active hepatic disease or hepatic impairment **Drug interactions:** Avoid concomitant use with immunosuppressants and DMARDs; may reduce the efficacy of some vaccinations; May decrease concentrations of CYP2C9 and 3A4 substrates **Monitoring:** Latent TB screening prior to therapy initiation; neutrophils, platelets, ALT/AST, signs/symptoms of infection (prior to, during, and after therapy), hypersensitivity reaction, and GI perforation. **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** Increased LFTs, injection site pruritus **Stability:** Store at 2°C to 8°C (36°F to 46°F) in original carton to protect from light. Do not freeze or shake. May store at ≤25°C (77°F) for ≤14 days. Do not store at >25°C (77°F). After removal from the refrigerator, use within 14 days or discard.
Scopolamine [anticholinergic]	Pre-Op Sedation	IRAD OR/PACU UHSC	**IV Push:** 0.3-0.6 mg Over < 1 min	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side effects:** Tachycardia, hypotension, dizziness, dry mouth **Stability:**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Secretin Chirhostim® [endocrine-metabolic agent]	Diagnostic Agent	ALL UNITS (Except Psy)	**IV Push**: 0.2 – 0.4 mcg/kg 2 mcg/mL 1 min	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Sincalide Kinevac® [diagnostic agent]	Gall Bladder	ENDO	**IV Push:** 0.02 mcg/kg (1.4 mcg/70 kg) over 30-60 secs depending on procedure. If a satisfactory contraction of the gallbladder does not occur in 15 mins, a 2nd dose of 0.04 mcg/kg may be given. **I.I.:** To reduce intestinal side effects an IV infusion of 0.12 mcg/kg in 100 mL NS may be given at 2 mL/min.	**Caution/Warning:** **Comments:** See specific protocols for each procedure. *Contraindications:* bowel obstruction. **Drug Interactions:** **Monitor:** **Side Effects:** abd. Pain, cramps, N, dizziness. **Stability:**
	Pancreatic Studies		**I.I.:** For Secretin-Kinevac test of pancreatic function, a Kinevac dose 0.04 mcg/kg IV over 30 min, starting 30 min after the initiation of secretin 0.25 units/kg IV over 60 min	
Sodium Bicarbonate 8.4% [systemic alkalinizer] If Extravasation, see Pages 10&11 **October 2018: During shortage of Sodium Bicarbonate, use Sodium Acetate for infusions.**	Metabolic Acidosis	In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IVPush (Codes):** 0.5- 1mEq /kg Over < 1 min **IV Push (ICU):** over <1 min	**Caution/Warning:** **Comments:** Do not piggyback with Calcium solutions. May cause hypernatremia, hypokalemia, hypocalcemia, met. Alkalosis, CHF, edema. **Drug Interactions:** **Monitor:** ABG's & Lytes, urine pH when being used for urinary alkalinization in patients receiving high dose methotrexate **Side Effects:** **Stability:** 24 hours at room temperature and 7 days refrigerated
	Metabolic Acidosis	ALL UNITS (Except Psy)	**C.I.:** 50-150 mEq/L D5W , rate determined by base deficit & MD/LIP	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Reference: Sodium Acetate as a Replacement for Sodium Bicarbonate in Medical Toxicology: a Review Avoid in midline cath see Page 14	Urinary Alkalinization for patients receiving high-dose methotrexate	UT1, UT6, MS5	**IVPush:** 50 mEq given over 1-2 min	
	Contrast Dye Induced Renal Failure Prevention	ALL UNITS (Except Psy)	**I.I.:** 150 mEq/ 1 Liter D5W @ 150 mL/hr x 1 L	
	Hyperkalemia	ALL UNITS (Except Psy)	**IV Push** 50 mEq (50 mL) over 1-2 mins	**Treatment of Hyperkalemia**: Follow MD orders: 1.Stop K+ infusions and oral therapy and Contact MD/LIP to Discontinue K+ infusions. 2. Consider Calcium Gluconate IV Push: 10-20 mL of 10% over 2 mins or 1 gm in 50 mL D5W or NS X 1-2 doses over 5-10 mins) 3. Dextrose IV Push (50 mL of D50 IV Push) undiluted over 1-2 mins 4. Regular Insulin IV Push (10 units) 5. Bicarbonate IVP (50 mEq= 50 mL of 8.4% over 2 mins 6. B2 adrenergics-albuterol nebs (10-20 mg = 12-24 mL nebulized); 7. Loop diuretics 8. Na Polystyrene (15-60 gms) 9. Hemodialysis

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Sodium chloride 3% If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	To reduce increase in Intracranial Pressure (ICP) & Cerebral edema	UT1-ICU UT2-IU (May start emergently in patients on other units followed by immediate transfer to approved unit for use.)	**I.I. LD:** 300 mL of 3 % sodium chloride as a bolus over 15-20 mins then **C.I.:** 40-70 mL/hr with goal of serum sodium 150 to 155 mEq/L (or per MD order). Maximum rate for peripheral lines of 75 mL/hr; rates of infusion > 75mL/hr are allowed via central venous access.	**Caution/Warning:** **Comments:** -Requires IV Pump. -Central line preferred. If a central line cannot be obtained a large bore peripheral line may be used for up to five days with daily site changes and RN assessment of the peripheral vein for inflammation and phlebitis q shift. Rate of infusion for peripheral lines should not exceed 75 mL/hr. -HT1-ICU Only: for patients without central access who require higher rates of infusion, a second peripheral line may be placed at a rate not to exceed 75 mL/hr for up to 12 hours. Central access must then be obtained for further administration. -Na level >160 mEq/L evaluate risk versus benefit -Blood for testing should NOT be drawn via the central line through which the 3% sodium chloride is infusing. -Send labs as Stat -Consider free water restriction -Consult Neurology for assistance **Drug Interactions:** **Monitor:** -Signs & symptoms of hemolysis, pulmonary edema. -ICP and/or clinical response with neurological status exam q 1-2 hours -Na, K, CL, Glucose, osmolarity -Serum sodium, chloride, osmolality to be checked one hour after bolus than every 4 hours for 24 hours -Natriuresis/Diuresis: input/output q 1 hour and daily weight -V/S: BP (hypotension) , HR, RR, O2 Sat q 1 hour **Side Effects:** hypernatremia, hyperchloremic acidosis, fluid overload and electrolyte abnormalities, “rebound” cerebral edema, central pontine myelinolysis **Stability:** **Information on Sodium chloride 3% continues on the next page.**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Sodium chloride 3% If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Severe Symptomatic Hyponatremia Serum Na+ < 120	UT1-ICU UT2-IU (May start emergently in patients on other units followed by immediate transfer to approved unit for use.)	Therapy should be guided by frequent monitoring of plasma sodium concentration. Severe hyponatremia is defined as a plasma concentration below 120mEq/L. In the absence of urinary loss of water, 1ml of 3% saline per kg of body weight will increase the plasma sodium concentration approximately 1mEq/L. Acute hyponatremia (duration less than 2 days) should be corrected over hours. Avoid increasing plasma sodium concentration by greater than 10mEq/L per day: -100ml bolus of 3% saline q 10 min times three as needed for severe symptoms -goal to increase plasma sodium concentration by 4-6 mEq/L in first 6 hours. Chronic hyponatremia (unknown duration or greater or equal to 2 days) should be corrected over days. Avoid increasing plasma sodium concentration by greater than 8mEq/L per day: -slow infusion (determine rate based on body weight and 24 hour sodium goal) -may need 100ml bolus of 3% saline for seizures -goal to increase sodium concentration by 4-6 mEq/L in first 24 hours	**See prior page for comments on Sodium chloride 3%.** **Caution/Warning:** -Use caution with patients with congestive heart failure, renal insufficiency, and sodium retention disorders. -The administration of 3% sodium chloride injection in hyponatremia has been associated with vein damage, pulmonary edema, CNS complications and volume overload. **Comments:** -Serum Sodium increase > 0.5 mEq/L/hr - Notify MD/LIP. -Rapid correction (increase in Na+ greater than 10mEq/L in 24 hrs) is associated with osmotic demyelination syndrome with neurologic events including flaccid paralysis, dysphagia, palsy, lethargy, coma and seizures. Stop infusion immediately and contact MD/LIP immediately if any of these are observed. -Orders must specify specific volume to be infused over a specific number of hours or a rate as mL/hr for a specific number of hours. -3% NaCl has 513 mEq/L NaCl & 1027 mOsmol/L -2 mL of 3% NaCl = 1 mEq Na **Monitor:** -Signs & symptoms of hemolysis, pulmonary edema. -Neurological status exam q 1-2 hours -Na, K, CL, Glucose, osmolarity -Serum sodium, chloride, osmolality to be checked after bolus doses and every 2-4 hours with infusions -Natriuresis/Diuresis: input/output q 1 hour and daily weight -V/S: BP (hypotension) , HR, RR, O2 Sat q 2-4 hours **Side Effects:** hypernatremia, hyperchloremic acidosis, fluid overload and electrolyte abnormalities. *Reference: Sterns R H. Disorders of Plasma Sodium – Causes, Consequences, and Correction. N Engl J Med 2015;372;55-65.*

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Sodium Chloride 23.4% [concentrated electrolyte] **HIGH ALERT / DOUBLE CHECK** Avoid in midline cath see Page 14	Increased Intracranial pressure	ED UT1-ICU OR (LIP Admin Only)	**I.I.:** 30 mL given over 2-20 minutes	**Caution/Warning:** Monitor serum sodium to avoid sodium toxicity, vesicant **Comments:** Administered via central line by a LIP only **Side Effects:** If extravasation occurs, stop infusion immediately and disconnect (leave cannula/needle in place); gently aspirate extravasated solution (do **NOT** flush the line); initiate hyaluronidase antidote (if indicated); remove needle/cannula; elevate extremity. Apply dry cold compresses **Stability:** Store at room temperature. Use only clear solutions.
Sodium Phosphate [electrolyte replacement]	Hypophosphatemia	ALL UNITS (Except Psy)	**I.I.:** 15 mM in 250mL D5W Premix over 3. 3 - 4 hrs For 30 mM – Follow the 1st 15 mM dose with a 2ND 15mM over 3. 3 - 6 hrs	**Caution/Warning:** **Comments:** Do not infuse via same line as calcium containing solutions. Do not exceed 7 mmol/hr. Each 3 mM of Na Phosphate has 4 mEq of Na **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Sodium Thiosulfate [antidote, Calciphylaxis (off-label use)]	Calciphylaxis (off-label use)	ALL UNITS (Except Psy)	**I.I.:** 25 g in 200 mL NS over 60 min (confirmed preparation with Fresenius Medical Care as to dilute 100mL of the drug in an additional 100mL of NS)	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 24 hours (Reference: Physico-Chemical Stability of Sodium Thiosulfate Infusion Solutions in Polyolefin Bags at Room Temperature over a Period of 24 Hours) **References:** Unexpectedly Severe Metabolic Acidosis Associated with Sodium Thiosulfate Therapy in a Patient with Calcific Uremic Arteriolopathy Sodium Thiosulfate Therapy for Calcific Uremic Arteriolopathy

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Sotrovimab VIR-7831 [Biologic, Monoclonal Antibody] **RESTRICTED ANTIVIRAL** 	FDA issued Emergency Use Authorization (EUA): Mild-to-moderate COVID-19 in adults and pediatric patients with positive results of direct SARS-COV-2 viral testing, and who are at high risk for progression to severe COVID-19, including hospitalization or death.	ALL UNITS (Except Psy)	**I.I.:** 500mg in 108mL NS over 30 min through an intravenous line containing a sterile 0.2 micron polyethersulfone (PES) filter. Do not administer simultaneously with any other medication. The compatibility of sotrovimab with IV solutions and medications other than 0.9% Sodium Chloride Injection is not known. Once infusion is complete, flush the tubing with 0.9% Sodium Chloride. Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete.	**Caution/Warning:** There is a potential for serious hypersensitivity reactions, including anaphylaxis, with administration of sotrovimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive care. In addition, infusion-related reactions have been observed with administration. **Drug Interactions:** Clinical drug-drug interaction studies have not been performed with sotrovimab. Sotrovimab is not renally excreted or metabolized by cytochrome P450 (CYP) enzymes; therefore, interactions with concomitant medications that are renally excreted or that are substrates, inducers, or inhibitors of CYP enzymes are unlikely. **Monitor:** Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete. **Side Effects:** The most common treatment-emergent adverse events observed in the sotrovimab treatment group in COMET-ICE were rash (2%) and diarrhea (1%), all of which were Grade 1 (mild) or Grade 2 (moderate). No other treatment-emergent adverse events were reported at a higher rate with sotrovimab compared to placebo. **Stability:** Refrigerate unopened Sotrovimab vials at 2°C to 8°C (36°F to 46°F) in the original carton. Do not freeze, shake, or expose to direct light.
SUFentanil [opioid analgesic]	Pain control	OR/PACU	**C.I.** 250 mcg in 25 mL NS at 0.2 – 1 mcg/kg/hr	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

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Succinylcholine [neuromuscular blocker]	Skeletal muscle relaxant for intubation	In presence of Critical Care RN or Action RN and LIP/CRNA for emergency intubation, ALL UNITS	**IV Push by MD/CRNA:** 0.5-1 mg/kg undiluted over 15-30 secs	**Caution/Warning:** **Comments:** In presence of MD/CRNA for intubation only. Atropine pretreatment may be needed to treat bradycardia. Do not administer with hyperkalemia. Consider analgesia and sedation before use. Quick onset, short duration. **Drug Interactions:** **Monitor:** **Related Policies:** • Neuromuscular Blocking Agents (NMBA): IV Administration **Side Effects:** Hypotension, flushing, hyperkalemia, bradycardia, Consider sedation and analgesia before use. **Stability:** Vials stored in intubation kit are good for 8 months at room temperature per reference: Adnet et al. "Stability of succinylcholine solutions stored at room temperature studied by nuclear magnetic resonance spectroscopy" Emerg Med J 2007;24:3 168-169 doi:10.1136/emj.2006.041053
Sugammadex Bridion® [binding agent for steroidal neuromuscular blockers]	Reversal agent for depolarizing muscle relaxants vecuronium and rocuronium	ECT-A UT1-ICU OR/PACU UHSC	**IV Push:** **(dose based on actual body weight)** **Administer bolus over 10 seconds.** Rocuronium and vecuronium reversal: -4 mg/kg, if spontaneous recovery of twitch response reaches 1-2 post-tetanic counts and there are no twitch responses to train-of-four stimulation. -2 mg/kg, if spontaneous recovery of the twitch response has reached the reappearance of the second twitch in response to train-of-four stimulation. Only rocuronium: -16mg/kg, if there is a clinical need to reverse neuromuscular blockade within 3 minutes of administration of a single dose of 1.2 mg/kg of rocuronium.	**Caution/Warning:** Patients with CrCl< 30 mls/min should not receive sugammadex. Monitor patients with severe hepatic impairment since this population has not been thoroughly studied. Interacts with oral contraceptives, binding to progestogen and potentially estrogen, decreasing efficacy; patients on oral contraceptives should use non-hormonal back-up contraception for 7 days after receiving sugammadex. **Comments:** Do not mix with other agents prior to administration. Flush the infusion line with NS between administration of sugammadex and other agents. May inject into the line of a running infusion of NS, D5W, 1/2NSD2.5W, Lactated Ringers, Ringers solution, or D5NS. **Side Effects:** Common- nausea (23-26%), vomiting (11-15%), headache (5-10%) Serious- hypersensitivity (7-9%), prolonged QT (6%), increased aPPT/PTT/INR up to 1 hour after administration (1-2%), recurrence of neuromuscular blockade (<1%), anaphylaxis (0.3%) **Monitor:** Monitor the train of four to assess reversal. Monitor renal function. Monitor for anaphylactoid reactions. **Stability:** Store intact vials at controlled room temperature and protect from light.

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Tacrolimus Prograf® [immunosuppressant]  BKC: Dispose in Black Bin	Prevent organ transplant rejection	ALL UNITS (Except Psy)	**I.I.:** 0.01 to 0.05 mg/kg/day (0.5 – 2 mg in 100 mL NS or D5W IV , > 2 mg in 250 mL NS or D5W over 24 hrs) Final conc.: 0.004-0.02 mg/mL If IV administration is necessary, administer by continuous infusion only over 24 hours. Do not use PVC tubing when administering diluted solutions. Adsorption of the drug to PVC tubing may become clinically significant with low concentrations. Reference: Lexicomp	**Caution/Warning:** **Comments:** Stable for 24 hrs @ R.T. In Glass or polyolefin. Switch to oral therapy as soon as tolerated. Hazardous medication precautions. Increased risk of lymphomas and other malignacies. Reproductive effects seen in lab studies. Pregnancy Category C. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects**: anaphylaxis, thrombocytopenia, leukopenia, nephrotoxicity, severe HTN, hyperkalemia, seizures, neurotoxicity, immunosupression, infections, malignancy, QT prolongation, cardiac hypertrophy, pericardial effusion. Common side effects: GI- abd. Pain, diarrhea, anorexia; CNS-headache, insomnia, asthenia, fever, hypomagnesemia, hyperglycemia, anemia, inc. LFT's, per. edema, inc. BUN/Cr, cough. CycloSPORINE should not be administered concomitantly with **tacrolimus**. Increases in trough cycloSPORINE levels associated with elevations in serum creatinine have been observed with the combination **Stability:** stored in glass or polyethylene containers, and discarded after 24 hours
Tbo-filgrastim Granix ® [granulocyte colony stimulating factor]	Neutropenia	ALL UNITS (Except Psy)	**I.I.:** 300-480 mcg in D5W only (not NS) with minimum conc. of 5 mcg/ mL (recommended is 5-15mcg/mL) over 15-20 mins	**Caution/Warning:** Do not administer earlier than 24 hours after or in the 24 hours prior to cytotoxic chemotherapy. **Comments:** IV only if SC not feasible. More effective when given subcutaneously. Flush before and after with D5W not NS. Do not dilute with saline at any time as product may precipitate. **Drug Interactions:** **Monitor:** **Side effects:** RARE: ARDS and splenic rupture. **Stability:**

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Tecovirimat **TPOXX** [antiviral agent]	Monkeypox (off-label use)	ALL UNITS (Except Psy)	**I.I.:** 35 to <120 kg: 200 mg in 60 mL of NS or D5W every 12 hours ≥120 kg: 300 mg in 90 mL of NS or D5W every 12 hours **Administration:** Administer TPOXX injection by IV infusion over 6 hours via an infusion pump. NOT FOR IV BOLUS INJECTION. Administer via syringe pump. Not compatible in infusion bags.	**Caution/Warning:** Hypoglycemia: Coadministration with repaglinide may cause hypoglycemia. Monitor blood glucose and monitor for hypoglycemic symptoms during co-administration. Risks with hydroxypropyl-β-cyclodextrin excipient for patients with renal insufficiency **Drug Interactions:** Weak inducer of cytochrome P450 (CYP)3A and a weak inhibitor of CYP2C8 and CYP2C19. **Monitor:** Blood glucose, symptoms of hypoglycemia (when coadministered with repaglinide); CrCl in patients receiving IV therapy prior to initiation and as clinically appropriate. **Side Effects:** Pain, redness, swelling, or other reaction where the injection was given, headache. **Stability:** The diluted TPOXX injection may be stored refrigerated (2°C - 8°C) for up to 24 hours or at room temperature (15°C - 25°C) for up to 4 hours.
Tedizolid Sivextro® [Oxazolidinone antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY**	Bacterial Infections Documented or suspected skin & skin-structure infection caused by VRE or MRSA in a patient intolerant to or not responding clinically to vancomycin or other formulary anti-MRSA/anti-VRE antibiotics who cannot take linezolid due to high risk of MAOI drug interactions Patient receiving medication prior to admission to UConn Health John Dempsey Hospital	ALL UNITS (Except Psy)	**I.I.:** Administer as an IV infusion over 1 hour; do not administer as an IV push or bolus. -**Not for intra-arterial, IM, intrathecal, intraperitoneal, or subcutaneous administration**. -If the same intravenous line is to be used for sequential infusion of other drugs or solutions, the line should be flushed with NS before and after tedizolid infusion	**Caution/Warning:** May result in fungal or bacterial superinfection (e.g. Clostridium difficile); Neutropenia: Not recommended for use in patients with neutrophil counts <1000 cells/mm^3 **Comments**: No dosage adjustment necessary for impaired kidney or hepatic function. **Drug interactions:** may decrease the effectiveness of BCG and Cholera vaccines; cladribine, dipyrone, and fexinidazole may enhance the myelosuppressive effect; may increase concentration of pazopanib and topotecan **Monitoring:** Baseline complete blood count (CBC) with differential **Related Policies:** Restricted and Concurrently- Monitored Antimicrobials **Side Effects:** nausea; vomiting; diarrhea; decreased platelet counts; headache **Stability:** Store at 20°C to 25°C (68°F to 77°F); excursions are permitted between 15°C and 30°C (59°F and 86°F) The total storage time of the reconstituted solution should not exceed 24 hours at either room temperature or under refrigeration at 2°C to 8°C (36°F to 46°F)

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Tenecteplase TNKase® [Fibrinolytic] **HIGH ALERT / DOUBLE CHECK**  **LOOK ALIKE / SOUND ALIKE**	STEMI	ED UT-ICU	**Dosing:** Administer as a single bolus over 5 seconds: <60 kg: 30 mg ≥60 to <70 kg: 35 mg ≥70 to <80 kg: 40 mg ≥80 to <90 kg: 45 mg ≥90 kg: 50 mg **Admixture Information** Reconstitute using the supplied 10 mL syringe with TwinPak Dual Cannula Device and 10 mL sterile water for injection. Do not shake when reconstituting. Slight foaming is normal and will dissipate if left standing for several minutes. The reconstituted solution is 5 mg/mL. Any unused solution should be discarded.	**Caution/Warnings:** Arrhythmias, internal bleeding, hypersensitivity reactions, thromboembolic events **Monitoring:** CBC, aPTT, signs and symptoms of bleeding, ECG monitoring **Side effects:** Bleeding, cardiac arrhythmias, allergic reactions **Stability:** Store under refrigeration of 2°C to 8°C (36°F to 46°F) or at room temperature; do not exceed 30°C (86°F). If reconstituted and not used immediately, store in refrigerator and use within 8 hours.
Teprotumumab-trbw Tepezza® [Monoclonal Antibody]	Treatment of Thyroid Eye Disease	OP-INFC	**IV Infusion:** 10 mg/kg once followed by 20 mg/kg every 3 weeks for a total of 8 infusions **Administration**: Administer over 90 minutes for the first two infusions; may reduce infusion time to 60 minutes for subsequent infusions if well tolerated. Do NOT administer as IV push or bolus Do NOT infuse concomitantly with other agents **Mix**: Remove a volume of 0.9% Sodium Chloride equivalent to the required volume of reconstituted Tepezza® solution to be placed into the infusion bag. Final infusion solution should have a total volume of 100 mL (for less than 1800 mg dose) or 250 mL (for 1800 mg and greater dose)	**Caution/Warning:** Infusion related reactions may occur within 1.5 hours after infusion **Comments:** Infusion reactions are usually mild or moderate in severity and can be managed with corticosteroids and antihistamines. In patients who experience an infusion related reaction, consideration should be given to pre-medicating with an antihistamine, antipyretic, corticosteroid and/or administering all subsequent infusions at a slower rate **Drug Interactions:** No major drug interactions **Monitor:** Infusion related reactions **Side Effects:** increased blood pressure, feeling hot, tachycardia, dyspnea, headache, muscular pain **Stability:** Store Tepezza® vials in original carton in the refrigerator between 2°C to 8°C (36°F to 46°F). Protect from light. Do not freeze. Combined storage time of reconstituted vial and diluted solution in the infusion bag containing 0.9% Sodium Chloride should not exceed 4 hours at room temperature 20°C to 25°C (68°F to 77°F) or up to 48 hours under refrigerated conditions 2°C to 8°C (36°F to 46°F) protected from light. Do not freeze. If refrigerated prior to administration, allow the diluted solution to reach room temperature prior to infusion.

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Terbutaline Brethine® [beta-2 adrenergic agonist] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Tocolysis Priapism	L&D/OB-GYN	**IV Push:** 0.25 mg undiluted over 15 sec	**Caution/Warning:** **Comments:** Preferred route is SC. **Drug Interactions:** **Monitor:** BP, HR, RR, FHR per protocol. **Side Effects:** **Stability:**
		ED	**I.I.:** 0.25 – 0.5 MG mg in 50 mL NS or D5W	**Comments:** Resolution of priapism can occur within 4-5 mins following injection. **Monitor:** Assess HR, BP, RR before and after dose. **Side Effects:** CV- PALPITATIONS, TACHYCARDIA, increases in EJECTION FRACTION, increases in CARDIAC OUTPUT, GI-NAUSEA and VOMITING , CNS- HEADACHE, NERVOUSNESS, DIZZINESS, SOMNOLENCE, and INSOMNIA, Tremors
Thiamine [vitamin B]	Vitamin deficiency	ALL UNITS	**IV Push (can also consider IM or Oral if possible):** 100mg IV over 5 min **I.I. (non-prefferred method of administration):** 100 mg in 50 mL D5W or NS over 30-40 mins **C.I.:** in IVF's	**Caution/Warning:** IV Push too fast can result in infiltration or systemic reaction such as headache, flushing, tightness in chest. All IV Push have Phlebitis Risk. Flush slowly after medication administration **Comments:** **Drug Interactions:** **Monitor:** **Side Effects:**

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	Wernicke's Encephalopathy:		**I.I.:** 500mg in 100mL NS or D5W over 30-40 mins for 2 to 3 days	**Stability:** Stable for 24 hours at room temperature References on Wernicke's Encephalopathy: Parrish, C. Wernicke's Encephalopathy: Role of Thiamine. *Practical Gastroenterology.* June 2009: 21-30 Thomson, A et al. The royal college physicians report on alcohol: guidelines for managing wernicke's encephalopathy in the accident and emergency department. *Alcohol and Alcoholism* (2002) 37 (6): 513-521.
Tigecycline [antibiotic] **RESTRICTED ANTIMICROBIAL**	Infections (CAP, Intra-abdominal, skin & structure)	ALL UNITS (Except Psy)	**I.I.:** Initial: 100 mg x1 dose then 50 mg/ 100 mL NS or D5W. q 12 hours for 5-14 days, Infuse over 30-60 minutes through dedicated line or via Y-site	**Caution/Warning:** **Comments: Pharmacy to mix.**Severe hepatic impairment (Child-Pugh class C): Initial: 100 mg single dose; Maintenance: 25 mg q 12 hours **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Reconstituted solution may be stored at room temperature for up to 6 hours or up to 24 hours if further diluted in a compatible I.V. solution. Alternatively, may be stored refrigerated at 2°C to 8°C (36°F to 46°F) for up to 48 hours following immediate transfer of the reconstituted solution into NS or D_5W. Reconstituted solution should be yellow-orange; discard if not this color.
Tobramycin [antibiotic] **RESTRICTED ANTIMICROBIAL** **NON-FORMULARY** **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS** Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** Traditional dosing: 1-2 mg/kg q 8-12 hrs in 50 mL NS or D5W over 30-60 mins Once daily dosing: per protocol- 2-7 mg/kg/day depending on site of infection and renal function in 100 mL NS or D5W over 30-60 mins q daily	**Caution/Warning:** **Comments: Pharmacy to mix.** Consult unit RPh for dosing & monitoring. Modify dose or interval for renal impairment. Peak & Trough levels recommended for monitoring of traditional dosing. Monitor trough with once daily dosing. Renal and ototoxic with high troughs for extended periods. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** 24 hrs at room temperature, 14 days refrigerated.

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Tocilizumab Actemra® [monoclonal antibody]	Rheumatoid arthritis (Moderate to Severe)	ALL UNITS (Except Psy)	**I.I.:** 4 mg/kg IV infusion over 1 hr q 4-wk; increase to 8 mg/kg based on clinical response; doses exceeding 800 mg per infusion are not recommended.	**Caution/Warning:** **Comments:** Pharmacy: From a 100 milliliters infusion bag or bottle, withdraw a volume of 0.9% Sodium Chloride Injection equal to the volume of tocilizumab solution required for the patients dose. Slowly add tocilizumab and mix gently by inverting the bag to avoid foaming. Patients should be closely monitored for the development of signs and symptoms of infection during and after treatment with tocilizumab **Drug Interactions:** **Monitor:** ALT & AST , CBC q 4-8 weeks **Side effects:** Signs and symptoms of infusion reactions, skin reactions, including rash, pruritus, and urticaria **Stability:** ****COVID-19 Considerations:** if vials for IV infusion are unavailable during the COVID-19 pandemic, the P&T Committee has approved the utilization of prefilled syringes for subcutaneous use in order to compound doses for IV infusion. This is a Category 1 substitution which allows pharmacists to adjust orders for 400mg IV once to 486mg IV once for the first dose (utilizing 3 of the subcutaneous prefilled syringes). When a second dose is indicated, pharmacists may adjust the dose to 324mg IV once (utilizing 2 of the subcutaneous prefilled syringes). All doses will be diluted in 100mL of Sodium Chloride 0.9% and infused over 60 minutes.
	**Cytokine release syndrome associated with COVID-19 infection	UT1-ICU	**I.I.:** 400mg IV once infused over 1 hour. A second dose may be considered for administration 8-12 hours after the first dose if no clinical improvement. The maximum total dose administered per patient should not exceed 800mg.	
	Cytokine release syndrome associated with bispecific T cell engager (BiTE) or other cellular therapies	UT1-ICU UT2-IU ED UT6 UT-BMT	**I.I**: 8 mg/kg (max 800mg) IV over 1 hour. If clinicial improvement dose not occur within 8 to 24 hours of dose, up to 3 additional doses may be administered (with at least an 8-hour interval between consecutive doses)	
Torsemide Demadex® [loop diuretic]	Edema, CHF	ALL UNITS (Except Psy)	**IV Push:** ≤ 40 mg undiluted given ≤ 20 mg/min, flush with 5 mL NS.	**Caution/Warning:** **Comments: Pharmacy to mix.** Torsemide 20 mg= Furosemide 40 mg= Bumetanide 1mg **Drug Interactions:** **Monitor:** BP & HR during rapid administration **Side effects:** Hypotension, h/a, dizziness, hypovolemia, muscle cramps, hyperuricemia, hyperglycemia, hypokalemia, hypocalcemia, metabolic alkalosis. **Stability**: 24 hrs at Room Temperature. Protect from light. Do not refrigerate.
		ALL UNITS (Except Psy)	**I.I.:** >40 - 100mg in 50 mL D5W only over 15- 30 mins	

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
		ED UT1-ICU UT2-IU OP-CARD OR/PACU	**IV Push:** up to 50 mg undiluted over 1-2 mins **C.I.:** 1 - 20 mg/ hr in D5W	
Tranexamic acid [hemostatic]	Hemophilia-hemorrhage	ALL UNITS (Except Psy)	**I.I.:** up to 2000 mg in 100 mL NS over 30 mins, Max. rate = 100 mg/min	**Caution/Warning:** **Comments:** Usual dose: 10 mg/kg. Increase interval for renal impairment. **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
	Postpartum Hemorrhage	L&D/ OB-GYN	**I.I.:** 1000mg in 100mL NS over 10 minutes given within 3 hours of vaginal birth or c-section; if bleeding continues after 30 minutes or stops and restarts within 24 hours after the first dose, a second dose of 1,000 mg may be given.	
	Open Heart	UT1-ICU	**Pre-op/post-op**: 100 mg/kg IV pre-op, then 50 mg/kg IV post-op, OR 15 mg/kg IV followed by **I.I.:** 1 mg/kg/hr for 5-6 hours started prior to initiating coronary bypass	

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	Reduce bleeding for Orthopedic Hip/Knee arhtroplasty	OR/PACU ED	**Pre-Op (total hip/total knee):** Usual dose: 1gm (10 mL) mixed with 10 mL NS for a total volume 20 mL given pre-op and may repeat intra-op IV **Intra-op (total hip/total knee with history of stent/cardiac disease that precludes IV use):** 1gm (10mL) mixed in 250 mL NS to applied at the time of wound closure	

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Treprostinil Remodulin® [prostaglandin, vasodilator] **HIGH ALERT / DOUBLE CHECK**  (during transition)  BKC: Dispose in Black Bin	Pul Artery Hypertension (PAH) With NYHA class II-IV symptoms	ED HT1-ICU HT2-INT IRAD OR/PACU	**C. I. (IV):** Usual initiation rate of 2 - 6 ng/kg/min. Maintenance CI at 2- 500 ng/kg/min. Continuous IV via ambulatory infusion pump with special syringe with rate set as mcL/hr or as mL/hr with Alaris infusion pump. The therapeutic potency of treprostinol is less than that of epoprostenol thus acceptable starting rates of treprostinol IV are 2-3 times the starting doses of epoprostenol. Titration q 6 -24 hrs based on therapeutic response and/or side effects. Patients with mild to moderate hepatic impairment or those who cannot tolerate the usual rate due to systemic effects might benefit from a reduced starting dose or slower titration. Requires Pharmacy admixture based on current admixture and dosing information obtained by calling the patient's speciality pharmacy (e.g Accredo 1-866-344-4874 or CVS Caremark 1-877-242-2738). Initially may be infused with Alaris pump in new patient or pump not available. Rate changes by practitioner only based on symptoms not weight changes. Calculation is based on patient's dosing weight and drug concentration. Pharmacy Worksheet for Dosing Calculation: Treprostinil Pharmacy Worksheet	**Caution/Warning:** Do not slow or stop infusion without Pulmonary order and guidance since this may be life-threatening. **Comments:** RPh or Practitioner must call the patient's speciality pharmacy to verify current concentration, dose delivered, and dosing weight (not current weight). Orders must be written in ng/kg/min, concentration of the CI (ng/mL) and mcL/hr in CRONO5 pump and mL/hr via Alaris Pump by Practitioner and verified by RPh and RN. **Procedure:** IV administration: prepare a 50 mL volume of diluted treprostinil infusion. Determine the dose (in mg) needed based on the pt's total body weight and the infusion rate (ng/kg/min): (no dose adjustment needed for obesity) Sudden withdrawal or large reductions in dosage may result in worsening of pulmonary arterial hypertension symptoms. If a patient is admitted the process of conversion to the JDH pump and guardrail system Concomitant use with anticoagulants (warfarin, enoxaparin, dalteparin, lepirudin, argatroban) or antiplatelet agents (NSAIDS, salicylates) may increase risk of bleeding. Diuretics, antihypertensives, vasodilators may result in added reductions in BP when given with epoprostenol. Advantages over epoprostenol: longer half-life so sudden interruption of therapy less dangerous, easier preparation as no reconstitution, less patient manipulation as change reservoirs every 2 days, no ice packs and light protection required. **Drug Interactions:** **Monitor**: for S&S's of PAH: chest pain, dyspnea, palpitations, orthopnea, syncope. Monitor for side effects of insufficient med: cyanosis, chest pain, cough, fatigue/weakness, palpitations, sob. Monitor for excess med: diarrhea, headache, lightheadedness/fainting, nausea, vomiting Monitor for side effects : inj. Site pain , infusion site reactions: rash, erythema or induration,, others: headache, diarrhea, nausea, jaw pain, hypotension, and edema. **Related Policies:** • Epoprostenol Sodium (Flolan) / Epoprostenol for Injection (Veletri) / Treprostinil Sodium (Remodulin) Transition to New Med, Route, and/or New Central Line • Treprostinil Pharmacy Policy and Procedure • Medications: High Alert, Double Check of **Side Effects:** **Stability:** Solutions expire at 48 hrs at room temperature **Information on SC Treprostinil is found on the next page.**

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Treprostinil Remodulin® [prostaglandin, vasodilator] **HIGH ALERT / DOUBLE CHECK** 	Pul Artery Hypertension (PAH) With NYHA class II-IV symptoms	ED HT1-ICU HT2-INT IRAD OR/PACU	**C. I. (SC):** Usual initiation rate of 2 - 6 ng/kg/min. Maintenance CI at 2- 500 ng/kg/min. Continuous IV via ambulatory infusion pump with special syringe with rate set as mL/hr or as mL/hr with Alaris infusion pump. The therapeutic potency of treprostinol is less than that of epoprostenol thus acceptable starting rates of treprostinol SC are 2-3 times the starting doses of epoprostenol. Titration q 6 -24 hrs based on therapeutic response and/or side effects. Patients with mild to moderate hepatic impairment or those who cannot tolerate the usual rate due to systemic effects might benefit from a reduced starting dose or slower titration. Requires Pharmacy admixture based on current admixture and dosing information obtained by calling the patient's speciality pharmacy (e.g Accredo 1-866-344-4874 or CVS Caremark 1-877-242-2738). Rate changes by practitioner only based on symptoms not weight changes. Calculation is based on patient's dosing weight and drug concentration. Pharmacy Worksheet for Dosing Calculation: Treprostinil Pharmacy Worksheet	**Information on IV Treprostinil is found on the prior page** **Caution/Warning:** Do not slow or stop infusion without Pulmonary order and guidance since this may be life-threatening. **Comments:** RPh or Practitioner must call the patient's speciality pharmacy to verify current concentration, dose delivered, and dosing weight (not current weight). Orders must be written in ng/kg/min, concentration of the CI (ng/mL) and mL/hr for a subcutaneous pump by Practitioner and verified by RPh and RN. Syringes are changed q 3 days **Procedure:** SC administration: prepare the intended volume treprostinil. Determine the dose (in mg) needed based on the patient's dosing weight and the infusion rate (ng/kg/min). Sudden withdrawal or large reductions in dosage may result in worsening of pulmonary arterial hypertension symptoms. Advantages over epoprostenol: longer half-life so sudden interruption of therapy less dangerous, easier preparation as no reconstitution, less patient manipulation as change reservoirs every 2 days, no ice packs and light protection required. **Drug Interactions:** **Monitor**: for S&S's of PAH: chest pain, dyspnea, palpitations, orthopnea, syncope. Monitor for side effects of insufficient med: cyanosis, chest pain, cough, fatigue/weakness, palpitations, sob. Monitor for excess med: diarrhea, headache, lightheadedness/fainting, nausea, vomiting Monitor for side effects : inj. Site pain , infusion site reactions: rash, erythema or induration,, others: headache, diarrhea, nausea, jaw pain, hypotension, and edema. **Related Policies:** • Medications: High Alert, Double Check of • Treprostinil Pharmacy Policy and Procedure • Remodulin (Treprostinil): Continuous Subcutaneous Administration **Side Effects:** **Stability:** Solutions expire at 48 hrs at room temperature

Generic name Brand name Med Class	Indications	Approved Units for Use	Dosing/Admixture Information	Caution/Warning / Comments / Monitoring / Related Policies / Side Effects / Stability
Trimethoprim (TMP) Sulfamethoxazole (SMX) Bactrim/Septra® [antibiotic] BKC: Dispose in Black Bin Avoid in midline cath see Page 14 (may be ok w/ short course)	Bacterial Infection	ALL UNITS (Except Psy)	**I.I.:** Sepsis/Meningitis/PCP: 15-20 mg/kg/day as TMP divided q 6 hrs Non PCP:10 mg/kg/day as TMP divided q 6-12 hrs 0-80 mg TMP in 100 mL D5W over 1 hr 81-120 mg TMP in 150 mL D5W over 1.5 hrs 121-240 mg TMP in 250 mL D5W over 1.5 hrs 241-450mg TMP in 500 mL D5W over 2 hrs Dosing is based on Ideal Body Weight. Consider Adjusted body weight in obesity.	**Caution/Warning:** **Comments: Nursing to admix due to limited stability (6 hours at room temperature). Mix immediately prior to use** Dosing is based on TMP component 5 mL = 80 mg trimethoprim & 400 mg sulfamethoxazole Mix immediately prior to use. Reduce dose w renal impairment. **Drug Interactions:** **Monitor:** CBC, Cr, K+, LFTs, for skin rashes **Side effects:** rash, immune hypersensitivity reactions, hyponatremia, thrombocytopenia, pancytopenia, hemolysis, hyperkalemia **Stability:**
Ustekinumab Stelera® [monoclonal antibody] 	Crohn's Disease	OP-INFC	**I.I.:** dose/250mL NS over 1 hour with an inline 0.2 micron low sorbing (protein) binding filter **Dose:** Weight ≤ 55 kg = 260 mg Weight 56-85 kg = 390 mg Weight > 85 kg = 520 mg	**Caution/Warning:** Perform tuberculosis screening prior to initiating and periodically during therapy. An FDA-approved medication guide must be dispensed with this medication: Ustekinumab Medication Guide **Comments:** Use 0.2 micron low sorbing (protein) binding filter. Do not infuse in the same IV line with other agents. **Drug Interactions:** **Monitor:** CBC, ustekinumab-antibody formation, signs/symptoms infection. **Side Effects:** **Stability:** 4 hrs at room temperature.
Valproic acid Depacon® [anticonvulsant] **Nov 2017: During shortage of SVP 50mL/100mL D5W, use NS**	Seizures, Behavioral management	ALL UNITS	**I.I.:** 10-15 mg/kg/day given 2-3 x a day as 125-1000 mg in 100 mL NS or D5W over 60 mins, increase at 1 week intervals by 5-10 mg/kg/day until the desired therapeutic effect is reached or adverse effects occur	**Caution/Warning:** **Comments: Pharmacy admix.** **Drug Interactions :** **Monitor :** level **Side effects:** nausea, vomiting, somnolence, sedation, bleeding, increase in LFT's, pancreatitis **Stability:** Stable 24 hrs @ Room Temperature

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Vancomycin [antibiotic] If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14 (may be ok w/ short course)	Gram Positives Infections	ALL UNITS	**I.I.:** Dosing is based on Total Body Weight. 500 mg/100 mL D5W or NS over 1 hr 750 mg/250 mL NS over 1hr 1000 mg /200 mL D5W premix over 1 hr 1250 mg /250 mL NS premix over 2 hrs 1500 mg/250 mL NS premix over 2 hrs 1750 mg/250 mL NS over 2 hrs 2000 mg/250 mL NS over 2.5hrs 2250 mg/250 mL NS over 2.5hrs 2500mg/250 mL NS over 2.5 hrs	**Caution/Warning:** nephrotoxicity, neurotoxicity, neutropenia, ototoxicity, Rapid I.V. administration may result in hypotension, flushing, erythema, urticaria, and/or pruritus **Comments:** Pharmacy admix. Consult Unit RPh for assistance in dosing and monitoring. Slow or stop infusion if flushing or hypotension develops. HD patients: random levels after dialysis. **Drug Interactions:** **Monitor:** Periodic renal function tests, urinalysis, WBC; serum trough vancomycin concentrations in select patients (eg, aggressive dosing, unstable renal function, concurrent nephrotoxins, prolonged courses) **Related Policies:** Pharmacist is responsible for ordering troughs **Side Effects:** Red man's syndrome (infuse slowly), eosinophilia **Stability:** Reconstituted 500 mg and 1 g vials are stable for at either room temperature or under refrigeration for 14 days. Note: Vials contain no bacteriostatic agent. Solutions diluted for administration in either D5W or NS are stable under refrigeration for 14 days or at room temperature for 7 days
Vasopressin Pitressin® [vasoconstrictor] **LOOK ALIKE / SOUND ALIKE** **TITRATE MED** If Extravasation, see Pages 10&11 Avoid in midline cath see Page 14	Vasodilatory shock	In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**IV Push:** Cardiac Arrest- pulseless VT, VFIB: 40 units x 1 per ACLS	**Caution/Warning:** **Comments:** CI for sepsis is non-titrable and requires MD/LIP order for changes in rate. **Drug Interactions:** **Monitor**: BP, urine Na & sp. Gr. , serum osm., I/O's **Side effects:** May provoke angina in pt's w CAD and may cause water retention, bradycardia, MI, hypertension, arrhythmias, bronchospasm and neuromuscular diseases. **Stability:**
	Vasodilatory shock	UT1-ICU In presence of Critical Care RN or Action RN and LIP during RRT/Code, ALL UNITS	**C.I.:** 40 units / 100 mL NS (0.4 units/mL), 0.04 unit/min, = 6 mL/hr, Do Not Titrate	
	Esophageal variceal bleed	UT1-ICU	**Esophageal varices CI**: 0.2 -0.4 unit/min= 30-60 mL/hr with 200 units/ 500 mL NS= 0.4 units/ml, titrate to max. of 1 unit/min, when bleeding stops continue for 12 hrs then taper off within 24-48 hrs	

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Vecuronium [neuromuscular blocker]	Intubation & for Mech. Ventilation	ECT-A ED UT1-ICU OR/PACU UHSC	**IV Push**: Load Dose: 0.1 mg/kg (2-10mg) over 1-2 mins, q 1-2 hrs **C.I.:** 100 mg/ 100 mL = 1 mg/ mL at 0.8- 1.2 mcg/kg/min	**Caution/Warning:** **Comments:** Pt MUST be on a ventilator. Must be sedation before use. Consider analgesia. Renal failure & hepatic dysfunction can prolong blockade. Contra: with steroids due to high risk for prolonged neuro-muscular blockade **Drug Interactions:** **Monitor**: TOF, HR, BP, electrolytes **Related Policies:** • Neuromuscular Blocking Agents (NMBA): IV Administration **Side Effects:** **Stability:**
Verapamil Calan/Isoptin® [Calcium Channel Blocker]	SVT, AFib., Hypertension	UT1-ICU	**IV Push**: 2.5 -10 mg over at least 2 mins, repeat dose x 1 if no response in 15-30 mins **C.I.** : 50-100 mg/250 mL at 2-10 mg/hr	**Caution/Warning:** **Comments:** **Drug Interactions:** **Monitor:** EKG, HR, BP **Side effects:** bradycardia, AV block, V-Fib., asystole, hypotension. **Stability:**
	Prevention of arterial spasm in catheters	CCL/EP IRAD OR/PACU	**Catheter**: (Diamondback 360 System by CSI). 1000mL NS with 20mL of Viper Slide (lubricant), 5mg of Nitroglycerin, and 5mg of verapamil.	
Voriconazole VFend® [antifungal] RESTRICTED ANTIMICROBIAL	Anti-fungal Aspergillosis, invasive, including disseminated and extrapulmonary infection:	ALL UNITS (Except Psy)	**I.I.:** Initial: Loading dose: 6 mg/kg q 12 hours for 2 doses; followed by maintenance dose of 4 mg/kg q 12 hours 1st & 2nd Load doses in 250 mL D5W/NS over 2 hrs then maintenance dosing in 100 mL over 1.5 hr. Duration of therapy should be a minimum of 6-12 weeks or throughout period of immunosuppression. Dosing is based on Ideal Body Weight (IBW). Can consider adjusted if obese and life-threatening.	**Caution/Warning:** **Comments:** Hazardous medication precautions. Pregnancy Category D. May cause fetal harm. Wear nitrile gloves while handling. Gowns should be utilized for incidental exposure to hazardous drugs. Dispose in hazardous waste container. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**
Vitamin - multiple	Vitamin deficiency	ALL UNITS	**C.I.:** 1 vial of MVI-12 to at least 500 mL of IVF	**Caution/Warning:** **Comments:** Stable for 48 hrs at room temperature. 1 vial of water soluble & 1 vial of fat soluble vitamins= 1 vial of MVI **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:**

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Zidovudine Retrovir® AZT [anti-retroviral]  **BOLUS OFF BAG**: Upon new EMR **April 2018**, ability to bolus and chart from continuous infusion bag via Alaris Pump Guardrails. Able to do with Zidovudine on Alaris as of 6/2017. Avoid in midline cath see Page 14 (may be ok w/ short course)	Prevent viral transmission to infant	L&D/OB-GYN	**I.I. LD:** 400mg/100mL D5W/NS (4mg/mL) at 2mg/kg/hr x 1 hr **I.I.:** 400mg/100mL D5W/NS (4mg/mL) at 1 mg/kg/hr until cord is clamped or a minimum of 3 hr before C/S or vag. delivery	**Caution/Warning:** **Comments:** Pharmacy can provide one bag for loading and maintenance dose as loading can be administered via bolus off bag. Maximum.concentration is 4 mg/ml. Use dedicated line. Adjust for renal dysfunction. Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** **Side Effects:** **Stability:** Stable for 8 hrs at room temperature and 24 hrs in refrigerator.
Zoledronic acid Reclast® Zometa®	Osteoporosis Reclast ® Given Yearly	OP-INFC OP-NCCC	**I.I.:** 5 mg in 100 mL D5W or NS over 20-30 mins	**Caution/Warning:** **Comments:** Minimum 7 days between doses. Hydration is recommended. Do not administer. V&S pre & post infusion.

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[bisphosphonate, calcium regulator] 	Hypercalcemia ass. with malignancy, Multiple myeloma, Paget's disease Zometa®	OP-NCCC	**I.I.:** 4 mg in 100 mL NS , infuse at 300 mL/hr over 20 minutes	Dose should be adjusted based on renal function. No dosage adjustment need for renal impairment for treatment of hypercalcemia of malignancy. Pharmacist has ability to make renal-based adjustments to the dosage regimen. For CrCl > 60 mL/min: 4 mg For CrCl 50-60 mL/min: 3.5 mg For CrCl 40-49 mL/min: 3.3 mg For CrCl 30-39 mL/min: 3 mg Refer to the UConn hazardous drug safety handling for further information: Medication Handling Safety **Drug Interactions:** **Monitor:** Ca++. P, Mg, BUN, Cr, phlebitis, hypersensitivity rxn's, malaise, GI-n/v, bone pain. Consider acetaminophen or ibuprofen to reduce incidence of acute-phase reaction symptoms. Reduce dose for CrCl < 60 mL/min for Multiple myeloma & Metastatic bone lesions from solid tumors **Side Effects:** Vein irritation, hypersensitivity reactions, CNS- malaise, fever, N/anorexia, bone pain. **Stability:**

References

- Lexicomp 2017 Wolters Kluwer Clinical Drug Information, Inc
- Micromedex Ann Arbor (MI): Truven Health Analytics
- DailyMed for individual FDA package inserts https://dailymed.nlm.nih.gov/

FINAL APPROVALS:

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3. Scott Allen, MD (Signed) — 10/30/2023
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