



# Prince Sultan Military Medical City

## Controlled Document, Not to be Reproduced



Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06		
Title: High Alert Medications		JCI Code: IPSG		
Supersedes <i>High Alert Medications 1-1-8062-05-020 Version No: 05; 31 January 2021</i>	Issue Date:	Effective Date: 11 SEP 2023	Revision Date: 10 SEP 2026	Page 1 of 7

### 1. PURPOSE

- 1.1. To ensure safe use of High Alert Medications (HAM).
- 1.2. To increase awareness of HAM among healthcare providers who prescribe, prepare, dispense, and administer these medications.
- 1.3. To provide and maintain a list of medications designated as HAM.

### 2. APPLICABILITY

Pharmaceutical Services Department, Nursing Department, all Medical Staff, and Clinical Services at PSMMC.

### 3. RESPONSIBILITIES

- 3.1. The responsibility of implementing and ensuring compliance with this policy and procedure lies with all healthcare professionals involved in medication use process.
- 3.2. Pharmaceutical Services Department is responsible for updating this policy.

### 4. POLICY

- 4.1. The Prince Sultan Military Medical City (PSMMC) implements strategies to improve the safety of HAM, which include specific storage, prescribing, preparing, dispensing, administration, and monitoring processes.
- 4.2. The location, labeling, and storage of HAM should be uniform throughout the pharmacy locations, pharmacy stores, and clinical areas.
- 4.3. In clinical areas, HAM should be stored in Automated Dispensing Cabinet (ADC-Pyxis), narcotic cabinets or designated locked cabinets.
- 4.4. In all pharmacy locations, pharmacy stores, and clinical areas HAM shall be clearly labelled.
- 4.5. All professional staff involved in medication use process shall be educated about HAM including monitoring and response associated with each.
- 4.6. HAM shall be stored in **RED bin**, and must be identified by **auxiliary labels**.



# Prince Sultan Military Medical City

## Controlled Document, Not to be Reproduced



Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06		
Title: High Alert Medications		JCI Code: IPSG		
Supersedes <i>High Alert Medications</i> <i>1-1-8062-05-020 Version No: 05;</i> <i>31 January 2021</i>	Issue Date:	Effective Date: 11 SEP 2023	Revision Date: 10 SEP 2026	Page 2 of 7

- 4.6.1. In an event of unavailability of the **RED bin**, auxiliary labels must identify a storage bin or medication's shelf.
- 4.7. Neuro-Muscular Blocking Agents (NMBA's) shall be stored in **Orange bin with lid**, and must be identified by auxiliary label "**Paralyzing Agent**".
- 4.7.1. In an event of unavailability of the **Orange bin with lid**, RED bin shall be used and must be identified by auxiliary label.
- 4.8. HAM stored inside the ADC-Pyxis should be identify by automatic alerts such as 'High Alert Medication'. However, the medication stored in ADC-Pyxis fridge must be stored in RED bin with auxiliary label
- 4.8.1. In an event of unavailability of the RED bin, stored medication in regular bin must be identified by automatic alerts.
- 4.9. Storage bins of different strengths of HAM shall be segregated and appropriately labelled (e.g. enoxaparin, warfarin and heparin).
- 4.10. The number of concentrations and/or volume options available for all HAM shall be limited to specific clinical areas.
- 4.11. HAM that Look Alike or Sound Alike (LASA) should be:
- 4.11.1. Stored in RED bin with **Tallman lettering labels**.
- 4.11.2. Identified by two (2) auxiliary labels, PSMMC standard HAM auxiliary labels and PSMMC standard LASA auxiliary labels
- 4.11.3. Segregated as per Look Alike – Sound Alike (LASA) Medications policy (HWPP 1-1-8062-05-021).
- 4.12. Any errors with HAM must be reported through Electronic Incident reporting system (Online CQI system).
- 4.13. PSMMC HAM List and Safety Strategy (Appendix A and B) shall be reviewed annually by Pharmaceutical Services Department.
- 4.13.1. Any addition, deletion or changes to the list of HAM requires approval of the Pharmacy and Therapeutics (P&T) Committee.



# Prince Sultan Military Medical City

**Controlled Document, Not to be Reproduced**



<b>Medical City Wide Policy &amp; Procedure</b>	<b>Dept.: Hospital Directorate</b>	<b>Policy No: 1-1-8062-05-020 Version No: 06</b>		
<b>Title: High Alert Medications</b>		<b>JCI Code: IPSG</b>		
<b>Supersedes <i>High Alert Medications 1-1-8062-05-020 Version No: 05; 31 January 2021</i></b>	<b>Issue Date:</b>	<b>Effective Date:</b>	<b>Revision Date:</b>	<b>Page 3 of 7</b>
		11 SEP 2023	10 SEP 2026	

- 4.14. For handling, storage and labeling of chemotherapeutic medications refer to Pharmacy Policy of Storing, Preparing and Dispensing of Chemotherapeutic Agents (Policy No: 1-2-7200-01-035) and shall be labeled with cytotoxic material auxiliary labels and HAM auxiliary labels.
- 4.15. The prescribing, preparing, dispensing, administration and monitoring of continuous intravenous infusions shall follow PSMMC approved Standard of Intravenous Continuous Infusion. [Refer to Vasoactive IV Drips Policy No: 1-2-7200-01-042]

## 5. DEFINITION OF TERMS

- 5.1. **High-Alert medications** are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients.
- 5.2. **Medication Segregation** is a process to store medications in separate bins and spaced out on shelves (not to follow alphabetical sequence for storage).
- 5.3. **Independent Double Checking** is the procedure in which two (2) healthcare professionals separately check (alone and apart from each other, then compare results) at each component of prescribing, transcribing, dispensing, and verifying the medication before administering to the patient.

## 6. PROCEDURES

- 6.1. Use of HAM shall be in accordance with the Hospital Formulary and P&T Committee guidelines and approved hospital treatment guidelines, or as per manufacturer's instructions.
- 6.2. Any additions, deletions, or changes to the list of HAM require approval of the P&T Committee.
- 6.3. High Alert Medication "**HAM**" phrase shall be **added** to the drug list in the online Hospital Formulary.



# Prince Sultan Military Medical City

**Controlled Document, Not to be Reproduced**



Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06		
Title: High Alert Medications		JCI Code: IPSG		
Supersedes <i>High Alert Medications</i> <i>1-1-8062-05-020 Version No: 05;</i> <i>31 January 2021</i>	Issue Date:	Effective Date: 11 SEP 2023	Revision Date: 10 SEP 2026	Page 4 of 7

6.4. Safety procedures during the storing, ordering, preparing, dispensing and administration of HAM include:

6.4.1. **Storage**

- 6.4.1.1. High alert intravenous infusions for specific patient(s) shall be clearly labeled with “high alert medication” statement on the (primary) label from pharmacy department. These medications should be stored in patient specific bins.
- 6.4.1.2. HAM shall **not** be stored as floor stock in clinical areas that do not have ADC-Pyxis or locked cabinets.
- 6.4.1.3. Storage bins of different strengths of a HAM shall be segregated.
- 6.4.1.4. It is the responsibility of the pharmacist/pharmacy technician who is filling the ADC-Pyxis to ensure continuous compliance with the storage and labeling requirements of HAM.
- 6.4.1.5. For ADC-Pyxis, automated alerts shall appear to alert the user to the High Alert medication.
- 6.4.1.6. The ADC-Pyxis refilling process of the HAM must be performed by independent double-checking by pharmacist or pharmacy technician and nursing staff.
- 6.4.1.7. HAM that look alike or sound alike shall be stored / handled as per Look Alike – Sound Alike (LASA) Medications policy (HWPP 1-1-8062-05-021).

6.4.2. **Prescribing**

- 6.4.2.1. It is the responsibility of the main responsible physician (MRP) to prescribe high alert medications within the approved formulary.
- 6.4.2.2. Verbal orders for HAM are only allowed during emergency or life threatening situations.



# Prince Sultan Military Medical City

## Controlled Document, Not to be Reproduced



Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06		
Title: High Alert Medications		JCI Code: IPSG		
Supersedes <i>High Alert Medications</i> <i>1-1-8062-05-020 Version No: 05;</i> <i>31 January 2021</i>	Issue Date:	Effective Date: 11 SEP 2023	Revision Date: 10 SEP 2026	Page 5 of 7

6.4.2.3. Verbal/ telephone orders are prohibited for chemotherapeutic agents, starting Narcotic/ Controlled Drugs (according to SFDA) or psychotropic medications and initiating Total Parenteral Nutrition (TPN). [ Refer to Reporting and Documentation of Verbal and Telephone Order Policy No: 1-1-8062-05-025]

6.4.2.4. For prescription of chemotherapeutic agents [Refer to Safe Handling of Cytotoxic Agents & Wastes policy & procedure (HWPP 1-1-8062-05-026)].

#### 6.4.3. Preparing and dispensing

6.4.3.1. When verifying a medication order into the electronic RABET system, an automated alert shall appear on the computer screen to alert the pharmacist of the high alert medication.

6.4.3.2. Verified orders of HAM shall be completely reviewed by pharmacist.

6.4.3.3. The preparation process of HAM shall be independently checked by another pharmacist or pharmacy technician before dispensing medication as per policy and procedure.

6.4.3.4. The preparation process of HAM in clinical settings, i.e., ED, ICU, and Theatre shall be checked by another staff (nurse or anaesthesiologist) as per policy and procedure.

#### 6.4.4. Administration

6.4.4.1. **Healthcare providers who are giving medications** must independently double check all HAM before administering. Independent double-checking is performed as:

6.4.4.1.1. Independently comparing the label and product contents in hand versus the order and Medication Administration Record (MAR).



# Prince Sultan Military Medical City

**Controlled Document, Not to be Reproduced**



Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06		
Title: High Alert Medications		JCI Code: IPSG		
Supersedes <i>High Alert Medications</i> <i>1-1-8062-05-020 Version No: 05;</i> <i>31 January 2021</i>	Issue Date:	Effective Date: 11 SEP 2023	Revision Date: 10 SEP 2026	Page 6 of 7

6.4.4.1.2. Independently verifying any calculations for doses that require preparation.

6.4.4.1.3. Independently ensure accuracy of infusion pump programming for continuous intravenous infusions of medications, which must be verified by two healthcare providers.

6.4.4.2. A competent healthcare provider shall sign the MAR, which must be independently double checked and double signed by another healthcare provider.

6.4.4.3. Standardized dose calculation tables or protocols should be utilized for HAM in all clinical areas, when available (e.g. heparin).

6.4.4.4. Whenever administration of a HAM continuous intravenous infusion is due, a second healthcare provider should verify the “6 rights” (right patient, right medication, right dose, right time, right route and right documentation).

## 7. REFERENCES

- 7.1. Institute of Safe Medication Practice (ISMP) - List of Potential High-Alert Drugs
- 7.2. Institute of Safe Medication Practices (ISMP) [www.ismp.org](http://www.ismp.org)
- 7.3. Joint Commission International Accreditation Standards for Hospitals 7<sup>th</sup> edition – 2021; International Patient Safety Goals (IPSG.3)
- 7.4. Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI); MM.5

## 8. APPENDICES

- 8.1. Appendix A: Prince Sultan Military Medical City (PSMMC) List of High - Alert Medications (HAM)
- 8.2. Appendix B: HAM Safety Strategy



# Prince Sultan Military Medical City

**Controlled Document, Not to be Reproduced**



وزارة الدفاع  
MINISTRY OF DEFENSE

Medical City Wide Policy & Procedure	Dept.: Hospital Directorate	Policy No: 1-1-8062-05-020 Version No: 06
Title: High Alert Medications		JCI Code: IPSG
Supersedes <i>High Alert Medications</i> 1-1-8062-05-020 Version No: 05; 31 January 2021	Issue Date:	Effective Date: 11 SEP 2023
		Revision Date: 10 SEP 2026
		Page 7 of 7

## 9. CONTRIBUTING DEPARTMENT/S

Pharmaceutical Services Department

Compiled by: Pharmaceutical Services Department	Signature: P.P.	Date: 20/8/2023
Reviewed by: International Patient Safety Goals (IPSG) Team	Signature: 	Date: 23/8/2023
Reviewed by: Medication Management and Use (MMU) Team	Signature: 	Date: 20/8/2023
Reviewed by: Dr. Turki Al Mutairi Executive Director of Nursing Affairs	Signature: 	Date: 03 SEP 2023
Reviewed by: Brig. Gen. Dr. Abdulelah Mohammed Hummadi Director, Continuous Quality Improvement & Patient Safety (CQI&PS)	Signature: 	Date: 5/9/2023
Authorized by: Brig. Gen. Dr. Bander Al Harbi Director of Pharmaceutical Services Department	Signature: 	Date: 21/8/2023
Authorized by: Brig. Gen. Dr. Abdulrahman Al Robayyan Director of Medical Administration	Signature: 	Date: 7/9/2023
Authorized by: Brig. Gen. Dr. Rashed Bin Ayed Al Otaibi Executive Director for Health Affairs Chairman, Senior Medical Management Team (SMMT)	Signature: 	Date: 10/9/2023
Approved by: Maj. Gen. Khalid Abdullah Al Hudaithi General Executive Director of Prince Sultan Military Medical City	Signature: 	Date: 11/9/2023

Adilla



## PSMMC List of **High-Alert Medications (HAM)**

**High-Alert Medications (HAM)** are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients. This list used to determine which medications require special safeguards to reduce the risk of errors. Strategies such as standardizing the ordering, storage, preparation, and administration of these products; improving access to drug information; limiting access to HAM; using auxiliary labels; employing automated alerts; and using redundancies such as automated or independent double checks.

CLASSES OF MEDICATIONS	PSMMC
<b>adrenergic agonists, IV</b>	adrenaline   <b>DOBU</b> Tamine   <b>DOP</b> amine   isoprenaline   milrinone   noradrenaline   phenylephrine   <b>VASO</b> pressin
<b>anesthetic agents</b>	dexmedetomidine   etomidate   ketamine   midazolam   propofol   sevoflurane   thiopentone   desflurane
<b>antithrombotic agents</b>	<ul style="list-style-type: none"> <li>• anticoagulants (warfarin)   low-molecular-weight heparin (enoxaparin)   unfractionated heparin</li> <li>• antithrombotic iii concentrated</li> <li>• direct thrombin inhibitors (argatroban)</li> <li>• factor Xa inhibitors (rivaroxaban, apixaban)</li> <li>• thrombolytics (alteplase)</li> </ul>
<b>chemotherapeutic agents</b> (all parenteral and oral)	actinomycin D   bendamustine   bleomycin   busulphan   carboplatin   capecitabine   carmustine   chlorambucil   cisplatin   cyclophosphamide   cytosine arabinoside   dacarbazine   <b>DAUNO</b> rubicin   <b>DOXO</b> rubicin   epirubicin   etoposide   fludarabine   fluorouracil   gemcitabine   idarubicin   ifosfamide   melphalan   mercaptopurine   methotrexate   mito <b>MY</b> cin C   mito <b>XANTRONE</b>   oxaliplatin   pemetrexed   temozolamide   thioguanine   vin <b>BLAS</b> tine   vin <b>CRIS</b> tine   vinorelbine
<b>concentrated electrolytes</b> (Injectable)	sodium chloride injection (greater than > 0.9%) 3%   23.4% potassium for injection concentrate (potassium acetate 2mmol/mL   potassium chloride 2mmol/mL   potassium phosphate 3mmol/mL) magnesium sulphate injection 50%
<b>dextrose hypertonic, 20 % or greater</b>	IV dextrose -50%   70%
<b>insulin injections</b> (subcutaneous and IV)	insulin aspart   insulin aspart+aspart protamine premix analogue   insulin detemir   insulin degludec   insulin glargine   insulin human soluble   insulin human isophane   insulin lispro protamine+lispro premix analogue
<b>neuromuscular blocking agents</b>	cisatracurium   pancuronium   rocuronium   suxamethonium
<b>parenteral nutrition preparations</b>	Total Parenteral Nutrition (TPN)
<b>controlled and narcotic medications, IV, transdermal, and oral</b> (including liquid concentrates, immediate and sustained-release formulations)	<b>narcotic:</b> acetaminophen/tramadol (Zaldiar®)   <b>ALF</b> entanil   codeine   fenta <b>NYL</b>   <b>HYDRO</b> morphine   morphine   oxycodone   pethidine   <b>REMIF</b> entanyl   tramadol   acetaminophen/codeine 30mg(Tylenol 3®) <b>controlled medications:</b> <b>ALPRAZ</b> olam   benzhexol   bromazepam   chloral hydrate   clonaze <b>PAM</b>   diazepam   ephedrine   ethanol absolute   gabapentin   <b>LOR</b> azepam   methylphenidate   phenobarbitone   pregabalin   procyclidine   zolpidem

**Note:** Please refer to the hospital wide policy and procedure of High Alert Medications for safety strategies

This list approved by the P&T committee

Chairman of P&T Committee  
Dr. Nasser Al Masri

**2023**



## Appendix B Risk Reduction Strategies For High Alert Medications

Medication/ Class	High-Alert Feature	Storage	Ordering	Preparing/ Dispensing	Administration	Monitoring
<b>1) adrenergic agonists, IV e.g.</b> adrenaline isoprenaline noradrenaline	Narrow therapeutic index.	<ul style="list-style-type: none"> <li>Use premixed solutions if available.</li> <li>"High Alert" Auxiliary labels</li> <li>ADC / locked cabinet</li> </ul>	<ul style="list-style-type: none"> <li>The Complete medication order of the continuous infusion shall include medication dose / rate titration range.</li> <li>Standardized concentrations.</li> </ul>	All preparations should be independently double-checked by a healthcare provider prior to dispensing.	<ul style="list-style-type: none"> <li>Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</li> </ul>	Use cardiac monitors on all patients with a central line.
		<ul style="list-style-type: none"> <li>Use Tall-Man lettering to differentiate between LASA medications (e.g. "DOBUTamine" and "DOPamine").</li> <li>Use premixed solutions (if available) from different manufacturers to make sure they look different.</li> <li>ADC / locked cabinet</li> </ul>	<ul style="list-style-type: none"> <li>Standardize ordering and dosage and IV rates.</li> <li>Use standard concentrations to facilitate the use of dosing charts and eliminate possibility of calculation errors and base dosing titration against clinical factors.</li> </ul>			
<b>2) anesthetic agents</b> e.g. ketamine, propofol, thiopentone	Risk of respiratory arrest	<ul style="list-style-type: none"> <li>"High Alert" Auxiliary labels</li> <li>ADC / locked cabinet</li> </ul>	<ul style="list-style-type: none"> <li>Restricted for anesthesia, ICUs and Emergency Departments.</li> <li>Credentialed Physicians</li> </ul>	All preparations should be independently double-checked by a healthcare provider prior to dispensing.	<ul style="list-style-type: none"> <li>Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</li> </ul>	
<b>3) Cardioplegic Solutions</b>						

## Appendix B Risk Reduction Strategies For High Alert Medications

<p><b>4) chemotherapeutic agents</b> (all parenteral and oral)</p>	<p>Drugs are toxic by design</p>	<ul style="list-style-type: none"> <li>Separate inventory.</li> <li>Separate Look Alike Sound Alike (LASA).</li> <li>TALL man lettering.</li> <li>"High Alert" Auxiliary label.</li> <li>Protect staff: (Pharmacy, Nursing, Housekeeping and Supplies).</li> <li>Handle with Protection while stocking / restocking shelves.</li> <li>Protective garb.</li> <li>Appropriate use of Spill kit.</li> <li>USP 797 and 800 standards.</li> <li>Dispose of material in chemo waste bin.</li> </ul>	<ul style="list-style-type: none"> <li>Restricted to Oncology (prescribed by doctor with privilege Oncologist /Hematologist).</li> <li>Make sure all orders include the patient's current height and weight so that the BSA can be calculated and double checked by all caregivers.</li> <li>Written orders/no verbal or telephone orders.</li> <li>Protocol in patient file.</li> <li>Dosing verified with physician if not clear.</li> <li>Blood work monitored before ordering.</li> <li>Informed consent to be obtained from patient.</li> <li>Premed ordered prior to administering chemotherapy.</li> </ul>	<ul style="list-style-type: none"> <li>Two pharmacists verify order entry and calculations (i.e. independent double check).</li> <li>Preparation by trained pharmacy technician.</li> <li>Dose and calculation checked by pharmacist.</li> <li>Vincristine shall be prepared and dispensed in minibags only.</li> <li>All preparations should be independently double-checked by a healthcare prior to dispensing.</li> </ul>	<ul style="list-style-type: none"> <li>Final product independently checked by two chemotherapy certified RN against the prescription order prior to administration.</li> <li>Two certified nurses to check the settings / rate on the infusion pump</li> <li>Intrathecal therapy safeguards (vinca alkaloids).</li> <li>Have a spill kit in the clinical areas and all staff administering chemotherapy aware of medication safety data sheet (MSDS) at PSMMC (online and hard copy).</li> </ul>	<ul style="list-style-type: none"> <li>Patient blood work</li> <li>Monitor the Pharmacy/nursing staff exposure</li> <li>Extravasation Management</li> </ul>
<p><b>5) concentrated electrolytes</b> (Injectable)</p>		<ul style="list-style-type: none"> <li>Restricted to pharmacy.</li> <li>If stored in Critical care areas must use the auxiliary labels "MUST BE DILUTED" and "High Alert"</li> <li>Utilize dilute premix solutions if available in Automated Dispensing Cabinets (ADC)/or locked cabinet.</li> </ul>	<ul style="list-style-type: none"> <li>Maximum concentration protocols (see separate document).</li> <li>Specify rate of administration (limit runway IVs and provide control of rate).</li> <li>No abbreviations</li> </ul>	<p>Prepared and dispensed by pharmacy for non-critical areas.</p> <p>In critical areas, two trained RNs prepare dose and independently check dose for concentrated electrolytes locations and justifications list.</p>	<p>Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</p>	<ul style="list-style-type: none"> <li>Electrolyte checks in the clinical areas</li> <li>ECG monitoring when administering higher doses/rate</li> </ul>
<p><b>6) dextrose hypertonic, 20% or greater</b></p>		<ul style="list-style-type: none"> <li>To be separated from the other Intravenous fluids containing dextrose</li> <li>"High Alert" Auxiliary labels</li> <li>ADC / locked cabinet</li> </ul>	<p>No abbreviations</p>	<p>All preparations should be independently double-checked by a healthcare prior to dispensing.</p>	<p>Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</p>	<ul style="list-style-type: none"> <li>Blood glucose level must be monitored</li> <li>Monitor through Clinical Data Categories (CDCs) in ADC-PYXIS (Dextrose 50%)</li> </ul>

## Appendix B Risk Reduction Strategies For High Alert Medications

<p><b>7) neuromuscular blocking agents "paralytics" Paralyzing Medications</b></p>	<p>Respiratory paralysis</p>	<ul style="list-style-type: none"> <li>Restricted to pharmacy, OR, ICUs and Emergency Department.</li> <li>If stored in pharmacy / critical / clinical areas (Automated Dispensing Cabinets (ADC)/or locked cabinet), it must have auxiliary warning labels: <b>(WARNING: PARALYZING AGENT PATIENT MUST BE INTUBATED)</b> and "High Alert"</li> <li>Use orange bins with lid (if available)</li> </ul>	<p>Restricted to anesthesiologists, Operating Room (OR), Intensive care units (ICUs) and Emergency department only.</p>	<ul style="list-style-type: none"> <li>Prepared by pharmacy.</li> <li>In critical areas, two-RNs prepare dose and independently check dose for accuracy</li> </ul>	<ul style="list-style-type: none"> <li>Can be given as a bolus / or as an infusion.</li> <li>Infusions <b>MUST</b> be via an infusion pump.</li> <li>Patient must be intubated <b>(WARNING: PARALYZING AGENT PATIENT MUST BE INTUBATED)</b></li> </ul>	<ul style="list-style-type: none"> <li>Continuous cardiac and respiratory monitoring.</li> <li>Monitor through Clinical Data Categories (CDCs) in ADC-PYXIS</li> </ul>
<p><b>8) controlled and narcotic medications</b>  IV, transdermal, and oral (including liquid concentrates, immediate and sustained-release formulations)</p>	<p>Respiratory depression</p>	<ul style="list-style-type: none"> <li>Use Tall-Man lettering to differentiate between LASA medications</li> <li>Limit floor stock and store separately, in controlled drug double locked cabinet/ADC.</li> <li>Assure the availability of antidotes in clinical areas.</li> <li>"High Alert" Auxiliary labels</li> </ul>	<ul style="list-style-type: none"> <li>Proper conversion to equivalent doses when switching from one to another.</li> <li>No Verbal / Telephone orders</li> <li>Do not use potentially confusing abbreviations such as "MgSO4" and "MSO4"</li> </ul>	<ul style="list-style-type: none"> <li>Prepared in pharmacy</li> <li>Standardize concentrations of intravenous solutions.</li> <li>All preparations properly labeled by pharmacy.</li> </ul>	<ul style="list-style-type: none"> <li>Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</li> <li>Two-certified nurses to check medication/amount wasted.</li> <li>Empty ampoules must be kept and returned to the pharmacy (narcotic section).</li> <li>Proper disposal methods of narcotics.</li> </ul>	<ul style="list-style-type: none"> <li>Identify whom at risk for respiratory depression.</li> <li>Observe patient for side effects, especially respiratory depression</li> <li>Keep antidote available "Naloxone".</li> </ul>
<p><b>9) insulin injections</b>  (subcutaneous and IV)</p>	<p>Hypoglycemia</p>	<ul style="list-style-type: none"> <li>Store different types of Insulin in separate bins to differentiate them.</li> <li>Opened Insulin vials will have an expiration date of 28 days.(follow updated BUD poster )</li> <li>"High Alert" Auxiliary labels</li> <li>Inspection of areas.</li> </ul>	<ul style="list-style-type: none"> <li>Use approved order sets in PSMC for insulin infusions protocols</li> <li>Do not abbreviate "units"</li> </ul>	<ul style="list-style-type: none"> <li>Limit floor stock.</li> <li>Updated poster created for different types of insulin</li> </ul>	<ul style="list-style-type: none"> <li>After dispensing/using insulin do not return to the original box this increase the risk that a vial might be placed in the wrong box and the next person may automatically select the wrong product.</li> <li>Document expiration date (28 day) and initials on</li> </ul>	<ul style="list-style-type: none"> <li>Monitor patient's blood sugar at regular intervals.</li> <li>Monitor for signs of hypoglycemia.</li> <li>Keep glucose/juice and Dextrose 50% available.</li> <li><b>Patient education;</b> patient is educated on</li> </ul>

## Appendix B Risk Reduction Strategies For High Alert Medications

		<ul style="list-style-type: none"> <li>• ADC / locked cabinet</li> </ul>		<p>opened multi-dose vials.(follow updated BUD poster )</p> <ul style="list-style-type: none"> <li>• Use appropriate syringes</li> <li>Independent double check on insulin dose preparation.</li> <li>• Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</li> <li>• Monitor proper pen use (i.e. Insulin pen sharing is prohibited)</li> </ul>	<p>the signs and symptoms of hypoglycemia and hyperglycemia.</p>
<b>10) antithrombotic agents e.g. heparin</b>	Bleeding risk	<ul style="list-style-type: none"> <li>• Minimize the number of different concentrations available.</li> <li>• "High Alert" Auxiliary labels</li> <li>• ADC / locked cabinet</li> </ul>	<ul style="list-style-type: none"> <li>• Use approved heparin infusion protocols.</li> <li>• Do not use "U" for units</li> </ul>	<ul style="list-style-type: none"> <li>• Before administering any of these agents a second nurse do independent double check of the drug, dose and infusion pump settings.</li> <li>• Document rate, adjustments on the flow sheet.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor clotting screen at regular intervals.</li> <li>• Monitor for signs of occult bleeding (urine and feaces)</li> <li>• Educate patient/monitor for side effects</li> </ul>
<b>11) enoxaparin (LMWH)</b>	Bleeding risk	<ul style="list-style-type: none"> <li>• Segregate different strengths.</li> <li>• "High Alert" Auxiliary labels</li> <li>• ADC / locked cabinet</li> </ul>	<p>Utilize Enoxaparin guidelines for use in specific populations (renal and obese)</p>	<ul style="list-style-type: none"> <li>• Before administering any of these agents a second nurse do independent double check of the drug and dose</li> </ul>	
<b>12) warfarin</b>	Bleeding risk	<ul style="list-style-type: none"> <li>• Segregate different strengths.</li> <li>• "High Alert" Auxiliary labels</li> <li>• ADC / locked cabinet</li> </ul>	<ul style="list-style-type: none"> <li>• Use approved Warfarin guidelines.</li> <li>• Warfarin order set are programmed to ensure baseline INR, and goal INR/indication.</li> </ul>	<ul style="list-style-type: none"> <li>• Before administering any of these agents a second nurse do independent double check of the drug and dose</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor INR.</li> <li>• Monitor through Clinical Data Categories (CDCs) in ADC-PYXIS</li> </ul>

## Appendix B Risk Reduction Strategies For High Alert Medications

<p><b>13) Total Parenteral Nutrition (TPN)</b></p>	<p>Risk of electrolyte imbalance</p>	<ul style="list-style-type: none"> <li>• Provide anticoagulation clinic referral prior to discharge.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepared by Pharmacy</li> <li>• All preparations should be independently double-checked by a pharmacist prior to dispensing.</li> <li>• Label infusion as "High Alert Medication".</li> </ul>	<ul style="list-style-type: none"> <li>• Recommended doses in Order Sets.</li> <li>• No Verbal / Telephone orders</li> </ul>	<ul style="list-style-type: none"> <li>• Check for baseline INR prior to administering dose.</li> <li>• Provide Warfarin education booklet and document it.</li> <li>• Designated as 'High Alert Medication' on MAR "if applicable"</li> <li>• Before administering of the preparation a second nurse do independent double check of the components, doses and infusion pump settings.</li> </ul>	<ul style="list-style-type: none"> <li>• Outpatients must return at regular intervals for blood tests to monitor INR.</li> <li>Order sets for standard parenteral nutrition labs</li> </ul>
--	--------------------------------------	---	--	--	---	---