

**Northwell Health
System Pharmacy & Therapeutics**

POLICY TITLE: High-Alert Medications	PATIENT CARE SERVICES POLICY AND PROCEDURE MANUAL
POLICY #:	CATEGORY SECTION:
System Approval Date: 06/01/2016 Site Implementation Date: 06/28/16	Effective Date: 02/15 Last Revised/Approved: 06/16
Inclusions: Long Island Jewish Medical Center, Long Island Jewish Forest Hills, Long Island Jewish Valley Stream, Cohen Children’s Medical Center, Zucker Hillside Hospital	
Prepared by: NWH Clinical Pharmacy Standardization Subcommittee, NWH Pharmacy & Therapeutics Committee	Exclusions: None

GENERAL STATEMENT of PURPOSE

- According to the Institute for Safe Medication Practices (ISMP), high-alert medications are “drugs that bear a heightened risk of causing significant patient harm when 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”.
- The Joint Commission (TJC) Medication Management (MM) standards require institutions to identify, in writing, their high-alert medications, develop a process for managing high-alert medications, and implement its process.

POLICY

- Identify and review a list of high-alert drugs specific to Northwell Health (NWH). This list will be used to ensure that safeguards are put in place to prevent medication errors and protect the patient.

SCOPE

This policy applies to faculty and students of the Hofstra Northwell Health School of Medicine (“School of Medicine”) conducting work or research on behalf of the School of Medicine or at any Northwell Health facility; and all members of the Northwell Health workforce including, but not limited to, employees, medical staff, volunteers, students, physician office staff, and other persons performing work for or conducting research at or on behalf of the Northwell Health.

PROCEDURE/GUIDELINES

- The NWH P&T Committee has agreed to designate the following drug pairs as high-alert medications (see *Appendix I*).
- Requests to add or remove agents from this list will be directed to the NWH P&T Committee.

- The ultimate decision to modify this policy shall lie with the NWH P&T Committee membership.
- Due to differing medication management processes at each NWH site and the implementation of various technology solutions, the exact strategies (i.e., processes) for managing high-alert medications shall be determined by local P&T Committees (see *Appendix II*). System-wide strategies may be considered upon directive from the NWH P&T Committee (see *Appendix II*). Recommended strategies may include, but are not limited to:
 - Standardizing the ordering, storage, preparation, and administration of these products
 - Improving access to information about these drugs
 - Limiting access to high-alert medications
 - Using auxiliary labels and automated alerts
 - Employing redundancies such as automated or independent double-checks
 - Administer high-alert intravenous (IV) medication infusions via a programmable infusion pump

REFERENCES

ISMP: <https://www.ismp.org/tools/highalertmedications.pdf>
 ISMP Sentinel Event Alert 11: https://www.jointcommission.org/assets/1/18/SEA_11.pdf
 ISMP Best Practices: <http://www.ismp.org/tools/bestpractices/TMSBP-for-Hospitals.pdf>
 American Hospital Formulary Service (AHFS)

TJC: CAMH - MM.01.01.03, EP1, EP2

Reviewed / Approved by: LIJMC Pharmacy & Therapeutics Committee	06/08/16
Reviewed / Approved by: LIJMC Medical Board	06/28/16
Signatures on File:	
X	Date
Richard Schwarz, Medical Director	
X	Date
Margaret Murphy, Associate Executive Director, Patient Care Services	
X	Date
Joseph Simpson, Chair, Pharmacy & Therapeutics Committee	
X	Date
James Abberton, Senior Director of Pharmacy Services	

Appendix I: Table of High-Alert Medications

NORTHWELL HEALTH HIGH-ALERT MEDICATIONS	
<i>Classes/Categories* of Medications</i>	
<p>Antithrombotic agents, including:</p> <ul style="list-style-type: none"> • Antiplatelets <ul style="list-style-type: none"> ○ Glycoprotein IIB/IIIa inhibitors (e.g., abciximab, eptifibatide, tirofiban) ○ P2Y12 platelet adenosine diphosphate (ADP) receptor antagonists (e.g., clopidogrel, prasugrel, ticagrelor) ○ Miscellaneous (e.g., aspirin, cilostazol, dipyridamole, ticlopidine) • Anticoagulants <ul style="list-style-type: none"> ○ Coumarin derivatives (e.g., warfarin) ○ Direct thrombin inhibitors (e.g., argatroban, bivalirudin, dabigatran) ○ Factor Xa inhibitors (e.g., apixaban, edoxaban, fondaparinux, rivaroxaban) ○ Heparins (e.g., dalteparin, enoxaparin, unfractionated heparin) <ul style="list-style-type: none"> ▪ Heparin flushes – pediatrics only • Thrombolytics (e.g., alteplase) 	<p>Epidural medications, including:</p> <ul style="list-style-type: none"> • BUpivacaine • FentaNYL • Ropivacaine • HYDRoMorphone • Morphine • Combination products
	<p>Insulin, including:</p> <ul style="list-style-type: none"> • All routes and formulations
	<p>Intrathecal medications, including:</p> <ul style="list-style-type: none"> • Baclofen • Bleomycin • Cytarabine • Hydrocortisone • Methotrexate • NaCl 0.9% • Thiotepa • Topotecan
<p>Antineoplastic agents, including:</p> <ul style="list-style-type: none"> • Non-oncologic & oncologic use 	<p>Ketamine, including:</p> <ul style="list-style-type: none"> • All routes and formulations
<p>Concentrated** Electrolytes (intravenous), including:</p> <ul style="list-style-type: none"> • Magnesium sulfate • Potassium chloride • Potassium phosphate • Sodium chloride (hypertonic) 	<p>Neuromuscular blocking agents, including:</p> <ul style="list-style-type: none"> • All intravenous formulations
	<p>Opioids, including:</p> <ul style="list-style-type: none"> • All routes and formulations
	<p>Phytonadione (Vitamin K), including:</p> <ul style="list-style-type: none"> • All parenteral formulations
<p>*Medications within each pharmacologic-therapeutic classification are defined as per the American Hospital Formulary Service (AHFS) unless otherwise specified</p> <p>**Concentrated electrolytes are those that require dilution prior to administration and those given undiluted only in emergency situations (e.g., hypertonic saline for increase intracranial pressure)</p>	

Appendix II: Strategies for Managing High-Alert Medications

STRATEGIES FOR MANAGING HIGH-ALERT MEDICATIONS

<i>Class / Category</i>	<i>Storage</i>	<i>Transcription/ Ordering</i>	<i>Preparing/ Dispensing</i>	<i>Administration</i>	<i>Monitoring</i>
Antithrombotic agents		<p>Practitioners educated as to the availability of standardized concentrations of premixed heparin solutions available for use at the Medical Center</p> <p>Standardized adult heparin orders or CPOE heparin nomograms will be utilized where applicable</p> <p>Intravenous anticoagulants are switched to subcutaneous or oral agents when indicated</p> <p>Unapproved abbreviations have been eliminated (the word “units” is spelled out versus writing “u”)</p>	Prefilled heparin flush syringes available	Smart infusion pumps are utilized for continuous IV infusions	<p>Ensure appropriate reversal agents are readily available</p> <p>Lab values are maintained and communicated via guidelines</p> <p>Standardized warfarin patient education booklet</p>

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Antineoplastic agents		<p>Patients and/or family receive education for all oral methotrexate discharge orders</p> <p>Standardized orders for antineoplastic agents are utilized (both mg/m² or mg/kg dose and the calculated dose are included)</p> <p>Maximum dose alerts built into the pharmacy computer profiling system</p>	<p>Vincristine and other vinca alkaloids are dispensed in a minibag of a compatible solution and not in a syringe</p> <p>Preparation and dispensation of all antineoplastic agents is limited to the Pharmacy Department</p> <p>Only specially trained pharmacists are allowed to prepare, check and dispense intravenous (IV) antineoplastic agents</p>	<p>Smart infusion pumps are utilized for continuous IV infusions</p>	<p>Lab values are maintained and communicated via guidelines</p>

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<p>Concentrated electrolytes (intravenous)</p>	<p>Remove potassium chloride/phosphate from floor stock.</p> <p>Hypertonic sodium chloride-stored in ED Automated Dispensing Cabinet (ADC) or dispensed from pharmacy only</p> <p>Medications used in emergency situations may be stored in the crash trays/kits (e.g., magnesium sulfate)</p>		<p>Move drug preparation off units and use commercially available premixed IV solutions whenever possible.</p> <p>Standardize and limit drug concentrations.</p>	<p>Smart infusion pumps are utilized for bolus infusions</p> <p>Potassium Administration Guidelines are utilized</p>	<p>Lab values are maintained and communicated per guidelines</p>

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Epidural medications			<p>All epidural preparations are prepared by the pharmacy or outsourced by pharmacy in standardized concentrations.</p> <p>Pharmacy will dispense these medications labeled with a warning “for epidural use”</p> <p>When picking up epidural infusions at the pharmacy, a registered nurse must identify the correct infusion and sign for the medication.</p>	<p>Infusion pumps are used for all epidural infusions.</p> <p>Two RNs must identify the patient, and check all epidural infusions (except when administered by Anesthesia practitioners): prior to initiation of infusion, when changing epidural pump settings, when giving a bolus, when changing the epidural bag, when discarding epidural waste</p>	

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Insulin		Unapproved abbreviations have been eliminated (the word “units” is spelled out versus writing “u”)	Patient-specific insulin is dispensed whenever possible Long-acting insulin is drawn up by pharmacy and dispensed as patient-specific doses	Smart infusion pumps are utilized for continuous IV infusions	Ensure appropriate reversal agents are readily available. Lab values are maintained and communicated via guidelines
Intrathecal medications			Auxiliary labels will be utilized when product is prepared and/or dispensed by pharmacy		
Ketamine		Use is restricted to the Emergency Department and the Department of Anesthesia	Ketamine infusions are prepared by pharmacy and replaced daily Standardized concentrations are utilized	Ketamine is infused through a smart infusion pump, using “guardrails” and a locked control panel	
Neuromuscular blocking agents (intravenous)	Segregate, sequester, and differentiate all neuromuscular blocking agents (NMBs) from other medications				

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<i>Class / Category</i>	<i>Storage</i>	<i>Transcription/ Ordering</i>	<i>Preparing/ Dispensing</i>	<i>Administration</i>	<i>Monitoring</i>
Opioids		<p>Sunrise CPOE Order Sets are utilized for PCA</p> <p>Unapproved abbreviations have been eliminated</p>	<p>Opioids and narcotics limited by individual unit's requirements and contained in Automated Dispensing Cabinets (ADCs)</p> <p>Standardized concentrations for administration will be utilized with the Patient Controlled Analgesia (PCA) pumps</p>	<p>Educate staff about hydromorphone and morphine mix-ups</p> <p>Patient controlled analgesia (PCA) requires RN double-checks of the drug, pump setting and dosage</p> <p>Two RNs must identify the patient, and check all PCA infusions (except when administered by Anesthesia practitioners): prior to initiation of infusion, when changing PCA pump settings, when giving a bolus, when changing the PCA bag, when discarding PCA waste</p> <p>Smart infusion pumps are utilized for continuous IV infusions</p>	<p>Ensure appropriate reversal agents are readily available</p>

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<i>Class / Category</i>	<i>Storage</i>	<i>Transcription/ Ordering</i>	<i>Preparing/ Dispensing</i>	<i>Administration</i>	<i>Monitoring</i>
Phytonadione [Vitamin K] (parenteral)	<p>Undiluted phytonadione will not be routinely stored in patient care areas</p> <p>When storage is necessary in patient care areas, specific directions for infusion preparation will be provided with the product</p>	<p>Only credentialed prescribers will be permitted to order intravenous phytonadione, otherwise, orders will require Hematology, Critical Care, or Emergency Medicine consult and/or approval</p>	<p>When prepared by pharmacy, orders for intravenous phytonadione will be dispensed as a diluted and ready to use product in a 50 milliliter bag for infusion</p>	<p>Intravenous phytonadione will be administered slowly as an intermittent infusion, using an infusion pump, over at least 20 minutes duration</p> <p>Phytonadione will not be administered as an intravenous push</p>	