

# High Alert Medications

## 1. Introduction

### 1.1. Purpose

[High Alert Medications](#) have an increased risk of causing significant [Client](#) harm when they are administered in error.

The purpose of this policy is to:

- Identify the regional list of High Alert Medications; and
- Outline required Client safety activities for storage, prescribing, preparation and administration of High Alert Medications.

### 1.2. Scope

This is a joint policy between Vancouver Coastal Health Authority (VCH) and Providence Health Care (PHC).

This policy applies to all VCH and PHC staff and [Providers](#) prescribing, storing or administering High Alert Medications in all areas, including inpatient, ambulatory/outpatient, community care, and residential care settings.

High Alert Medication use in the operating rooms by anesthesiologists will follow guidelines of the Canadian Anesthesiologist's Society.

This policy outlines the minimum requirements for the handling of designated High Alert Medications. Additional safeguards may be appropriate for medications in specific populations e.g. pediatrics or neonates.

## 2. Policy

### 2.1. Prescribing

- 2.1.1. Preprinted orders/electronic order sets will be developed for High Alert Medications, as appropriate.
- 2.1.2. Preprinted orders/electronic order sets will include Client monitoring criteria and rescue procedures, as appropriate.
- 2.1.3. Preprinted orders/electronic order sets, when available, will be used for initiating therapy with High Alert Medications, as appropriate.

## 2.2. Storage and Labelling

- 2.2.1. Pharmacy will standardize and minimize the strengths/concentrations and package sizes of High Alert Medications available.
- 2.2.2. High Alert Medications will be issued as a Client-specific supply, which will be removed/returned to pharmacy when no longer required.
- 2.2.3. High Alert Medications will only be added to wardstock in a client service area with the approval of the Regional Pharmacy and Therapeutics Committee. Consideration will be given to the urgency with which the medication may be required, the safeguards available for storage and the availability of pharmacy services on site to provide a patient-specific supply.
- 2.2.4. If a High Alert Medication is wardstock in a client service area and an antidote/reversal agent exists, the antidote/reversal agent will also be available as appropriate.
- 2.2.5. In areas with automated dispensing cabinets (ADCs), High Alert Medications will be stored in locking bins with a user warning requiring positive acknowledgement when the product is removed.
- 2.2.6. High Alert Medications stocked outside of ADCs in client service areas will be stored in containers labeled with a “High Alert” sticker/label; medications stored within these containers will be labelled on their outer packaging with a “High Alert” sticker/label.

## 2.3. Preparation

- 2.3.1. High Alert Medications will be provided to client service areas in ready-to-administer dosage forms whenever possible to minimize the requirement for preparation on the units.
- 2.3.2. Parenteral Drug Therapy Manual monographs for High Alert Medications will be indicated as such.

## 2.4. Administration

- 2.4.1. High Alert Medications for intravenous infusion will be administered via infusion pump. The corresponding drug library setting will be used where available.
- 2.4.2. Select High Alert Medications will require an [Independent Double Check](#). Refer to [Appendix A](#) for independent double check guidelines.

For PHC, refer to the [Independent Double Check of Medication \(DOCUMENT #B-00-07-10098\)](#) for a specific list of medications and checks required.

For VCH, refer to the [Independent Double Check \(IDC\) of Medications \(D-00-07-30354\)](#).

## 2.5. Documentation

- 2.5.1. The computer generated (paper) or electronic medication administration record for High Alert Medications will indicate “High Alert Medication”.

## 3. Responsibilities and Compliance

### 3.1 Regional Pharmacy & Therapeutics Committee

The Regional Pharmacy & Therapeutics Committee is responsible for approving the list of High Alert Medications (Appendix A) and ensuring implementation, maintenance and monitoring of policies regarding their use.

Audits of High Alert Medications will be conducted on an annual basis.

## 4. Supporting Documents

### 4.1 Related Policies

- [High Alert Medications](#) (Lower Mainland Pharmacy Services)
- [Independent Double Check of Medication \(DOCUMENT #B-00-07-10098\)](#) (PHC)
- [Independent Double Check \(IDC\) of Medications \(D-00-07-30354\)](#) (VCH)

## 5. Definitions

“**Client**” refers to a patient, resident or Client receiving care.

“**High Alert Medications**” are drugs that bear a heightened risk of causing significant Client 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 harmful to Clients.

“**Independent Double Check**” (IDC) is a process by which two clinicians work **separately** to verify the accuracy of the order and medication related care to be delivered. The two clinicians perform the verification process independent of one another, without assistance from each other and without knowledge of the steps followed or conclusions arrived at by each other. Once verifications are complete, results are compared and discrepancies, if any, must be resolved before any action is taken e.g. transcription, preparation or administration.

“**Parenteral Medication**” refers to an injectable medication.

“**Providers**” refers to Physicians, Pharmacists, Registered Midwives, Registered Nurse Practitioners and Provider students, within their scope of practice.

“**Standard checking procedure**” includes the completion of the rights of medication administration: right Client, drug, dose, route, time, reason and documentation.

## 6. References

Institute for Safe Medication Practices (ISMP) [Canada Definition of Terms](#).

Institute for Safe Medication Practices (ISMP) [High-Alert Medications](#).

Accreditation Canada 2020 Medication Management Standards.

## 7. Appendices

- [Appendix A: High Alert Medications and Summary of Minimum Safety Practices](#)
- [Appendix B: BC Cancer Oncology High Alert Medication List](#)
- [Appendix C: Miscellaneous High-Alert Medications Wardstock Storage](#)
- [Appendix D: Concentrated Electrolytes Wardstock Storage](#)
- [Appendix E: High Dose Format Heparin Wardstock Storage](#)
- [Appendix F: High Dose Format Narcotic Wardstock Storage](#)

## Appendix A: High Alert Medications and Summary of Minimum Safety Practices

Medications or Routes	Ordering	Storage	Preparation	Administration*
<b>Miscellaneous</b>		Refer to <a href="#">Appendix C</a>		
BC Cancer Oncology High Alert Medications List ( <a href="#">Appendix B</a> ) Medications on the list are considered high alert for both oncology and non-oncology indications	PPO required for initiation of parenteral chemotherapy	Not stocked; patient-specific supply	Pharmacy	Refer to organization's Independent double-check guideline
methotrexate (all routes)		Not stocked; patient-specific supply	Pharmacy	Refer to organization's Independent double-check guideline
epidural infusions		Stocked with approval of Regional P&T	Pharmacy	Refer to organization's Independent double-check guideline
intrathecal medications		Stocked with approval of Regional P&T	Pharmacy	Refer to organization's Independent double-check guideline
perineural infusions		Stocked with approval of Regional P&T	Pharmacy	Refer to organization's Independent double-check guideline
patient controlled analgesia (IV-PCA, Epidural - PCEA, Perineural - PCPA)		Stocked with approval of Regional P&T	Pharmacy	Refer to organization's Independent double-check guideline
insulin IV continuous infusions		Stocked with approval of Regional P&T	Pharmacy/ Care area	Refer to organization's Independent double-check guideline
Insulin injections at concentrations above 100 units/mL		Not stocked; patient-specific supply	Care area	Refer to organization's Independent double-check guideline
sterile water for injection, in containers of 100 mL or more		Stocked with approval of Regional P&T	Care area	Standard checking procedure
neuromuscular blocking agents		Stocked with approval of Regional P&T	Care area	Standard checking procedure
<b>Medications or Routes</b>	<b>Ordering</b>	<b>Storage</b>	<b>Preparation</b>	<b>Administration</b>
<b>High Dose Format Narcotics</b>		Refer to <a href="#">Appendix F</a>		
diacetylmorphine injections		Stocked with approval of Regional P&T	Care area	Refer to organization's Independent double-check guideline

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POLICY

POLICY # BD-00-11-40028

methadone oral liquid		Stocked with approval of Regional P&T	Care area	Refer to organization's Independent double-check <a href="#">guidelines</a>
Opioids, parenteral vials or ampoules containing <u>more than</u> fentanyl 100 mcg or morphine 15 mg (adults) morphine 2 mg (pediatrics) HYDROMORPHONE 2 mg		Stocked with approval of Regional P&T	Care area	Refer to organization's Independent double-check guideline
<b>Concentrated Electrolytes</b>		<b>Refer to <a href="#">Appendix D</a></b>		
calcium salts for injection at concentrations of 10% or above		Stocked with approval of Regional P&T	Pharmacy/ Care area	Standard checking procedure
magnesium sulfate for injection at concentrations above 20%		Stocked with approval of Regional P&T	Pharmacy/ Care area	Standard checking procedure
potassium (all salts) for injection at concentrations of 2 mmol/mL or more		Stocked with approval of Regional P&T	Pharmacy/ Care area	Standard checking procedure
sodium acetate and sodium phosphate for injection at concentrations of 4 mmol/mL or more (of sodium)		Stocked with approval of Regional P&T	Pharmacy/ Care area	Standard checking procedure
<b>Medications or Routes</b>	<b>Ordering</b>	<b>Storage</b>	<b>Preparation</b>	<b>Administration</b>
<b>Concentrated Electrolytes</b>		<b>Refer to <a href="#">Appendix D</a></b>		
sodium chloride for injection at concentrations above 0.9%		Stocked with approval of Regional P&T	Pharmacy/ Care area	Standard checking procedure
<b>High Dose Format Heparins</b>		<b>Refer to <a href="#">Appendix E</a></b>		
heparin for injection containing 10,000 units or more per container		Stocked with approval of Regional P&T	Pharmacy/ Care area	Refer to organization's Independent double-check guideline
Low molecular weight heparin for injection, multidose vials		Stocked with approval of Regional P&T	Care area	Standard checking procedure

\*Refer to: **PHC:** [Independent Double Check of Medication \(DOCUMENT #B-00-07-10098\)](#)  
**VCH:** [Independent Double Check \(IDC\) of Medications \(D-00-07-30354\)](#)

**Appendix B: BC Cancer Oncology High Alert Medication List :**

Medications on this list are considered high alert for both oncology and non-oncology indications.

## Appendix C: Miscellaneous High Alert Medications Wardstock Storage

Medications	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
BC Cancer Oncology High Alert Medications List ( <a href="#">Appendix B</a> ) Medications on the list are considered high alert for both oncology and non-oncology indications	None, not approved for storage in client service areas	None
methotrexate (all routes)	None, not approved for storage in client service areas	None
epidural infusions patient controlled epidural analgesia (PCEA) BUpivacaine ROpivacine BUpivacaine-fentanyl BUpivacaine-HYDROmorphine BUpivacaine-morphine HYDROmorphine	Pain Control	Post Anesthetic Care Units (PACU) Surgical Units Maternity SH – Operating Room, CCU
intrathecal medications	None, not approved for storage in client service areas	None
perineural infusions patient controlled perineural analgesia (PCPA) BUpivacaine ROpivacine	Pain Control	Post Anesthetic Care Units (PACU) –VA, LGH, SPH Cardiac Surgery ICU (CSICU) - VA Surgical Units – SPH, LGH, MSJ Operating Rooms - LGH
intravenous infusions for patient controlled analgesia (PCA) HYDROmorphine fentanyl morphine	Pain Control	Surgical units Medicine units (For Overflow Surgical Patients) Critical Care Areas Renal Unit - SPH Maternity Operating Room Post Anesthetic Care Units (PACU) Neurology - LGH Radiology – LGH Pediatrics (for Overflow Adult Patients only) - LGH
insulin IV continuous infusions (excluding dose titrations)	Glycemic control	VGH Operating Rooms (OR), critical care areas

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Medications	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
insulin injections at concentrations above 100 units/mL	None, not approved for storage in client service areas.	None
sterile water for injection, in containers of 100 mL or more	Reconstitution of dantrolene for treatment of malignant hyperthermia	Operating Rooms (OR) PACU
neuromuscular blocking agents rocuronium succinylcholine cisatracurium	Facilitate endotracheal intubation Skeletal muscle relaxation during surgery or mechanical ventilation	Critical Care Areas Burns trauma high acuity units (BTHA)-VA High acuity units (HAU) Maternity –RH, LGH Neonatal ICU – SPH Special Care Nursery - LGH Urgent Care Centre – UBC Whistler Healthcare Centre (WHCC) Pemberton Healthcare Centre (PHCC) Rapid sequence intubation kits
	Reduce intensity of muscle contractions of pharmacologically or electrically induced convulsions	ECT (4W2) –MSJ ECT Areas - VA

Critical Care Areas – see Parenteral Drug Therapy Manual Site-Specific Administration Restrictions list

BCGH – Bella Coala General Hospital  
LGH – Lions Gate Hospital  
MSJ – Mount St Joseph Hospital  
qGH – qathet General Hospital  
RH – Richmond Hospital  
VGH – Vancouver General Hospital

RWLMH – RW Large Memorial Hospital, Bella Bella  
SGH – Squamish General Hospital  
SH – Sechelt Hospital  
SPH – St Paul’s Hospital  
UBCH – University of BC Hospital

## Appendix D: Concentrated Electrolytes Wardstock Storage

Restricted Concentrated Electrolytes	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
calcium chloride 10% (1 g/10 mL)	Life threatening arrhythmias	Critical Care Areas, High Acuity Units Emergency Response Drug Kits, Night Cupboard/Cabinet, Bella Coola (BCGH) - General unit in limited supply for crash cart replenishment
	Antidote Depot Supply – calcium channel blocker poisoning	Antidote Depot Sites as per BC Drug and Poison Information Center Antidote Stocking Guidelines
	Malignant Hyperthermia	Operating Room
	Treatment of ionized hypocalcaemia due to citrate toxicity from blood product transfusions	Maternity
calcium gluconate 10% (1 g/10 mL)	Life threatening arrhythmias	Critical Care Areas Emergency Response Drug Kits, Night Cupboard/Cabinet LGH HAU
	Antidote Depot Supply- treatment of hydrofluoric acid burn	Antidote Depot Sites as per BC Drug and Poison Information Center Antidote Stocking Guidelines
	Hypermagnesemia (part of Gestational Hypertension Protocol based on Perinatal Services of BC Guidelines)	Maternity
	<i>Urgent</i> calcium replacement therapy	Medical Units – Bella Bella (RWLMH), Bella Coola (BCGH) Dialysis Units Plasma Exchange Units LGH HAU
	Stem cell harvest	Apheresis Unit
	Beta-blocker or calcium channel blocker overdose	LGH HAU
magnesium sulfate 5 g/10 mL	Cardiac emergencies	Critical Care Areas Cardiac Units Emergency Response Drug Kits
	Asthma Treatment	Emergency Department - qGH and SGH
	<i>Urgent</i> magnesium replacement therapy	Client service areas at sites where pharmacy operational hours prevent the timely provision of a patient-specific supply: Night Cupboard- MSJ, LGH, RH

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Restricted Concentrated Electrolytes	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
		Coastal rural sites – SGH, qGH, SH, Whistler, Pemberton, Bella Bella (RWLMH), Bella Coola (BCGH)
	Stem cell harvest Plasma Exchange	Apheresis Unit
	Anticonvulsant in gestational hypertension protocol	Maternity
potassium chloride greater than or equal to 2 mmol/mL	Cardioplegic solution (potassium chloride 40 mmol/20 mL and 80 mmol/40 mL)	SPH OR Pump Room
potassium phosphate greater than or equal to 2 mmol/mL	None, not approved for storage in Client service areas.	None
sodium acetate greater than or equal to 4 mmol/mL sodium	None, not approved for general wardstock storage in client service areas	None
sodium chloride 3% 250 mL bag	Treatment of neurological emergencies	Critical Care Areas Neurology Units, Night Cupboard/Cabinet
	WBC labeling in Nuclear Med	Nuclear Medicine
sodium chloride 5% bag	None, not approved for general wardstock storage in client service areas	None
sodium chloride 23.4% 30 mL	None, not approved for general wardstock storage in client service areas	None
sodium phosphate greater than or equal to 4 mmol/mL sodium (30 mmol/10 mL phosphate)	<i>Urgent</i> phosphate replacement therapy	Client service areas at sites where pharmacy operational hours prevent the timely provision of a patient-specific supply: Night Cupboard - LGH,SH, MSJ, RH Coastal Rural Sites

Critical Care Areas – see Parenteral Drug Therapy Manual Site-Specific Administration Restrictions list

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qGH – qathet General Hospital

SPH – St Paul's Hospital

RH – Richmond Hospital

## Appendix E: High Dose Format Heparin Wardstock Storage

Restricted Heparin Products	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
heparin 25,000 units/250 mL premixed bag	Heparin Infusions	Critical Care Areas, Cardiac Units, High Acuity Units, Night Cupboards/Cabinets All units at VGH and UBCH. Medicine units at Bella Bella (RWLMH), Bella Coola (BCGH)
heparin 10,000 units/10 mL vial	Urgent bolus doses of heparin Initiation of heparin protocol	Critical Care Areas, Cardiac Units, High Acuity Units, Night Cupboards/Cabinets VGH, UBC – all units SPH, MSJ – all units LGH – Cardiac/telemetry (2E), Surgery (6E), Surgical Observation Unit and Trauma, Neuro Critical Care Unit Bella Bella (RWLMH) and Bella Coola (BCH) - Medicine Units PHC Community Dialysis Units
heparin 30,000 units/30 mL vial	Cardiac Bypass Surgery	OR
heparin 10,000 units/1 mL vial	None, not approved for storage in Client service areas	None
heparin 50,000 units/5 mL vial	None, not approved for storage in client service areas	None
enoxaparin 300 mg/3 mL multidose vial	Acute Coronary Syndrome	Critical Care Areas, Cardiac Units Night Cupboards/Cabinets Medicine units – Bella Bella (RWLMH), Bella Coola (BCGH)
dalteparin 95,000 units/3.8 mL multidose vial	DVT/PE Treatment, Thromboprophylaxis for Cardiac Ablations	PHC – Critical Care

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## Appendix F: High Dose Format Narcotic Wardstock Storage

Restricted High Dose Format Narcotics	Approved Indications for Wardstock Storage in the Listed Locations	
	Indications	Locations
diacetylmorphine 100 mg/mL pharmacy prepared syringe	Opioid Use Disorder	Crosstown Clinic
methadone oral liquid	Pain Control, Drug detoxification and maintenance	All units at VCH and PHC Vancouver Detox/Daytox
fentanyl 250 mcg/5 mL vial	Pain Control, Rapid Sequence Intubation, Compounding of infusion bags	Critical Care Areas Code Blue Emergency Response Kit
	Procedural sedation by anesthetist	Radiology SPH - Electrophysiology lab, Cardiac Procedure Room
fentanyl 1000 mcg/20 mL vial	None, not approved for storage in client service areas	None
HYDROmorphine 10 mg/1 mL vial	Pain Control	Palliative Care Units (PCU), North Shore Hospice, St. John Hospice, qGH Palliative Care Bed
	Clients who require more than 4 mg/dose on non-PCU units	Night cupboard – LGH, SH, SGH, qGH, MSJ ICU
	Opioid Use Disorder	SPH Urban Health unit, SPH Medicine units, SPH Substance Use Stability Unit (SUSU) unit – during non-pharmacy operating hours
HYDROmorphine 50 mg/5mL vial	None, not approved for storage in client service areas	None
HYDROmorphine 50 mg/1 mL vial	Opioid Use Disorder	SPH OR
HYDROmorphine 50 mg/mL pharmacy prepared syringe	Opioid Use Disorder	Crosstown Clinic
morphine 50 mg/1 mL vial	Compounding of infusion bags for pain control	SH – Cardiac Care Unit and ED for unit mixing of first dose infusion bags, subsequent infusion bags provided by pharmacy
morphine 10 mg/1 mL vial in pediatric care areas	Pain control	LGH, RH - Dedicated Pediatric (non-Neonatal ICU) units that have large variation in Client weights

Critical Care Areas – see Parenteral Drug Therapy Manual Site-Specific Administration Restrictions list

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RWLMH – RW Large Memorial Hospital, Bella Bella  
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