

	Department: PHARMACY	Policy Number 1000.519
	Title: HIGH-ALERT / HIGH-RISK / HAZARDOUS / LOOK ALIKE / SOUND ALIKE MEDICATIONS	Effective Date 10/10
		Distribution: PHARMACY, FOOD & NUTRITION, NURSING

APPROVALS:

Director	Date	3/05
Michele Goeb-Burkett	10/10	Originated Date 1/06, 4/06, 8/06 , 9/06, 9/07, 7/08, 12/08, 9/09, 7/10, 9/10, 10/10
Vice President	Date	Revised Date 11/05
President/CEO	Date	Reviewed Date

PURPOSE:

To identify medications with high risk to patients and provide a process to safely deliver these medications to the patient.

GENERAL STATEMENT:

High Alert/High Risk medications are those listed and will be safely administered to the patient through use of the verification process. Look alike, sound alike medications may also lead to harmful medication errors. Steps will be taken to identify and warn of similarities to reduce chance of confusion. Hazardous medications are those used for chemotherapy, antiviral drugs, hormones, some bioengineered drugs and others that may cause toxicity.

SPECIFICS:

High Alert/High Risk medications are verified by two licensed professionals prior to administration. This policy does not apply to licensed independent practitioners.

Verification includes independent visual confirmation of the physician's order and the following:

1. Right patient using two identifiers (neither shall be the patient room number). This is the responsibility of the nurse administering the medication.
2. Right medication(s)
3. Right route
4. Right dose/infusion rate/pump setting
5. Right time

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For chemotherapy, total parenteral nutrition and dialysis solutions, each additive is verified.

Verification is documented as a comment when documenting medication administration on the electronic medical record (EMR). The comment indicates the name of the nurse with whom the medication was verified. Manual records, such as the Heparin Flow Sheet, PCA/Epidural Flow Sheet, and Insulin Drip Flow Sheet, are initialed by both licensed practitioners.

High Alert Medication Verification List

1. Chemotherapy agents
2. Peritoneal dialysis solutions with additives
3. Any medication or infusion given by the epidural or intrathecal route (refer to policy)
4. Concentrated morphine solution (Roxanol[®])
5. PCA narcotic syringes AND PCA pump settings (Refer to policy)
6. Alteplase[®] (TPN/TNKASE)
7. *Lovenox
8. Total parenteral nutrition solutions (TPN/PPN) - Refer to policy
9. Insulin products, both subcutaneous and IV (Refer to policy)
10. Sodium chloride injection, hypertonic, more than 0.9% concentrate
11. Neonatal pain medications
12. Neonatal antibiotics
13. Neonatal IV fluids with additives
14. Intravenous Heparin IV and Bolus
15. HydromorphONE Injectible

* indicates automatic EMAR notification or paper documentation of second nurse verification requirement.

High Alert Medication Pyxis Alert List

1. Glycoprotein IIb/IIIa inhibitors - Integrilin[®], Reopro[®]
2. Inotropic medications (dopamine, dobutamine, milrinone)
3. Nesiritide (Natrecor[®])
4. IV Adrenergic Agonists (Pressors) – (epinephrine, norepinephrine, phenylephrine)

Pyxis Alert is defined as a reminder message that appears prior to obtaining a medication from the pyxis machine as follows:

“High Alert/High Risk Medication Verify Dose/Pump Settings.”

High Alert/High Risk Medications in the pharmacy are indicated by a highlighted “Red Label” or placement in a High Alert area designated by red (i.e. chemotherapy) or by indication on the label generated by Talyst. The list of meds includes but is not limited to the following medications:

Methotrexate 2.5mg	Magnesium 1 Gm/100ml
Methotrexate 1Gm vials	Lidocaine 2 Gm 4mg/ml in D5
Coumadin	500ml
Heparin – all strengths	Potassium 20mEq/100ml
Heparin 25,000 Units/500ml	Potassium 10mEq/50ml

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Amiodarone 150mg/3ml
Amiodarone 450mg/9ml
Bleomycin
Natreacor 1.5 mg

Nitropress 50mg
Magnesium 1mg/2ml
Sodium chloride 23.4% 30ml
Potassium Phosphate 15ml

LOOK ALIKE SOUND ALIKE (LASA) MEDICATIONS

1. Confusing drug names is a common system failure. Many drug names look alike or sound alike can potentially lead to harmful errors. Table 1 is a list of LASA medications that are commonly used in our facility.
2. LASA meds in Talyst are bar coded in and out and bins are not labeled with drug names. Medications in Talyst are not stored in any order enhancing patient safety with look alike sound alike medications in pharmacy. Medications that are look alike sound alike stored outside of the auto carousel (Talyst) are placed in yellow bins or highlighted with yellow to warn of the potential for error.
3. LASA are noted with tall man lettering in the Pyxis formulary, E-Mars & Cerner to help differentiate the drugs.
4. Physicians will alerted to LASA medications through their physician computerized order entry process with tall man lettering.
5. In the event of a near miss or medication error as a result of a LASA medication, action is taken to correct as soon as possible. Any area utilizing medications may report/submit to the pharmacy a potential LASA medication for action.

Table 1

Amphotericin lipid complex (Abelcet)/Amphotericin B/Amphotericin B liposomal
Bupropion / Buspirone
Chlorpromazine / Chlorpropamide
Cyclosporin / Cycloserine
Diphenhydramine / Dimenhydranate
Glipizide / Glyburide
Hydralazine / Hydroxyzine
Medroxyprogesterone / Methylprednisolone / Prednisone
Ephedrine / Epinephrine
Dopamine / Dobutamine
Daunorubicin / Doxorubicin
Vincristine / Vinblastine
Calcium Chloride / Calcium Gluconate
Carboplatin / Cisplatin

LASA medications listed are selected from the ISMP list of confused drug names, for error reports, or medications with significant potential for harm. LASA are reviewed on an ongoing basis and revised as needed. A review is performed at least annually.

CONCENTRATED ELECTROLYTES

Concentrated electrolytes are not stored or dispensed to any patient care area. Only Magnesium Sulfate 1 Gm vials for IM use and crash care(with proper label and instructions) are allowed outside the pharmacy.

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HAZARDOUS MEDICATIONS

1. Hazardous medications as defined by ASHP and NIOSH include those that exhibit one or more of the following:
 - a. Carcinogenicity
 - b. Teratogenicity or other developmental toxicity
 - c. Reproductive toxicity
 - d. Organ toxicity at low doses
 - e. Genotoxicity
 - f. Structure and toxicity profiles of new drugs that mimic existing drugs determined hazardous by the above criteria
2. See attached the list of hazardous drugs as listed in the NIOSH Alert “Preventing Occupational Exposure to Antineoplastic and Other Hazardous Drugs in Health Care Settings”.

GUIDELINES (FORMS): NIOSH Hazardous Drug List

Sample list of drugs that should be handled as hazardous*		
Drug	Source	AHFS Pharmacologic-Therapeutic Classification
Aldesleukin	4,5	10:00 Antineoplastic agents
Alemtuzumab	1,3,4,5	10:00 Antineoplastic agents
Alitretinoin	3,4,5	84:36 Miscellaneous skin and mucous membrane agents (Retinoid)
Altretamine	1,2,3,4,5	Not in AHFS (Antineoplastic agent)
Amsacrine	3,5	Not in AHFS (Antineoplastic agent)
Anastrozole	1,5	10:00 Antineoplastic agents
Arsenic trioxide	1,2,3,4,5	10:00 Antineoplastic agents
Asparaginase	1,2,3,4,5	10:00 Antineoplastic agents
Azacitidine	3,5	Not in AHFS (antineoplastic agent)
Azathioprine	2,3,5	92:00 Unclassified therapeutic agents (immunosuppressant)
Bacillus Calmette-Guerin	1,2,4	80:12 Vaccines
Bexarotene	2,3,4,5	10:00 Antineoplastic agents
Bicalutamide	1,5	10:00 Antineoplastic agents
Bleomycin	1,2,3,4,5	10:00 Antineoplastic agents
Busulfan	1,2,3,4,5	10:00 Antineoplastic agents
Capecitabine	1,2,3,4,5	10:00 Antineoplastic agents
Carboplatin	1,2,3,4,5	10:00 Antineoplastic agents
Carmustine	1,2,3,4,5	10:00 Antineoplastic agents
Cetrorelix acetate	5	92:00 Unclassified therapeutic agents (GnRH antagonist)
Chlorambucil	1,2,3,4,5	10:00 Antineoplastic agents
Chloramphenicol	1,5	8:12 Antibiotics
Choriogonadotropin alfa	5	68:18 Gonadotropins
Cidofovir	3,5	8:18 Antivirals
Cisplatin	1,2,3,4,5	10:00 Antineoplastic agents
Cladribine	1,2,3,4,5	10:00 Antineoplastic agents
Colchicine	5	92:00 Unclassified therapeutic agents (mitotic inhibitor)

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Cyclophosphamide	1,2,3,4,5	10:00 Antineoplastic agents
Cytarabine	1,2,3,4,5	10:00 Antineoplastic agents
Cyclosporin	1	92:00 Immunosuppressive agents
Dacarbazine	1,2,3,4,5	10:00 Antineoplastic agents
Dactinomycin	1,2,3,4,5	10:00 Antineoplastic agents
Daunorubicin HCl	1,2,3,4,5	10:00 Antineoplastic agents
Denileukin	3,4,5	10:00 Antineoplastic agents
Dienestrol	5	68:16.04 Estrogens
Diethylstilbestrol	5	Not in AHFS (nonsteroidal synthetic estrogen)
Dinoprostone	5	76:00 Oxytocics
Docetaxel	1,2,3,4,5	10:00 Antineoplastic agents
Doxorubicin	1,2,3,4,5	10:00 Antineoplastic agents
Dutasteride	5	92:00 Unclassified therapeutic agents (5-alpha reductase inhibitor)
Epirubicin	1,2,3,4,5	10:00 Antineoplastic agents
Ergonovine/methyletergonovine	5	76:00 Oxytocics
Estradiol	1,5	68:16.04 Estrogens
Estramustine phosphate sodium	1,2,3,4,5	10:00 Antineoplastic agents
Estrogen-progestin combinations	5	68:12 Contraceptives
Estrogens, conjugated	5	68:16.04 Estrogens
Estrogens, esterified	5	68:16.04 Estrogens
Estrone	5	68:16.04 Estrogens
Estropipate	5	68:16.04 Estrogens
Etoposide	1,2,3,4,5	10:00 Antineoplastic agents
Exemestane	1,5	10:00 Antineoplastic agents
Finasteride	1,3,5	92:00 Unclassified therapeutic Agents (5-alpha reductase inhibitor)
Floxuridine	1,2,3,4,5	10:00 Antineoplastic agents
Fludarabine	1,2,3,4,5	10:00 Antineoplastic agents
Fluorouracil	1,2,3,4,5	10:00 Antineoplastic agents
Fluoxymesterone	5	68:08 Androgens
Flutamide	1,2,5	10:00 Antineoplastic agents
Fulvestrant	5	10:00 Antineoplastic agents
Ganciclovir	1,2,3,4,5	8:18 Antiviral
Ganirelix acetate	5	92:00 Unclassified therapeutic agents (GnRH antagonist)
Gemcitabine	1,2,3,4,5	10:00 Antineoplastic agents
Gemtuzumab ozogamicin	1,3,4,5	10:00 Antineoplastic agents
Gonadotropin, chorionic	5	68:18 Gonadotropins
Goserelin	1,2,5	10:00 Antineoplastic agents
Hydroxyurea	1,2,3,4,5	10:00 Antineoplastic agents
Ibritumomab tiuxetan	3	10:00 Antineoplastic agents
Idarubicin	1,2,3,4,5	Not in AHFS (antineoplastic agent)
Ifosfamide	1,2,3,4,5	10:00 Antineoplastic agents
Imatinib mesylate	1,3,4,5	10:00 Antineoplastic agents
Interferon alfa-2a	1,2,4,5	10:00 Antineoplastic agents

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Interferon alfa-2b	1,2,4,5	10:00 Antineoplastic agents
Interferon alfa-n1	1,5	10:00 Antineoplastic agents
Interferon alfa-n3	1,5	10:00 Antineoplastic agents
Irinotecan HCl	1,2,3,4,5	10:00 Antineoplastic agents
Leflunomide	3,5	92:00 Unclassified therapeutic agents (antineoplastic agent)
Letrozole	1,5	10:00 Antineoplastic agents
Leuprolide acetate	1,2,5	10:00 Antineoplastic agents
Lomustine	1,2,3,4,5	10:00 Antineoplastic agents
Mechlorethamine	1,2,3,4,5	10:00 Antineoplastic agents
Megestrol	1,5	10:00 Antineoplastic agents
Melphalan	1,2,3,4,5	10:00 Antineoplastic agents
Menotropins	5	68:18 Gonadotropins
Mercaptopurine	1,2,3,4,5	10:00 Antineoplastic agents
Methotrexate	1,2,3,4,5	10:00 Antineoplastic agents
Methyltestosterone	5	68:08 Androgens
Mifepristone	5	76:00 Oxytocics
Mitomycin	1,2,3,4,5	10:00 Antineoplastic agents
Mitotane	1,4,5	10:00 Antineoplastic agents
Mitoxantrone HCl	1,2,3,4,5	10:00 Antineoplastic agents
Mycophenolate mofetil	1,3,5	92:00 Immunosuppressive agents
Nafarelin	5	68:18 Gonadotropins
Nilutamide	1,5	10:00 Antineoplastic agents
Oxaliplatin	1,3,4,5	10:00 Antineoplastic agents
Oxytocin	5	76:00 Oxytocics
Paclitaxel	1,2,3,4,5	10:00 Antineoplastic agents
Pegaspargase	1,2,3,4,5	10:00 Antineoplastic agents
Pentamidine isethionate	1,2,3,5	8:40 Miscellaneous anti-infectives
Pentostatin	1,2,3,4,5	10:00 Antineoplastic agents
Perphosphamide	3,5	Not in AHFS (antineoplastic agent)
Pipobroman	3,5	Not in AHFS (antineoplastic agent)
Piritrexim isethionate	3,5	Not in AHFS (antineoplastic agent)
Plicamycin	1,2,3,5	Not in AHFS (antineoplastic agent)
Podofilox	5	84:36 Miscellaneous skin and mucous membrane agents (mitotic inhibitor)
Podophyllum resin	5	84:36 Miscellaneous skin and mucous membrane agents (mitotic inhibitor)
Prednimustine	3,5	Not in AHFS (antineoplastic agent)
Procarbazine	1,2,3,4,5	10:00 Antineoplastic agents
Progesterone	5	68:32 Progestins
Progestins	5	68:12 Contraceptives
Raloxifene	5	68:16.12 Estrogen agonists-antagonists
Raltitrexed	5	Not in AHFS (antineoplastic agent)
Ribavirin	1,2,5	8:18 Antiviral
Streptozocin	1,2,3,4,5	10:00 Antineoplastic agents

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Tacrolimus	1,5	92:00 Unclassified therapeutic agents (immunosuppressant)
Tamoxifen	1,2,5	10:00 Antineoplastic agents
Temozolomide	3,4,5	10:00 Antineoplastic agents
Teniposide	1,2,3,4,5	10:00 Antineoplastic agents
Testolactone	1,2,3,4,5	10:00 Antineoplastic agents
Testosterone	5	68:08 Androgens
Thalidomide	1,3,5	92:00 Unclassified therapeutic agents (immunomodulator)
Thioguanine	1,2,3,4,5	10:00 Antineoplastic agents
Thiotepa	1,2,3,4,5	10:00 Antineoplastic agents
Topotecan	1,2,3,4,5	10:00 Antineoplastic agents
Toremifene citrate	1,5	10:00 Antineoplastic agents
Tositumomab	3,5	Not in AHFS (antineoplastic agent)
Tretinoin	1,2,3,5	84:16 Cell stimulants and proliferants (retinoid)
Trifluridine	1,2,5	52:04.06 antivirals
Trimetrexate glucuronate	5	8:40 Miscellaneous anti-infectives (folate antagonist)
Triptorelin	5	10:00 Antineoplastic agents
Uracil mustard	3,5	Not in AHFS (antineoplastic agent)
Valganciclovir	1,3,5	8:18 Antiviral
Valrubicin	1,2,3,5	10:00 Antineoplastic agents
Vidarabine	1,2,5	52:04.06 Antivirals
Vinblastine sulfate	1,2,3,4,5	10:00 Antineoplastic agents
Vincristine sulfate	1,2,3,4,5	10:00 Antineoplastic agents
Vindesine	1,5	Not in AHFS (antineoplastic agent)
Vinorelbine tartrate	1,2,3,4,5	10:00 Antineoplastic agents
Zidovudine	1,2,5	8:18:08 Antiretroviral agents

[†]These lists of hazardous drugs were used with the permission of the institutions that provided them and were adapted for use by NIOSH. The sample lists are intended to guide health care providers in diverse practice settings and should not be construed as complete representations of all of the hazardous drugs used at the referenced institutions. Some drugs defined as hazardous may not pose a significant risk of direct occupational exposure because of their dosage formulation (for example, intact medications such as coated tablets or capsules that are administered to patients without modifying the formulation). However, they may pose a risk if solid drug formulations are altered outside a ventilated cabinet (for example, if tablets are crushed or dissolved, or if capsules are pierced or opened).

¹The NIH Clinical Center, Bethesda, MD (Revised 8/2002).

The NIH Health Clinical Center Hazardous Drug (HD) List is part of the NIH Clinical Center's hazard communication program. It was developed in compliance with the OSHA hazard communication standard [29 CFR 1910.1200] as it applies to hazardous drugs used in the workplace. The list is continually revised and represents the diversity of medical practice at the NIH Clinical Center; however, its content does not reflect an exhaustive review of all FDA-approved medications that may be considered hazardous, and it is not intended for use outside the NIH.

²The Johns Hopkins Hospital, Baltimore, MD (Revised 9/2002).

³ The Northside Hospital, Atlanta, GA (Revised 8/2002).

⁴The University of Michigan Hospitals and Health Centers, Ann Arbor, MI (Revised 2/2003).

⁵This sample listing of hazardous drugs was compiled by the Pharmaceutical Research and Manufacturers of America (PhRMA) using information from the AHFS DI monographs published by ASHP in selected AHFS Pharmacologic-Therapeutic Classification categories [ASHP/AHFS DI 2003] and applying the definition for hazardous drugs. The list also includes drugs from other sources that satisfy the definition for hazardous drugs [PDR 2004; Sweetman 2002; Shepard 2001; Schardein 2000; REPROTOX 2003]. Newly approved drugs that have structures or toxicological profiles that mimic the drugs on this list should also be included. This list was revised in June 2004.