

**Identified High Alert Medications at Naval Medical Center Portsmouth**  
with associated error reduction strategies

*Pharmacists must perform final checks on all medications designated as “high alert” when patient-specific orders are processed by the pharmacy*

Classification	Individual Agents	Specific Error Reduction Strategies
Designated “look-alike, sound-alike medications	<p>Cisplatin-carboplatin</p> <p>Concentrated oral morphine liquid-conventional oral liquid morphine</p> <p>Epinephrine-ephedrine</p> <p>Fentanyl-sufentanyl</p> <p>Lipid based-conventional amphotericin formulations</p> <p>Taxol-taxotere</p> <p>Celebrex-Celexa-Cerebyx</p> <p>Clonidine and clonazepam</p> <p>Insulin products</p> <p>Zyprexa-Zyrtec</p> <p>Toprol XL-Topamax</p>	<ul style="list-style-type: none"> <li>• “Tall-man” font utilized where allowed in automated systems such as Pyxis and CHCS (drop lists, labels, etc).</li> <li>• Elimination of like-sounding name from automated systems where feasible (example- removal of “Toprol XL” from CHCS pick list- providers must order by generic name).</li> <li>• Stock segregation</li> <li>• Appropriate comments in CHCS to further distinguish items (class description, cautionary statements for high concentration items, etc)</li> </ul>
Concentrated electrolytes	<p>Potassium chloride 2meq/ml</p> <p>Sodium chloride 23.4%</p> <p>Magnesium sulfate 50%</p> <p>Potassium/sodium phosphates</p>	<ul style="list-style-type: none"> <li>• Pre-diluted, ready-to-infuse products are used when clinically feasible.</li> <li>• If storage at the point of care is required, special storage (limited access) and labeling requirements are observed with minimal stock allowed.</li> </ul>
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Adrenergic agonist	Epinephrine 1:1000 vial (30ml)	<ul style="list-style-type: none"> <li>• Complete segregation of this product. Stored in limited access area in pharmacy space. Stocked exclusively for Tidewater Emergency Medical Services (TEMS) drug boxes and for manufacture of LET solution. Not used for preparation of any IV doses. Each vial is labeled individually to indicate appropriate use.</li> </ul>
Parenteral and oral hypoglycemics	<p>Insulin products such as regular human insulin, NPH insulin, insulin glargine, insulin aspart and combination products</p> <p>Oral sulfonylureas such as glipizide, glyburide, glimeperide and combination products</p>	<ul style="list-style-type: none"> <li>• Limited selection of available agents.</li> <li>• Only 100 unit/ml concentration products allowed at point-of-care.</li> <li>• Special precautions by nursing staff that require independent verification of product selected, dose ordered, dose measured in syringe or pump setting if applicable.</li> <li>• Insulin is stored separately from heparin</li> <li>• U-500 insulin: prepared and dispensed by pharmacy only. Not floor stock.</li> <li>• Spell out “units”. No abbreviation</li> <li>• Insulin infusions are prepared in pharmacy only</li> <li>• Premixed products are when possible</li> <li>• Flow control pumps are used for continuous IV infusions</li> <li>• Nurses should inform patient they are administering insulin (name of insulin, dose and current blood glucose level before administering)</li> <li>• Patients should receive diabetes education that includes counseling on strategies to avoid hypoglycemia</li> </ul>
Anticoagulants	Heparin products, enoxaparin, dalteparin, fondaparinux, warfarin	<ul style="list-style-type: none"> <li>• Heparin is stored separately from insulin products</li> <li>• Spell out “units”. No abbreviation</li> <li>• Order by metric weight, not by volume or amp</li> <li>• One commercially available heparin concentration standard is used for drips in adult patients.</li> <li>• If bolus is ordered: give it from syringe versus modifying the rate of the infusion</li> <li>• Refer orally anticoagulated patients to the AMS</li> </ul>
Chemotherapy/antineoplastics (oral and parenteral agents)	All drugs in this class used for oncology and non-oncology indications (such as oral methotrexate for rheumatoid arthritis).	<ul style="list-style-type: none"> <li>• Sterile compounding services provided by a pharmacist and technician that specialize in chemotherapy preparation in a separate satellite</li> <li>• All orders include current height and weight so BSA can be calculated/double checked</li> <li>• Drug prep in Pharmacy only. Premixed solutions are used when possible</li> <li>• Warning labels are used to distinguish between intrathecal and intravenous products</li> <li>• Certification processes for staff to order, prepare and administer these drugs</li> </ul>

Thrombolytics	Alteplase, tenecteplase, reteplase, urokinase and all other available agents at NMCP	<ul style="list-style-type: none"> <li>• Protocols and dose calculations charts are available to guide therapy and monitoring for all uses of thrombolytics: i.e. acute MI, embolism, cerebral vascular accident, catheter declotting, etc.</li> <li>• Store in separate area from stock meds (“clot box”, etc)</li> <li>• Verify that there are no contraindications</li> <li>• Clearly document drug administration in patient record</li> </ul>
Opiates/narcotics	Morphine, hydromorphone, oxycodone, fentanyl, meperidine and all related agents available at NMCP	<ul style="list-style-type: none"> <li>• Limit the opiates and narcotics available in floor stock</li> <li>• Educate staff about possible hydromorphone and morphine mix-ups</li> <li>• Implement PCA protocols to double check the drug, pump setting and dosage</li> <li>• Standardize concentrations of intravenous solutions</li> <li>• Use of nonstandard narcotic concentrations limited to medically necessary situations.</li> <li>• Naloxone is available in all areas that narcotics are used</li> <li>• No abbreviations: MSO4</li> <li>• Limit oral liquid items available as floor stock to conventional concentrations</li> <li>• Limit concentrated oral morphine and hydromorphone to areas where chronic pain is treated</li> <li>• PCA and epidural medication protocols are used.</li> <li>• Question all patients receiving opiates about allergies</li> <li>• Encourage use of generic names</li> </ul>
Pediatric/neonatal medicines	All medications ordered for pediatric patients at NMCP	<ul style="list-style-type: none"> <li>• Utilize standardized concentrations and vary the rate of infusion in pediatrics based on corresponding dosing charts (dosed in mcg/kg/minute).</li> <li>• Use standard concentrations for infusions if clinically feasible.</li> <li>• Medication order requirements: <ol style="list-style-type: none"> <li>1. Actual drug dose (not volume)</li> <li>2. Patient’s weight and intended dose expressed in mg/kg required on critical care inpatient pediatric orders and recommended on all general care inpatient and outpatient orders for verification by pharmacy staff.</li> </ol> </li> <li>• General use of verbal/telephone orders is avoided</li> <li>• Specialized pharmacy satellite services for pediatric patient care areas</li> <li>• Oral syringes are made available for accurate measurements of oral liquids</li> <li>• Micromedex is available via intranet to confirm doses</li> <li>• Pediatric emergency carts with drugs/supplies in size appropriate for pediatric patients are maintained</li> </ul>

Allergy extracts	<ul style="list-style-type: none"> <li>• Confirm patient identification on allergy extract vial and allergy extract treatment form in addition to other identification policies prior to receiving allergy shot</li> <li>• Only one patient receiving allergy injections should be in the room where injections are administered at any one time.</li> <li>• No injection should be drawn up until the patient who will receive the injection is in the room.</li> <li>• Consider Relative Contraindications to allergy shots: <ul style="list-style-type: none"> <li>○ Beta Blocker medication use</li> <li>○ Medical conditions: Asthma &amp; significant cardiovascular disease</li> </ul> </li> <li>• Administer only in setting where physician and resuscitation equipment are physically present so that the prompt recognition and treatment of anaphylaxis are assured.</li> <li>• Patient must remain in clinic at least 30 minutes after an allergy shot</li> </ul>
Vaccines	<ul style="list-style-type: none"> <li>• Patients are screened prior to receiving vaccines as follows, and those answering “yes” should receive further evaluation prior to vaccination: <ul style="list-style-type: none"> <li>○ Do you have allergies to medications, food, or any vaccine?</li> <li>○ Have you ever had a serious reaction after receiving a vaccination?</li> <li>○ Do you have cancer, leukemia, AIDS, or any other immune system problem?</li> <li>○ Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had radiation treatments?</li> <li>○ During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?</li> <li>○ For women: Are you pregnant or is there a chance you could become pregnant during the next month?</li> <li>○ Have you received any vaccinations in the past 4 weeks?</li> </ul> </li> </ul>