

HIGH-ALERT MEDICATIONS

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. This list may be used to determine which medications require special safeguards to reduce the risk of errors. This may include strategies such as 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; and employing redundancies such as automated or independent double-checks when necessary. (Note: manual independent double-checks are not always the optimal error-reduction strategy and may not be practical for all of the medications on the list).

SPECIFIC MEDICATIONS

EPINEPHrine, IM, SC	Oxytocin, IV
Epoprostenol (Flolan), IV	Nitroprusside sodium for injection
Insulin U-500 (special emphasis*)	Potassium chloride for injection concentrate
Magnesium sulfate injection	Potassium phosphates injection
Methotrexate, oral, non-oncologic use	Promethazine injection
Opium tincture	Vasopressin, IV or intraosseous

CLASSES/CATEGORIES OF MEDICATIONS

Adrenergic agonists, IV (eg, **EPINEPH**rine, phenylephrine, norepinephrine)

Adrenergic antagonists, IV (eg, propranolol, metoprolol, labetalol)

Anesthetic agents, general, inhaled and IV (eg, propofol, ketamine)

Antiarrhythmics, IV (eg, lidocaine, amiodarone)

Antithrombotic agents, including:

- Anticoagulants (eg, warfarin, low-molecular-weight heparin, unfractionated heparin)
- Direct oral anticoagulants and Factor Xa inhibitors (eg, dabigatran, rivaroxaban, apixaban, edoxaban, betrixaban, fondaparinux)
- Direct thrombin inhibitors (eg, argatroban, bivalirudin, dabigatran)
- Thrombolytics (eg, alteplase, reteplase, tenecteplase)
- Glycoprotein IIb/IIIa inhibitors (eg, eptifibatide)

Cardioplegic solutions

Chemotherapeutic agents, parenteral and oral

Dextrose, hypertonic (20% or greater)

Dialysis solutions, peritoneal and hemodialysis

Epidural or intrathecal medications

Inotropic medications, IV (eg, digoxin, milrinone)

Insulin, subcutaneous and IV

Liposomal forms of drugs (eg, liposomal amphotericin B) and conventional counterparts (eg, amphotericin B desoxycholate)

Moderate sedation agents, IV (eg, dexmedetomidine, midazolam, **LOR**azepam)

Moderate and minimal sedation agents, oral, for children (eg, chloral hydrate, midazolam, ketamine [using IV form])

Narcotics/opioids, IV, transdermal, oral (including liquid concentrates, immediate and sustained-release forms)

Neuromuscular blocking agents (eg, succinylcholine, rocuronium, vecuronium)

Parenteral nutrition preparations

Sterile water for injection, inhalation, and irrigation (excluding pour bottles) in containers of 100mL or more

Sodium chloride for injection, hypertonic, greater than 0.9% concentration

Sulfonylurea hypoglycemics, oral (eg, chlorpro**PAMIDE**, glimepiride, gly**BURIDE**, glipi**ZIDE**, **TOLBUT**amide)

NOTES

* All forms of insulin, SC and IV, are considered high-alert medications. Insulin U-500 has been singled out for special emphasis to bring attention to the need for distinct strategies to prevent the types of errors that occur with this concentrated form of insulin.

Based on error reports submitted to the Institute of Safe Medication Practices (ISMP) National Medication Errors Reporting Program, reports of harmful errors in the literature, and input from practitioners and safety experts, ISMP created and periodically updates a list of potential high-alert medications. During June and July 2018, practitioners responded to an ISMP survey designed to identify which drugs were most frequently considered high-alert medications by individuals and organizations. Further, to assure relevance and completeness, the clinical staff at ISMP and members of the ISMP advisory board were asked to review the potential list. This list of medications and drug categories reflects the collective thinking of all who provided input.

REFERENCES

Source: Institute for Safe Medication Practices. *High-Alert Medications in Acute Care Settings*. 2018. Available at: <https://www.ismp.org/recommendations/high-alert-medications-acute-list>. Accessed October 27, 2021.

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