

ISMP List of High-Alert Medications in Community/Ambulatory Care Settings

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. We hope you will use this list to determine which medications require special safeguards to reduce the risk of errors. This may include strategies such as standardizing the prescribing, storage, preparation, and administration of these products; improving access to information about these drugs; limiting access to certain high-alert medications; using auxiliary labels; employing clinical decision support and automated alerts; and using 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.)

Ambulatory care sites such as long-term care facilities, long-term acute care facilities, dialysis facilities, ambulatory surgery centers, and the pharmacies that provide services to them should also reference the **ISMP List of High-Alert Medications in Long-Term Care (LTC) Settings** (www.ismp.org/node/130) and/or the **ISMP List of High-Alert Medications in Acute Care Settings** (www.ismp.org/node/103).



Specific Medications

Car BAM azepine
EPINEPH rine, IM, subcutaneous
Insulin U-500 (special emphasis)*
Lamo TRIG ine
Methotrexate, oral and parenteral, nononcologic use (special emphasis)*
Phenytoin
Valproic acid

**All oral and parenteral chemotherapy, and all insulins are considered high-alert medications. These specific medications have been singled out for special emphasis to bring attention to the need for distinct strategies to prevent the types of errors that occur with these medications.*

Classes/Categories of Medications

Antithrombotic agents, oral and parenteral, including:

- Anticoagulants (e.g., warfarin, low molecular weight heparin, unfractionated heparin)
- Direct oral anticoagulants and factor Xa inhibitors (e.g., dabigatran, rivaroxaban, apixaban, edoxaban)
- Direct thrombin inhibitors (e.g., dabigatran)

Chemotherapeutic agents

- Oral and parenteral chemotherapy (e.g., capecitabine, cyclophosphamide)
- Oral targeted therapy and immunotherapy (e.g., palbociclib [**IBRANCE**], imatinib [**GLEEVEC**], bosutinib [**BOSULIF**])
- Excludes hormonal therapy

Immunosuppressant agents, oral and parenteral (e.g., aza**THIO**prine, cyclo**SPORINE**, tacrolimus)

Insulins, all formulations and strengths (e.g., U-100, U-200, U-300, U-500)

Medications contraindicated during pregnancy (e.g., bosentan, **ISO**tretinoin)

Moderate and minimal sedation agents, oral, for children (e.g., chloral hydrate, midazolam, ketamine [using the parenteral form])

Opioids, all routes of administration (e.g., oral, sublingual, parenteral, transdermal), including liquid concentrates, immediate- and sustained-release formulations, and combination products with another drug

Pediatric liquid medications that require measurement

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

Background

Based on error reports submitted to the ISMP National Medication Errors Reporting Program (ISMP MERP), reports of harmful errors in the literature, studies that identify the drugs most often involved in harmful errors, and input from practitioners and safety experts, ISMP created and has periodically updated a list of high-alert medications in community and ambulatory care settings. The original list was developed in 2008, which included input from community pharmacy practitioners who participated in focus groups or responded to an ISMP survey on the topic. To update the list, practitioners were once again surveyed. To assure relevance and completeness, the clinical staff at ISMP, members of ISMP's community/ambulatory care advisory board, and other safety and clinical experts in the US were asked to review the list and potential changes. This current list reflects the collective thinking of all who provided input.