

High-Alert Medications in Long-Term Care (LTC) Settings

High-alert medications are drugs that bear a heightened risk of causing significant patient or resident harm when they are used in error (e.g., wrong drug, wrong dose, wrong route, wrong resident). Although mistakes may or may not be more common with these drugs, the consequences of an error with these medications are clearly more devastating to patients or residents. 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 ordering, storage, preparation, and administration of these products; improving access to information about these drugs; limiting access to certain 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).

Long-term acute care (LTAC) facilities and LTC facilities with subacute units where a variety of intravenous medications are administered, should also reference the **ISMP List of High-Alert Medications in Acute Care Settings**, which can be found at: www.ismp.org/node/103. Facilities are also encouraged to use other resources, such as the Beers Criteria^{1,2} and STOPP and START Criteria³ to identify and address medications that should be avoided in the elderly population, which are different than high-alert medications.



Specific Medications

- Concentrated morphine solution (20 mg/mL), oral (special emphasis)*
- Digoxin, parenteral and oral
- **EPINEPH**rine, IM, subcutaneous
- Insulin U-500
- Iron dextran, parenteral
- Methotrexate, oral and parenteral, nononcologic use (special emphasis)*
- Phenytoin
- Sacubitril and valsartan (**ENTRESTO**)

**All routes of opioids, all parenteral and oral chemotherapy, and all subcutaneous and IV insulin 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

- Anti-Parkinson's drugs, including carbidopa, levodopa, and combination products that contain at least one of these ingredients
- Antithrombotic agents, parenteral and oral, including:
 - anticoagulants (e.g., warfarin, low molecular weight heparin, unfractionated heparin)
 - direct oral anticoagulants (e.g., dabigatran, rivaroxaban, apixaban, edoxaban, betrixaban)
 - 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
- GABA analogs (e.g., gabapentin, pregabalin) used to treat neuropathic pain
- Immunosuppressants, oral and parenteral (e.g., aza**THIO**prine, cyclo**SPORINE**, cyclophosphamide, tacrolimus, abatacept [**ORENCIA**], adalimumab [**HUMIRA**])
- Insulins, all formulations and strengths (e.g., U-100, U-200, U-300, U-500)
- 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
- Parenteral nutrition preparations
- Sulfonylurea hypoglycemics, oral (e.g., chlorpro**PAMIDE**, glimepiride, gly**BURIDE**, glipi**ZIDE**, **TOLBUT**amide)

References

- 1) American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc.* 2019;00(0):1-21. doi:10.1111/jgs.15767 www.ismp.org/ext/694
- 2) Institute for Safe Medication Practices (ISMP). Updated 2019 American Geriatrics Society (ASG) Beers Criteria released along with key principles to optimize their use. *ISMP Medication Safety Alert! Long-Term Care AdviseERR.* 2019;7(2):1-3. www.ismp.org/node/1508
- 3) O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. *Age Ageing.* 2015;44(2):213-8. www.ismp.org/ext/695

Background

Based on error reports submitted to the ISMP National Medication Errors Reporting Program (ISMP MERP), reports of harmful errors in the literature, and input from practitioners and safety experts, ISMP created and has periodically updated a list of high-alert medications in the long-term care (LTC) setting. The original list was developed in 2016, which included input from practitioners from LTC facilities who responded to an ISMP survey on the topic. To update the list and assure its relevance and completeness, the clinical staff at ISMP, members of ISMP's LTC Advisory Board, and safety experts throughout the US were asked to review the list and potential additions. This current list of specific medications and medication classes/categories reflects the collective thinking of all who provided input.