



HOSPITAL PHARMACY STANDARDS OF PRACTICE 2

Emergency Situations

Summer 2022

PHAR 4101

HIGH-ALERT MEDICATIONS

- Drugs that bear a heightened risk of causing significant patient harm when they are used in error. (ISMP, 2018)
- Although mistakes may or may not be common with these drugs, the consequences of an error are clearly more devastating to patients.



HIGH-ALERT MEDICATIONS

○ **To reduce the risk of errors associated with high-alert medications:**

- a) standardizing the ordering(forms), storage, preparation, and administration of these products;*
- b) improving access to information about these drugs;
- c) limiting access to high-alert medications;
- d) using auxiliary labels and automated alerts;
- e) employing independent double-checks when necessary.



High Alert medication List According to ISMP

Classes/Categories of Medications

adrenergic agonists, IV (e.g., **EPINEPH**rine, phenylephrine, norepinephrine)

adrenergic antagonists, IV (e.g., propranolol, metoprolol, labetalol)

anesthetic agents, general, inhaled and IV (e.g., propofol, ketamine)

antiarrhythmics, IV (e.g., lidocaine, amiodarone)

antithrombotic agents, including:

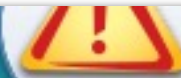
- anticoagulants (e.g., warfarin, low molecular weight heparin, unfractionated heparin)
- direct oral anticoagulants and factor Xa inhibitors (e.g., dabigatran, rivaroxaban, apixaban, edoxaban, betrixaban, fondaparinux)
- direct thrombin inhibitors (e.g., argatroban, bivalirudin, dabigatran)
- glycoprotein IIb/IIIa inhibitors (e.g., eptifibatide)
- thrombolytics (e.g., alteplase, reteplase, tenecteplase)

cardioplegic solutions

chemotherapeutic agents, parenteral and oral

dextrose, hypertonic, 20% or greater

diabetic solutions, concentrated and hyperosmolar



EPINEPHrine, IM, subcutaneous
 epoprostenol (e.g., Flolan), IV
 insulin U-500 (special emphasis*)
 magnesium sulfate injection
 methotrexate, oral, nononcologic use
 nitroprusside sodium for injection
 opium tincture
 oxytocin, IV
 potassium chloride for injection concentrate
 potassium phosphates injection
 promethazine injection
 vasopressin, IV and intraosseous

**All forms of insulin, subcutaneous and IV, are considered a class of 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.*



High Alert medication List According to ISMP

dialysis solutions, peritoneal and hemodialysis
epidural and intrathecal medications
inotropic medications, IV (e.g., digoxin, milrinone)
insulin, subcutaneous and IV
liposomal forms of drugs (e.g., liposomal amphotericin B) and conventional counterparts (e.g., amphotericin B desoxycholate)
moderate sedation agents, IV (e.g., dexmedetomidine, midazolam, LOR azepam)
moderate and minimal sedation agents, oral, for children (e.g., chloral hydrate, midazolam, ketamine [using the parenteral form])
opioids, including: ■ IV ■ oral (including liquid concentrates, immediate- and sustained-release formulations) ■ transdermal
neuromuscular blocking agents (e.g., succinylcholine, rocuronium, vecuronium)
parenteral nutrition preparations
sodium chloride for injection, hypertonic, greater than 0.9% concentration
sterile water for injection, inhalation and irrigation (excluding pour bottles) in containers of 100 mL or more
sulfonylurea hypoglycemics, oral (e.g., chlorpro PAMIDE , glimepiride, gly BURIDE , glipi ZIDE , TOLBUT amide)



Is This list the same for all hospital?

- **NO**
- The previous list is 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,
- However, every institution should customize its list according to error reports and its formulary guidelines.



HIGH-ALERT MEDICATIONS

- E.g. Potassium chloride: Why?
- It can precipitate cardiac arrest within a minute if injected too fast or in too high a dose



HIGH-ALERT MEDICATIONS



In-service

- Bring the full list of high alert medications and explain to your classmates why they pose a concern?
- Check if there are special precautions to reduce associated potential errors?



“Now” and “Stat” ORDERS

- STAT and NOW medication orders are implemented as soon as possible, based on patient need, within 60 minutes of receipt of the written or electronic order.
- Stat medications, from the Latin statim, meaning ‘immediately’
- A “stat” order suggests a possible emergency condition, one where treatment must immediately be undertaken. Tests not designated as “stat” can occur when possible- a few hours, the next day or even next week.
- Stat medications are reserved for the highest priority orders and life-threatening situations.



“Now” and “Stat” ORDERS

- **Clinical examples of the appropriate use of the STAT designation include:**
 - a) orders for patients with hemorrhages or allergic reactions.
- E.g of a stat order: <https://www.youtube.com/watch?v=P0I0SF8Sjg8>
- Stat order vs. A one-time order ?



Emergency Trolley (Crash Cart)

- a cart stocked with emergency medical equipment, supplies, and drugs for use by medical personnel especially during efforts to resuscitate a patient experiencing cardiac arrest.
- Crash cart Check list e.g.
 - https://www.health.qld.gov.au/_data/assets/pdf_file/0031/974353/2020_RRESS_resuscitation_trolley_checklist_V1.2.pdf
 - http://www.kznhealth.gov.za/mcwh/ChildHealth/ess-pack/10.3_EmergencyTrolley_Checklist_PHC.pdf



Emergency Trolley Drugs

Medication Name	Quantity	Indication
Inj. Adenosine 6mg/mL	4	Paroxysmal supraventricular tachycardia
Inj. Adrenaline 1mg/mL	10	Anaphylaxis, cardiac arrest
Inj. Aminophylline 250mg/10mL	2	
Inj. Amiodarone 150mg/3mL	2	
Inj. Atropine 1mg/mL (Anticholinergic / parasympathetic blocking agent)	10	Symptomatic bradycardia, bradydysrhythmias (hemodynamically significant heart block and asystole)
Inj. Calcium Gluconate 10%/10mL	2	
Inj. Chlorpheniramine 10mg/mL	2	
Inj. Dextrose 50%/10mL (Antihypoglycaemic agent)	5	Unconscious acute hypoglycaemia
Inj. Digoxin 0.5mg/2mL	2	Atrial flutter, atrial fibrillation
Inj. Dobutamine 250mg/20mL	2	Congestive heart failure
Inj. Dopamine 200mg/5mL	4	Bradycardia, hypotension
Inj. Flumazenil 0.5mg/mL (Benzodiazepine antagonist)	2	Reversal of excessive sedation, emergency delirium and possible respiratory depression



Emergency Trolley Drugs

Inj. Frusemide 20mg/mL	5	Acute pulmonary edema
Inj. Hydrocortisone 100mg/vial	5	Acute allergic reaction, prevention of recurrent anaphylaxis
Inj. Labetalol 25mg/5mL	4	
Inj. Lignocaine 100mg/5mL	4	Ventricular tachycardia, pulseless, ventricular fibrillation
Inj. Methylprednisone 500mg/20mL	2	Cardiac arrest, anaphylaxis, acute adrenocortical insufficiency
Inj. Naloxone 0.4mg/mL (Narcotic antagonist)	2	Reversal of opioid-induced respiratory depression
Inj. Sodium Bicarbonate 8.4%/10mL	5	Hyperkalemia, metabolic acidosis with bicarbonate loss, hypoxic lactic acidosis
Inj. Terbutaline 0.5mg/mL	2	
Inj. Verapamil 5mg/mL	3	Atrial flutter or atrial fibrillation, Paroxysmal supraventricular tachycardia
Water for Injection 10mL	10	



Hospitals Codes

○ Some of the more widely used codes in hospitals include

- code blue: cardiopulmonary arrest.
- code silver: active shooter.
- Code black: bomb threat
- code yellow: lost patient
- code white: violent patient .
- code green: emergency activation (go)



CODE RED

SMOKE, FIRE OR FUMES



CODE BLUE

CARDIAC ARREST/MEDICAL
EMERGENCY



CODE ORANGE

MASS CASUALTY/EXTERNAL
DISASTER or HAZARDOUS
MATERIALS/SPILL



CODE YELLOW

PENDING EMERGENCY or
DISASTER



CODE PINK

PEDIATRIC/NEONATAL
CARDIAC ARREST or
INFANT/CHILD ABDUCTION



CODE GREEN

FACILITY EVACUATION or
EMERGENCY ACTIVATION



CODE GREY

LOSS OF UTILITIES/
INFRASTRUCTURE LOSS



CODE BROWN

HAZARDOUS MATERIALS
SPILL/LEAK or SEVERE
WEATHER



CODE WHITE

VIOLENT PERSON or
EVACUATION



CODE BLACK

BOMB THREAT/SUSPICIOUS
PACKAGE



CODE VIOLET

VIOLENT/COMBATIVE
INDIVIDUAL



CODE SILVER

ACTIVE SHOOTER/
HOSTAGE SITUATION



○ Thank you 😊

