

National Pediatric Readiness Project

www.PediatricReadiness.org

1. Medication errors #1 cause of medical errors in US
2. ED third most common site for medication errors
 - a. 3.6% of patient inappropriate dose
 - b. 5.6% of prescriptions inappropriate
 - c. Up to 16% of all prescriptions
 - d. MEDMARX study
 - i. 49% of medications errors in ED reach patient
 - ii. 3% cause harm
3. 76.3% of all ED patients receive medication or immunization
4. Distractions are leading cause of medication errors
 - a. Ordering
 - b. Procuring
 - c. Delivering
 - i. Illegible text
 - ii. Incorrect dose
5. Reduction recommendations
 - a. ED Pharmacist
 - b. Computer Physician Order Entry
 - i. Double Edged Sword
 - c. Medication reconciliation on all ED patients
 - d. Clear documentation of allergies
 - e. Clear documentation of contraindicated medications for the patient
 - f. Neuromuscular blocking agents stored with special warnings
 - g. Look alikes and sound alikes appropriately isolated
 - h. Double check high alert medications
6. Crowding increases medication errors
7. High Alert Medications
 - a. Classes/ Categories of Medications
 - i. adrenergic agonists, IV (e.g., EPI NEPHrine, phenylephrine, norepinephrine)
 - ii. adrenergic antagonists, IV (e.g., propranolol, metoprolol, labetalol)
 - iii. anesthetic agents, general, inhaled and IV (e.g., propofol, ketamine)
 - iv. antiarrhythmics, IV (e.g., lidocaine, amiodarone)
 - v. antithrombotic agents, including: anticoagulants (e.g., warfarin, low-molecular-weight heparin, IV unfractionated heparin)
 - vi. Factor Xa inhibitors (e.g., fondaparinux)
 - vii. direct thrombin inhibitors (e.g., argatroban, bivalirudin, dabigatran etexilate, lepirudin)

- ix. glycoprotein I Ib/ IIa inhibitors (e.g., eptifibatide)
- x. cardioplegic solutions
- xi. chemotherapeutic agents, parenteral and oral
- xii. dextrose, hypertonic, 20% or greater
- xiii. dialysis solutions, peritoneal and hemodialysis
- xiv. epidural or intrathecal medications
- xv. hypoglycemics, oral
- xvi. inotropic medications, IV (e.g., digoxin, milrinone)
- xvii. insulin, subcutaneous and IV
- xviii. liposomal forms of drugs (e.g., liposomal amphotericin B) and conventional counter-parts (e.g., amphotericin B desoxycholate)
- xix. moderate sedation agents, IV (e.g., dexmedetomidine, midazolam)
- xx. moderate sedation agents, oral, for children (e.g., chloral hydrate)
- xxi. narcotics/opioids
- xxii. IV
- xxiii. transdermal
- xxiv. oral (including liquid concentrates, immediate and sustained-release formulations)
- xxv. neuromuscular blocking agents (e.g., succinylcholine, rocuronium, vecuronium)
- xxvi. parenteral nutrition preparations
- xxvii. radiocontrast agents, IV
- xxviii. sterile water for injection, inhalation, and irrigation
- xxix. (excluding pour bottles) in containers of 100 mL or more
- xxx. sodium chloride for injection, hypertonic, greater than 0.9% concentration

8. Injection Medications Safety

- a. One needle one syringe
- b. Purchase single doses whenever possible
 - i. If you have to open more than two vials you have the wrong dose
- c. Clean hub prior to entry
- d. Date all multi-dose vials
- e. Hand hygiene prior to and after gloves
- f. Medications should be prepared by pharmacists

9. Calculation errors in pediatric dosing

- a. 10 fold errors
 - i. Decimal point errors
 - ii. More pronounced in smaller children when 10 fold dose fits in single syringe
- b. Variable concentration preparations
 - i. Ketamine
 - 1. 10 mg/cc
 - 2. 100mg/cc
 - 3. 500mg/cc
- c. Paper ordering
- d. Manual calculations
- e. Drug delivery pumps
- f. Color Coding reduces errors

10. Consideration of double check system

- a. Complacency