

Community/Ambulatory Care

ISMP Medication Safety Alert!®

Educating the Healthcare Community About Safe Medication Practices

Do not let “Depo-” medications be a depot for mistakes

PROBLEM: Several longstanding medications are available on the market with names that begin with the prefix “Depo-,” meaning they are administered via a *depot injection* that deposits the drug into localized tissue from which it is gradually absorbed by surrounding tissue. These injections, typically subcutaneous, intramuscular (IM), or intra-articular, allow the active compound to be released consistently over a longer period of time. Many of these medications with the prefix “Depo-” have been on the market for 30 to 50 years, some even longer. Misadministration of these medications and confusing one “Depo-” medication with another has been consistently reported throughout the years. More recently, mix-ups between different strengths and volumes of containers of a “Depo-” drug have occurred. The “Depo-” medications most often involved in outpatient wrong route, wrong drug, or wrong strength/volume errors can be found in **Table 1**.

Table 1. “Depo-” medications most often involved in outpatient medication errors.

Brand Name	Generic Name	Route	Description
Depo-Provera Depo-Provera Contraceptive Injection Depo-SubQ Provera 104	medroxyPROGESTERone acetate	IM Subcutaneous	A progestin used as a contraceptive, or to treat endometriosis or endometrial carcinoma
Depo-Medrol	methylPREDNISolone acetate	IM Intra-articular	An anti-inflammatory or immunosuppressive corticosteroid
Depo-Testosterone	testosterone cypionate	IM	An androgen used to treat male hypogonadism

Examples of error reports submitted to the US Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS) and/or the ISMP National Medication Errors Reporting Program (MERP) are provided below.

Depo-Provera vs. Depo-Medrol

In early 2015, FAERS received a report involving a 44-year-old man with shoulder pain (non-impingement) who received an intra-articular injection of Depo-Provera instead of Depo-Medrol. A box of Depo-Provera had been stored inadvertently in the bin where Depo-Medrol was usually kept in a medication cabinet. Other than size, the medication cartons do not look similar, but both drug names start with “Depo-” and appear in the same black font (**Figure 1**). The physician performing the shoulder injection reached into the bin and removed a box of the correct medication, Depo-Medrol, and read the label and concentration. He set that carton aside, and a moment later, he inadvertently reached back into the bin and removed another box, but this one contained



Figure 1. Both “Depo-” products have been mixed up, despite dissimilar carton labels.

SAFETY briefs



Confusing warfarin tablet color.

We’ve received two recent reports about confusion regarding warfarin tablet colors. One report specifically noted a problem with the 2.5 mg tablet color used by Exelan Pharmaceuticals. Although brand and generic warfarin tablet manufacturers seem to have standardized the green tablet color for the 2.5 mg tablets, the Exelan generic 2.5 mg product is a light shade of blue, which is not far off from the **COUMADIN** or **JANTOVEN** 4 mg tablet, which also is a shade of blue (**Figure 1**). In fact, we’ve also



Figure 1. Exelan warfarin 2.5 mg (top), Coumadin 2.5 mg (middle), and Jantoven 2.5 mg (bottom).

noticed some other color differences among tablet strengths between various warfarin manufacturers. Healthcare practitioners and patients have become so accustomed to standard colors for the various strengths of warfarin tablets, that any color difference raises concerns, as happened here when patients and health professionals raised questions. The blue color of the Exelan tablet could also contribute to dispensing errors if confused with blue Jantoven or Coumadin 4 mg tablets. We contacted Exelan to ask them to try to match the green color used by other manufacturers for the 2.5 mg tablets.

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Depo-Provera. Believing he had previously confirmed the drug and concentration, the physician withdrew the desired amount of an opaque white liquid similar in appearance to Depo-Medrol (**Figure 2**). The physician injected about three-quarters of the 1 mL volume he had withdrawn into the syringe (about 112 mg of Depo-Provera). A medical assistant discovered the error while cleaning up after the patient had left the office. Within 3 days of injection, the patient experienced a lack of libido and had erectile dysfunction, which required prolonged use of testosterone and **CIALIS** (tadalafil). Since making the error, the physician learned that others have made the same error, mixing up Depo-Medrol and Depo-Provera.



Figure 2. Vials look dissimilar except for the "Depo-" part of the drug name and the opaque white liquid inside the vial.

Depo-Medrol vs. Depo-Provera

Several years ago, ISMP received a report of a similar mix-up, again leading to patient harm, but in this case, the patient was supposed to receive Depo-Provera but received Depo-Medrol in error. A 19-year-old woman went to a clinic to receive an injection of Depo-Provera for contraception, which was to be repeated every 12 weeks. After providing a negative pregnancy test, the young woman was mistakenly given an intramuscular injection of Depo-Medrol. The lot number of the vial of medication was recorded in her medical record. The woman returned in 12 weeks and reported a positive home pregnancy test. An ultrasound confirmed the pregnancy, with an estimated date of conception about 3 ½ weeks after her first injection. The error was uncovered when the documented lot number was found to be associated with Depo-Medrol.

In this case, Depo-Medrol and Depo-Provera had previously been stored in separate cabinets. However, a few days before the event, the medication cabinets had been consolidated, and the medications were stored alphabetically in bins. The stock in the consolidated cabinet had been labeled with Depo-Provera and Depo-Medrol, which were stored next to each other. Working with only a verbal order for the drug, the clinic staff had accidentally selected a vial of Depo-Medrol instead of the intended Depo-Provera.



Figure 3. Can you see the difference? The labeling on cartons of Depo-Testosterone makes it difficult to notice that one contains a 1 mL vial (L) and the other a 10 mL vial (R).

Wrong strength Depo-Testosterone

ISMP has received reports regarding potential errors with Depo-Testosterone for which the wrong strength or volume of the drug might be administered to patients. This drug is available in two strengths: 100 mg/mL and 200 mg/mL. The 200 mg/mL strength is available in a 1 mL vial and a 10 mL vial. However, the vial sizes are extremely hard to differentiate when looking at the medication cartons (**Figure 3**).

Aggregate reports

Analysis of aggregate data regarding mix-ups between Depo-Medrol and Depo-Provera between 1999 and 2015 identified 5 additional cases reported to FAERS and 4 more re-

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Safety opportunities with NY e-Rx requirement.

Beginning March 27, 2016, prescribers in New York (NY) State must utilize electronic prescribing (e-Rx) or face fines, license revocation, or even prison. Except in emergencies or a few other exceptions, handwritten and printed prescriptions will soon become a thing of the past in NY (www.ismp.org/sc?id=1697). Other states will likely follow suit. Minnesota already has such a rule, although without consequences for noncompliance. The NY law requires a secure, encrypted, or encoded system for electronic transmission from prescriber to pharmacy, computer to computer. Emailed prescriptions are not allowed; a faxed prescription for non-controlled drugs is allowed under certain circumstances.

This is a well-intentioned rule that will likely reduce errors due to poor handwriting and will hopefully provide prescribers with clinical decision support. However, as with most changes, unintended consequences could emerge. For example, the risk is elevated for errors due to selecting the wrong medication among look-alike drug names from a drop-down list. This type of error would be hard to detect without knowing the intended purpose of the prescribed medication. Strategies that would help, such as communicating each medication's purpose and counseling patients, are not mentioned in the legislation. We hope healthcare practitioners will keep these strategies in mind. We also hope regulations will be written to assist practitioners in understanding and implementing this legislative mandate.

Also missing is a provision for ensuring that patients receive a printout at the prescriber's office that lists newly prescribed medications. Otherwise, how will patients know what they're supposed to receive? The prescriber

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ported to the ISMP MERP, for a total of 11 reports. One of the events occurred as recently as December 2015, although no harm occurred when the patient received an injection of Depo-Medrol instead of Depo-Provera. The reported errors were distributed evenly from 1999 through 2015; therefore, we did not find any trends in the occurrence of the errors over time. In most ($n = 7$) of the cases, Depo-Provera was the intended drug and Depo-Medrol was administered instead. The errors occurred in a variety of settings, so it is difficult to associate patterns of error within a specific clinical setting. Five of the reports identified the Pfizer Depo-Medrol 80 mg/mL vials, and 2 involved the Pfizer Depo-Provera 150 mg/mL vials (both distributed by Pharmacia & Upjohn, a division of Pfizer). In four of the 11 cases, both products were available as unit stock. This may have contributed to errors due to the similarities in the names. For example, confusion may have occurred if staff misread the correct drug name when stocking the drug product (i.e., stocked in the wrong bin) and then the wrong drug was selected prior to administration, leading to a medication error. Other than name similarity, none of the reports identified container labels or carton labeling similarities as a contributing factor.

The recent close calls associated with Depo-Testosterone ($n = 2$) were both caused by volume or strength confusion due to look-alike labeling and packaging.

SAFE PRACTICE RECOMMENDATIONS: Today, the “Depo-” naming convention would be a concern for FDA based on its proprietary name review criteria (www.ismp.org/sc?id=423). However, when these drugs were first approved, the risk associated with this prefix was not considered. It would be very difficult to change the names of these products today—it may even make the risk of errors greater since these drug names are widely recognized. However, there are steps manufacturers, regulatory agencies, and healthcare practitioners can take to reduce the risk of potentially harmful mix-ups between these medications, strengths/container volumes, and routes of administration.

Manufacturers and regulatory agencies

Clarify labeling. Address the look-alike labels and packages of Depo-Testosterone as soon as possible. Most people look at the 1 mL and 10 mL vials and fail to realize that they are not the same.

Enhance warnings. Make warnings against intravenous (IV) use of depot products more prominent. The warnings should be clearly visible on the front label panel of cartons and vials, not on the back.

Healthcare practitioners

Keep vials apart. Separate the storage of the “Depo-” medication vials in the pharmacy and in all clinical settings where these drugs are stocked. Store only one medication in each bin or other storage container. Evaluate whether all of these drugs need to be stocked in patient care areas.

Differentiate the products. Consider stocking Depo-Provera in prefilled syringes for single patient use instead of single-dose vials. Depo-SubQ Provera 104 is available in single use 0.65 mL (104 mg) prefilled syringes for subcutaneous injections, and Depo-Provera 1 mL (150 mg) is available in prefilled syringes for intramuscular injections. Since Depo-Medrol is not supplied in prefilled syringes, this may increase differentiation between the two products, but only if staff know to expect Depo-Provera in a syringe. Thus, staff awareness is a necessary component of this differentiation strategy. This is important at the physician office or clinic as well as at the pharmacy since many community pharmacies may dispense these products to office practices and clinics.

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doesn't always communicate the name, strength, and directions for using the prescribed medication; if they do, patients sometimes forget. Ideally, with e-prescribing, the prescriber should give the patient verbal instructions, offer an opportunity to ask questions, and provide the patient with a corresponding printout that lists the prescribed medication, dose, and directions for use. As long as the printout isn't on official NY State prescription paper, once the e-Rx is sent electronically, the law does not prohibit a printout of current medications. This is a practice that should be encouraged, and not just in NY! Pharmacists should encourage patients to ask prescribers for a record of what was prescribed so they can know what to expect, read about the drugs, and formulate any questions they may have for their pharmacists, or contact their physicians if they have concerns about taking the medications.



Ambiguous abbreviation. One reader contacted us about a near miss. A nurse transcribed an order for **NOVOLOG** (insulin aspart) **FLEX-PEN** 20 units with the frequency of administration as “c B-L-D.” The pharmacist initially misread the “B-L-D” as “BID,” but upon further review prior to submitting the order, noticed the hyphens placed between the letters and requested clarification. Apparently, the nurse had written the abbreviation “B-L-D” to mean with breakfast, lunch, and dinner.

This is the first time we have received a report involving this abbreviation. Even so, if not already done, this would be a good time to ban this abbreviation and put out a reminder to practitioners that B-L-D should never be used in handwritten or electronic prescriptions. Ambiguous abbreviations should be avoided when communicating drug and patient information.

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Limit access. Attempt to limit inventory of Depo-Testosterone to a single strength and vial size. Also evaluate which “Depo-” medications need to be stocked in clinics, and limit access to those that can be dispensed as needed from a pharmacy.

Include auxiliary labels. Highlight or circle important information on labels to draw attention to it, or add an auxiliary label if necessary. For example, given the small font of the warning on Depo-Medrol vials, an auxiliary label that states, “IM Use Only” or “Intra-articular Use Only” may be required. For Depo-Testosterone labels, circle or point an arrow toward the total volume in each vial.

Express generic names safely. Use tall man letters when expressing the generic names of Depo-Medrol and Depo-Provera (i.e., methyl**PREDNIS**olone, medroxy**PROGESTER**one) to prevent confusion. When expressing generic names for Depo-Medrol and **SOLU-MEDROL** (methyl**PREDNIS**olone sodium succinate), include the form of methyl**PREDNIS**olone (i.e., acetate, sodium succinate) to help differentiate the drugs.

Use barcode scanning. Implement barcode scanning to verify medications when dispensing medications. Explore the possibility of using barcode scanning prior to drug administration at the bedside in clinic and procedural areas as a method to help mitigate confusion that may lead to wrong drug medication errors. When used at the bedside, this technology confirms not only the drug but also the patient's identity, dose, time, and dosage form of the medication being delivered. Track scanning compliance to ensure that staff is using the technology.

Increase staff awareness. Assess staff understanding of the term “depot,” and increase their understanding regarding why “Depo-” medications should not be administered IV. Be sure staff know the risk of confusion between “Depo-” products with similar names, such as mix-ups between Depo-Provera and Depo-Medrol, or the risk of errors related to labeling and packaging similarities with Depo-Testosterone.

Special Announcement

Free CE for pharmacists

ISMP has 4 new opportunities for pharmacists to earn FREE continuing education credits online:

- *Making Smart Pumps More Intelligent*
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- *Advancing Medication Safety for Adult Patients Receiving IV Push Therapy*
- *Medication Safety in Radiology: Often Unrecognized Issues*

Access all 4 programs from our homepage at: www.ismp.org.

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tion. Pharmacists should not dispense drugs until ambiguities are clarified with the prescriber.



Health literacy toolkit. Only 12 percent of US adults have the health literacy skills needed to manage and navigate the complexities of the US healthcare system. Patients' ability to absorb and use health information can be compromised by stress or illness. Experts recommend assuming that everyone may have difficulty understanding in order to create an environment in which all patients can thrive. To accomplish this, healthcare professionals should implement universal precautions to address health literacy because they have no way of knowing which patients are challenged by limited health literacy.

The Agency for Healthcare Research and Quality (AHRQ) recently published the second edition of its health literacy universal precautions toolkit. The *AHRQ Health Literacy Universal Precautions Toolkit, Second Edition* (www.ismp.org/sc?id=1701) can help pharmacies and primary care practices reduce the complexity of health care and enhance support for patients of all health literacy levels. We took a look at the tools and found them to have been done very well, particularly the slide sets with the speaker's notes. We encourage practitioners to put these tools into practice and for healthcare professional schools to incorporate them into the curriculum for students about to go on rotations.

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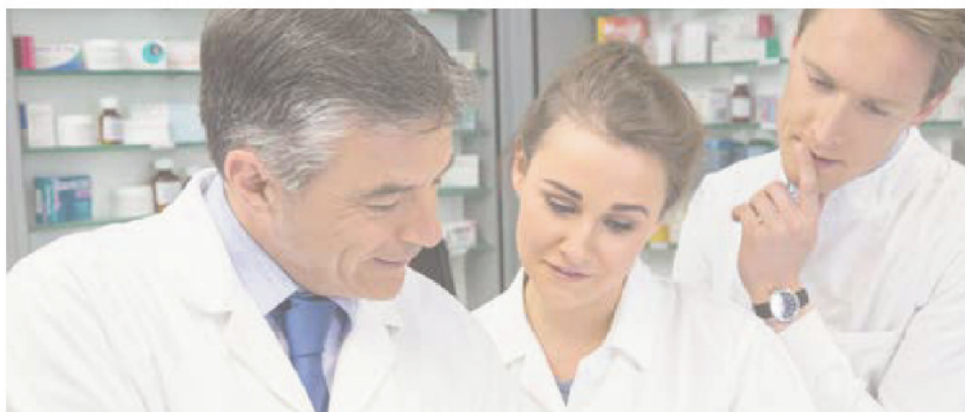


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Overview

This course is designed to help organizations achieve better outcomes, pursue sustainable and positive culture change through learning and justice, and reduce adverse events. This is accomplished by developing in-house expertise in the 5 Skills and the Just Culture Algorithm™. Specific case examples associated with medication safety will be provided for real-world simulations for pharmacists and nurses, along with broad organizational examples for other healthcare leaders and human resources staff.

Who Should Attend?

- Pharmacy managers
- Nurse managers
- Medication safety officers
- Patient safety officers
- Leaders from risk, safety, quality, and human resources
- Medical staff officers
- Other organizational operations leaders

Phases of Training

There are 3 phases to provide the participants with rich and diverse learning experiences. These phases include online training, the Just Culture Certification Course, and a proficiency exam. Each phase builds on the previous learning opportunity and provides the participant with additional knowledge, understanding, and application of Just Culture principles. At a minimum, Phases 2 and 3 are required for a participant to be formally recognized as a Just Culture Certified Champion.

CEU Credits Available

This program is approved for a total of 20 contact hours (2.0 CEUs) of continuing education for pharmacists and nurses.



Pharmacy continuing education is provided by Educational Review Systems, Inc., which is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmaceutical education. Pharmacists will receive 7 contact hours on day 1, 7 contact hours on day 2, and 6 contact hours on day 3, for a total of 20 contact hours for the 3-day program. Pharmacists must participate in an entire day's program and complete a daily course evaluation and post-test to receive continuing education credit each day.

Nursing continuing education is provided by Debora Simmons, PhD, RN, CCNS, FAAN. The program is approved by the California Board of Registered Nursing. Nurses must participate in the entire program and complete a course evaluation and post-test to receive continuing education credit.

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