Mix-ups with “Medrols”

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PROBLEM: Over the years, numerous cases of confusion between methylprednisolone acetate (Depo-Medrol) and methylprednisolone sodium succinate (Solu-Medrol) have been reported. Although both forms of the product are used to treat inflammation, dosing may differ. The acetate form should never be given by intravenous (IV) administration.

Case 1

Solu-Medrol 40 mg IV was prescribed for a three-year-old child in the emergency department (ED). The nurse accidentally selected methylprednisolone acetate 40 mg, which was the first form and strength of the generic methylprednisolone that appeared on the automated dispensing cabinet screen. Shortly thereafter, the pharmacist who entered the order for Solu-Medrol into the computer noticed that Depo-Medrol had been removed from the cabinet. He called the unit to alert the nurse of the error. Fortunately, the nurse had already noticed that she had selected the wrong product, and the child received the correct form of the drug.

Case 2

Another 3-year-old child received the acetate form of the drug intravenously. A daily outpatient infusion of Solu-Medrol 140 mg IV had been prescribed for the child, who had recently received an organ transplant at a large teaching hospital. The first dose was administered in the ED of a small community hospital on a Saturday, when the pharmacy was closed. A nursing supervisor brought a box containing four vials of Depo-Medrol, each 40 mg, to the ED. The child’s nurse noticed the box of Depo-Medrol and assumed that the medication had been supplied by the hospital where the transplant was performed. Because she was unfamiliar with Solu-Medrol, the nurse checked a drug reference text and found that both Solu-Medrol and Depo-Medrol listed methylprednisolone as part of their generic names. She erroneously assumed that both medications were brand names for equivalent products, and she administered Depo-Medrol 140 mg in 50 mL of saline IV to the child over a period of one hour.

Pharmacia/Pfizer’s warning on the vial (“Not for IV Use”) was in very small print and was hardly visible. Unfortunately, the nurse never noticed the warning. The error was not detected until the following day, when the child’s mother commented that the medication administered that day was clear, whereas the medication given the day before had been cloudy. Fortunately, the patient did not experience adverse effects. However, the manufacturer has received reports of adverse reactions, some severe, resulting from IV administration of Depo-Medrol.

SAFE PRACTICE RECOMMENDATION:

The U.S. Pharmacopeia has advised the Institute of Safe Medication Practices (ISMP) that 48 reports of mix-ups between these two formulations have been received through its MEDMARX program in the last several years, mostly related to look-alike brand and generic names. Here are some suggestions to help reduce the risk of confusion between Solu-Medrol and Depo-Medrol:

1. Practitioners should be alerted to the differences between these two formulations. Some practitioners might not be aware that the word “depo” or “depot” in association with a drug indicates a slow release or slow absorption with a longer duration of action. Thus, these products are not intended for IV administration.
2. Methylprednisolone products should be dispensed from the pharmacy, or a pharmacist must review the order before they are dispensed from the pharmacy, or a pharmacist must review the order before they are dispensed from the pharmacy. A clinical alert for the acetate form of methylprednisolone should be designed to appear on automated dispensing cabinet screens to remind practitioners that the drug cannot be given via the IV route. A warning label (“IM Use Only”) should be affixed to the acetate form of methylprednisolone when it is dispensed, because the manufacturer’s warning is practically invisible (Figures 1 and 2).
3. Alerts and reminders should be developed. A clinical alert for the acetate form of methylprednisolone should be designed to appear on automated dispensing cabinet screens to remind practitioners that the drug cannot be given via the IV route. A warning label (“IM Use Only”) should be affixed to the acetate form of methylprednisolone when it is dispensed, because the manufacturer’s warning is practically invisible (Figures 1 and 2).

4. Labeling should be improved. The manufacturer of Solu-Medrol and Depo-Medrol packs these products in similar-looking cartons. This practice has contributed to occasional drug storage mix-ups and medication errors. The manufacturer’s warning (“Not for IV Use”) on the Depo-Medrol vials should also be more distinctive and obvious (see Figures 1 and 2).

a. The 5-mL vial of Depo-Medrol contains benzyl alcohol, but the 1-mL vial does not. Again, this information is hardly visible. Because the 1-mL and 5-mL vials are packaged in cartons of the same size, mix-ups are possible (Figure 3).

b. Only the preservative-free formula can be given epidurally. If the formulation with preservatives is used by mistake, neural tissue injury can occur. The ISMP has alerted the manufacturer. Even though minor changes have been made, errors persist.

continued on page 419
5. The two products should be differentiated. Solu-Medrol is available for purchase in a box of 25 vials. When feasible, purchasers should order it in bulk packaging instead of in individual cartons, which look like Depo-Medrol cartons. After the vials are removed from the cartons, they look very different.

6. Methylprednisolone products in computer order entry systems should be listed by both brand name and generic name to reduce the risk of mix-ups and errors.

The reports described in this column were received through the USP-ISMP Medication Errors Reporting Program (MERP). Errors, close calls, or hazardous conditions may be reported on the ISMP (www.ismp.org) or the USP (www.usp.org) Web site or communicated directly to ISMP by calling 1-800-FAIL SAFE or via e-mail at ismpinfo@ismp.org.