ISMP Canada is an independent Canadian non-profit agency established for the collection and analysis of medication error reports and the development of recommendations for the enhancement of patient safety.

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Depo-Medrol Confused with Solu-Medrol

A 3-year old patient who had received an organ transplant was prescribed a daily infusion of 140 mg Solu-Medrol for prevention of organ rejection. The prescription was written at the children's hospital where the transplant had been performed. Arrangements were made for the medication to be administered at a small urban hospital near the child's home. The first treatment was scheduled to be given on a Saturday in the Emergency Department. Weekday treatments would then be given in the hospital's ambulatory care unit.

When the patient was brought to the Emergency Department, the nurse was unable to find Solu-Medrol among the medications stocked in the emergency. Since the hospital pharmacy was not open on weekends, the nursing day supervisor was contacted to obtain a supply of Solu-Medrol. The supervisor happened to be close to the Pharmacy and decided it would be more efficient to obtain the drug from the Pharmacy instead of going to the night cupboard. She then delivered a box of 4 vials of Depo-Medrol (40 mg/vial) to the team leader in the Emergency Department. The team leader wrote the patient's name on the box containing the Depo-Medrol vials and left the medication on the counter. Another nurse, noting that the patient had waited for two hours, checked with the team leader and prepared to administer the medication. The nurse assumed that the Depo-Medrol had been supplied by the children's hospital that had prescribed the medication. She called the children's hospital to confirm the dose to be administered. She also referred to the Compendium of Pharmaceuticals and Specialties (CPS) and found that both Solu-Medrol and Depo-Medrol list methylprednisolone as part of the generic drug name. The nurse was unfamiliar with either Solu-Medrol or Depo-Medrol and thought that they must be different brands of equivalent products. The very small size of the Depo-Medrol product suggested to her that this must be a pediatric product and in this way the information "confirmed" her assumptions that the Depo-Medrol product was correct. The nurse then prepared 140 mg Depo-Medrol in a 50 mL normal saline minibag and administered the infusion over one hour.

Later in the evening, the team leader requested the nursing night supervisor to obtain more Solu-Medrol vials for the Sunday dose. The nursing night supervisor obtained a Solu-Medrol 1g/vial of which 140mg was prepared in 50 mL normal saline and administered on the Sunday. The patient's mother commented that the IV solution prepared on that day was "clear" and the IV solution prepared on the previous day had been "cloudy". An investigation was done and the medication error was discovered and disclosed to the family. Pharmacia was contacted by the hospital to ascertain risks to the patient and if any follow-up care was required. The hospital was advised that any risk for adverse reactions would have occurred during the first 24 hours after receiving the incorrect drug. Fortunately, the patient did not experience any adverse events from administration of Depo-Medrol instead of Solu-Medrol.

The hospital notified ISMP Canada of the event in order to have the information shared among other hospitals and hopefully prevent a recurrence of such an incident. The hospital also sent a letter to Pharmacia requesting that enhancements to the labeling of the Depo-Medrol product be considered.

Possible contributing factors to the medication error:

- Lack of knowledge about the differences between Solu-Medrol and Depo-Medrol products.
- Lack of Pharmacy personnel resources on evenings and weekends and lack of pharmacy on-call services.
- Non-pharmacy personnel allowed access to medications stored in a hospital pharmacy.
- The Pharmacia Depo-Medrol product warning: "Not for IV or intrathecal use" is barely legible on the product label. The warning is **not in BOLDFACE type** nor easily visible in the CPS product monograph.
- A "cloudy" IV solution was administered without questioning the appearance and seeking an extra check.

Recommendations for prevention of a similar error:

1. Good communication from the hospital providing the prescription for therapy to the hospital where treatment will be administered can help ensure advance planning for the patient visit. Different hospitals can have very different medication formularies. In this case the small urban hospital uses Solu-Cortef more often than Solu-Medrol and nursing staff were therefore less familiar with the Solu-Medrol product. Ideally, in situations where an out-patient visit is scheduled, the required medication can be selected by pharmacy personnel in advance of the patient visit. A pharmacist-dispensed product provides an extra layer of safety.

2. Ready access to a pharmacist, even if only for information, can help a nurse with questions about a pharmaceutical product.
3. When an unusual or unfamiliar drug is being used there needs to be an environment that encourages extra checks. Possibly the requirement of a mandatory 'second check' for any drug obtained from outside the standard nursing unit medication stock supply would ensure a review of the obtained medication. Health care professionals need to be assured that because of the myriad of drugs available, taking time to obtain an extra check is warranted whenever there is some ambiguity or some uncertainty related to a medication. Physicians can also be asked to provide an independent check. Possibly, had the Emergency Department physician been consulted, the incorrect drug would have been identified.
4. When ambulatory care patients are scheduled to visit emergency departments it may be helpful to arrange for nursing resources specifically intended for those patients. This will permit the emergency nurses to attend to the emergent and urgent cases without the added stress of knowing that there are patients having to wait long times for a relatively simple procedure.
5. Access to the Pharmacy by non-pharmacist personnel after-hours can increase the risk for medication substitution errors. It is recommended that only a night cupboard with a restricted formulary be accessible to non-pharmacy personnel when the Pharmacy is closed. A pharmacist that is on call for questions or who can come into the hospital when needed is recommended. It is recognized that in some areas pharmacists are a scarce resource.
6. Keeping the patient and/or patient's family in the "communication loop" as much as possible can help add layers of safety. In this example there was an "assumption" by the nurse that the Depo-Medrol came from a children's hospital. This assumption led to a "confirmation bias" when the nurse attempted to verify the product using the CPS as an information source. The family may have been able to correct this assumption.
7. Consider using this bulletin as an educational opportunity to inform nurses, physicians, and pharmacy personnel that the word "depo" or "depot" in association with a drug indicates "slow release or slow absorption with longer duration of action". Such products are usually specially formulated and are never intended for IV administration.
8. Consider using this bulletin to educate healthcare professionals that IV solutions are generally clear. A few IV solutions, such as lipid solutions for TPN, lipid-based products and propofol, are some noted exceptions. A cloudy IV solution should be an alert to obtain an extra check to verify that the product is intended for intravenous administration. Consider including mention of this in orientation sessions and student teaching programs.
9. A significant contributing factor to the above described medication error is the labeling of the Depo-Medrol product. The standard size paperclip (3.2 cm) shown next to the product in the photograph demonstrates the size of the vial.

Figure 1. Actual Size (3.5 cm vial height). The line "Not for IV or intrathecal use" is easily missed.

Pharmacia has received a number of previous reports of inadvertent intravenous administration of Depo-Medrol, including reports of adverse events as a result of the errors. Some of these adverse events were mild and transient and some were severe. Direct causal associations between the errors and subsequent reactions have not been established, due to the complicated nature of the underlying patient status in the reported cases.

ISMP Canada has contacted Pharmacia expressing concern over the lack of a visible warning on the Depo-Medrol label. Pharmacia has indicated that the company is planning to enhance the current label format for Depo-Medrol.

ISMP Canada is a national voluntary medication incident and 'near miss' reporting program founded for the purpose of sharing the learning experiences from medication errors. Implementation of preventative strategies and system safeguards to decrease the risk for error-induced injury and thereby promote medication safety in healthcare is our collaborative goal.
To report a medication error to ISMP Canada: (i) visit our website www.ismp-canada.org or (ii) email us at info@ismp-canada.org or (iii) phone us at 416-480-5899. ISMP Canada guarantees confidentiality and security of information received. ISMP Canada respects the wishes of the reporter as to the level of detail to be included in our publications.