Health care personnel alerted to problems with lipid-based products, albumin

Confusion about lipid-based drug products prompted alerts to directors of nursing, directors of pharmacy, and risk managers nationwide by the Institution for Safe Medication Practices (ISMP). ISMP issued the warnings in August in response to serious medication errors resulting from failure to differentiate between lipid-based drug products and conventional formulations of the same drug.

Adverse events, including deaths, said ISMP, have occurred after mix-ups between lipid-based amphotericin B products (Abelcet, Liposome Company; Amphocet, Sequus; and Ambisome, Fujisawa USA) and conventional amphotericin B with sodium deoxycholate and sodium phosphates. Conventional amphotericin B dosages should not exceed 1.5 mg/kg/day. Dosages of lipid-based products are higher but vary from product to product.

Other problems stemmed from mix-ups of doxorubicin and daunorubicin products. Accidental administration of the PEG-stabilized liposomal form of doxorubicin (daunorubicin citrate liposomal, DaunoXome, Nexstar) is also available and has been confused with conventional daunorubicin hydrochloride. Dosages of liposomal daunorubicin are typically 40 mg/m² repeated every two weeks, while dosages of conventional daunorubicin hydrochloride vary greatly and doses may be administered more frequently.

ISMP recommends the following measures for preventing errors with these products:

- Educate all staff involved in medication use, including persons involved in long-term care and home care, about the differences between conventional and lipid-based formulations of these drugs.
- Do not store conventional and lipid-based products together in the pharmacy. Consider using cautionary labels as a reminder of the differences between products.
- To preserve a redundant check system, these products should be dispensed by a pharmacist after required preparation and labeling are accomplished. Storage in patient care areas and automated dispensing equipment is discouraged.
- Teach staff, patients, and caregivers to be alert for a change from the usual appearance of a medication, since lipid-based products may appear milky rather than clear.
- Encourage staff to refer to the lipid-based products by their brand names.
- ISMP also issued an alert about dilution of concentrated albumin. Because of a product shortage, pharmacies have prepared albumin 5% from the 25% concentration. Fatal hemolysis and renal failure have occurred when large volumes of albumin diluted with sterile water were administered. ISMP recommends educating staff about the problem, discarding outdated reference sources and using up-to-date sources that highlight this problem, posting notices about proper dilution near stored containers of 25% albumin, and distributing procedures for proper dilution.

Pharmacist-run anticoagulation clinic improves patient outcomes, lowers health care costs

In a recent study, 176 patients receiving warfarin sodium at an anticoagulation clinic supervised by a pharmacist had better anticoagulation control, lower rates of bleeding, and fewer thromboembolic events than 142 patients receiving usual medical care. The clinic was associated with an annual cost saving of $162,058 per 100 patients. Patients at the university-affiliated anticoagulation clinic were seen primarily by pharmacy students or residents. When the study began, the clinic was temporarily closed to new patients; these patients received usual medical care at the discretion of physicians, often involving patient education and communication by medical residents, nurses, and pharmacy practitioners.

For each group, the percentage of International Normalized Ratios (INRs) in the therapeutic range and the percentage of time spent within that range were used to gauge anticoagulation control. The percentages of INRs <2.0 and >3.0 and of time spent below an INR of 2 and above an INR of 5 were also calculated, because INRs outside these limits have been associated with high complication rates. Clinic patients who received lower-range anticoagulation had fewer INRs above 5 than usual-care patients (7.0% versus 14.7%), spent more time within the therapeutic range (40.0% versus 37.0%), and spent less time at an INR above 5 (3.5% versus 9.8%); those receiving higher-range anticoagulation had more INRs within range (50.4% versus 35.0%) and fewer INRs below 2 (13.0% versus 23.8%) and spent more time within range (64.0% versus 51.0%).

The occurrence of “significant” bleeding (requiring evaluation or referral or associated with a decrease in hematocrit of ≥3% or a decrease in hemoglobin level of ≥1.2 mg/mL) was 77% lower among patients attending the anticoagulation clinic (8.1% versus 35.0% per patient year); “major” (requiring hospitalization...