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

The Healthcare Insurance Reciprocal of Canada (HIROC) is a member-owned expert provider of professional and general liability coverage and risk management support.

ISMP Canada Safety Bulletin

Volume 2, Issue 3 March, 2002

Codeine Syrup - Dangerous 'Near miss' in the Community

ISMP Canada receives medication error reports from the community setting, as well as the hospital setting, and a recent report about an error with codeine oral syrup is described.

A 7 year-old boy was seen at an urgent care clinic on a weekend for symptoms of an ear infection. The attending physician wrote two prescriptions: one for amoxicillin liquid 250 mg po q8h for 7 days; and one for codeine syrup 15 mg po q4h prn. The quantity ordered for the codeine syrup was interpreted to be 600 mL. The pharmacist attempted to contact the physician to clarify the volume ordered, but was unsuccessful. The pharmacist explained to the patient's mother that the pharmacy had only 500 mL codeine syrup in stock and therefore could not dispense the total volume ordered. He also advised her that he had tried to contact the physician. The pharmacist also recommended that the mother consider giving only ½ the prescribed dose instead of the full 15mg dose.

Codeine syrup is available as a 5mg/mL solution. The recommended dose in children is 1 to 3 mg/kg daily, divided in 6 doses. The boy weighed 25 kg.

After leaving the store, the mother noticed that the directions on the two 250 mL bottles of codeine syrup were labeled "give 1 tablespoonful every 4 hours if needed". From the information provided on the label, she was able to calculate that a tablespoon would equate to a 75mg dose, significantly more than the prescribed 15mg dose. Fortunately, she returned to the store and asked the pharmacist to double-check the prescription. In checking the prescription again, it was realized that the directions on the dispensed product should have read 3 mL per dose instead of one tablespoonful. It was then also surmised that the physician had intended a total quantity of 600 mg and not 600 mL. The label was re-typed and 120 mL of codeine syrup was dispensed.

Contributing factors to the error included workload issues and the lack of an independent check in the dispensing process. The inability to access the prescribing physician in order to verify a prescription is a frustration often experienced in the retail setting.

Safe Medication Practice Recommendations:

1. During the prescribing phase there needs to be a risk/benefit analysis of the medication being prescribed. Alternative options (in this case, acetaminophen) should be outlined to the patient and/or family and the decision can then involve the patient and/or their family.

2. Ideally, both the patient/family and the pharmacist should be able to clearly read the prescription. Full information such as the indication and dose calculation, when included in the prescription will also help the checking process.

3. Typically, pharmacies have well-established, redundant systems in place to monitor the accuracy of the dispensing process. A fail-safe process that ensures an independent double check before dispensing medications is critical. As well, the original order should be compared to the final product being dispensed, rather than relying only on the label generated from order entry. "Alarm bells" should be ringing when more than one bottle of a medication is needed to fill a prescription

4. Unsafe work conditions such as long hours without breaks, multitasking between phones, patients and prescription dispensing and other workload issues need to be addressed.

5. Ideally, a pharmacy computer system provides a warning when doses exceed the recommended dose limits.

6. Oral syringes, with instructions on their use, should be provided when pediatric liquids are dispensed. Directions that call for the use of 'teaspoon' or 'tablespoon' increase the risk for harm from error in this patient population.

7. Child-resistant packaging is essential with high-risk drugs such as codeine.

Finally, enhancing patient safety will often require being open to tradeoffs such as ensuring adequate staffing at a higher cost to operations.

ISMP Canada is currently developing a medication safety self-assessment tool for use in Canadian community pharmacies. This initiative is funded by Green Shield Canada, and is being undertaken with the assistance from ISMP in the U.S. The project will include a pilot study scheduled for completion this summer. For more information, please contact info@ismp-canada.org.