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ISMP

Long-Term Care
Advise ERR™

Educating the Healthcare Community About Safe Medication Practices

Computerized Order Entry (*e*-prescribing) Survey:
Part 2: Improving how systems are used

Prescribing medications electronically using a computer (*e*-prescribing) can reduce the number of medication errors by half when compared to handwritten, faxed, or verbal medication orders that must be transcribed.[1] Long-term care (LTC) is in the early stages of adopting and maximizing this technology. In 2010, approximately 1 in 15 LTC facilities were using *e*-prescribing.[2-4] Our 2014 survey showed an encouraging, positive trend with almost half (43%) of the respondents reporting use of the technology.[5] The upward trend was most pronounced in chain- and hospital-affiliated LTC facilities. However, the survey also showed that many of the key safety features with *e*-prescribing systems are not being utilized or maximized, significantly diminishing the positive impact that the technology could bring to medication safety.

In general, the areas of weakness identified by the 2014 survey included the following.

1 Prescribers are not entering most medication orders into LTC *e*-prescribing systems.

Frequent verbal, phone, faxed, and handwritten orders have resulted in order entry by nurses and, in some facilities, untrained allied health staff. According to the survey, 4 out of 5 orders in LTC facilities are entered by non-prescribers. Prescribers who treat residents in half of the LTC facilities in our survey cannot access the *e*-prescribing system remotely from their offices or other external health setting, necessitating phone or faxed orders. Respondents told us verbal and handwritten orders from prescribers while on site at the LTC facilities are also common. The key safety features of *e*-prescribing are to avoid the error-prone process of transcribing medication orders, and to provide the prescriber with instant feedback about the safety of the prescribed medication or to detect an order that has been entered incorrectly. Neither of these strategies are effective unless the prescribers themselves are entering the orders.

2 LTC *e*-prescribing systems often lack a bidirectional interface with the pharmacy system.

In 20% of the LTC facilities responding to our survey, the pharmacy computer system and LTC *e*-prescribing system do not "talk to each other," which requires entering orders into two separate electronic systems, wasting resources and increasing the risk of a transcription error. In this scenario, the medication administration records at the LTC facility may not match the pharmacy profile and will not reflect real-time changes made to a resident's medication profile in the pharmacy.

3 LTC *e*-prescribing systems often exhibit nonexistent or ineffective decision support during order entry and an inability to customize the system.

In our survey, almost 1 in 5 LTC facilities reported that the *e*-prescribing system will not warn staff about any potentially unsafe orders—the alert system is totally nonexistent. Of those with an alert system, only about a third warned about a dose too

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Check allergies when using an emergency drug box. A long-term care (LTC) resident with multiple sclerosis had difficulty swallowing and was thought to have aspirated. The doctor wanted to start the resident on an antibiotic right away. He called in an order for **AUGMENTIN** (amoxicillin clavulanate), a form of penicillin. Unfortunately, the doctor failed to notice that the resident had an allergy to "ticarcillin," also a form of penicillin, which was documented in the resident's office record. The nurse at the LTC facility wanted to get therapy started as soon as possible and administered the first dose from the emergency drug box. The nurse never noticed the resident's allergy. The pharmacy caught the error when reviewing the order, but it was after the first dose was given. Fortunately, the resident did not experience a serious reaction.

This incident highlights the importance of ensuring that drug allergies are clearly visible in the resident's medical record and medication administration record (MAR), and why these should be checked before the first dose is administered. The event also shows how vulnerable the resident is to medication errors when appropriate safety checks are skipped. A process should be in place for a pharmacist to review an order before administration for all but a few true emergency drugs. If a dose of medication must be removed from an emergency box, a second nurse should independently verify the drug, paying close attention to resident allergies since pharmacy will not be screening the order for safety before administration.

Transdermal medications and heat sources. Before leaving the hospital, a woman with bone cancer was given a prescription for a fentaNYL (**DURAGESIC**) patch, 25 mcg per hour. During her first 2 weeks at home, she was doing well. But

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Provided free to long-term care facilities in the US thanks to corporate sponsorship from Lilly

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high or low; a little more than half received duplicate therapy alerts; and three-quarters or fewer *e*-prescribing systems issued alerts for drug interactions or drugs to which the patient may be allergic. The inability to customize the display of information on screens, identify required fields, or build or alter alerts was also widespread among *e*-prescribing systems in LTC facilities. *E*-prescribing has the potential to assist in clinical decision-making, but only if meaningful and relevant data are communicated to prescribers when they need it.

4 A copy of all handwritten, printed, or faxed medication orders is not consistently sent to the pharmacy for verification of the order entered by nurses and allied health staff.

As a general rule, pharmacists should always verify the accuracy of the order entry process and assess the safety and appropriateness of all medication orders prior to dispensing the medications. However, only one-third of the LTC facilities in our survey reported sending the pharmacy a copy of all handwritten, printed, or faxed orders to make this verification possible. If a nurse enters an order, but the pharmacist never sees the original order, this important independent double-check is bypassed, and the likelihood of a prescribing error or misinterpreted order reaching the resident is significantly increased. One method of maintaining this important independent double-check is to have a copy of the original order sent to the pharmacy for review.

5 Training of staff who enter orders into *e*-prescribing systems is inconsistent, particularly training to address clinically appropriate alerts during order entry.

LTC facilities are responsible for training individuals to use the *e*-prescribing system appropriately. According to our survey, initial training to address alert messages may occur for prescribers and nurses, but not for other allied healthcare staff who may be allowed to enter orders. In addition, ongoing training receives less emphasis than initial training. As decision support systems change and improve, ongoing training is needed to maximize error-detection capabilities.

Conclusion

Each year, *e*-prescribing can prevent more than 2 million adverse drug events and save healthcare providers $27 billion,[6] but only if the technology is fully and effectively implemented, and if its functionality is maximized. Much of that burden falls on LTC facilities, LTC pharmacies, and *e*-prescribing vendors. While any new technology will create new sources of error not encountered in manual systems,[7] it will also be less safe if "workarounds" are used that bypass significant safety features of the systems, or if the full capabilities of the system are not utilized. Thus, *how* the technology is used is just as important as *whether* it is being used. The low level of decision support (e.g., alerts) and the inability to customize the *e*-prescribing system to improve medication safety suggest that software vendors also need to enhance their *e*-prescribing systems.

For LTC facilities that have *e*-prescribing systems, see the following **check *it* out!** section for recommendations to maximize medication safety. For LTC facilities planning to implement *e*-prescribing systems, the recommendations can be used as a resource when evaluating vendor systems and to request certain functionality up front at the time of purchase. *Please note: A summary of the 2014 survey findings (Part 1), including data tables, can be found in the December 2014 issue of* **Long-Term Care *AdviseERR*.**[5]

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then her family noticed that she seemed confused and was losing her balance. She was also nauseated and had vomited. It was discovered that the woman had been placing the fentaNYL patch on her back, near the pain. At the same time, she often sat in her favorite recliner with a heated seat. The heat from the back of the chair was directly over the patch, which caused the fentaNYL to be released from the patch too quickly.

Exposing medication patches to heat could increase the amount of drug absorbed from the patch into the body. So, it is important to remind staff and residents wearing a patch to avoid exposing it to heat sources like heating pads, electric blankets, direct sun, heat lamps, hot baths, heat wraps, heated chairs, and so on. Also, avoid tight coverings over the patch. Transdermal medication patches should be applied to body areas that won't come into contact with these heat sources. Medication patches do not need to be placed directly on or near the affected area to be effective.

Actiq is not for sore throats! A hospital recently reported three events in which a provider attempted to order ACTIQ (fentaNYL citrate oral transmucosal lozenge) to treat a sore throat, mistaking the powerful opioid as a typical throat lozenge. In two cases, the pharmacist identified the error and contacted the provider. In the third case, the provider caught his own error. In each case, the patients were not taking other opioids and did not have a history of opioid use. Use of this product in opioid-naïve patients can lead to respiratory depression and serious harm, including death. This type of error could also happen in a long-term care (LTC) facility.

Strict limitations on prescribing, dispensing, and distributing this drug are required by the Transmuscosal Immediate Release FentaNYL (TIRF) Risk Evaluation and Mitigation Strategy (REMS). This is a program required by the US Food and Drug Administration (FDA) before initiating treatment and during use of Actiq. Before enrollment in the TIRF REMS Access program, prescribers and pharmacists must participate in an educational program with a number of other requirements (www.ismp.org/sc?id=357). Staff need to question any order for Actiq, espe-

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check it out

Follow these recommendations to maximize medication safety with *e*-prescribing systems.

Plan for *e*-prescribing. If you have not yet implemented *e*-prescribing, plan and budget for implementation within the next 2-3 years. An integrated *e*-prescribing/electronic health record (EHR) system may be the most cost-effective option.

Facilitate remote *e*-prescribing. Ensure that your *e*-prescribing system allows remote order entry from the prescriber's office or home. For high-volume prescribers, consider the feasibility of interfacing the office-based *e*-prescribing system with the LTC facility *e*-prescribing system.

Establish bidirectional integration. Be sure your *e*-prescribing system is integrated not only with your EHR but also with the pharmacy system so that pharmacy entries and changes can be shared in real time with LTC facilities. If edits are made and viewed in real time, the medication administration record (MAR) should arise from the pharmacy system or be part of the integrated system.

Train staff. Ensure that staff and prescribers have adequate training to understand the alert messages from the *e*-prescribing system. Place as much emphasis on ongoing training as with initial training. Provide for "superusers" (clinicians highly competent in the use of the system) to help answer questions and provide education.

Information technology support. Ensure that you have adequate information technology (computer) support to implement, update, customize, and maintain your *e*-prescribing system. Consider hiring a clinician (e.g., nurse) who is an informatics specialist to help facilitate this process.

Decision support capabilities. Ensure that your system has adequate decision support capabilities and alerts to prevent erroneous or unsafe entries and confirm that all necessary information has been entered into the system (e.g., allergies, weight). At a minimum, these should include alerts for: drug allergies; clinically significant drug-drug or drug-food interactions; duplicate therapy; exceeding the maximum dose (high dose); or a lower dose than therapeutic (low dose). Ensure that all medication safety decision support features of your *e*-prescribing system are activated and in use.

Analyze current practices. Conduct an analysis of how staff use your *e*-prescribing system and make improvements and/or conduct education to improve use and prevent "workarounds."

Facility-based customization. LTC facilities need to work with their vendor(s) to allow customization and to lobby for features that will enhance their *e*-prescribing

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cially in opioid-naïve residents, or for an indication of a sore throat.

Topical creams/solutions and other products are not safe at the bedside. In our premier (May 2013) issue of the ISMP *Long-Term Care AdviseERR*, we reported the death of a 2-year-old boy who died after ingesting a used fenta**NYL** transdermal patch at the long-term care (LTC) facility where his great-grandmother lived. Accidental ingestion of toxic topical medications by small children visiting a loved one in a LTC facility is not limited to used patches, but can occur from any medication left at the resident's bedside—including topical ointments and creams.

LTC facility staff may be unaware of potential dangers with topical products. Many contain toxic ingredients or doses that, if taken orally, would be toxic to an adult, let alone a small child. In the past, we have received reports of accidental ingestion of **BENADRYL EXTRA STRENGTH ITCH STOPPING GEL** (diphenhydr**AMINE**). Between 2001 and 2009, 121 cases of ingesting Benadryl Extra Strength Itch Stopping Gel were reported to the manufacturer. Of these cases, 7 resulted in patients requiring treatment in the emergency department, hospitalization, or admission to the intensive care unit. Many of these cases were the result of product packaging which looked like an oral solution. After years of work by the manufacturer and the US Food and Drug Administration (FDA), this product is now packaged in a tube, reducing the likelihood of being mistaken for an oral product. However, accidental ingestion of the product by children is still possible if the product is left at the bedside of a resident.

Topical anesthetic products like **ANBESOL** and **ORAJEL** contain benzocaine and can cause methemoglobinemia. Children who have accessed these products may put them in the mouth and swallow them. Methemoglobinemia can occur within minutes after exposure, even the first time the product is used. It isn't very common overall, but children under 2 years of age appear to be at particular risk.

Topical creams compounded in a pharmacy are also problematic, as these products are often packaged in containers without a safety closure and often contain multiple

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systems. The facility should be able to customize the decision support system to improve resident safety.

Examples where customization is crucial include:

- Facility-specific times of medication administration for each frequency
- The drugs available for selection in the *e*-prescribing system drug library
- Specific entries that are required in order to proceed (called forcing functions because one is "forced" to enter specific data before proceeding)
- Information displayed on the medication administration record (MAR)
- Identifying which alerts are active and the level at which they become active
- Restrictions on which route of administration can be selected for a particular medication
- Restrictions on which units of measure (e.g., mg vs. mL) are displayed in specific areas or for specific drugs
- Limitations on the dosage forms that can be selected
- Identifying the drugs that are included in a duplicate therapy alert

All customizations related to medication therapy should include the LTC pharmacy provider. Also, as LTC facilities look to implement or upgrade their *e*-prescribing system, the availability of these features should be considered.

Dose combination selection. Ensure that your *e*-prescribing system allows the person entering the medication order to enter the exact prescribed dose of the desired medications, allowing the pharmacy, not the prescriber or person entering the order, to select the best combination of strengths available to make up the desired dose. The software system can select the combination of strengths needed, provided the pharmacy can make alterations if necessary.

Transition to prescriber order entry. Establish a policy that requires prescribers to enter orders into the *e*-prescribing system. Set a goal of achieving 90% prescriber order entry for all orders in your *e*-prescribing system over the next 2 years, and develop a program of education, incentives, and resources to accomplish this goal. Have a physician champion and your Medical Director advocate with prescribers to support this goal.

Use only healthcare professionals. Eliminate the use of non-licensed, non-professional healthcare staff (medical assistants, medication aides, unit secretaries, and clerks) for order entry, allowing only trained registered nurses or licensed practical nurses to carry out this function when needed for an occasional order that cannot be entered by the prescriber.

Send pharmacy a scanned/faxed order. Make sure the pharmacy receives a copy of the original written, faxed, or transcribed verbal order from the prescriber when the order is not entered directly by the prescriber. The pharmacist should compare the copy of the order to the electronic order to ensure accuracy, and also review the order for appropriateness and safety.

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potent prescription medications. ISMP and the Philadelphia Poison Control Center have received several reports of accidental overdose and serious harm in children who were exposed to these medications.

Staff should not store any medication at the resident's bedside, unless it is in a locked drawer. Staff need to be aware of the potential for toxicity if topical products are taken orally by either residents or the children who visit them in a LTC facility.

Don't open Pradaxa capsules. Nurses and others may not be aware that the package insert for the anticoagulant dabigatran states, "The oral bioavailability of dabigatran etexilate (**PRADAXA**) increases by 75% when the pellets are taken without the capsule shell compared to the intact capsule formulation. Dabigatran capsules should therefore not be broken, chewed, or opened before administration." Studies have shown that the absorption increases significantly if administered this way, increasing patients' risk for severe bleeding.

A hospital notified us recently that a patient brought to the emergency department (ED) from an assisted care facility was admitted for hematemesis. It is believed that some nurses at the care facility may have been opening the dabigatran capsule and sprinkling the contents on the patient's food. The hospital wants to alert others to be aware of this situation so staff training and other measures can be provided to avoid adverse events with dabigatran. The medication administration record (MAR) listing for dabigatran at this hospital states "Do NOT break, chew, or open capsules." Other healthcare facilities should consider adding this statement to their MARs as well. Pradaxa is also included on the DO NOT CRUSH list on our website, which can be found at: www.ismp.org/Tools/DoNotCrush.pdf.

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