October 5, 2023 | Volume 28 ■ Issue 20

ISMP
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Acute Care
ISMP Medication Safety Alert!®
Educating the Healthcare Community About Safe Medication Practices

Minimizing distractions and interruptions during medication safety tasks

Problem: A distraction occurs when an individual's attention is drawn away from one task to a different task, or when they are trying to work on multiple tasks at the same time. An interruption occurs when an individual is engaged in a task and stops or performs another task with the intention of returning to the initial task. In today's healthcare environment, practitioners are expected to multitask, and distractions and interruptions are generally accepted as the norm. In fact, a study showed that pharmacists, technicians, and nurses can be distracted or interrupted as frequently as once every 2 minutes (www.ismp.org/ext/1166). Distractions and interruptions in healthcare environments are a threat to human performance and patient safety.

Interruptions can be necessary and appropriate when crucial information, such as holding a patient's medication due to a critical laboratory value or speaking up about a potential medication error, must be conveyed to prevent patient harm. This could include the use of well-designed alerts, clinical decision support, and person-to-person communication to bring someone's attention to a potential safety issue. However, researchers have shown that interruptions can also lead to an increase in errors when performing clinical tasks such as medication prescribing, dispensing, and administration (www.ismp.org/ext/1183). When interrupted, practitioners do not remember where they left off with the task when they return to it. Minimizing unnecessary distractions and interruptions is essential for ensuring patient safety, quality of care, and the healthcare practitioner's well-being.

Sources of Distractions and Interruptions

Understanding the types of distractions and interruptions is important to drive appropriate risk-reduction strategies. Distractions may be voluntary, such as scrolling through emails, text messages, social media; multitasking; or socializing. Or they may be involuntary (e.g., hunger, thirst, fatigue). However, interruptions are generally involuntary, such as taking phone calls, answering patient questions, colleagues having a conversation nearby, or responding to electronic health record [EHR] alerts or healthcare device alarms. These contribute to diversion of attention, stress, fatigue, and forgetfulness, and can lead to medication errors.

Impact of Distractions and Interruptions

While most research on distractions and interruptions is based on direct observation, the first retrospective analysis that used patient safety events to understand the impact was recently published.[1] Researchers included data from multiple hospitals' patient safety reporting systems between 2013 and 2016. They defined a distraction or interruption as an event that caused a healthcare practitioner to stop working on their current task. Using a free-text keyword query to search for variations of the terms distraction and interruption (e.g., distract, distracted, interrupt, interrupted) resulted in 220 event reports for analysis. They found that nurses (50%) were most often interrupted, followed by technicians (17%) and pharmacists (16%). Interruptions were frequently attributed to an environmental cause (64%) (e.g., high workload) or an interruption by another individual (e.g., patient, nurse). These interruptions contributed to errors such as wrong dose, wrong medication, omission, and medication mislabeling. Two recent examples of distractions and interruptions that were reported to ISMP from separate hospitals are provided below.

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SAFETY briefs

Potential for mix-ups between Talvey and Tecvayli. We wanted to warn practitioners about the potential for mix-ups between **TALVEY** (talquetamab-tgvs) and **TECVAYLI** (teclistamab-cqyv). Both products, made by Janssen, are indicated for the treatment of adult patients with relapsed or refractory multiple myeloma after previously receiving at least four prior lines of therapy. While Tecvayli has been approved for nearly a year, Talvey was approved this past August. At issue are the multiple overlapping characteristics, including similar brand and generic names; similar-looking carton principal display panels (**Figures 1** and **2**); and the fact that each is packaged as a single-dose vial, administered subcutaneously, and requires refrigeration for storage.

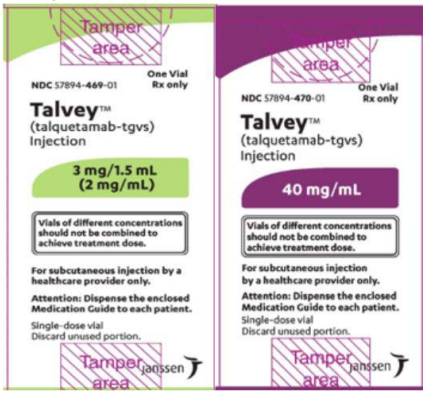

Figure 1. Principal display panels on cartons of Talvey 3 mg/1.5 mL (left) and 40 mg/mL (right).

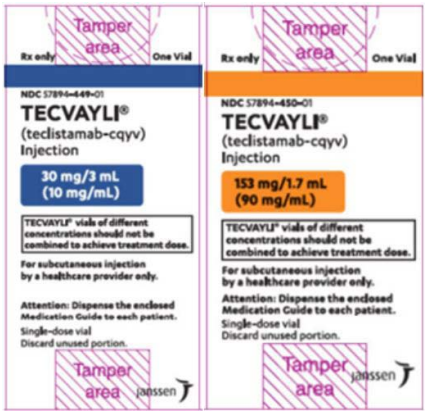

Figure 2. Principal display panels on cartons of Tecvayli 30 mg/3 mL (left) and 153 mg/1.7 mL (right).

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Before intubating a patient, a prescriber gave verbal orders to a nurse for doses of midazolam, vecuronium, propofol, and ketamine. The prescriber thought the concentration of ketamine was 30 mg/mL and told the nurse to remove two vials from the automated dispensing cabinet (ADC) to provide a 60 mg dose. Orders were not placed in the EHR, so the nurse removed the medications from the ADC via override. The nurse typed "KET" to search for ketamine and was interrupted to answer a colleague's question. When the nurse returned to the task of removing ketamine from the ADC, she saw a 30 mg/mL concentration and selected what she thought was ketamine. The nurse removed two vials along with the other ordered medications. The intensive care unit (ICU) was extremely busy at the time, so the nurse prepared the doses and quickly returned to the patient's room. While administering the medications, the nurse was also responding to questions from other practitioners about the patient's past medical history. When discarding the medication waste, the nurse noticed that ketorolac was on the list of medications that had been removed from the ADC via override. The nurse identified that ketorolac had inadvertently been administered rather than ketamine. The prescriber was then notified of the error. No patient harm was reported.

A pharmacy technician was preparing an intrathecal dose of cytarabine to be diluted to a final volume of 5 mL. The technician was interrupted by a phone call from a nurse requesting another patient's chemotherapy. When the technician returned to finish preparing the dose, he prepared an underdose of cytarabine and also incorrectly diluted it to a final volume of 3 mL. The pharmacy had an intravenous workflow management system (IVWMS) with barcode scanning technology but had not implemented gravimetric analysis. A pharmacist checked the dose and did not identify the error. After the dose was administered, the oncologist called the pharmacy to question why the volume was different from the typical intrathecal volume of 5 mL. The error was confirmed through the digital images captured in the IVWMS, and the remaining dose was prepared and administered to the patient.

Like most preventable events, latent and active failures contributed to these errors, and both organizations are implementing changes to their systems and processes to prevent reoccurrence. It is also important to note that the practitioners felt distracted because they were interrupted during critical parts of the medication-use process.

Safe Practice Recommendations: While distractions and interruptions cannot be fully eliminated, organizations should consider the following recommendations to limit them.

Define critical tasks. Determine a list of critical tasks that require dedicated time without interruptions. These may include activities such as entering or verifying a medication order, preparing a medication dose, removing medication from an ADC, programming a smart infusion pump, or administering a medication.

Improve systems and processes. Identify the sources of common distractions and interruptions and remedy any system issues. Establish systems for the electronic communication of information (e.g., used between nursing and pharmacy) that do not require immediate phone contact. Evaluate the environment where critical tasks are performed and rectify poor environmental conditions (e.g., unnecessary noise, dim lighting). For example, place ADCs in locations with limited foot traffic to reduce distractions (www.ismp.org/node/1372). Provide medications to patient care units in ready-to-administer formulations to remove the risk of interruptions while mixing or diluting medications.

Limit alerts, alarms, and noise. Reduce the frequency of invalid, insignificant, or overly sensitive computer alerts and device alarms to promote the delivery of necessary critical notifications. Minimize the noise of overhead pages and other unnecessary chatter in areas where medication tasks are being performed. For more information about the impact of sound and noise during the medication-use process, review USP General Chapter <1066> *Physical Environments that Promote Safe Medication Use*.

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Talvey and Tecvayli also share several clinical similarities. Both medications require weight-based dosing, including step-up dose escalation (see package insert for details). Talvey is administered on a weekly or biweekly (every 2 weeks) dosing schedule, and Tecvayli is administered on a weekly dosing schedule. Both medications have boxed warnings due to risks of life-threatening or fatal reactions, such as cytokine release syndrome (CRS) and neurologic toxicity, including immune effector cell-associated neurotoxicity syndrome (ICANS). Both medications are only available through a restricted program called the TECVAYLI and TALVEY Risk Evaluation and Mitigation Strategy (REMS) and need to be administered by a healthcare professional. Due to the risk of CRS and neurologic toxicity, including ICANS, patients should be hospitalized with appropriate medical support for 48 hours after administration of all doses within the step-up dosing schedules.

Organizations should determine if it is possible to carry only one of these medications on the formulary. If both products are needed, educate staff about the potential for mix-ups and stress the importance of barcode scanning during product preparation and prior to administration. Store the products in separate areas of the refrigerator and consider using auxiliary warning labels on medication containers and storage bins to help differentiate them. Check how the medication names appear in your electronic health record (EHR) and intravenous workflow management system (IVWMS). If possible, display both the brand and generic names in the medication description field and on product selection menus. Review or create order sentences, including step-up dose frequencies, and ensure the correct formulation is automatically linked for dispensing. For additional recommendations review our previous newsletter article, *Adopt strategies to manage look-alike and/or sound-alike medication name mix-ups* (www.ismp.org/node/31981).

Textbook errata. A dosage error appears in the book, *Extemporaneous Ophthalmic Preparations* (Alghamdi, 2020). On pages 80-81 of the print version, the compounding instructions for the ganciclovir intravitreal injection (Second

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Optimize the phone tree. Establish a triaging system for incoming phone calls to avoid interruptions in designated areas (e.g., sterile compounding room). When possible, have designated ancillary staff (e.g., front desk staff, technician) screen out non-emergent calls in the patient care units and in the pharmacy.

Be prepared. To minimize task disruption, ensure that all the supplies that practitioners will need are organized together in medication preparation areas prior to preparing or administering medications.

Develop a checklist. Create a checklist of important information for lengthy critical tasks as a reference. When available, utilize guided technologies (e.g., IVWMS with step-by-step procedural capabilities) to ensure staff follow approved medication preparation procedures, and can return to the appropriate step if an interruption occurs.

Find the best time. Practitioners should establish set times to address non-urgent questions. If urgent notifications are necessary when practitioners are prescribing, dispensing, or administering medications, others should attempt to intervene during transitions between subtasks, such as between patients or doses being prescribed, prepared, or administered.

Manage the use of mobile devices. Educate staff about the risks associated with distractions from the use of mobile devices, and obtain input from stakeholders regarding their appropriate and inappropriate use. Implement a strategy to address appropriate use while minimizing the distraction risks. Any inattentive behavior related to personal use of mobile devices should be treated as an at-risk behavior that requires coaching to promote safe behavioral choices.

Educate staff. Warn practitioners not to disturb colleagues completing critical tasks unless significant alteration in a patient's therapy must be communicated immediately. Embed distractions and interruptions into annual simulation training when practitioners are practicing critical tasks. This targeted training can make staff aware of how distractions and interruptions impact their processes. In one school of nursing where students participated in simulations with high noise levels and varied background noises (e.g., music, conversations), the students found that distractions decreased accuracy in medication preparation and administration.[2] For suggestions on how to use simulations, see our May 4, 2023, feature article, *The role of simulation when onboarding healthcare professionals—Part II* (www.ismp.org/node/75988).

Manage patient questions. Conduct regularly scheduled bedside rounds to facilitate appropriate times for patients/caregivers to ask questions. Before performing a critical task in front of a patient, practitioners should explain to the patient/caregiver what they plan to do, and provide them with time to ask any questions before initiating the task, when possible.

Reassess. After implementing interventions to address distractions and interruptions, directly observe practitioners completing critical tasks, gather feedback from end-users, and provide coaching as needed. Also monitor error reports and reevaluate if additional strategies are needed.

References:

1) Kellogg KM, Puthumana JS, Fong A, Adams KT, Ratwani RM. Understanding the types and effects of clinical interruptions and distractions recorded in a multihospital patient safety reporting system. *J Patient Saf.* 2021;17(8):e1394-e1400.

2) Thomas CM, McIntosh CE, Allen R. Creating a distraction simulation for safe medication administration. *Clin Simul Nurs.* 2014;10(8):406-11.

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formulation: ganciclovir **2 mg/0.1 mL** [0.3 mL]) are listed incorrectly. If the instructions are followed as printed, it will result in a 10-fold lower concentration (2 mg/mL). The instructions specify withdrawing **0.1 mL** of a ganciclovir 200 mg/mL solution (Vial A) and combining it with 9.9 mL of sodium chloride 0.9% (Vial B) which will actually result in a concentration of **2 mg/mL**. Instead, to make the **2 mg/0.1 mL** formulation, the compounder should withdraw **1 mL** of a ganciclovir 200 mg/mL solution (Vial A) and combine it with 9 mL of sodium chloride 0.9% (Vial B) for a resulting concentration of **2 mg/0.1 mL**. Of note, the previous version of the book contains a different concentration of 200 mcg/0.1 mL using the same directions, which may have contributed to this error. We have notified Springer Nature Publishing of this issue, and a correction and erratum will appear in the online and printed versions of the book. For now, please make the correction manually.

Special Announcements

Survey on high-alert medications

Please take our survey on ***ISMP's List of High-Alert Medications in Acute Care Settings***. Submit your responses by **October 20, 2023**, at: www.ismp.org/ext/1228.

Celebrate Pharmacy Technician Day

Please join us in celebrating ***Pharmacy Technician Day*** on **October 17, 2023**.

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HITTING THE SAFETY HIGH NOTES

ISMP 26TH ANNUAL CHEERS AWARDS

When: Tuesday, December 5, 2023

Where: House of Blues – Anaheim

The Cheers Awards honor those who have hit the high notes in medication safety.

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Showcase your commitment to medication error prevention with a donation to our ONLY fundraising event:

https://www.ismp.org/node/83407

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- Branding as a prominent champion of patient safety
- Positioning as a strategic partner with ISMP
- Networking with patient safety leaders from varied practice settings

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