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ISMP An ECRI Affiliate

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

Numerous wrong dose errors with Paxlovid

Problem: In the last few months, ISMP and the US Food and Drug Administration (FDA) have received numerous reports of wrong dose errors related to **PAXLOVID** (nirmatrelvir and ritonavir). Paxlovid is indicated for the treatment of mild-to-moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years and older weighing at least 40 kg) with positive results of direct severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral testing, and who are at high risk for progression to severe COVID-19, including hospitalization or death. The dosing errors occurred at various points throughout the medication-use process, including prescribing or dispensing the wrong strength, improper renal dosing, and self-administration errors. A recent analysis of national oral antiviral (**LAGEVRIO** [molnupiravir] and Paxlovid) dispensing data through May 21, 2022, for the treatment of COVID-19 showed that 87% of these drugs were dispensed by pharmacies (www.ismp.org/ext/940). Therefore, the following information has major implications for pharmacists.

Paxlovid Packaging Configurations

Paxlovid is currently available in two configurations. For patients with normal renal function (estimated glomerular filtration rate [eGFR] equal to or greater than 90 mL/minute) or mild renal impairment (eGFR below 90 mL/minute but more than or equal to 60 mL/minute), Paxlovid is available in a carton holding 30 tablets contained in 5 daily-dose blister cards (**Figure 1**, page 2). Each blister card contains 4 nirmatrelvir tablets (150 mg each) and 2 ritonavir tablets (100 mg each). The dose, administered twice a day, in the morning and evening, is 2 tablets of nirmatrelvir (150 mg each, 300 mg total) and 1 tablet of ritonavir (100 mg). In January 2022, ISMP published a special alert related to Paxlovid safety risks (www.ismp.org/node/29033), in which we noted that **patients with moderate renal impairment** (eGFR below 60 mL/minute, but more than or equal to 30 mL/minute) **must take only 1 tablet of nirmatrelvir (150 mg) along with 1 tablet of ritonavir (100 mg) together, twice daily.** Patients with severe renal impairment with an eGFR below 30 mL/minute should not receive the drug.

When Paxlovid first became available, dispensing pharmacists needed to remove 1 of the 2 nirmatrelvir tablets for both the morning and evening doses from each of the blister cards before dispensing Paxlovid to patients with moderate renal impairment. In some reported cases, extra tablets were not removed for renal dosing, or, by mistake, pharmacies removed ritonavir instead of the nirmatrelvir component. To mitigate these dosing risks, in April 2022, cartons of Paxlovid for patients with moderate renal impairment became available with reduced-dose blister packages designed to provide just 1 tablet of nirmatrelvir (150 mg) along with 1 tablet of ritonavir (100 mg) to be administered twice daily (**Figure 2**, page 2). Instead of 30 tablets in the carton for patients with normal renal function or mild renal impairment, each carton contains just 20 tablets divided into 5 daily-dose blister cards for patients with moderate renal impairment.

Recently Reported Errors

Many of the recently reported errors have happened during patient self-administration and generally involved patients taking the wrong tablets (e.g., took 3 tablets of nirmatrelvir from the same blister card and no ritonavir, took 2 ritonavir tablets and 1 nirmatrelvir

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SAFETY briefs

HIGH-ALERT

Don't confuse ePHEDrine hydrochloride with ePHEDrine sulfate. An organization reported potential dosing confusion with **REZIPRES** (ePHEDrine hydrochloride) injection from XGen Pharmaceuticals. The product is supplied in a 23.5 mg/5 mL (4.7 mg/mL) strength, equivalent to 19 mg/5 mL (3.8 mg/mL) of ePHEDrine base (**Figure 1**). This is the only ePHEDrine hydrochloride salt on the market. All other products are available as ePHEDrine sulfate, often supplied as 50 mg/mL (38 mg/mL of ePHEDrine base). In addition, the dosage and administration section of the Rezipres package insert specifies a bolus intravenous

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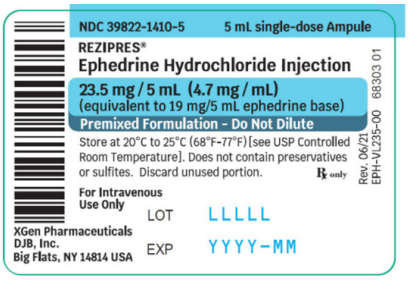

Figure 1. Rezipres (ePHEDrine hydrochloride) injection 23.5 mg/5 mL (4.7 mg/mL) is equivalent to 19 mg/5 mL (3.8 mg/mL) of ePHEDrine base.

ISMP survey for *pharmacists when responding to codes*

☑ ISMP is conducting a short survey for pharmacists to learn more about the pharmacists' role when responding to codes (cardiopulmonary resuscitation events), training and competency assessments, whether pharmacists feel prepared to respond to codes, and specific medication safety issues perceived during codes. Pharmacists can take our online survey, regardless of whether they respond to codes, by **July 29, 2022**, by visiting: www.ismp.org/ext/941. For reference, the questions in the online survey are provided on **page 6**. We sincerely appreciate your participation!

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tablet for each dose, took the entire day's dose [6 tablets] at one time, took 2 nirmatrelvir tablets from one blister and 1 nirmatrelvir tablet from another blister for each dose). Dispensing errors involved providing the carton with reduced-dose blister packages intended for patients with moderate renal impairment to patients with normal renal function or mild renal impairment, or vice versa. Several of the reported errors involved improper renal dosing, such as prescribing or dispensing Paxlovid to patients with severe renal impairment. Other prescribing errors included ordering the standard dose for patients with moderate renal impairment and vice versa, prescribing the incorrect quantity (e.g., 30 tablets for moderate renal impairment dosing), providing directions to take 2 tablets twice a day in conflict with the instructions on the package prescribed, and not checking or asking patients about renal function or concomitant drug use to avoid drug-drug interactions.

Contributing Factors

Before the reduced-dose blister package for patients with moderate renal impairment became available, we mostly received error reports involving pharmacy staff failing to remove 1 of the nirmatrelvir tablets for each dose on all 5 blister cards and/or omitting auxiliary stickers (provided by the manufacturer) to alert patients to the altered packaging and removal of the unneeded tablets. However, even with the availability of the reduced-dose blister package for patients with moderate renal impairment, we continue to receive reports of Paxlovid dosing errors with the following contributing factors:

- The prescriber was unaware of the required dose adjustment needed for patients with moderate renal impairment
- The prescriber was unaware of the patient's renal function (or the patient's concomitant drugs to screen for drug-drug interactions; see a reported Paxlovid drug-drug interaction in our June 2, 2022, newsletter: www.ismp.org/node/32420)
- Prescribers' confusion about the two available packages and the number of tablets per regimen
- The new moderate renal impairment dose packaging may not be stocked in certain pharmacies
- Mix-ups between look-alike cartons of the standard and moderate renal impairment doses
  - ☐ The reduced-dose blister package and carton fail to note it is for patients with moderate renal impairment
- Confusion when referring to the tablets by their color or the blister package colors
  - ☐ Tablet colors are not visible in the blister packages
- Error-prone and inconsistent format of displaying Paxlovid in electronic health records (EHRs)
  - ☐ For example, the nirmatrelvir dose was listed as "150 mg, two tablets" rather than "300 mg," which may lead to administration of only 1 tablet of nirmatrelvir
- Confusing blister pack instructions for patients

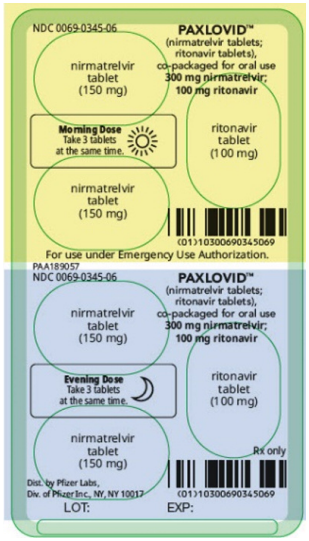

Figure 1. For patients with normal renal function or mild renal impairment, each Paxlovid carton contains 5 daily-dose blister packages with 2 tablets of nirmatrelvir 150 mg (300 mg total) and 1 tablet of ritonavir 100 mg for each morning and evening dose (30 tablets in total).

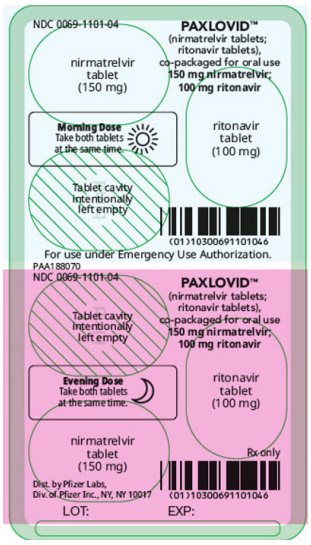

Figure 2. For patients with moderate renal impairment, each Paxlovid carton contains 5 daily-dose blister packages with 1 tablet of nirmatrelvir 150 mg and 1 tablet of ritonavir 100 mg for each morning and evening dose. One blister for the morning and evening dose is intentionally left empty (20 tablets in total).

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(IV) injection of 4.7 to 9.4 mg as needed, not to exceed 47 mg. This does not specify if the dose is based on the hydrochloride salt or the ePHEDrine base.

We have contacted the US Food and Drug Administration (FDA) and XGen Pharmaceuticals to notify them of the potential for dosing errors due to differences in the available salt forms. XGen Pharmaceuticals confirmed that the dose is based on the hydrochloride salt and will review our suggestion to specify this information in the dosing section of the package insert. If a diluted product is preferred, there is also a 25 mg/5 mL ePHEDrine sulfate (3.8 mg/mL ePHEDrine base) that comes ready-to-use in a prefilled syringe (AKOVAZ). If you plan to purchase Rezipres, make sure your systems are set up based upon the hydrochloride salt, and notify staff of this difference in formulation. Additional applicable recommendations may appear in our June 16, 2022, feature article on safely transitioning to a new drug concentration (www.ismp.org/node/32208).

Patient drank albuterol nebulization solution. A patient who did not speak English was discharged from a hospital with a new prescription for albuterol 2.5 mg/3 mL nebulization solution. The patient had not been using this bronchodilator prior to admission and did not have a nebulizer at home. During a post-discharge phone call, the patient told a nurse that she had been given a "liquid medication to drink from a syringe." The concerned nurse called the dispensing pharmacy to understand which medication formulation the patient had received. The pharmacy verified that the physician had prescribed an albuterol nebulization solution for the patient with directions in English to "Use 3 mL (2.5 mg) in nebulizer every six hours." However, the physician had not prescribed a nebulizer to administer the medication, which the pharmacy reported was not covered by the patient's insurance. It is uncertain if the patient received education on how to take this new medication. The pharmacy later learned that the patient was drinking the albuterol nebulization solution that had actually been dispensed in a plastic nebulization solution container, which the patient described as a "syringe." Fortunately, the patient did not experience any adverse effects.

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SAFE PRACTICE RECOMMENDATIONS: To prevent dosing errors with Paxlovid, consider the following recommendations:

Increase awareness. Educate practitioners about the availability of the reduced-dose blister package for patients with moderate renal impairment. Remind practitioners to avoid prescribing and dispensing Paxlovid for patients with severe renal impairment.

Check EHR and prescribing system configuration. Check your EHR or prescribing system to see how the dose and tablet strength fields are displayed, and make the required alterations to ensure it is intuitive for the prescriber to select 2 of the 150 mg nirmatrelvir tablets to make up a 300 mg dose. On drop-down menus, it is safest to list the strength of Paxlovid as a 300 mg and 100 mg dose pack, or, for moderate renal impairment, a 150 mg and 100 mg dose pack (as stated on the cartons).

Clinical decision support. If possible, provide dose guidance for Paxlovid in prescribing systems, such as providing an order sentence with the required reduced dosing for patients with moderate renal impairment.

Check and confirm renal function. Confirm the patient's renal function before prescribing or dispensing Paxlovid. (See the FDA *Paxlovid Patient Eligibility Screening Checklist Tool for Prescribers* to support clinical decision making and to screen for significant drug interactions: www.ismp.org/ext/921.) If possible, prescribers should document on prescriptions the patient's most recent eGFR and date. Pharmacists without access to the patient's medical record will need to contact the prescriber if this information is not included.

Avoid communicating the dose by tablet or blister color. Do not refer to the tablets as pink (nirmatrelvir) and white (ritonavir), or by any other colors, or by the color of the blister package, as this can cause the patient to misunderstand which medications to take.

Educate patients. Mark Paxlovid prescriptions for mandatory patient education, and explore ways to use technology to prompt mandatory patient education when the prescription is picked up. Show patients how the medication is labeled on the blister pack, and teach them about the two different medications that they will be taking twice a day. Encourage them to remove each tablet just prior to taking the dose and not ahead of time (e.g., transferring them to a medication box). Use the teach-back method, making sure that patients can demonstrate how they will take the morning and evening doses. Also provide patients with the *Fact Sheet for Patients, Parents, and Caregivers* (www.ismp.org/ext/939).

Recommendations for the manufacturer. To differentiate the two packages, Pfizer should consider adding a banner on the renal dosing cartons to specify that this package configuration is for patients with moderate renal impairment. Also, Pfizer should provide patient education tools, such as laminated cards, for each package type.

Additional risk of age-related mix-ups now that our youngest patients are eligible for COVID-19 vaccines

PROBLEM: With the expanded emergency use authorization (EUA) for patients as young as 6 months old, there are now three different age groups, not just two, that are eligible for the Pfizer-BioNTech and Moderna coronavirus disease 2019 (COVID-19) vaccinations (www.ismp.org/ext/934). Similar to the mix-ups that occurred between the Pfizer-BioNTech vaccines for children 5 through 11 years old and for individuals 12 years and older (www.ismp.org/node/28619), it is predictable that we will see mix-ups between these three age groups with both the Pfizer-BioNTech and the Moderna vaccines. In the past, some individuals 12 years and older received the Pfizer-BioNTech vaccine formulation and dose intended for children 5 to 11 years old, resulting in underdoses. Or children who were 5 to 11 years old received the formulation and dose intended for individuals 12 years

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When a patient is discharged on a nebulization solution, practitioners must check if the patient already has a nebulizer at home. If not, a nebulizer prescription should be provided to the patient, and utilization review, case management, a social worker, or another applicable person should pursue and obtain insurance approval (or let the prescriber know if insurance approval cannot be obtained). For patients who speak a language other than English, a medical interpreter should be used to communicate instructions to the patient and ensure clarity about how to use or take the medication. Mandatory counseling for all new prescriptions for nebulizers and medications used with nebulizers must be provided. The teach-back method should be used to confirm the patient's understanding of how to use the medication and the nebulizer. Ideally, pharmacies should print labels and educational material in the patient's preferred language.

Fluconazole tablet blister pack without a barcode. Prior to administering a patient's fluconazole (150 mg tablet), a nurse could not find a barcode on the individual blister package (**Figure 1**). The tablets are manufactured by Glenmark Pharmaceuticals for BluePoint Laboratories. We have contacted the manufacturer as well as the US Food and Drug Administration (FDA). An FDA barcode rule (www.ismp.org/ext/943) requires that the barcode must be on the outside container or wrapper, as well as on the *immediate container*, unless the barcode is easily legible through the outside container or wrapper. For now, we recommend purchasing this medication from an alternative manufacturer so that barcode scanning can be utilized. Pharmacies should develop a proactive process to ensure new products contain a barcode on the immediate container, and test the barcode prior to dispensing.

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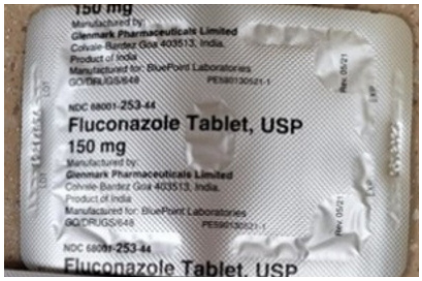

Figure 1. Glenmark fluconazole 150 mg tablets do not contain a barcode on the individual blister cards.

> Age-related mix-ups — continued from page 3

and older, resulting in overdoses. Similar errors could happen with the new vaccines for our youngest patients. We do not want mix-ups between these vaccine formulations to raise concerns and undermine public health efforts to have as many children vaccinated as possible, even though these errors are not expected to cause serious adverse events.

Moderna Vaccine

The Moderna EUA vaccine (**Table 1**) comes as a two-dose series administered 1 month apart to individuals 6 months through 17 years. Previously, the vaccine had been authorized for use in adults 18 years and older. The vaccine was also authorized to provide a third primary series dose at least 4 weeks following the second dose for individuals 6 months and older who have certain kinds of immunocompromise.

Table 1. Moderna COVID-19 Vaccine Formulations (www.ismp.org/ext/935)

Age group	6 months through 5 years for two-dose *primary series* 0.25 mL (25 mcg)	6 years through 11 years for two-dose *primary series* 0.5 mL (50 mcg)	6 years through 11 years for two-dose *primary series* 0.5 mL (50 mcg) *18 years and older *booster dose* 0.5 mL (50 mcg)	12 years and older for two-dose *primary series* 0.5 mL (100 mcg) *18 years and older *booster dose* 0.25 mL (50 mcg)
Vial cap color	Dark blue	Dark blue	Dark blue	Red
Vial label border color	Magenta	Teal†	Purple	Light blue

†May not be available currently

Pfizer-BioNTech Vaccine

The Pfizer-BioNTech EUA vaccine (**Table 2**) comes as a three-dose series for children 6 months through 4 years in which the initial two doses are administered 3 weeks apart, followed by a third dose administered at least 8 weeks after the second dose. Previously, the vaccine had been authorized for use in individuals 5 years and older as a two-dose primary series. The vaccine was also authorized to provide a third primary series dose at least 4 weeks following the second dose for individuals 5 years and older who have certain kinds of immunocompromise.

Table 2. Pfizer-BioNTech COVID-19 Vaccine Formulations (www.ismp.org/ext/937)

Age group	6 months through 4 years for three-dose *primary series* 0.2 mL (3 mcg)	5 years through 11 years for two-dose *primary series* and *booster dose* 0.2 mL (10 mcg)	12 years and older for two-dose *primary series* and *booster dose* 0.3 mL (30 mcg)
Vial cap and label border color	Maroon	Orange	Purple or gray

According to the *Fact Sheet*, vaccine vial labels for the youngest age group may state "Age 2y to < 5y" or "Age 6m to < 5y," and carton labels may state "For age 2 years to < 5 years" or "For age 6 months to < 5 years." These vaccines can be used for children 6 months through 4 years old (www.ismp.org/ext/936). However, locations that receive these vials may find it confusing and mistakenly believe the formulation labeled "2y to < 5y" cannot be used for children younger than 2 years. Also, we do not recommend using the "<" or ">" signs, which are sometimes confused to mean the opposite.

Children who will turn from 4 years to 5 years old between any doses in the Pfizer-BioNTech's COVID-19 vaccine primary series may adhere to either of the following dosing schedules:

- Two-dose primary series (10 mcg) with the 5 through 11 years vaccine
- Three-dose primary series with the vaccine authorized for use in children 6 months through 4 years of age (3 mcg); the second or third dose may be with the vaccine for ages 6 months through 4 years **or** with the vaccine for 5 years through 11 years of age.

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HIGH-ALERT

Look-alike phenylephrine and neostigmine vials and cartons. While unpacking a medication shipment, a pharmacy technician thought that the quantity of neostigmine vials she had received did not match the amount ordered. After closer inspection, the technician noticed that she had a box of the vasoconstrictor phenylephrine, 50 mg/5 mL vials, mixed in with a box of neostigmine 10 mg/10 mL vials. Neostigmine is used for the reversal of nondepolarizing neuromuscular blocking agents. Both products, manufactured by Amneal, have similar black, tan, and white colors on the carton and vial labels, along with the same red caps (**Figure 1**).

Figure 1. Look-alike vials (top) and cartons (middle and bottom) of neostigmine 10 mg/10 mL and phenylephrine 50 mg/5 mL, from Amneal.

We have communicated with the manufacturer, Amneal, about this look-alike concern and recommended changing the label and carton colors on one of the products. For now, consider purchasing these medications from different manufacturers. Also, employ barcode scanning technology to confirm that the correct drug has been selected when receiving, stocking, dispensing, or administering these medications.

> Age-related mix-ups — continued from page 4

SAFE PRACTICE RECOMMENDATIONS: If clinics, physician practices, or pharmacies administer adult and/or pediatric COVID-19 vaccines, consider the following recommendations, paying particular attention to these confusing issues:

- The Moderna vaccines for children 6 months through 5 years, and for 6 years through 11 years, both have a dark blue cap and an age range that starts with the number "6" on the label. Also, the vial with the purple border only lists the indication for a booster dose, but it is currently the only vaccine intended for use in children 6 years through 11 years.
- The Pfizer-BioNTech vaccines for children 6 months through 4 years and for 5 years through 11 years both require a volume of 0.2 mL for each dose (3 mcg and 10 mcg, respectively) but are provided in different concentrations. Also, the primary series for children 6 months through 4 years requires three doses, while the primary series for children 5 years through 11 years requires only two doses.

Segregate storage. In refrigerators and freezers, store the vaccine formulations apart from one another in separate plastic bins properly labeled with the corresponding age group. Differentiate the bin labels with colors that align with the vial label color, keeping in mind that purple may be the label color for both the Pfizer-BioNTech vaccine for patients 12 years and older, and the Moderna vaccine for children 6 years through 11 years.

Verify identity, age, and vaccine(s) requested. When checking in a patient who is scheduled to receive a vaccine(s), ask the parent, caregiver, or patient to provide at least two patient identifiers—their full name and date of birth. Verify the patient's actual age with the patient, parent, or caregiver, and be sure to ask which vaccine(s), including the brand, they have requested. Repeat this process immediately prior to vaccination.

Verify the vaccine history. Prior to vaccine preparation, check the history on the patient's vaccine card, the patient's medical record, and the immunization information system to confirm which COVID-19 vaccines have been administered previously and when.

Label syringes. Clearly label all syringes. To facilitate labeling, print labels for each patient or provide practitioners who prepare the vaccines with strips of preprinted labels that differentiate the formulations and dose for each of the three age groups.

Employ barcode technology. During preparation and administration, use barcode scanning to confirm the correct vaccine.

Vaccinate one patient at a time. Only bring the intended and labeled vaccine syringe(s) for one patient into the vaccination area. Vaccinate one patient at a time.

Engage the patient. Involve the parent, caregiver, or patient in verifying the vaccine, formulation, and dose by reading the label to confirm the correct vaccine.

Document the vaccine(s). Document the lot number and date of manufacture prior to vaccine administration, and document administration afterwards in the patient's profile, on vaccination records, and via state or other immunization information systems.

Report vaccine errors. Report vaccine errors internally as well as to the Vaccine Adverse Event Reporting System (https://vaers.hhs.gov), which is mandatory for COVID-19 vaccines available under an EUA. ISMP also asks providers to report vaccine errors to the ***ISMP National Vaccine Errors Reporting Program*** (www.ismp.org/report-medication-error).

Additional resources. For details on immunization schedules, please review the Centers for Disease Control and Prevention (CDC) resource, *COVID-19 Vaccine Interim Immunization Schedule for 6 Months of Age and Older* (www.ismp.org/ext/938). Also, Immunize.org has compiled a tool (www.ismp.org/ext/933) that organizes information about US COVID-19 vaccines and provides links to dosing guidance, *Fact Sheets*, package inserts, storage and handling, and preparation and administration. This resource is updated at least monthly.

Special Announcements

New resource for specialty pharmacies

ISMP and our affiliate, ECRI, have launched a new online membership for specialty pharmacies. Membership provides actionable guidance and practical strategies for safe medication management, including resources that can be used to help meet accreditation standards, stay informed about new technologies and best practices, and create safety improvements to reduce the risk of medication errors. Membership can include access to specialty drug proactive risk assessments, user group access, and the ISMP community/ambulatory care newsletter. To learn more, please complete the form at: www.ismp.org/node/31616.

Nominations for CHEERS AWARDS

Nominations for this year's **ISMP CHEERS AWARDS** will be accepted through **September 9, 2022**. The **CHEERS AWARDS** honor individuals, organizations, and groups from various healthcare disciplines that have demonstrated an exemplary commitment to medication safety. To submit a nomination, visit: www.ismp.org/node/123.

Apply for a Just Culture scholarship

The Just Culture Company, in cooperation with ISMP, will award three ***Judy Smetzer Just Culture Champion Scholarships*** annually to honor Judy Smetzer, BSN, RN, FISMP, a retired ISMP vice president. Applications for next year's scholarships are due by **July 31, 2022**. For details and to apply, visit: www.ismp.org/node/30840.

Report medication and vaccine errors to ISMP: Call 1-800-FAIL-SAF(E) or visit our website at: www.ismp.org/report-medication-error. ISMP guarantees the confidentiality of information received and respects the reporters' wishes regarding the level of detail included in publications.

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☑ ISMP Survey on the *Pharmacists'* Role and Medication Safety During a Code

For pharmacists only: We encourage you to participate in this short survey by **July 29, 2022**, so we can learn more about the pharmacists' role when responding to codes (cardiopulmonary resuscitation events), training and competency assessments, whether pharmacists feel prepared to respond to codes, and specific medication safety issues perceived during codes. Pharmacists can take the survey by visiting: www.ismp.org/ext/941, regardless of whether they respond to codes.

1 In your organization, do pharmacists respond to codes?
☐ Yes ☐ No (skip to question # 11)

2 When do pharmacists respond to codes?
☐ Always, when the pharmacy is open ☐ When able, when the pharmacy is open
☐ In some locations (or for some patient populations), when the pharmacy is open
☐ Occasionally ☐ Rarely ☐ Other (please specify): _____

3 Does a pharmacy technician accompany pharmacists to codes?
☐ Yes, always when the pharmacy is open ☐ Yes, when able, when the pharmacy is open
☐ Yes, in some locations (or for some patient populations), when the pharmacy is open ☐ Yes, occasionally ☐ Yes, rarely ☐ No, never

4 Please select the type or topic of training required of pharmacists who respond to codes. (select all that apply)
☐ Current basic life support (BLS) certification
☐ Current advanced cardiovascular life support (ACLS) certification
☐ Current pediatric advanced life support (PALS) certification
☐ Indications of medications typically used during a code
☐ Doses of medications typically used during a code (adult)
☐ Doses of medications typically used during a code (pediatric)
☐ Preparation of medications typically used during a code
☐ Where to find medications in code carts
☐ Other (please specify): _____
☐ No training is required

5 Do pharmacists have an interactive opportunity to open a code cart and practice selecting and/or preparing medications?
☐ Yes ☐ Don't know ☐ No

6 Do pharmacists who respond to codes complete annual competencies for knowledge and skills?
☐ Yes ☐ Don't know ☐ No

7 Do you feel pharmacists have been adequately prepared to participate in codes?
☐ Yes ☐ Don't know ☐ No

8 What is the pharmacists' role when responding to a code? (select all that apply)
☐ Scribe ☐ Defibrillate/assist with defibrillation ☐ Assist with intubation
☐ Assist with basic life support (chest compressions and/or airway ventilation)
☐ Retrieve medications and/or equipment from code carts (and other locations)
☐ Prepare medications
☐ Administer medications
└ ☐ Intravenous ☐ Endotracheal ☐ Intraosseous ☐ Other route (please specify): _____
☐ Advise code team leader about medications and doses ☐ Other (please specify): _____

9 Does your organization debrief staff after each code?
☐ Yes, always ☐ Yes, sometimes ☐ Don't know ☐ No, never

10 How many years of experience do you have with responding to codes?
☐ Less than 1 year ☐ 1-3 years ☐ 4-5 years ☐ More than 5 years ☐ I have never responded to a code

11 Please describe the three conditions and/or medications that worry you most when thinking about medication errors during codes.
_____
_____

12 Please select the best response regarding your profession, your position, and the patient population in your organization.
Profession: ☐ Pharmacist who responds to codes ☐ Pharmacist who does not respond to codes
☐ Other (please specify):_____
Position: ☐ Administrator/executive ☐ Manager/director/supervisor ☐ Staff
☐ Other (please specify):_____
Patient Population: ☐ Adults only ☐ Pediatrics only ☐ Adults and pediatrics