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

ISMP National Vaccine Errors Reporting Program:
2020-2021 analysis focuses on age-related, non-Covid-19 vaccine errors

PROBLEM: We recently looked at 1,440 events reported to the ***ISMP National Vaccine Errors Reporting Program*** (ISMP VERP) between June 2020 and December 2021. Of note, more than two-thirds (68%) of the vaccine events reported during this timeframe were related to coronavirus disease 2019 (COVID-19) vaccines. We excluded the COVID-19 vaccine events from our analysis since we have recently published information about these errors, along with recommended error-prevention strategies, including in our June and July 2022 newsletter issues and our December 6, 2021, ***National Alert Network*** (NAN) alert (www.ismp.org/node/28619). Our analysis of the remaining reports during the 19-month timeframe showed that the most frequent types of vaccine events, other than those related to the COVID-19 vaccines, were:

- Wrong vaccine (24%)
- Expired vaccine or contamination/deterioration (14%)
- Wrong age (13%)
- Extra dose (10%)
- Wrong dose (9%)
- Vaccine/component omission (e.g., only diluent or a single component of a two-component vaccine administered) (8%)
- Wrong time or interval (7%)
- Wrong patient (4%)

Since healthcare providers administer most vaccines in the outpatient setting, reported events occurred in medical clinics (49%), doctors' offices (20%), public health immunization clinics (11%), or community pharmacies (9%). In these outpatient settings, widespread barcode scanning prior to vaccine administration is often lacking. Only 3% of the events occurred in inpatient settings, and 8% occurred in other settings. Forty-two percent of the events involved registered nurses or nurse practitioners, 34% involved medical assistants, 14% involved pharmacists, and 14% involved other healthcare providers, such as physicians, physician assistants, emergency medical technicians, respiratory therapists, and nursing assistants (more than one practitioner type may have been included in a single report).

Focus on age-related vaccine events

Our focus for this vaccine event analysis is on age-related vaccine errors, which may also be associated with administering the wrong vaccine or the wrong dose. For example, a mix-up between a pediatric hepatitis A vaccine and an adult hepatitis A vaccine could result in an error classified as the wrong vaccine, the wrong dose, or the wrong age. One-third (33%) of the reported events involved the wrong vaccine or the wrong dose, which reporters often attributed to confusion between age-dependent vaccine formulations. Adding these vaccine events to wrong age vaccine events (13%) contributes to nearly half (46%) of all the vaccine errors reported to the *ISMP VERP* (excluding COVID-19 vaccine errors). Receiving a lower-than-intended vaccine dose for a patient's age can compromise the protection immunizations provide, leaving patients more vulnerable to diseases; whereas, receiving a higher-than-intended vaccine dose for a patient's age could result in adverse effects or the need for additional monitoring.

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Bivalent and monovalent COVID-19 vaccine mix-ups. With the new Moderna and Pfizer-BioNTech COVID-19 bivalent booster formulations that target both the original coronavirus variant and omicron subvariants BA.4 and BA.5, it was predictable that mix-ups would occur. Since the bivalent boosters were authorized, we have received a number of reports of actual mix-ups between these formulations. The Moderna COVID-19 bivalent vaccine, authorized as a booster dose for patients 18 years and older, looks similar to the Moderna COVID-19 primary series vaccine for patients 6 through 11 years (also previously used as the conventional monovalent booster for patients 18 years and older). Both have dark blue caps with "BOOSTER DOSES ONLY" on the label (**Figure 1**), although the vaccine with the purple label should no longer be used for booster doses. Both the bivalent and primary series vaccine doses are 0.5 mL (50 mcg), but they are not equivalent. Although the Moderna bivalent booster label lists two doses, "0.5 mL or 0.25 mL based on age," it is only authorized as a 0.5 mL dose for patients 18 years and older at this time.

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Figure 1. The new Moderna COVID-19 bivalent vaccine (left) and the primary series vaccine for patients 6 through 11 years (right) have dark blue caps and display "BOOSTER DOSES ONLY."

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Wrong age and wrong dose events

Wrong age and associated wrong dose errors occurred frequently between age-related formulations of influenza virus vaccines (31%); diphtheria, tetanus, and/or pertussis vaccines, including combination vaccines (23%); hepatitis A vaccines (16%); and hepatitis B vaccines (16%).The frequency of mix-ups between age-related formulations of these four vaccines has not improved much during the past decade. In fact, events related to these four vaccine types seem to be occurring for many of the same reasons previously noted in analyses of the *ISMP VERP* data between 2012 and 2016, and again in 2017 which was published in our June 2018 issue, particularly for:

- Not differentiating age-dependent formulations of the same vaccine (44%)
- Failure to verify the patient's age before administration (16%)
- Lack of familiarity with the indicated ages for vaccines (16%)

The way vaccine labels portray the intended age group may contribute to some of these mix-ups. It is not surprising that practitioners continue to struggle with providing the correct vaccine based on the patient's age, given that several vaccines available in pediatric and adult formulations have similar packaging presentations and generic names—some even have the same brand name. Consider three recent reports:

Case 1: A nurse administered the pediatric formulation of hepatitis B vaccine (recombinant), **ENGERIX-B** (10 mcg/0.5 mL), rather than the adult formulation (20 mcg/mL), to a 28-year-old patient. Both vaccines, manufactured by GSK, have the same brand name, Engerix-B, and the cartons have similar labeling, although the colors used on the left of the cartons are different (**Figure 1**). Also, the carton labels do not specify "pediatric" or "adult" formulation. Due to a stocking error, the pediatric doses had been stored in the adult bin in the clinic. Prior to administration, the nurse did not check the label, and the outpatient facility did not utilize barcode scanning technology.

Figure 1. GSK manufactures two hepatitis B vaccines, one for children from birth through 19 years (left), and the other for adults 20 years and older (right), indicated on the cartons. The syringe labels (not pictured) do not include the age ranges or state "pediatric" or "adult" formulation.

Case 2: A nurse administered an adult hepatitis A vaccine (for patients 19 years and older) to a pediatric patient instead of the pediatric hepatitis A vaccine (for children 12 months through 18 years). Both vaccines, manufactured by Merck, have the same brand name, **VAQTA**, differing by the color, dose, and pediatric/adolescent or adult formulation designation on the carton, vial, and syringe (**Figure 2**). However, the pediatric/adolescent and adult notations are listed below the vaccine name in similar font size and color, and in all uppercase letters. Practitioners generally identify the vaccine and then stop reading, so they may miss what is below the name and not see "pediatric/adolescent" or "adult."

Figure 2. Merck manufactures two hepatitis A vaccines, one for children 12 months through 18 years (left), and the other for patients 19 years and older (right). The labels specify pediatric/adolescent or adult, but this is displayed below the name of the vaccine and can be easily overlooked.

Case 3: A medical assistant administered an adult hepatitis A vaccine (for patients 19 years and older) to a pediatric patient instead of the pediatric hepatitis A vaccine (for children

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Perhaps an even greater concern for confusion exists between the Pfizer-BioNTech products. The bivalent vaccine is authorized as a booster for patients 12 years and older, and the primary series vaccine is for patients 12 years and older. They both have gray caps and labels with gray borders (**Figure 2**).

Figure 2. The Pfizer-BioNTech bivalent vaccine (left) and the primary series vaccine for patients 12 years and older (right) have gray caps. The bivalent vaccine label does not specify its use as a booster.

In both cases, the manufacturer's name has become part of the vaccine name, which increase look-alike similarities. This means the vaccine name may wrap around the vial making it easier for practitioners to miss critical parts of the name.

To prevent vaccine mix-ups with look-alike vaccines, store these vaccine formulations apart from one another in separate bins that are properly labeled with the corresponding age group or booster designation. Verify the patient's full name, date of birth, and actual age with the patient, parent, or caregiver, and ask which vaccine(s) were requested, including the brand name, company, and/or the dose (e.g., second primary vaccine, first bivalent booster). Prior to preparation, check the patient's vaccine card, pharmacy profile/medical record, and the immunization information system. Clearly label all syringes. During preparation and administration, use barcode scanning to confirm the correct vaccine. Only bring the intended and labeled vaccine syringe(s) for one patient into the vaccination area and vaccinate one patient at a time. Involve the parent, caregiver, or patient in verifying the correct vaccine by reading the label to confirm the vaccine, formulation, and dose.

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12 months through 18 years). A coworker had pulled the adult formulation from the refrigerator, and a medical assistant confirmed what he thought was the correct vaccine and administered it. Both vaccines, manufactured by GSK, have the same brand name, **HAVRIX**, the cartons have similar labeling, and the print is small and somewhat difficult to read. Also, the syringe label does not include the recommended age range or specify "pediatric" or "adult" formulation.

Wrong vaccine events

Wrong vaccine events most often involve mix-ups between formulations for different age groups, such as diphtheria, tetanus, and/or pertussis vaccines, including combination vaccines (38%); influenza virus vaccines (17%); meningococcal vaccines (12%); measles, mumps, rubella, and/or varicella vaccines (10%); and hepatitis A vaccines (7%). Underlying causative factors associated with mix-ups among these products included the following:

- Not differentiating age-dependent formulations of the same vaccine (19%)
- Look-alike products stored near one another (16%)
- Similar brand names (15%)
- Similar vaccine abbreviations (7%)

Consider this recent report:

Case 1: A prescriber ordered DTaP (**DAPTACEL**) to be administered to an infant. A nurse removed the Tdap formulation (**ADACEL**) from the refrigerator and administered a dose to the infant. Daptacel specifies "6 wks – 6 yrs," and Adacel specifies "Adolescent/Adult" on the top of the carton (**Figure 3**). Both products are made by Sanofi and are available in 0.5 mL doses.

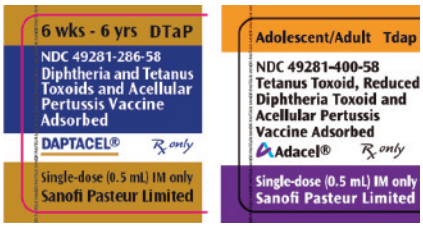

Figure 3. Daptacel, the DTaP formulation by Sanofi, is intended for patients 6 weeks through 6 years (left). Adacel, the Tdap formulation by Sanofi, is intended for patients 10 years through 64 years of age (right).

Confusion between DTaP and Tdap is among the most common of the age-related mix-ups reported to ISMP. Tdap vaccines contain less diphtheria toxoid and pertussis antigens per dose than DTaP vaccines. These products are easy to confuse due to their similar proper names and abbreviations. The uppercase letters, "D" and "P" in DTaP, correspond with a higher antigen quantity of the diphtheria and pertussis components, relative to Tdap and its lowercase letters. An adult who gets DTaP (higher amount of antigens) would not need to be revaccinated but would be more likely to experience adverse effects. But an infant/child who receives Tdap would have received a lesser amount of antigen and may not develop an adequate immune response.

Safe Practice Recommendations: Consider the following recommendations to prevent age-related vaccine errors, help foster herd immunity to prevent disease outbreaks, and enhance the public's confidence in vaccines and the healthcare delivery system:

Maximize technology

- Develop order sets based on the Centers for Disease Control and Prevention (CDC) immunization schedules to guide prescribers to the appropriate age-based formulations (www.ismp.org/ext/978).
- Along with the full generic name and CDC standard abbreviation, list vaccine brand names in the electronic health record (EHR) and outpatient pharmacy systems, as they may help to differentiate look-alike full vaccine names and combination vaccines.
- Confirm that clinical decision support (CDS) will provide an alert if a practitioner orders a vaccine for a patient in an age group outside of its approved indication. Also, CDC makes available test cases (www.ismp.org/ext/994) that can be used

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Changes in dosing frequency not matched by dispensed amounts. A specialty pharmacy was preparing a refill for **ENTYVIO** (vedolizumab) 300 mg vial for intravenous (IV) injection. Entyvio is a humanized monoclonal antibody that is used to treat Crohn's disease and ulcerative colitis. During pre-verification for the refill, the pharmacist noticed the dispensed quantity was two, with the directions to inject 300 mg (1 vial) IV on week 0, 2, 6, and then every 8 weeks thereafter. Looking at the dispensing history, the pharmacist discovered that the pharmacy had previously dispensed one fill of two vials (for weeks 0 and 2) and a second fill of two vials (for week 6). The pharmacist identified an error with the second fill, because the pharmacy should have dispensed only one vial for week 6, which would have been a 56 day (or 8 weeks) supply. The pharmacist called the infusion center that administered the medication, and the infusion center staff confirmed they still had one vial on hand for the next infusion (due 8 weeks after the dose given on week 6). The refill order was canceled.

Many specialty medications used for autoimmune conditions have a different dosing frequency for induction doses than the maintenance doses. For this pharmacy, the dispensing system automatically populated the refill quantity to be the same quantity and day supply as was dispensed for the previous fill.

ISMP surveyed 27 specialty pharmacies in 2021 to learn about medication quantity and package size errors. One of the most common types of errors reported were those related to confusion with induction doses. To reduce the risk of errors with induction doses, add dispensing software notes to alert staff about correct dispensing procedures for applicable medications. Consider entering two prescriptions into the dispensing software for medications that change frequency over time: enter one prescription for induction doses and one prescription for maintenance doses. Dispense the induction dose prescription first, and when it is completed, dispense the maintenance dose prescription.

Patient drank albuterol nebulization solution. A non-English speaking patient

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to evaluate whether the CDS built within EHRs appropriately support vaccine prescribing in accordance with the Advisory Committee on Immunization Practices' (ACIP) recommendations.

- Use barcode scanning technology for verification prior to vaccine administration. Although adoption of this safeguard at the point of administration lags in pharmacies and other outpatient settings, implementation of barcode medication administration is a well proven error prevention strategy that will help deliver maximum medication safety benefit to patients.

Purchase from different manufacturers

- Investigate purchasing differing age-specific formulations of the same vaccine from different manufacturers to help distinguish them.

Store separately

- Separate adult and pediatric vaccine storage on different shelves in bins properly labeled with the corresponding age formulation.
- Do not store vaccines with similar names or abbreviations, or overlapping components (e.g., DTaP, Tdap, TD, Td) right next to each other.
- For vaccines that come in prefilled syringes, consider storing them in their carton, especially for age-dependent formulations that do not display the intended age range or age group (e.g., pediatric, adult) on the syringe label.
- Assign a staff person to routinely go through the contents of the vaccine bins, opening each carton and making sure no vaccines were incorrectly returned to stock, confirming the intended formulations are still stored separately, and checking that the vaccines have not expired.

Verify identity, age, and vaccine(s) requested

- When checking in a patient 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 ask which vaccine(s) they have requested. Repeat this process immediately prior to vaccination.
- Ask patients and/or caregivers to bring up-to-date vaccination records to their appointment so they may be reviewed and compared to the EHR or patient profile.
- Check the patient's profile/medical record and the state and/or local immunization information system prior to vaccination to ensure the patient requires the vaccine.

Label syringes

- For vaccines that do not come in prefilled syringes, clearly label all prepared syringes (e.g., vaccine name, dose).
- To facilitate labeling, print patient-specific labels with barcodes or provide practitioners who prepare the vaccines with strips of preprinted labels that differentiate adult or pediatric formulations and doses for each vaccine.

Engage the patient

- Involve the parent, caregiver, or patient in verifying the vaccine, formulation, and dose by reviewing the label to confirm the correct vaccine. Providing the vaccine information statement (VIS) and reading the medication name and age formulation in the patient's, parent's, or caregiver's preferred language can provide an additional opportunity for both parties to stop and question if something does not seem right.

Document the vaccine(s)

- Document the lot number and expiration date prior to vaccine administration; this is often the step during which healthcare workers detect an error that can be mitigated. Document administration afterwards in the patient's profile, on vaccination records, and in state or other immunization information databases.

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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 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 written 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 and it is uncertain if the patient received education on how to take this new medication. The pharmacy was made aware that the patient was drinking the albuterol nebulization solution as dispensed in a plastic nebulization solution container, which the patient described as a "syringe." Fortunately, the patient did not experience any side effects.

When a patient is ordered nebulization treatment at home, the prescriber, nurse, and pharmacist must check if the patient already has a nebulizer at home. If the patient does not have a nebulizer, practitioners must work with the patient and their insurance company to verify the cost will be covered. Once coverage or the patient's ability to pay for the nebulizer is verified, a prescription should be provided to the patient.

For non-English speaking patients, a medical interpreter should be used to communicate instructions to the patient and ensure clarity about how to use or take the medication. Counseling for all new prescriptions for nebulizers and medications used with nebulizers should be mandatory and provided to the patient and caregivers using the teach-back method to confirm understanding of how to use the medication and any associated device, such as a nebulizer. In addition, pharmacies should print labels and patient educational material in the patient's preferred language.

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Educate practitioners

- When bringing in new vaccine products, including during shortages, educate staff about the new vaccine product, highlighting its storage location, packaging, indication, and the intended age group.
- In locations where vaccines are prescribed, dispensed, and administered, provide resources that list the indication and schedules for routine and catch-up vaccinations.
- Use trained providers with demonstrated vaccination competencies to educate staff prior to allowing them to vaccinate patients.
- Consider focusing on a "vaccine of the month" during staff meetings, huddles, and/or other pharmacy communication tools (e.g., newsletter) to draw attention to the vaccine. Review the storage location, packaging, indication, and intended age group, highlighting when there are pediatric and adult formulations. Gather feedback from staff by asking them how this vaccine has caused confusion and led to errors, and make adjustments as needed.
- Share impactful stories and recognize staff for good catches, describing how the event was averted to prevent future close calls or actual events.
- Use this document, ***Staff Educational Topics and Teaching Points to Prevent Errors During Vaccine Administration*** (www.ismp.org/ext/55) as a teaching tool.

Report vaccine-related errors

- Report vaccine errors internally as well as to the Vaccine Adverse Event Reporting System (https://vaers.hhs.gov) operated by the US Food and Drug Administration (FDA) and CDC. ISMP also asks providers to report vaccination errors to the *ISMP VERP* (www.ismp.org/report-medication-error).

Recommendations for FDA and manufacturers

- We encourage manufacturers and regulators to review labeling strategies to reduce the risk of age-related vaccine mix-ups.
- Prominently display **PEDIATRIC** or **ADULT** (or **ADOLESCENT/ADULT** or **PEDIATRIC/ADOLESCENT**) formulations in a different color bold font on the top of the cartons, vials, and on syringe labels.
- For vaccines and other biologics, federal regulations require manufacturers to place the product's proper (generic) name above the brand name (www.ismp.org/ext/988). The font size and typeface of the proper name must be at least as prominent as the font size and typeface used in designating the trademark and trade name. However, when reading a label, people generally start from the top, and once they think they have identified the product, they tend to stop reading. Thus, practitioners can overlook critical information, including the vaccine's brand name. While not supported by FDA, for vaccines that have different brand names for vaccine formulations, displaying the brand name prominently and higher on the carton label and vial could help differentiate formulations that have similar generic names.
- For vaccines that do not come in ready-to-use prefilled syringes, provide pharmacists and vaccine administration staff with preprinted labels (in the carton) that include the vaccine name, dose, and intended age group.

Your *Reports* at *Work*

Important safety news for pets! Thanks to your reports, topical fluorouracil (**CARAC**, **EFUDEX**, **TOLAK**) labeling is being updated to warn patients about accidental exposure to pets, which can lead to severe toxicity and death (www.ismp.org/ext/980). These products are often used to treat actinic or solar keratosis or basal cell carcinomas. All too often, prescribers are unaware that fluorouracil is extremely toxic to dogs and cats if ingested, so they do not provide patients with warnings. Tragedy can happen when a pet licks the owner's skin where the medication has been applied, or chews the fluorouracil container. Even small amounts of fluorouracil can be toxic to dogs and cats. We brought the issue to the attention of USP and the US Food and Drug Administration (FDA).

FDA is now requiring topical fluorouracil manufacturers to revise their prescribing information, carton labeling, and container labels to warn about accidental pet exposures. For example, Bausch Health has updated the Efudex solution and cream packaging to state that the product may be fatal if a pet licks or ingests fluorouracil (**Figure 1**). The label and packaging will now warn patients to avoid allowing the pet to come in contact with the tube or the patient's skin, and to store and dispose of the product out of the reach of pets. Prescribers and pharmacists should educate patients to take care to prevent exposing pets to the medication.

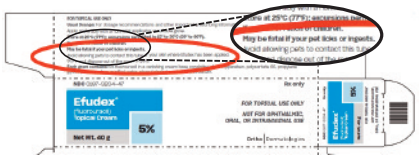

Figure 1. Efudex and other fluorouracil topicals now have warnings regarding toxicity to pets.

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ISMP Medication Safety Alert!® ActionAgenda

One of the most important ways to prevent medication errors is to learn about problems that have occurred in other organizations and to use that information to prevent similar problems at your practice site. To promote such a process, the following selected agenda items have been prepared for you and your staff to stimulate discussion and collaborative action to reduce the risk of medication errors. These agenda topics appeared in the *ISMP Medication Safety Alert! Community/Ambulatory Care* between May 2022 and August 2022. Each item includes a brief description of the medication safety problem, recommendations to reduce the risk of errors, and the issue to locate additional information. The *Action Agenda* is also available for download in Excel and Word formats at: www.ismp.org/node/41110.

Key: ⚠ — ISMP high-alert medication

Issue	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Added risk of age-related mix-ups now that younger patients can receive coronavirus disease 2019 (COVID-19) vaccines					
06/22	With the expanded emergency use authorization (EUA) for patients as young as 6 months old, there are now three age groups, many with different doses and dosing schedules, that are eligible for COVID-19 vaccinations (www.ismp.org/ext/934). As seen previously in other age groups, mix-ups have occurred with the youngest age group.	Refer to COVID-19 vaccine information from Moderna (www.ismp.org/ext/995) and Pfizer-BioNTech (www.ismp.org/ext/937) for guidance on age-related dosing and vaccination schedules. Segregate storage of the vaccines; verify patient identity, age, and the vaccine(s) requested; verify the vaccine history; label vaccine syringes; employ barcode technology prior to dispensing and administration; and report any vaccine errors.			
Numerous wrong dose errors with PAXLOVID (nirmatrelvir and ritonavir)					
06/22 08/22	Paxlovid requires dose modification for patients with moderate renal impairment, which initially required pharmacists to remove nirmatrelvir tablets from blister cards prior to dispensing. In April 2022, a reduced-dose pack became available, but errors continue, including prescribing or dispensing the wrong strength, improper renal dosing, and self-administration errors due to the lack of patient counseling and confusing blister pack instructions.	On drop-down menus, indicate the strength of Paxlovid as a 300 mg and 100 mg dose pack, or for moderate renal impairment, as a 150 mg and 100 mg dose pack. Confirm the patient's renal function before prescribing or dispensing. Educate practitioners about the reduced-dose blister pack for patients with moderate renal impairment. Mark Paxlovid prescriptions for mandatory patient education. Provide patients with the updated *Fact Sheet for Patients, Parents, and Caregivers* (www.ismp.org/ext/968).			
Pen injectors need pen needles					
05/22	Omitted doses and reused needles have been reported when pen needles were not prescribed and/or dispensed along with pen devices (www.ismp.org/node/31803). Some events were attributed to dispensing the wrong pen needles and unfamiliarity with the pen injector.	Check state laws to determine if a prescription is required to dispense pen needles. Create order sets that include pen needles. Remind patients to pick up BOTH the pen injector and needles from the pharmacy, and educate patients regarding how to use the pen device.			

Issue	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Wrong dosing unit used in directions for PRALUENT (alirocumab)					
07/22	A prescription for Praluent 150 mg/mL prefilled pen was dispensed with the directions "Inject 1 mg under the skin every 2 weeks" instead of directions to "Inject 1 mL under the skin every 2 weeks." This product is available as a single-use prefilled pen device, and the entire contents of the pen should be administered for a dose (1 mL total). It would be impossible to measure 1 mg since the pen doesn't have dose markings or a mechanism to select a specific mg.	Prescribers and pharmacies should implement a standardized *sig* code or directions for injectable products. Make sure the directions match up with how the drug device is designed and how the prescribed dose is delivered. Conduct a proactive risk assessment with new products. Educate staff about risk of *sig* errors and provide a reference tool indicating how directions and dosages should be relayed to the patient on the label (e.g., mg, mL, pen). Educate patients using the teach-back method.			
Common workaround contributes to wrong strength error with JAKAFI (ruxolitinib)					
06/22 ⚠	A prescription for Jakafi 5 mg tablets was mistakenly filled with 15 mg tablets. The pharmacy label for Jakafi 5 mg tablets was placed on the manufacture's bottle of Jakafi 15 mg tablets. The pharmacist overrode the barcode alert during verification assuming the product's barcode information was not in the pharmacy system. Pharmacists had become accustomed to bypassing barcode alerts when a product's barcode information was not in the pharmacy system.	Test new products' barcodes to make sure they will scan properly. Update the pharmacy system as necessary. Work with staff to uncover and fix the system-based reasons for workarounds. Track and review data from the barcode scanning system, including the percent of medications with an unreadable barcode, scanning compliance rates, and overridden alerts. Use this data to identify and address any barriers to using the technology safely and effectively.			
New concentration for topiramate (EPRONTIA) oral solution may cause confusion					
05/22 ⚠	Eprontia is available in a concentration of 25 mg/mL. This differs from commonly compounded concentrations. The American Society of Health-System Pharmacists' (ASHP) Standardize 4 Safety initiative (www.ismp.org/ext/922) recommends a concentration of 20 mg/mL. However, some organizations also compound 6 mg/mL for smaller children to make doses easier to measure. We are concerned about the risk of wrong concentration errors. This is especially concerning for patients prescribed the 6 mg/mL concentration, as a significant overdose could occur.	Establish a proactive plan to convert to the commercially available product. Identify patients currently receiving an extemporaneous formulation of topiramate. Convert patients to the new concentration in a defined period of time. Conversion charts should be prepared and checked, and the new strength and volume of each dose should be communicated to providers and patients before prescription conversion. Consider tagging prescriptions for mandatory patient education. Use the teach-back method to educate patients on the new concentration, the corresponding volumetric dose, and how to measure each dose.			

Issue	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Different concentrations of oral liquid baclofen (FLEQSUVY, OZOBAX) can cause confusion and lead to errors					
06/22	Fleqsuvy oral suspension is available in a concentration of 25 mg/5 mL (5 mg/mL). Ozobax is available in a concentration of 5 mg/5 mL (1 mg/mL). The Ozobax label lists the concentration as "5 mg/5 mL," which could be confused with the 5 mg/mL concentration of Fleqsuvy. ASHP (www.ismp.org/ext/922) recommends a concentration of 5 mg/mL for compounded baclofen oral liquid prescriptions.	Configure prescribing and pharmacy computer systems to list the concentration of the products (i.e., 25 mg/5 mL [5 mg/mL] or 5 mg/5 mL [1 mg/mL]). Consider applying auxiliary labels to the medication bottles to warn against confusion. Doses should be prescribed in mg, and practitioners should clarify and discuss doses based on the mg dose. Use the teach-back method to educate patients.			
Workflow vulnerability leads to missed drug-drug interaction between COSENTYX (secukinumab) and XELJANZ (tofacitinib)					
08/22	A patient called to set up delivery of Cosentyx. The patient told the pharmacist that they started taking Xeljanz samples, which should not be used with Cosentyx. While waiting for clarification from the prescriber, another pharmacist saw the Cosentyx order in the verification queue and filled it. Despite adding Xeljanz to the patient's medication history, the pharmacy system did not alert of the drug interaction.	Explore ways to electronically flag a prescription that is awaiting follow-up. Establish a process to communicate issues with orders (e.g., adding system notes, direct communication with colleagues). Update the patient's profile with new drugs they are taking. Test the computer system at various stages of the workflow to determine if alerts will fire when a patient's medication history is updated.			
Poor fax quality contributes to specialty pharmacy error					
05/22	A specialty pharmacy dispensed the wrong dose of somatropin for a pediatric patient because random marks on the prescription obscured critical information. The prescription had been faxed, and due to significant fax noise, the intended dose of 0.6 mg was misread as 0.8 mg. The start date was also misread as 12/8 instead of 12/6. Fortunately, the patient was not harmed.	Check the fax order against the original if available. Call prescribers to confirm faxed medications if critical information is obscured by fax noise. Maintain fax machines, scanners, and printers according to the manufacturers' recommendations. Notify the prescriber if it appears their equipment may be contributing to the poor fax quality.			
Personal practice changes made after learning firsthand about medication errors at ISMP					
05/22	A survey of past and current ISMP fellows and staff revealed common topics they have (or would have) applied in practice after learning about errors from practitioners who have reported them to ISMP. Insights from ISMP past and current fellows and staff can serve as a roadmap for change.	Implement the practice changes ISMP fellows and staff identified: 1) make error reporting a priority; 2) investigate events completely; 3) share risks with colleagues; 4) conduct targeted education for staff (e.g., key medication safety initiatives) and patients; and 5) promote a Just Culture.			