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Educating the Healthcare Community About Safe Medication Practices

Do not cut scopolamine or cloNIDine patches to deliver partial doses

A children's hospital reported two cases in which prescribers advised parents to cut a child's scopolamine or clo**NID**ine patch to provide a reduced dose of medication. However, neither patch should have been cut as this can impact the drug delivery rate and may result in patients receiving an increased dose due to additional drug leaking out from the reservoir. We wrote about similar events in our May 2021 newsletter article, *Analysis of transdermal medication patch errors uncovers a "patchwork" of safety challenges*. Serious toxic effects are possible when a patch is cut and can result in a scopolamine or clo**NID**ine overdose. Details of the two recent events follow.

In the first case, a prescriber told a child's dad to use tape to cover three-quarters of a scopolamine transdermal system (patch) to provide a partial dose (i.e., one-quarter of a patch) to treat excess secretions. When the dad asked for clarification about how to tape it, the prescriber stated to cut the scopolamine patch instead and place one-quarter of the patch on the child. A statement on the back of the patch packaging says, "Do not cut the transdermal system" (**Figure 1**), but the small font size along with a lot of other text makes this warning easy to overlook. Once home, the dad cut and placed one-quarter of the patch behind his child's ear. Three hours later, he noticed the child was pursing her lips and having trouble swallowing. The dad became concerned that this was due to side effects from the scopolamine patch and removed it. Within a few hours, the child returned to baseline.

Figure 1. The back of the scopolamine patch pouch (right, step number 2 in bold print) states, "Do not cut the transdermal system." However, this is in a tiny font and buried within text, which makes it difficult to read. Also, there is no warning on the front of the scopolamine pouch (left).

In the second case, a prescriber ordered a clo**NID**ine transdermal system (patch) for a child to treat hypertension. The child's mom messaged the prescriber through a patient portal to notify them that her child was experiencing somnolence and bradycardia. The prescriber replied to the message, instructing the mom to cut the clo**NID**ine patch in half to reduce the dose and lessen the side effects. The next morning, the prescriber sent a follow-up message, stating not to cut the patch in half, but to place tape over half of the patch to provide the reduced dose. However, the mom had already placed the cut patch on her child and was unaware the prescriber had sent a new message in the portal. The clo**NID**ine patch package does not include a warning to avoid cutting it (**Figure 2**, page 2).

After approximately 24 hours, the mom saw the updated instructions, removed the cut patch, and applied a new patch with tape covering half. The child continued to experience somnolence and

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SAFETY wires

Does IV push equate to IV bolus? We heard from a colleague outside the United States that the terms "intravenous (IV) push" and "IV bolus" are used synonymously in their country. However, as discussed in the ISMP ***Safe Practice Guidelines for Adult IV Push Medications***, the use of ambiguous terminology such as IV push, IV bolus, "slow" or "fast" IV push, often leads to the need for personal interpretation, especially if the order is lacking a rate of administration. So, is there a difference between IV push and IV bolus? The answer is, "Yes."

IV push is a method of administration using a syringe, usually under pressure, connected to an IV access device which includes a specific rate of administration; this may include a manually administered IV bolus dose in an emergency. On the other hand, IV bolus is a dose of medication or fluid given rapidly over a short, defined period. Depending on the medication or fluid, a bolus dose (also sometimes called a loading dose) could be prescribed and administered through alternative routes (e.g., oral bolus dose) and may precede a maintenance dose.

Create or review policies and procedures and organizational guidelines that clearly define IV push versus IV bolus. Ensure all systems (e.g., electronic health record, smart infusion pump drug library) reflect accurate terminology and include a rate of administration on the medication administration record (MAR) for all IV medication orders. Educate staff about the differences between IV push (i.e., method of administration) versus IV bolus (i.e., dose).

Patient almost given CARBOplatin instead of nivolumab. A physician prescribed an **OPDIVO** (nivolumab) infusion for a patient in an outpatient infusion center, but the patient almost received a **CARBO**platin infusion prescribed for a

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bradycardia, so the mom called the prescriber's office, and they instructed her to remove the patch. Unfortunately, the child's symptoms worsened over the next few hours. The parents drove the child to the emergency department (ED), but en route, the child became unresponsive to sternal rub, so they called 911. An ambulance met the parents and drove the child to the ED. He was admitted for observation, and fortunately returned to baseline in less than 24 hours.

Figure 2. The front (left) and back (right) of the clo**NID**ine transdermal system package does not include a warning to avoid cutting the patch.

Alza, the manufacturer of the proprietary (brand) name product **CATAPRES-TTS** (clo**NID**ine), told us there is no indication that the Catapres-TTS patch can be cut and administered, nor that it can be used to deliver a partial dose. They noted that cutting, dividing, folding, or covering one portion of the patch to achieve lower incremental doses is not indicated according to the official labeling of the product and doing so could be hazardous since they do not know the exact amount of drug that will be absorbed and cannot predict the activity/behavior and efficiency of the patch if part of it is covered, folded, or cut.

Recommendations

We have notified the US Food and Drug Administration (FDA) to recommend that manufacturers of scopolamine and clo**NID**ine transdermal systems update the packages to include a prominent warning to not cut the patch. If patients require a dose less than what the full patch provides, organizations should consider if alternative dosage formulations or medications may be more appropriate. Review the prescribing information for patches on the formulary and follow the manufacturer's recommendations regarding the safety and efficacy of cutting patches. If a patch cannot be cut, build a warning, "Do NOT cut patch," into medication order sentences and outpatient prescriptions, and ensure this information is visible on the medication administration record and discharge instructions. When appropriate, consider restricting prescribers from being able to order partial dosages (e.g., similar to controlled release tablets, only allow them to order the entire dosage form). Educate practitioners and patients to ensure they are aware of which patches cannot be cut due to the impact on the drug delivery rate.

While it is clear that these patches should not be cut, we have heard that some organizations cover part of the patch using an adhesive bandage, or only remove half of the backing and cover the remainder with an occlusive dressing prior to administration. This process is also not without risk, especially if asking patients or parents to do this at home. It is important to understand that the dressing could be accidentally removed, or a child could touch and displace it, exposing a larger surface area of the patch, and increasing the risk of an overdose. In addition, clo**NID**ine manufacturers (e.g., Teva, Mylan, TruPharma, Dr. Reddy's, Mayne) do not have data to support covering a portion of the patch to provide an incremental dose, and it is unknown if the medication is dispersed evenly from the patch. If organizations are still considering covering a portion of a patch, we recommend completing a failure mode and effects analysis (FMEA) to determine potential failure points and mitigation strategies, and to monitor patients closely for side effects.

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different patient. The pharmacy dispensed both infusions in brown, opaque bags to protect them from light (**Figure 1**). The pharmacy system was set up to print two patient-specific labels with barcodes for each medication: one to affix to the compounded infusion and the other to be placed on the brown bag. At some point, the infusion bags were inadvertently switched. Prior to administration, the nurse noticed that the intravenous (IV) tubing that the pharmacy had primed and attached to the infusion (labeled as nivolumab on the brown bag) was not the appropriate tubing. The nurse removed the infusion from the brown bag and identified the error. The nurse contacted the pharmacy and received the correct infusion before it was time for administration.

Figure 1. These are examples of opaque IV bags that are placed over infusions that contain a medication that needs to be protected from light.

In our September 2024 article, *The dark side—safety issues when protecting medications from light*, we shared a similar error along with recommendations to safeguard this process. Review prescribing information, published literature, and drug information resources to identify medications on your organization's formulary that require protection from light during specific steps of the medication-use process. To limit the overuse of brown bags covering infusions that do not need to be protected from light during administration, refer to resources such as *Hospital Pharmacy's Light-Sensitive Injectable Prescription Drugs—2022*. According to this reference, **CARBO**platin does not require light protection during administration.

When available, practitioners should scan the manufacturer's barcode directly on the product to prevent the risk of a false positive barcode scan from a pharmacy-applied

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Call to action: Please take our short survey on parenteral nutrition (PN) by January 23, 2025!

what's in a Name?

The "-prost" drug stem name

Medications that end with the suffix "-prost" belong to the prostaglandin derivatives drug class. Prostaglandins are lipid-like hormones that are naturally produced by the body and play an important role in regulating homeostasis. Therefore, medications within this class have various effects on the body. However, the medications that will be discussed in this article will focus on the topical prostaglandin derivatives (ophthalmic agents) that are used to increase aqueous outflow to reduce intraocular pressure (IOP), an associated risk factor of glaucoma.

Currently, there are four single-agent and one combination topical prostaglandin derivative medications approved for use in the United States (**Table 1**). The combination product (latanoprost and netarsudil) includes a Rho kinase inhibitor that is also indicated for the treatment of elevated IOP. There are other prostaglandin derivatives that are used for other indications such as, dinoprostone (**CERVIDIL**, **PREPIDIL**) and mi**SOPROST**ol (**CYTOTEC**), which are used to dilate the cervix of pregnant women; iloprost (**VENTAVIS**), treprostinil (**REMODULIN**), and epoprostenol (**FLOLAN**), which are used to treat pulmonary hypertension; and alprostadil, used in adults for erectile dysfunction (**EDEX**) and in infants for ductus arteriosus patency (**PROSTIN VR**). These medications will not be included in the table below or further discussed in this article.

Table 1. Medications with the suffix "-prost" available in the United States.

Generic Name(s)	Brand Name(s)
bimatoprost	**LATISSE**, **LUMIGAN**
latanoprost	**IYUZEH**, **XALATAN**, **XELPROS**
latanoprost and netarsudil	**ROCKLATAN**
lantanoprostene bunod	**VYZULTA**
tafluprost	**ZIOPTAN**
travoprost	**TRAVATAN Z**

Topical prostaglandins are typically administered with an applicator by instilling one drop every evening in the affected eye(s). Patients who wear contact lenses for vision correction should remove them before administering the medication and wait 15 minutes before reinserting. Topical prostaglandins are typically well tolerated although browning of the iris, bacterial keratitis, and inflammation of the eye may occur with use. In addition, bimatoprost may increase the length, thickness, and/or number of eyelashes in the eye being treated.

Once the medication has been started, patients using this class of medications should meet with their provider regularly regarding IOP monitoring and excessive iris pigmentation. Common side effects include headaches, stinging of the eye, eye irritation, and ocular hyperemia (excessive dilatation/engorgement of ocular blood vessels). Patients should be aware that nonsteroidal anti-inflammatory drugs (NSAIDs) may reduce the effectiveness of ophthalmic prostaglandins and should explore the use of alternative analgesics with their healthcare providers.

what's in a *Name?* is a regular feature highlighting common drug name stems to promote their recognition. With permission, ISMP has borrowed the idea from the French publication, *Prescrire International*, a journal that provides comprehensive and reliable information about medications that are available in Europe.

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patient label. If a pharmacy-generated label with a barcode is needed (e.g., compounded infusion), it should be affixed directly on the product container (e.g., syringe, infusion bag). If light-protective bags are needed for medication administration, they should still be clear enough to allow practitioners to read the medication label through the bag and have visibility of the inner product for monitoring the infusion during administration.

This is how bad things happen. An elderly patient with acute coronary syndrome was admitted to the emergency department (ED). The ED provider ordered four tablets of chewable aspirin (81 mg each); however, the patient did not have their dentures and was unable to chew. Since oral syringes were not readily available, the nurse dissolved the aspirin in water and drew it up in a parenteral luer lock syringe. The nurse then handed the syringe to a student to administer to the patient without communicating the intended route. The student started to administer the medication intravenously (IV). After half of the dose had been administered, the nurse realized the error and stopped the student from injecting the remaining dose.

We have previously warned about wrong route errors. To prevent these types of errors, organizations should purchase, store, and maintain an adequate supply of oral/ENFit syringes in all patient care areas where oral/enteral medications may be prepared and administered. Designate a department (i.e., pharmacy, nursing, materials management/supplies) to verify that oral/ENFit syringes are in stock and readily available with every monthly unit inspection. In our experience, even in hospitals that are committed to stocking oral/ENFit syringes, they are not consistently kept in stock. Educate staff about why parenteral syringes should never be used to prepare oral medications. If a medication is not administered immediately by the individual who prepared it, the syringe should be labeled (e.g., medication name, dose, route, expiration). In addition, if a syringe is handed to another practitioner to administer, this information also needs to be verbally communicated.

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