April 2026 | Volume 25 ▪ Issue 4

ISMP Institute for Safe Medication Practices
An ECRI Company

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

Clindamycin—What to know about prophylactic use for dental procedures

Problem: ISMP received a report from a patient's son describing his mother's death following antibiotic use for a dental procedure. According to the report, his mother, who was otherwise in good health, was prescribed clindamycin for a routine dental procedure. Within several days, she developed a severe *Clostridioides difficile* (*C. diff*) infection and subsequently died. The reporter stated that neither the patient nor her family had been counseled about the potential risks associated with clindamycin therapy, including the signs and symptoms of *C. diff* infection, nor were alternative antibiotic options discussed. While ISMP was unable to independently verify all clinical details of this case, the reported outcome is consistent with well-documented safety concerns associated with clindamycin use, particularly among older adults.

AHA and ADA Guidance

The 2021 American Heart Association (AHA) scientific statement on infective endocarditis prevention no longer recommends clindamycin as an alternative agent for antibiotic prophylaxis prior to dental procedures for patients allergic to penicillin or ampicillin because it "may cause more frequent and severe reactions."[1] The American Dental Association (ADA) aligns with the AHA and supports antibiotic stewardship in dentistry, emphasizing appropriate use only when evidence-based indications exist. Though age-based warnings are not explicitly stated in the ADA guideline itself, the ADA cites the AHA guidance about infective endocarditis prophylaxis and stresses limiting antibiotic use.[2]

In dental practice, antibiotic prophylaxis should be reserved for patients at the highest risk of serious infective endocarditis, such as those with prosthetic heart valves, prior infective endocarditis, certain congenital heart diseases, or cardiac transplant recipients with valvopathy. Routine antibiotic prophylaxis for lower-risk conditions, including mitral valve prolapse, is no longer recommended.[1-2] While clindamycin has historically been used as an alternative for patients with penicillin allergies, its use carries a higher risk of adverse reactions, including *C. diff* infection and antibiotic resistance.

Clindamycin and *C. diff*

Multiple epidemiologic studies and systematic reviews show that clindamycin is strongly associated with *C. diff* infection compared with many other antibiotics.[3-4] Reports show that people aged 65 and older are more likely to develop severe complications and death from *C. diff* infection.[5] Risk increases substantially with age, underlying conditions, and antibiotic exposure.[5] Alternatives, such as amoxicillin or, for patients with penicillin allergy, cephalexin (for penicillin allergy without anaphylaxis), azithromycin, clarithromycin, or doxycycline, exist.[1-2] Careful documentation of allergy history and timing of administration is essential, and prophylaxis should be reserved strictly for patients meeting the high-risk criteria.[1-2] Ongoing gaps in guideline dissemination, prescriber education, patient counseling, and standardized prescribing practices place vulnerable populations at preventable risk.

Safe Practice Recommendations: To mitigate the risk, dental offices and ambulatory care settings that prescribe, dispense, and administer prophylactic antibiotics should regularly review and adopt current evidence-based guidance, including the 2021 AHA infective endocarditis prevention recommendations

continued on page 2 — Clindamycin >

SAFETY briefs

Look-alike vancomycin for oral solution cartons. A practitioner recently reported that cartons of vancomycin for oral solution 50 mg/mL and 25 mg/mL, both manufactured by Wilshire Pharmaceuticals, were inadvertently stored in the same refrigerator bin. Only the 50 mg/mL product was meant to be in the bin. As a result, a carton of the 25 mg/mL product was accidentally retrieved, opened, and used for compounding.

When stored upright in a bin, both cartons' side panels appear nearly identical (**Figure 1**). The labeling for both products uses the same font style, size, and color (orange). The main difference between the two products is the labeling of the concentration on the carton's primary display panel as seen on DailyMed. The 50 mg/mL concentration is displayed in white font with a blue background, while the 25 mg/mL concentration appears in white font with an orange background.

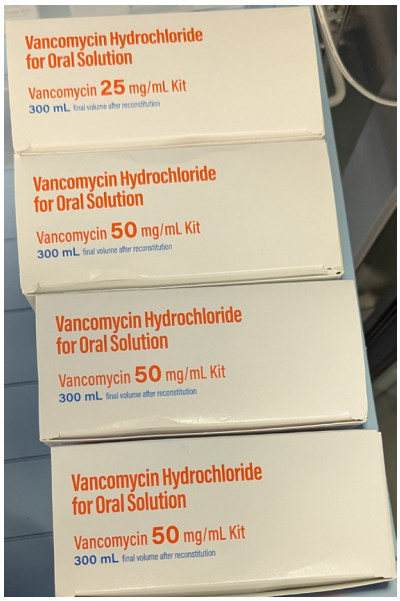

Figure 1. Look-alike carton side panels of vancomycin oral solution 25 mg/mL (top) and 50 mg/mL (bottom three), both by Wilshire Pharmaceuticals, stored upright, resulted in the wrong concentration being selected and prepared.

continued on page 2 — SAFETY briefs >

> Clindamycin — continued from page 1

and ADA antibiotic stewardship guidance, to eliminate outdated practices, such as routine prophylactic use of clindamycin for dental procedures. Ensure practitioners understand situations in which clindamycin is, and is not, indicated based on patient-specific needs. Establish clear treatment algorithms defining when prophylaxis is indicated, preferred first-line agents, and alternatives for patients with allergies.

Implement high-leverage system controls—such as standardized electronic health record (EHR) order sets, removal of clindamycin from default prophylaxis choices, and requirement for indication-based justification—to prevent inappropriate selection and ensure consistent, safe prescribing. Use standardized prescriptions and electronic order sets with clinical decision support to guide prescribers to select the appropriate antibiotic indication, dose, and duration based on patient-specific risk factors, such as age or prior *C. diff* infection. When community pharmacies are filling antibiotic prescriptions for dental procedures, ensure the drug, dose, and duration are appropriate based on the prescribed indication and patient-specific factors. If a patient has a contraindication or the pharmacist has a safety concern, the pharmacist should contact the prescriber to discuss and clarify if any changes to the prescription are needed prior to dispensing.

Provide ongoing education for dentists, prescribers, and community pharmacists, regarding updated antibiotic guidelines, stewardship principles, contraindications, and potential adverse effects to reinforce safe practice. When patients are prescribed and dispensed antibiotics for dental procedures, especially clindamycin, inform them about specific risks such as *C. diff* infection and early warning signs, including persistent or severe diarrhea, abdominal pain or cramping, fever, nausea, or signs of dehydration, and clearly instruct them when to seek medical care.

References

1) Wilson WR, Gewitz M, Lockhart PB, et al. Prevention of viridans group streptococcal infective endocarditis: a scientific statement from the American Heart Association. *Circulation.* 2021;143(20):e963-78.
2) Vidovic Juras D, Skrinjar I, Kriznik T, et al. Antibiotic prophylaxis prior to dental procedures. *Dent J (Basel).* 2024;12(11):364.
3) Miller AC, Arakkal AT, Sewell DK, et al. Comparison of different antibiotics and the risk for community-associated *Clostridioides difficile* infection: a case-control study. *Open Forum Infect Dis.* 2023;10(8):ofad413.
4) Brown KA, Khanafer N, Daneman N, Fisman DN. Meta-analysis of antibiotics and the risk of community-associated *Clostridium difficile* infection. *Antimicrob Agents Chemother.* 2013;57(5):2326-32.
5) Lessa FC, Mu Y, Bamberg WM, et al. Burden of Clostridium difficile infection in the United States. *N Engl J Med.* 2015;372(9):825-834.

Multiple factors contribute to the dispensing of the wrong opioid

Problem: A pharmacist recently reported that a prescription for oxy**CODONE** and acetaminophen 10 mg/325 mg was filled with a combination of oxy**CODONE** and acetaminophen 10 mg/325 mg and **HYDRO**codone and acetaminophen 10 mg/325 mg. A contributing factor to the error was that the manufacturer bottles, both from Camber Pharmaceuticals, look similar (**Figure 1**, page 3). The reporter noted that while a vertical hash mark stripe and background color for the oxy**CODONE** and acetaminophen 10 mg/325 mg strength are blue, and the same features for **HYDRO**codone and acetaminophen 10 mg/325 mg are green, overall, the bottles remain too similar in appearance. Additionally, the drug names oxy**CODONE** and **HYDRO**codone have a history of confusion and appear on the ISMP List of Confused Drug Names and the FDA and ISMP Lists of Look-Alike Drug Names with Recommended Tall Man (Mixed Case) Letters.

The pharmacist also identified several other factors that contributed to the event. The tablets themselves look similar, with imprints that both start with the letter "T," making it more difficult to

continued on page 3 — Wrong opioid >

>SAFETY briefs cont'd from page 1

Several strategies can help prevent mix-ups. When possible, purchase products from different manufacturers to reduce the number of look-alike containers. If you currently have these products, consider storing them separately. Make sure staff are aware that they have been separated and where to locate the medications. Employ barcode scanning during dispensing and verification.

Incomplete vaccination following administration of liquid component only. Several primary care clinics within a health system have reported multiple medication errors involving **PENMENVY** (meningococcal groups A, B, C, W, and Y vaccine) in which only the liquid MenB component was administered to patients. Penmenvy is a meningococcal vaccine manufactured by GSK that is indicated for active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroups A, B, C, W, and Y in individuals 10 through 25 years of age. The product is supplied in cartons containing 10 vials of the MenACWY component lyophilized powder and 10 prefilled TIP-LOK syringes (luer lock syringes) containing the clear liquid MenB component (**Figure 1**).

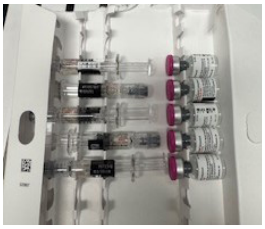

Figure 1. Penmenvy is supplied in cartons containing 10 vials of the MenACWY component lyophilized powder and 10 prefilled syringes containing the clear liquid MenB component. Five doses (5 vials and 5 syringes) remain in the carton pictured above.

To prepare the complete vaccine, practitioners must invert the prefilled syringe of the MenB component multiple times to form a homogeneous suspension. Next, they must unscrew the syringe cap by twisting it counterclockwise and connect the hub of a sterile needle to the luer lock adapter of the prefilled syringe. The practitioner should then slowly transfer the entire contents of the syringe into the vial containing the lyophilized MenACWY component. Without removing the needle from the vial, they must swirl the vial gently

continued on page 3 — >SAFETY briefs >

> **Wrong opioid** — continued from page 2

catch an error on visual inspection. The pharmacy was also very busy at the time of the event with staff managing multiple phone calls and working on prescriptions for multiple patients simultaneously.

Safe Practice Recommendations: Pharmacies should explore purchasing one product of a look-alike pair from a different manufacturer to reduce the number of look-alike containers. If you currently have these products, consider storing them separately; make sure staff are aware that they have been separated and where to locate the medications.

Design pharmacy space and workflow to minimize distractions, especially during data entry, filling, and pharmacist verification. Borrow a concept from the airline industry and create a "sterile cockpit" at each workstation to minimize unnecessary distractions and interruptions. Also, it is important that pharmacy staff work on one patient's prescriptions at a time. Generate prescription labels for one patient at a time, then work on one prescription at a time to minimize the risk of dispensing the wrong medication or affixing the wrong label to a bottle of medication. Baskets or trays can be used to keep labeled containers, stock bottles, and documentation for one patient together until final verification.

Figure 1. Look-alike bottles of oxy**CODONE** and acetaminophen 10 mg/325 mg (left) and **HYDRO**codone and acetaminophen 10 mg/325 mg (right), both from Camber Pharmaceuticals, were used to fill a prescription for oxy**CODONE** and acetaminophen 10 mg/325 mg.

Install and use barcode verification during the dispensing process. Scan each package or container (e.g., bottle, carton) used to fill a prescription. Configure the pharmacy system to alert the pharmacist during verification if barcode scanning was bypassed at any step. Additionally, standardized verification processes should be developed to guide the pharmacist's final verification of each medication.

At the point-of-sale, have the patient review the pharmacy label and contents of each prescription container to check that the medication is correct—even if this requires opening the bag. When a patient reports a potential or actual error, respond to the patient in a timely manner with transparency and honesty. The goal is to correct the error and minimize any harm or negative impact to the patient.

Special Announcement

Apply for Fellowship Opportunities

ISMP has two one-year fellowship programs available for healthcare practitioners. For more information and to submit an application, click here.

- **Ochsner Children's and ISMP Safe Medication Management Fellowship:** This opportunity is for a pharmacist to work onsite at Ochsner Health in New Orleans, LA, and remotely with ISMP throughout the year.
- **ISMP Safe Medication Management Fellowship:** This opportunity is for a healthcare practitioner (e.g., pharmacist, nurse, or physician) to work remotely with ISMP.

>SAFETY briefs cont'd from page 2

until the powder is completely dissolved (do not invert the vial or shake vigorously). After reconstitution, the vial is inverted to withdraw the entire contents, and then the full vaccine can be administered to the patient. Errors occur when practitioners incorrectly believe the prefilled syringe contains the complete vaccine, skip the reconstitution steps (listed above), and only administer the liquid component. When searching our error reporting databases, we found additional reports of this error involving Penmenvy.

We have written many times about the potential to administer only one component of two-component vaccines, including **SHINGRIX** (zoster vaccine recombinant, adjuvanted), **PENTACEL** (diphtheria and tetanus toxoids and acellular pertussis adsorbed, inactivated poliovirus and *Haemophilus* b conjugate vaccine), and **MENVEO** (meningococcal groups A, C, Y, W-135 diphtheria conjugate vaccine). These errors are serious because if unrecognized, which is certainly possible with these types of vaccines, individuals who do not receive a proper dose containing all components will not know they are unprotected.

To reduce the risk of errors with two-component vaccines, circle or highlight critical information on vaccine containers without obscuring the manufacturer's label information. Clearly label or distinguish each component if the manufacturer's label and/or packaging could mislead staff into believing either component is the complete vaccine itself. Establish a process to keep two-component vaccines together if storage requirements do not differ and dispense the products together in a bag or banded together with an auxiliary label to remind staff to use both components. Maximize the use of technology and require barcode scanning of both components of two-component vaccines prior to administration.

Editors: Michael J. Gaunt, PharmD; Shannon Bertagnoli, PharmD; Ann Shastay, MSN, RN, AOCN; Rita K. Jew, PharmD, MBA, BCPPS, FASHP. ISMP, 3959 Welsh Road, #364, Willow Grove, PA 19090. Email: ismpinfo@ismp.org; Tel: 215-947-7797.