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Infection control

Quandary: What to do for vaginal prep

It's a question ORs have faced for several years—what do you use for the vaginal prep when the patient is allergic to povidone iodine?

After Techni-Care (PCMX, or chloroxylenol) stopped being made in 2009, clinicians were left without a skin prep indicated for use in the genital area for iodine-allergic patients.

"There really is no good black and white answer," says Peggy SaBell, MS, RN, CIC, a member of the communications committee for the Association for Professionals in Infection Control and Epidemiology (APIC) and regional infection prevention and control director for Kaiser Permanente's Colorado region.

Nurses find themselves in a Catch 22: The skin prep is a mainstay in the prevention of surgical site infection, yet none of the alternatives currently on the market carries the appropriate label claim and manufacturers' instructions for the vaginal prep. Professional guidelines and regulations emphasize the importance of following manufacturers' instructions.

What are OR leaders to do? SaBell's advice: Gather a multidisciplinary team, examine the evidence, and make a decision that is best for your organization.

The evidence is not plentiful. Three alternative prep solutions have been the subject of small studies.

Chlorhexidine gluconate

The antiseptic 4% chlorhexidine gluconate (CHG), widely used as a skin prep for other indications, carries a warning label saying it should not be used in the genital area, meninges, or head and face.

There's strong evidence for CHG as a surgical skin prep for other areas of the body. One large study, published in 2010 in the *New England Journal of Medicine*, found a chlorhexidine-alcohol product compared with povidone-iodine scrub and paint resulted in a 41% lower surgical site infection rate.

In the only randomized controlled trial comparing 4% aqueous CHG with povidone iodine as a vaginal prep, by Patrick J. Culligan, MD, FACOG, FACS, and colleagues, 50 vaginal hysterectomy patients were randomized to have preoperative preps with 10% povidone iodine or 4% aqueous CHG. CHG was found to be more effective in decreasing bacterial colony counts.

"My study and others clearly show that it is safe and effective to use 4% aqueous CHG as a vaginal prep," Dr Culligan told OR *Manager*. He is director of urogynecology at the Atlantic Health System in New Jersey and professor of obstetrics and gynecology at the Mount Sinai School of Medicine in New York City.

Though Dr Culligan says he thinks 4% aqueous CHG could be safely used as a vaginal prep, he does not routinely use it in his own practice because a prep kit is not available.

In the study, the application method for CHG was similar to that for povidone iodine: a 2-minute vigorous scrub followed by a "paint" application; for CHG, the

Status of Techni-Care

The maker of Techni-Care (PCMX), taken off the market in 2009, may soon resume sales of a skin antiseptic with a claim for the surgical skin prep.

A representative of the manufacturer, Care-Tech Laboratories, St Louis, said in June that it has nearly completed the process of bringing its documentation system into conformance with the Food and Drug Administration's (FDA) requirements. The company suspended manufacture of its products in 2009 over regulatory issues.

Once that process is complete and audited by the FDA, the company expects to market Techni-Care again, according to Care-Tech customer service representative, Kim Miller.

She said Techni-Care would be labeled "nontoxic" and would carry no contraindications for its use on parts of the body. Once the product is released, she said it would take about 90 days to catch up with a large volume of back orders.

At the time manufacture ceased in 2009, Care-Tech stated that neither the FDA nor the company was aware of reports of injury or illness related to the products, and the FDA did not require a recall.

FDA regulatory framework for skin antiseptics

Skin antiseptics are regulated under the FDA's Tentative Final Monograph (TFM), issued in 1994.

TFM category	Description
Category I	Antimicrobial products generally recognized as safe and effective.
	Examples: Isopropyl alcohol 70%-91.3%, povidone iodine 5%-10%
Category II	Antimicrobial products not generally recognized as safe and effective.
	Example: Hexachlorophene
Category III	Available data are insufficient to classify as safe and effective.
	Examples: PCMX, triclosan, benzethonium chloride
NDA (new drug application)	If the proposed product has ingredients of concentrations not recognized as safe and effective in the TFM, it must undergo rigorous testing for safety and efficacy.
	Example: Chlorhexidine gluconate

Source: Food and Drug Administration. Tentative Final Monograph for Health-Care Drug Products (21 CFR Parts 333, 369). 1994.

OR Manager *acknowledges Travis Becker of CareFusion for assistance with this chart.*

scrub and paint used the same solution. The method was described in a response to a letter in the *American Journal of Obstetrics and Gynecology.*

What type of tissue?

Dr Culligan says much of the dilemma about use of CHG in the vagina springs from incorrect use of the term "mucosal" to refer to the lining of the vagina, which in fact is epithelial tissue. Common use of the term "vaginal mucosa" doesn't mean the vagina is a mucosal surface, he says.

An additional description is provided by Danny J. Schust, MD, a researcher at the University of Missouri School of Medicine, Columbia.

Unlike skin, he says, vaginal tissue is not keratinized, "and keratinization offers a lot of protections." He adds, "The ectocervix is a transition zone toward the single epithelial cell layer of the endocervix, and both of these would be exposed to vaginal application of CHG."

Gray's Anatomy, 40th edition, describes the vagina as "a fibromuscular tube lined by nonkeratinized stratified epithelium." The description continues, "There are no mucous glands, but a fluid transudate from the lamina propria and mucus from the cervical glands lubricate the vagina."

Adverse reactions to CHG?

Are adverse reactions a concern with 4% CHG in the vaginal area?

"I have never seen an adverse reaction," Dr Culligan says. "There are a few case

About off-label use

Those with questions about off-label use might find a statement from the American Academy of Pediatrics helpful. The statement was issued because in the care of children, products often come with the disclaimer, "safety and efficacy in pediatric patients have not been established."

Summary of key points

- "Off-label use does not imply an improper use and certainly does not imply an illegal use or a contraindication based on evidence." That's distinct from explicit warnings or contraindications against uses, which are important medically and legally.
- "The FDA regulates the manufacture, labeling, and promotion of drugs; it does not regulate the use of drugs by physicians (ie, the practice of medicine)."
- "The practitioner who prescribes a drug is responsible for deciding which drug and dosing regimen the patient will receive and for what purposes."
- "The off-label use of a drug should be based on sound scientific evidence, expert medical judgment, or published literature. New uses, doses, or indications will not be approved by the FDA until substantial evidence of safety and effectiveness for that indication or age group is submitted to the FDA. This may take years or may never occur."
- Off-label use should be conducted in good faith and without fraudulent intent.

Reference

American Academy of Pediatrics. Uses of drugs not described in the package insert (off-label uses). *Pediatrics.* 2002;110:181-183.

reports describing adverse reactions, but by definition, case reports describe rare events. There are also case reports describing adverse reactions to iodine."

Among the case reports is one from 2004 in which a healthy premenopausal woman developed desquamating vaginal tissue from a CHG prep. There are also a few reports of serious allergic reactions to CHG used in the genital area, including anaphylaxis. A 2009 case report from the UK describes 3 patients who collapsed in the recovery room after urological surgery with reactions attributed to use of a CHG-containing lubricant gel. In a 2008 report from Korea, a patient had an anaphylactic reaction during a digital rectal exam with chlorhexidine jelly. He later tested positive for a chlorhexidine allergy. In a 2007 report from the Netherlands, 3 men developed anaphylactic reactions attributed to a gel used during urinary catheterization.

On the other hand, Dr Culligan's article refers to large series where there were no adverse reactions to CHG used in the vaginal area for preventing infections in mothers and infants during childbirth. In series involving 1,024 patients and 6,964 patients, no adverse reactions were reported. Solutions used were 0.2% CHG and 0.25% CHG. A third series, involving 600 women in Africa who received vaginal lavage with CHG or no treatment during labor, reported comparable low rates of itching, stinging, or other complaints for both groups.

Baby shampoo

Some opt to use baby shampoo, based on a small study by Linda A. Lewis, MD, and colleagues from Stanford University. The study compared postop infection rates for patients having vaginal preps with either povidone iodine or baby shampoo before minimally invasive gynecologic surgery. The baby shampoo was diluted 1:1 in normal saline.

Charts were reviewed for 249 patients after surgery, 96 before the switch to baby shampoo and 153 after. Infection rates were 14.6% for povidone iodine and 11.8% with baby shampoo.

Experts note that this is a small study, and baby shampoos differ in their formulations.

Saline for prep

In a small study from 1981 involving 17 patients having vaginal hysterectomy who received prophylactic antibiotics, no difference was found in outcomes for patients prepped with normal saline or povidone iodine. The authors said they thought the dilution effect of saline or antiseptic might be a factor in reducing infection.

Guiding clinicians

After examining the evidence, San Diego-based Sharp Healthcare has given its physicians information on use of 4% aqueous CHG as a preoperative vaginal prep for iodine-allergic patients, particularly for procedures at higher risk of SSI such as robotic-assisted vaginal hysterectomy or procedures with implants. A forum of Sharp's infectious disease physicians and infection preventionists advised surgeons to weigh the risk of a surgical site infection with the risk of an adverse reaction, which seems to be small. For non-high-risk surgery without implants, an option is half-strength baby shampoo.

"Our women's hospital has used Hibiclens (CHG) for some time without incident," says Shannon Oriola, RN, CIC, COHN, lead infection preventionist for the Sharp Metropolitan Medical Campus.

Infection preventionists are distributing a memo to nurses explaining the risks and benefits, that the product can be used off label, and that the risk of an adverse outcome is low.

Those with questions about off-label use may find a statement from the American Academy of Pediatrics helpful (sidebar).

The regulatory backdrop

Much of the quandary over skin antiseptics stems from the Food and Drug Administration's (FDA) confusing regulatory framework. Skin antiseptics fall under a 1994 document called the Tentative Final Monograph (TFM) for Healthcare Drug Products (21 CFR Parts 333, 369). Though never finalized, the TFM governs the way antiseptics can be marketed. It sets forth efficacy criteria and defines requirements for active ingredients, including concentration, testing, and labeling criteria. Companies are required to follow the testing criteria under the document, but the FDA does not review the data. These products are termed "compliant" but cannot claim FDA approval. The TFM classifies active ingredients in skin antiseptics into Categories I, II, and III (chart, p 20).

Products that don't fall under the TFM must go through a separate, more rigorous process called a "new drug application" (NDA).

For NDA products, the FDA does examine the testing data and approve the product prior to marketing.

CHG is considered an NDA product, meaning it must undergo rigorous testing and be approved by the FDA for additional label claims. CHG is not included in the TFM because when the FDA went through this regulatory process starting in the late 1970s, the agency said it did not have enough data to include it.

How CHG acquired the warning not to use it in the genital area seems to be lost to history. Companies say pursuing a change in the label claim is difficult because the FDA has not established testing criteria for skin antiseptics to be used on vaginal tissue and because of the expense of such studies.

—Pat Patterson

References

Amstey M S, Jones A P. Preparation of the vagina for surgery: Comparison of povidone-iodine and saline solution. *JAMA.* 1981;245:839-841.

Bae Y J, Park C S, Lee J K, et al. Case of anaphylaxis to chlorhexidine during digital rectal examination.

J Korean Med Sci. 2008;23:526-528.

Culligan P J. Letter. *Am J Obstet Gynecol*. 2006;195:625.

Culligan P J, Kubik K, Murphy M, et al. Randomized trial that compared povidone iodine and chlorhexidine as antiseptics for vaginal hysterectomy. *Am J Obstet Gynecol.* 2005:192:422-425.

Darouiche R O, Wall M J, Itani K M F, et al. Chlorhexidine-alcohol versus povidone-iodine for surgical-site antisepsis. *N Engl J Med.* Jan 7, 2010;362:18-26.

Lewis L A, Lathi R, Crochet P, et al. Preoperative vaginal preparation with baby shampoo compared with povidone-iodine before gynecologic procedures. *J Minim Invasive Gynecol*. 2007;736-739,

Parkes A W, Harper N, Herwadkar A. Anaphylaxis to the chlorhexidine component of Instillagel: A case series. *Br J Anaesth.* 2009;102:65-68.

Standring S, ed. *Gray's Anatomy*. 40th edition. London: Churchill Livingstone/Elsevier, 2008.

Van Zuuren E J, Boer F, Lai a Fat E J, et al. Anaphylactic reactions to chlorhexidine during urinary catheterisation]. *Ned Tijdschr Geneeskd*. 2007;151:2531-2534.