

What the Experts Say

Chlorhexidine Gluconate (CHG) Skin Preps: Benefits and Compatibility

Benefits of Chlorhexidine Gluconate (CHG)

“The immediate bactericidal action of chlorhexidine surpasses that of similar preparations containing povidone-iodine, triclosan, hexachlorophene, or parachlorometaxylenol (PCMX)...Chlorhexidine has a broader spectrum of activity, particularly against gram-negative bacteria.”

Denton GW, Chlorhexidine. In Seymour S. Block (Ed.) Disinfection, sterilization, and preservation. 4th Ed., Lea & Febiger, Williams & Wilkins, Media PA, 1991:279.

“One of the most important attributes of CHG is its persistence. It has strong affinity for the skin, remaining chemically active for at least 6 hours. Indeed, it probably has the best persistent effect of any agent currently on the market.”

Larson E, APIC guidelines for infection control practice: guideline for use of topical antimicrobial agents. Am J Infect Control. 1988;16(6):253-65.

CHG is the only preoperative skin prep agent that the CDC recognizes as having “excellent” activity against gram-positive bacteria as well as “excellent” residual activity.

Mangram AJ, et al., Guideline for prevention of surgical site infection, 1999. Centers for Disease Control and Prevention, Hospital Infection Control Practices Advisory Committee, Atlanta GA.

CHG Compatibility Information: Support for a Rinse-Free Preoperative Skin Prep

“The activity of CHG is not significantly affected by blood or other organic material. However, its activity is pH-dependent (5.5-7.0) and is reduced or neutralized in the presence of nonionic surfactants, inorganic anions (e.g., phosphate, nitrate, chloride, and other substances that are present in hard tap water and in many pharmaceutical preparations), and organic anions such as natural soaps.”

Larson E, APIC guidelines for infection control practice: guideline for use of topical antimicrobial agents. Am J Infect Control. 1988;16(6):253-65.

“Many surgeons prefer to have their patients bathe with antimicrobial soap the morning of the surgical procedure. The patient should be advised to avoid the use of body emollients, oils, creams, and lotions after washing. Some products decrease the efficacy of antimicrobial soap, and other products prevent adherence of electrodes to the skin.”

Phillips NF, Berry & Kohn's Operating Room Technique, 10th edition, Chapter 26: Positioning, Prepping, and Draping the Patient: Principles of patient skin preparation, Mosby, Inc. 2004:494.

“Chlorhexidine gluconate is incompatible with soaps and other anionic materials, is inactivated by cork, and may be neutralized by hard water. At concentrations of 0.05% chlorhexidine gluconate is incompatible with borates, bicarbonates, carbonates, chlorides, citrates, nitrates, phosphates, sulfates, and most dyes, which form salts of low solubility that may precipitate out of solution. Activity may be reduced in the presence of suspending agents such as alginates and tragacanth, insoluble powders such as kaolin, and insoluble compounds of calcium, magnesium, and zinc. Unlike the iodine-containing disinfectants, the anti-infective effects of chlorhexidine gluconate are not reduced by the presence of organic matter, such as blood.”

Chlorhexidine Gluconate Topical: Monograph: Chemistry and Stability. Medscape from WEBMD (accessed 24 Jan 2006 at <http://www.medscape.com/druginfo/monograph?cid=med&drugid=4711&drugname=Chlorhexidine+Gluconate+Topical&monotype=monograph&secid=10>).

“Nonionic substances such as detergents, although not directly incompatible with chlorhexidine salts, may inactivate the antiseptic to varying degrees, according to the chemical type and concentration used.”

“Chlorhexidine is incompatible with inorganic anions in all but very dilute solutions...Chlorhexidine is also incompatible with organic anions, such as soaps, sodium lauryl sulphate, sodium carboxymethyl cellulose, alginates, and many pharmaceutical dyes. In certain instances, there will be no visible signs of incompatibility, but the antimicrobial activity may be significantly reduced because of the chlorhexidine being incorporated into micelles.”

“There are only a limited number of approved dyes that can be used to color chlorhexidine solutions, and even these are anionic in nature and therefore not fully compatible. They can usually be added at low concentrations to tint chlorhexidine solutions for identification purposes but are liable to form a precipitate when used at the higher concentrations necessary to give good skin-staining properties.”

Denton GW, Chlorhexidine. In Seymour S. Block (Ed.) Disinfection, sterilization, and preservation. 4th Edition, Lea & Febiger, Williams & Wilkins, Media PA, 1991:279.