

Facts about iodine and iodophors

- Iodine has been used to kill microorganisms for over 100 years. Iodine and iodophors have bactericidal activity against both gram positive and gram-negative bacteria, as well as mycobacteria, viruses, and fungi. Iodine molecules rapidly penetrate the cell wall of microorganisms and inactivate cells by forming complexes with amino acids and unsaturated fatty acids, resulting in impaired protein synthesis and alteration of cell membranes.¹
- Iodophors are composed of elemental iodine, iodide or triiodide, and a carrier complex. A carrier-complex is used to reduce the irritation potential of iodine on the skin and to promote sustained release of the iodine.¹
- Iodine is a trace element essential to life and present throughout the body. True allergy to iodine does not exist. A very small number of patients who are extremely predisposed to allergy may exhibit sensitivity to various skin preparations.
- According to the AORN 2015 Guideline for Preoperative Patient Skin Antisepsis², under Recommendation III it states:
“The collective evidence indicates that there is no one antiseptic that is more effective than another for preventing SSI.”²
III.b.1 “The perioperative RN should assess the patient for allergies and sensitivities to preoperative skin antiseptics.”²
Based on *in vitro* and *in vivo* studies reviewed by AORN, severity of skin irritation by skin antiseptics is dependent on the concentration of the antiseptic, individual susceptibility and the site being prepped³
AORN references the 2004 position statement from the American Academy of Allergy, Asthma and Immunology (AAAAI). The statement asserts that:
 - There is no correlation between reactions to iodine and allergy to fish and seafood.⁴⁻⁶
 - Contact dermatitis related to topically applied iodine antiseptics is not an indication of an iodine allergy; rather, it is indicative of a reaction to chemicals in the product.⁷⁻⁸
 - An anaphylactic reaction to topical iodine antiseptic solutions is exceedingly rare and not proven to be related to iodine.⁴
 - Studies reviewed regarding chlorhexidine gluconate indicate that it has triggered allergic reactions in sensitized individuals ranging from mild local symptoms to severe anaphylaxis. Mild symptoms may precede severe attacks⁹⁻¹¹
- Based on *in vitro* and *in vivo* work with povidone iodine (PVP-I) in human nares, the maximum concentration of PVP-I that has been used in clinical studies without adverse health effect was at a maximum dosage concentration of 5% PVP-I.
- Iodine and iodophors have not been shown to contribute to antibiotic resistance.¹²

1. CDC Hand Hygiene Guideline in Healthcare Settings; *MMWR*, October 25, 2002 / Vol. 51.
2. AORN Guideline for Perioperative Practices, 2015 Edition.
3. Quatresooz P, Xhaufaire-Uhoda E, Pierard-Franchi-mont C, Pierard GE. Regional variability in stratum corneum reactivity to antiseptic formulations. *Contact Dermatitis*. 2007; 56 (5):271–273.
4. Academy Position Statement: The Risk of Severe Allergic Reactions from the Use of Potassium Iodide for Radiation Emergencies. February 2004. *American Academy of Allergy Asthma and Immunology*. <https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20and%20Parameters/Potassium-iodidein-radiation-emergencies-2004.pdf>. Accessed July 14, 2014.
5. Schabelman E, Witting M. The relationship of radiocontrast, iodine, and seafood allergies: a medical myth exposed. *J Emerg Med*. 2010; 39(5):701–707.
6. Huang SW. Seafood and iodine: an analysis of a medical myth. *Allergy Asthma Proc*. 2005; 26(6):468–469.
7. Yoshida K, Sakurai Y, Kawahara Set al. Anaphylaxis to polyvinylpyrrolidone in povidone-iodine for impetigo contagiosum in a boy with atopic dermatitis. *Int Arch Allergy Immunol*. 2008; 146 (2):169–173.
8. Adachi A, Fukunaga A, Hayashi K, Kunisada M, Horikawa T. Anaphylaxis to polyvinylpyrrolidone after vaginal application of povidone-iodine. *Contact Dermatitis*. 2003;48(3):133–136.
9. Sivathanan N, Goodfellow PB. Skin cleansers: the risks of chlorhexidine. *J Clin Pharmacol*. 2011; 51 (5):785–786.
10. Garvey LH, Roed-Petersen J, Husum B. Anaphylactic reactions in anaesthetised patients - four cases of chlorhexidine allergy. *Acta Anaesthesiol Scand*. 2001; 45 (10):1290–1294.
11. Toomey M. Preoperative chlorhexidine anaphylaxis in a patient scheduled for coronary artery bypass graft: a case report. *AANA J*. 2013; 81 (3):209–214.
12. Jones RD. Bacterial resistance and topical antimicrobial wash products. *Am J Infect Control*. 1999.

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