Gloves Are No Guarantee! Modifying Surgical Gloves to Reduce Microbial Transfer

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Hospital acquired infections are infections that patients catch from the hospital environment or staff. According to the Centers for Disease Control, hospital acquired infections infect 1.7 million patients and kill 99,000 in the US each year at a cost of $4.5 to $11 billion. Surgical site infections, a type of hospital acquired infection, affect 500,000 people annually, and are caused when a patient is exposed to microorganisms during surgery. One surface that spreads pathogenic microbes during surgery are the gloves that the surgeons and medical personnel wear. Studies have shown that when exposed to e-coli bacteria, gloves transfer more of the bacteria than bare hands alone. The purpose of this project was to see if modifying surgical gloves with 4 different types of anti-microbial / anti-adhesion products, could decrease the rate and number of microbes transferred by the gloves. In this experiment, surgical gloves were treated with Sharklet-film, Pledge-Multi, Sani-Shield, and Colloidal Silver, sterilized with UV-C light, exposed to contaminated surgical rulers, cultured, plated, and incubated for 24 hours. The results showed that modifying surgical gloves with either Sharklet anti-adhesion film or Sani-Shield barrier coating can decrease the average rate of microorganism transfer via surgical gloves by 44%. The Sani-Shield also decreased the average number of colonies transferred by 97%. In conclusion, surgical gloves modified with anti-adhesion products could be used to decrease both the rate and quantity of microorganisms transferred during surgery, and possibly reduce the number of costly and potentially lethal surgical site infections.

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