A Novel Approach Using Ultraviolet Radiation to Eliminate Bacteria Leading to Nosocomial Infections on Data Entry Peripherals in Hospitals

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Nosocomial infections, along with hospital errors, are one of the leading causes of death in America, resulting in 99,000 deaths annually. The problem being addressed is the prevalence of bacteria leading to nosocomial infections on peripherals for data entry for electronic medical records (EMR) in hospital rooms and the efficacy of the current cleaning methods used on said peripherals for data entry, as well as the effectiveness of UV-C light in eliminating such bacteria. Ultraviolet germicidal irradiation has shown promise in a hospital setting, but has yet to be tested on the data entry peripherals in said hospitals. The hypothesis is that several different types of bacteria that lead to nosocomial infections, such as E.coli and members of the Staphylococcus genus, will be present on the peripherals for data entry, that the current cleaning methods will not be completely effective in removing these bacteria, and that the implementation of UV-C light will result in increased elimination of harmful bacteria. Fort eight samples of keyboard swabs before and after cleaning, twenty four for each the control and variable, were taken, and the bacteria was cultured on blood agar plates and analyzed using the gram staining procedure. These bacteria were quantified in tables for optimal understanding, and it was concluded that the current method was 18.75% effective in eliminating Staphylococcus aureus, 30% in Serratia, 3705% in Staphylococcus epidermidis, 33.33% in E.coli, and 57.1% in Micrococcus. In samples treated with UV-C light, Staphylococcus aureus was removed in 50%, 67% in Serratia, 78% in Staphylococcus epidermidis, 57% in E.coli, and 60% in Micrococcus. These results show the ineffectiveness in the current methods and the superiority of the use of UV-C.

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