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An innovative method for disinfecting the stethoscope membrane: A pilot study

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Background: The literature demonstrated that stethoscope, the most used medical device, can be more contaminated than hands. There is a big concern on disinfecting the health professional hands, contrarily, lack of time and attention make the stethoscope disinfection quite rare, although it should be disinfected before every visit. This pilot study, evaluates an innovative solution for stethoscopes' membrane disinfection in a real environment.

Methods: An ultraviolet (UV) device was used for disinfecting the membrane of the stethoscope head. When the device couples the stethoscope head, an UV-C LED (wavelength 280 nm) automatically lights up to disinfect the stethoscope membrane. The device's effectiveness was tested on a stethoscope used on 10 volunteers. The stethoscope was used for hearing the heart and respiratory sounds twice. The first time the stethoscope was treated with the UV device which irradiated its membrane for 5 minutes and then it was placed on Petri dishes to detect Colony Forming Units (CFU) at 36°C after 24 hours; the second time, the stethoscope membrane, was directly placed on petri dishes for obtaining matching controls. Petri dishes of treated/not treated stethoscope were compared using the Wilcoxon signed-rank test. Statistical significance was set at 95%.

Results: 5 out of 10 cases had a low bacterial contamination on control petri dishes (CFU 3 to 35) and the corresponding UV-C treated ones did not have any bacterial growth. On average, overall bacterial reduction was 91.7% ($p < 0.05$).

Conclusions: The device was able to sterilize membrane with low bacterial load and significantly reduce microbial presence in the others.

Biography

Andrea Serafini MD is graduated in 2011 at the University of Siena. He is attending the Post Graduate School of Public Health in Siena. During his career, he participated at the European Public Health Association (EUPHA) Conferences in 2013 (Brussels) and in 2014 (Glasgow) with 1 pitch presentation and 2 oral presentations. In 2013 he attended a course in Basel about ARCGis in Public Health.

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