

Development of Personal Protection Equipment for Dental Surgeon

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Abstract : During daily oral health cares, dental surgeons are in contact with numerous potentially infectious germs from patients' saliva and blood. In order to take into account these risks, a product development process has been unrolled to propose to the dental surgeon a personal protection equipment that is suitable with their expectations in terms of images, protection and comfort. After a consumer study, to evaluate how the users wear the garment and their expectations, specifications have been carried out and technical solutions have been developed in order to answer to the maximum of the desiderata. Thermal studies and comfort studies have been performed. The obtained results lead to define the technical solutions concerning the design of the new scrub. Three main functions have been investigated, the ergonomic aspect, the protection and the thermal comfort. In terms of ergonomic aspect, instrumented garments have been worn and pressure measurements have been done. The results highlight that a raglan shape for the sleeves has to be selected for a better dynamic comfort. Moreover, spray tests helped us to localize the potential contamination area and therefore protection devices have been placed on the garment. Concerning the thermal comfort, an I-R study was conducted in consulting room under the real working conditions; the heating zones have been detected. Based on these results, solutions have been proposed and implemented in a new gown. This new gown is currently composed of three different parts; a protective layer placed in the chest area to avoid contamination; a breathable layer placed in the back and in the armpits and a normal PET/Cotton fabric for the rest of the gown. Through the fitting tests conducted in hospital, it was obtained that the new design was highly appreciated. Some points can nevertheless be further improved. A final product will be produced based on necessary improvements.

Keywords : comfort, dentists, garment, thermal

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