Abstract

The use of respirators in health care setting is relatively new but important step forward in the efforts to prevent the transmission of diseases through the air. The level of protection a respirator provides is determined by the efficiency of the filter material and how well the facepiece fits or seals to the health care worker's face. In America, the Occupational Safety and Health Administration standard for respiratory protection must be followed to ensure respirators are properly selected, used, and maintained when respirators are used. However, there is no relative standard in Taiwan. Accordingly, the objective of this study was to implement a Respiratory Protection Program which is designed and organized for health care workers. Moreover, by following in the spirit of the PDCA cycle, the quality and adequacy of this program will be continuous improved.

There were 3 institutions including 2 of 8 hospitals that take part in the Infection Prevention Network and 1 of 10 BSL3 laboratories located in northern Taiwan volunteered to participate in this study. A TSI PortaCount Plus Model 8020 was used to evaluate the fitting characteristics of the respirators that were supposed to be used for each individual. Prior to the start of the test, the subject was trained to perform the modified quantitative fit test protocol. Moreover, the subject's attitude and cognition change to the respiratory protection program were also evaluated before and after the test, respectively, by using a questionnaire. In addition, a laboratory study was conducted to investigate the fitting characteristics of 7 models of N95 filtering-facepiece respirators that are commonly used in Taiwan.

The results showed that there was only 7 % of 209 subjects participated in this study experienced quantitative fit test before, and 94 % of them doubted about the effectiveness when using respirators. This indicated that there is an urgent need to implement the respiratory protection program. The results of quantitative fit test showed that 57 % of the subjects obtained a fit factor larger than 100 which is the fit test pass/fail level for filtering-facepiece recommended by respirator authorities in America. In laboratory study, the passing rate of individual model values were ranging from 7 % to 58 %. Famous model did not guarantee the higher passing rate. Therefore, the fit test of filtering-facepiece respirators is necessary to ensure that the user receives the expected level of protection. On the other hand, the appropriateness of the pass/fail level for filtering-facepiece aforementioned should be reconsidered.

Keywords：Respiratory Protection Program；Filtering-Facepiece Respirators；Fit test