Results: The mean FSL for Visit 1 (baseline) was 0.69% (SD=0.36) with a range of 0.11% to 2.13%. The mean change in FSL between Visits 1 and 3 (one year visit) for the subjects who continued to participate through Visit 3 was 0.21% (SD=0.78), and between Visits 1 and Visit 5 (two year visit) for the subjects who continued to participate through Visit 5 was -0.06% (SD=0.63). For Visit 3, 10.2% of the subjects had unacceptable fit (90th percentile FSL > 0.05%). For Visit 5, 2.4% of the subjects had unacceptable fit. A weight loss of ≤ 20 lbs. or weight gain of ≥ 20 lbs. was experienced by 4%, 12%, 13%, and 15% of subjects on Visits 2, 3, 4, and 5 respectively. An unacceptable fit was associated with 8% of these occurrences.
Conclusions: These preliminary results indicate significant changes in fit for significant percentage of the subjects. Data collection will continue and anthropometric data will be analyzed to understand why subjects had unacceptable fit.

SR-139-03
Real-Time Fit of a Respirator during Simulated Health Care Tasks

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Objective: Fit is an important but difficult-to-predict feature of respirator performance. This study examined a new approach to measuring respirator performance using two continuous direct reading particle-counting instruments in a simulated healthcare workplace.
Methods: A pilot test was conducted with eight experienced healthcare professionals, who passed a traditional quantitative fit test before performing three randomized 10-min healthcare scenarios (patient assessment (PA), IV treatment (IV), wound care (WC)). Two TSI Portacount Plus (Model 8020) with N95 Companion (Model 8095) instruments were used to continuously measure 1-sec ambient particle concentrations inside and outside the respirator facepiece. A simulated workplace fit factor (SWFF) was calculated by dividing outside by inside concentrations. Data were log transformed and examined using analysis of variance (ANOVA) between subjects, scenario types and scenario order. The GM SWFF for the eight subjects, three scenarios per subject, ranged from 172 to 1073 (GSD 1.7 to 3.5) and was significantly different for each subject.
Results: A multi-way ANOVA showed no difference among the three scenario types (PA, IV, WC). There were differences by the order in which scenarios were performed; the third scenario SWFF was significantly different and higher than that of the first and second scenarios. All subjects passed the initial quantitative fit test with a fit factor of at least 100. Five subjects had fit factors greater than 200 and GM scenario SWFFs greater than 400. Three participants with initial fit factors less than 200 had GM scenario SWFFs ranging from 132 to 326.
Conclusions: This pilot test demonstrates that it is possible to evaluate instantaneous respirator fit using two quantitative fit test instruments in a simulated healthcare environment. Results suggest that an initial fit test may be predictive of fit during simulated tasks and that one scenario may be adequate for measuring a simulated workplace fit factor.

CS-139-04
The Use of Video Exposure Monitoring in a Training Video to Motivate Fit-Testing and the Appropriate use of Healthcare N95 Respirators

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Situation/Problem: Healthcare workers may be required to wear N95filtering facepiece respirators (FFR) to reduce potential exposure to airborne bacterial and viral agents. Motivating workers to be fit tested, wear only a fit tested respirator, and don it correctly are key to ensuring that workers obtain adequate protection.
Resolution: A training video was developed using video exposure monitoring (VEM) technology to visually demonstrate how a poorly fitting or improperly adjusted N95 FFR allows unacceptable levels of facepiece leakage. Two TSI Portacount instruments

ABSTRACTS

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