CANADIAN REGISTRATION BOARD
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N95 Fit-testing during a pandemic – a logistical challenge

The COVID outbreak has turned things upside down for most of us. While lots of people moved their work to home many employees had to continue working on the front lines. Control strategies had to be put in place to protect them at work. While engineering and administrative controls are always the first consideration to protect these workers from COVID exposure, respiratory protection in the form of N95s became a must.

Recently, as part of our consulting practice we were tasked with fitting over 7000 employees working in urban and rural settings all over the province. The project scope was to get these front-line workers fit-tested fast! In addition to teaching employees about proper donning and doffing, quantitative fit-testing was a critical aspect of the project scope. I'm not sure if every Occupational Hygienist has completed quantitative fit-testing before, but with the requisite cleaning and disinfection protocols of the workspace and equipment between tests it meant a peak test rate of just 3 fit-tests per hour. Do the math! 7000 tests will take 350 workdays to complete.

The big issues for us included protecting our employees from infection, managing the cleaning and disinfection protocol between tests, managing the supply chain of N95s for the tests and for use by employees afterwards, managing the supply chain of consumables for the fit-testing (reagent grade alcohol, push pins for porting N95s, etc.), minimizing the failed test rates, and the logistics of getting employee to show-up for their scheduled test time. We undertook the challenge and were able to quantitatively fit the 7000 employees between December 2020 and February 2021 using the TSI Porta-count, models 8038 and 8048. With 6 technicians on the ground this became a logistical exercise more than a technical one.

The workspace of our employees needed to be big enough, with good ventilation, and a system to minimize the number of people near us so we could safely do our work. Cleaning, sanitizing, and proper PPE were a must. We needed lots of wipes and time for cleaning after each test. We could only attempt to fit employees to N95 models that could be reliably sourced and continually be made available through the organization's supply-chain processes after the fit-testing and for the foreseeable future. Fitting employees to a model of N95 that could not be sourced in large numbers was of no use.

As the number of models of N95s available to fit employees increased, we were better able to successfully fit test all employee face sizes. Very large and very small faces were difficult to find an N95 that could be fitted and pass the test. With a range of N95 models available, a satisfactory fit for all employees become easier.

Managing the delivery of consumables to our technician team was a challenge. It seemed everyone else in North America was fit-testing at the same time. Push pins for porting the N95s were a hot commodity. Reagent grade alcohol was in big demand. Getting your hands on an extra Porta-Count required careful negotiation, persuasion, and a bit of luck.

Minimizing failed tests was a challenge. A failed test meant we needed to start again with a different N95 respirator type, and this caused delays that cascaded through the day's schedule. Managing no- shows was also a challenge. A no-show meant a delay in completing the project work. Every no show meant we had to add that person back into the schedule sometime after.

In the end we got it done and the client was happy. Some of the key learnings we can share were as follows:

- Standardize your processes. How you do you work should be standardized so all technicians do things the same way regardless of where they are in the province. Develop a script for technicians to speak to so as to ensure you get consistency in the orientation and education of fit-tested employees. Get a record keeping system set-up and get the data going into it every day.
- The best outcome is achieved with al least 6 models of N95 to choose from when fitting large numbers of employees. More is better. The fewer models you have available the greater the likelihood that you will encounter an employee that cannot pass the fit-test with any of the models on hand.
- Although the actual test only takes 8 minutes to perform, properly managing the cleaning and sanitizing of the workstation and equipment means you should only schedule 3 tests per hour.
- The normalized fit-test failure rate will be 20% so budget enough time in your schedule. Three fit-tests per hour can be scheduled with a plan to run over about hour each day. If you schedule a 7.5 -hour workday with 24 tests you'll likely need 9 hours to get the work done most days.
- Even if the work is carefully planned and synchronized, a no-show rate of 20% should be expected.
- As soon as you can, start stock-piling consumables needed for the entire scope of work. The supply chain will have ups and downs and just when you need your suppliers to meet your needs they might have run out.
- Keep at least one extra Porta-Count on hand. While the equipment is robust and reliable there can be issues and so as to not disrupt your schedule, have some redundancy.

This fit-test project was a great test. Logistics is the key determinant in how successful you'll be. If fit-testing is a challenge you are facing now or about to face I would welcome the opportunity to chat and share our learnings. Feel free to reach out and give me a call at 403.630.3854.

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