

Respirator Fit Testing for H1N1 Flu Protection

We recently had the opportunity to conduct quantitative fit testing on 797 medical personnel employed at an international level hospital in response to concerns over the H1N1 Flu threat. This hospital chose two sizes of the N95 and one size of the N100 disposable respirators produced for the health care industry by an internationally known respirator manufacturer. The vast majority of health care professionals [Doctors, Nurses, Personal Care Assistants, etc.] were tested on the N95s. Respiratory Therapists, who were required to be near patients who were coughing, were the only ones fit tested with the N100. The quantitative measurements were conducted using a well known and well tested particle counter specifically designed for disposable respirator fit testing.

There is no question that the N95 and N100 disposable respirators' filter media are highly effective against very small particles and aerosols such as pathogens. The Achilles' heel of these respirators has always been obtaining a good face seal. An effective face seal is especially critical for those health workers who come in contact with patients suffering from communicable diseases that pose an airborne risk. Unlike hazardous chemicals which do not multiply upon entering the body, it takes only a few pathogenic organisms bypassing the respirator's filter media via a compromised face seal to cause serious disease in a health worker.

The hospital scheduled their personnel for fit testing over two shifts per day, including weekends, in an attempt to fit test as many workers as possible. The fit testing effort lasted for approximately six weeks. Due to the very nature of hospital workloads, it was impossible to maximize the number of fit tests per shift based on tester availability. Frequently only one or two workers were fit tested per shift.

For approximately 50% of personnel tested, the test had to

be interrupted at least once and the respirator readjusted in order to obtain a satisfactory face seal. Many of the tests had to be interrupted several times and the respirator readjusted before the individual could pass all portions of the fit test. Individuals with small or flat nose bridges had the most difficulty obtaining a proper fit. In the final analysis 719 [90%] were successfully fit tested [N95-625; and N100-93]. 78 [10%] failed all efforts to be fit tested [One N95-44; Both N95s-28 and N100-6].

So what did we learn or relearn?

- Even with a quantitative fit testing program, this hospital can expect approximately 10% of their workers not to be protected from airborne pathogens using only these respirators;
- Without a quantitative fit testing program, the respirator fit test failure rate would have been at least 50%;
- One should have no confidence that a worker who is simply handed a respirator will obtain a proper fit;
- One brand, one type and one size does not fit all workers;
- Quantitative fit testing is clearly necessary if proper fit is to be achieved, especially in high risk situations such as protecting against pathogens;
- Quantitative fit testing is a great teaching tool in that it directly correlates how the masks feels on the subject's face with how it is performing; and
- Fit testing and respirator training must be done well in advance of their necessary use. If any organization, especially a hospital, waits till a crisis such as a H1N1 outbreak is upon them, to start fit testing, many workers will already be exposed to airborne pathogens before they can physically be fit tested and trained.

Stay Safe—Beat the Summer Heat

WHAT TO DO

- Increase your intake of non-alcoholic, non-carbonated, caffeine free beverages such as water and juice.
- Wear clothing that is light in color and loose fitting.
- Avoid the outdoors during extreme heat. Stay out of the sun.
- Stay in an air-conditioned environment if possible. Shopping malls offer relief if your home is not air-conditioned.
- Check on the elderly. They are especially susceptible to heat related illness.
- Eliminate strenuous activity such as running, biking, and lawn care work when it heats up.
- Eat less foods that increase metabolic activity/heat. Proteins are an example. Increased metabolic heat increases water loss.

HEAT RELATED ILLNESSES AND THEIR SYMPTOMS

Sunburn—Redness and pain in the skin. In severe cases there is also swelling, blisters, fever, and headaches.

Heat Cramps—Heavy sweating and painful spasms usually in the leg or abdomen muscles.

Heat Exhaustion—The person becomes weak and is sweating heavily. The skin is cold, pale, and clammy. The pulse becomes thread. Fainting and vomiting accompanies heat exhaustion.

Heatstroke/Sunstroke—High body temperature (106 degrees or higher) along with hot dry skin and a rapid and strong pulse. Unconsciousness is possible.

Reducing MRSA Outbreak

Most frequently transmitted by skin-to-skin contact, MRSA (Methicillin-resistant *Staphylococcus aureus*) is a type of Staph bacteria that causes difficult-to-treat and serious bacterial infections, many of which manifest themselves as skin blemishes, rashes and boils with resistance to penicillin-type antibiotics.

Through education and crucial cleaning practices, company management and employees can work together to reduce the spread of MRSA in facilities by practicing a proactive prevention strategy to reduce the risk of MRSA transmission:

Handwashing—Washing hands frequently and for at least 30 seconds upon each visit to the sink. Since MRSA is most often transmitted from person to person via contaminated hands, this is a crucial part of the strategy and helps reduce all types of germ transmission and promote general office cleanliness.

Surface Cleaning—daily decontamination of high-touch points (e.g., doorknobs, keyboards, phones and light switches)

and preventing cross-contamination through proper use of tools, chemicals and color-coding as listed below: EPA-registered, hospital-grade disinfectants are strong (but safe) disinfectants proven

to kill MRSA; Use of No-dip, flat mop technologies increases soil and germ removal and reduces risk of cross-contamination;

Color-coded microfiber cloths to be used in a single, designated area of a facility; Bucket immersion, in lieu of pour bottles, for applying disinfectant to cleaning cloths guarantees that germs and bacteria on cloths are eliminated before the next surface is attended to;

Touch-free, spray-and-vacuum systems provide the most complete disinfection and matter removal of any cleaning application on surfaces that are tolerant to this wet cleaning process.

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