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Gaps in Respiratory PPE for Infectious Disease Response

Federal agencies continue to implement equipment cache programs to assist communities with the response to disaster situations. Equipment contained within federally funded caches should meet national standards[1] where appropriate. This paper will focus on recommendations to increase the availability of respiratory protection for first responders (first receivers) using cache programs that relate to infectious disease response. Appropriate protective ensemble will also include disposable protective clothing to include caps, gowns, boots, gloves and eye/face splash protection.

For respirators, caches should include materials that support training, use and proper fit. Sufficient quantities of fit test kits should be included in the caches for each type of respiratory equipment contained within. Appropriate medical assessment(s) [1] and training[1] must be considered for the use, selection and care of the materials contained within as well as the fit testing, doffing, donning and re-use procedures[1].

Based on a review of available sources[2, 3], it is the opinion of the IAB that respiratory PPE supplies of N95 respirators **are not** sufficient to meet the potential demands of an Infectious Disease Response. In the event of a large scale-incident, there are demonstrated concerns about how long it will take for cache replenishments to occur as most of the respiratory protective equipment is not manufactured domestically. Many responder organizations have used DHS grant funds to purchase enhanced PPE ensembles, however, until recently, grant funds could not be leveraged to *maintain* and *sustain* these products resulting in a degradation of preparedness and response levels. Lacking effectual sustainment and resilience strategies, the initial purchase of respiratory PPE cannot result in a stable long-term capability increase. Cognizant of supplanting protocols, many jurisdictions may still be impeded by using grants funds to *maintain* and *sustain* PPE cache and ensembles. As a result, the Authority Having Jurisdiction may deem it necessary to deviate from standards of care/practice and operations for PPE based upon the evolving situation – placing the first responder (first receiver) at increased risk.

The Health, Medical and Responder Safety SubGroup of the InterAgency Board recommends the following for Federal Caches of PPE for response to Infectious Disease events:

1. Ensure that federally funded equipment cache program(s) have the necessary logistics in place to:
    a. Ensure appropriate training in the selection, use and care of protective ensembles.
    b. Ensure appropriate training in the fit testing, doffing, donning and re-use procedures for respiratory protective equipment/ensembles.

2. Develop an affordable domestic production capacity plan in the event that a major disaster depletes available supplies of respiratory protective equipment.
    a. This should include final guidance on the re-use of single-use respirators, such as the N95[4].
    b. Adopt hierarchies that are agent and circumstance-specific for first responder (first receiver) respirator use such as N95; then N-P-R-99/100 filtering facepiece or elastomeric N95/99 or 100; then emergency and alternative use of surgical masks[5].

3. Ensure that federal grant programs allow for the sustainment and replacement of PPE ensembles purchased with or without grant funds – ensuring near seamless level of response capability.

4. The IAB recommends that NIOSH develop an audit program of N95 respirators to determine if the manufacturer recommended shelf-life should be extended (following manufacturer recommended proper care and storage protocols).

References:

[1] National Standards and Regulations include:

1. OSHA 1910.120, Hazardous waste operations and emergency response
2. OSHA 1910.1030, Bloodborne pathogens
3. OSHA 1910.134, Respiratory protection
4. NFPA 1581, Standard on fire department infection control program
5. NFPA 1999, Standard on protective clothing for emergency medical operations

[2] Interim Guidance on Infection Control Measures for 2009 H1N1 Influenza in Healthcare Settings, Including Protection of Healthcare Personnel. Centers for Disease Control and Prevention, 14 October 2009.

[3] A New Pandemic Fear: A Shortage of Surgical Masks. Time Magazine. 19 May 2009.

[4] Evaluation of the filtration performance of 21 N95 filtering face piece respirators after prolonged storage. Viscusi, et al. American Journal of Infection Control. June 2009. Page 381-386.

[5] Cal/OSHA Interim Enforcement Policy on H1N1 Section 5199 (Aerosol Transmissable Diseases). Issue Date: 10/22/09 http://www.dir.ca.gov/dosh/SwineFlu/Interim_enforcement_H1N1.pdf