Integration of Respiratory Protection into Practice among Health Care Workers

A Users Guide for Respiratory Protection in North Carolina's Hospitals

May 30, 2013

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INTEGRATION OF RESPIRATORY PROTECTION INTO PRACTICE AMONG HEALTH CARE WORKERS

May 30, 2013

William and Ida Friday Center for Continuing Education
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PURPOSE: The purpose of this meeting is to provide information on respiratory protection for health care workers and to identify appropriate strategies for successful implementation of effective respiratory protection programs.

TARGET AUDIENCE: Workers in health care facilities including, but not limited to, staff from employee health, infection prevention, safety/environmental health, nursing, respiratory therapy providers, management.

LEARNING OBJECTIVES:

- Discuss the importance of respiratory protection among health care workers
- List respiratory protection program requirements
- Describe how to fit test for respirator use
- Discuss gaps and deficiencies in respiratory protection programs at health care facilities
- Identify strategies for implementing respiratory protection program at health care facilities

AGENDA

7:30 Registration
8:30 Introductions and Conference Purpose - Bonnie Rogers
8:50 Respiratory Protection for Health Care Workers: Program Requirements - Edie Alfano-Sobsey
9:30 Evaluation of Respiratory Protection Programs in NC hospitals - Bonnie Rogers
10:15 Break
10:30 Fit Testing Demonstration (qualitative and quantitative) - Pat Curran
11:15 Donning and Doffing Respirators - Pat Curran
12:00 Lunch Break
12:45 Joint Commission Tool Kit and Monograph for best practices - Debbie Novak
1:00 Panel Discussion: Strategies for Implementing Respiratory Protection Programs at Health Care Institutions and Best Practices with discussion from representatives of each hospital. Facilitator - Kathleen Buckheit
1:45 Next Steps: Focus Groups - Judy Ostendorf
2:15 Break
2:25 Practice Champions - Bonnie Rogers
3:00 Adjourn

Table of Contents

I. Purpose of This Guide / Introduction

This guide was developed to provide hospital workers in North Carolina with a useful tool for developing and implementing effective respiratory protection programs, with an emphasis on protecting health care workers from aerosol transmissible diseases (ATD). It was prepared by the North Carolina Occupational Safety and Health Education and Research Center (NC OSHERC) (http://osherc.sph.unc.edu/index.html) with funding from the National Institute for Occupational Safety and Health (NIOSH) National Personal Protective Technology Laboratory (NPPTL) (http://www.cdc.gov/NIOSH/NPPTL).

Hospitals are unique work environments with challenging occupational health and safety issues. Some large hospitals have health and safety personnel who are highly qualified to develop and implement appropriate policies and procedures to control workplace exposures. However, in many smaller facilities with more limited resources, the role of the health and safety professional might be taken on as an added responsibility by someone in the nursing, employee health, occupational health, or infection control department. This guide is written as a practical, step-by-step manual that can be used by anyone who is charged with the task of setting up and maintaining a respiratory protection program.

This guide was developed with funding from a NIOSH grant and information supplied by the North Carolina Occupational Safety and Health education and Research Center (NC OSHERC) and the California Department of Public Health, Occupational Health Branch.

Introduction

This manual was developed to assist hospitals in developing and implementing effective respiratory protection programs, with an emphasis on preventing the transmission of **aerosol transmissible diseases** (ATDs) to health care workers. Health care workers are paid and unpaid persons who provide patient care in a health care setting or any person who provides services that support the delivery of health care such as dietary, housekeeping, engineering, and maintenance personnel. Aerosols are particles or droplets suspended in air. ATDs are diseases transmitted when infectious pathogens, which are suspended or present in particles or droplets, contact the mucous membranes or are inhaled.

Hospitals are unique work environments with challenging occupational health and safety issues. Some hospitals have health and safety personnel who are highly qualified to develop and implement appropriate policies and procedures to control workplace exposures. However, in many facilities with more limited resources, the role of the health and safety professional might be taken on as an added responsibility by someone in the nursing, employee health, occupational health, or infection control department. This toolkit is written as a practical manual that can be used by anyone charged with the task of setting up and maintaining a respiratory protection program for reducing employee exposure to hazards that may be inhaled. The toolkit also provides educational resources to reinforce health care workers' proper use of respirators. A respirator is a device worn over the nose and mouth to protect the wearer from hazardous materials in the breathing zone. In health care, the term respirator is also used to describe a mechanical ventilator that helps patients who are having difficulty breathing; this document does not address this type of medical equipment.

The body and appendices of the toolkit include links **(indicated by blue font and underlining)** to references, resources, and electronic tools such as templates, sample forms, and educational materials. Some of the tools and resources were developed by the authors of this document. Other resources, produced by other organizations and available on the internet, have been identified.

Filtering facepiece respirators being used in health care workplaces

II. Why Hospitals Need a Respiratory Protection Program

Respiratory Hazards in the Health Care Setting

The hospital environment contains hazards such as bacteria, viruses, and chemicals that may be inhaled by workers and cause injury or illness. The approach for reducing exposure required by the Occupational Safety and Health Administration (OSHA) and accepted by health and safety professionals is to use a "hierarchy of controls." This means the most effective controls—the elimination of hazards or substitution of less hazardous processes, chemicals, or products are used first. Next in the hierarchy are engineering controls, which involve isolating the hazard and/or using specialized ventilation (e.g., isolation rooms or laboratory hoods). Where these controls are not feasible or adequate, administrative controls (e.g., providing vaccinations or triaging chemical emergency patients) and work practices (e.g., following respiratory hygiene/cough etiquette strategies or keeping chemical containers capped) are used to minimize the extent or duration of the exposure, or reduce the number of employees exposed. Respirators and other personal protective equipment (PPE) are used as a last line of defense when exposures cannot be reduced to an acceptable level using these other methods.

Airborne droplets visible during sneezing (photo enhanced)

The hazards associated with ATDs (e.g., infectious patients with a transmissible disease or environmental sources of anthrax or fungi) cannot be eliminated from or substituted out of the hospital setting. ATD pathogen exposures cannot routinely be measured in the air, and have no established occupational exposure limits. In addition, ATD pathogens vary in infectivity and severity of outcome. In order to protect employees from ATDs, health care facilities must implement a combination of engineering, administrative (including training and vaccination), and work practice controls, and provide for the use of respirators and other PPE.

Health care workers who care for patients with ATDs must work in close proximity to the source of the hazard, so even with controls in place, they are likely to have a higher risk of inhaling infectious aerosols (droplets and particles) than the general public. These employees, and others with a higher risk of exposure related to the tasks they perform (e.g., lab or autopsy workers), must be protected further through the proper use of respirators. See Table 1 for some examples of methods used for controlling exposures to ATD pathogens in the health care setting.

Table 1. METHODS FOR CONTROLLING EXPOSURE TO AEROSOL TRANSMISSIBLE DISEASES (ATD)

Minimize the number of employees exposed	Minimize the amount of infectious aerosol in the air	Protect employees who must be exposed
Isolate suspected and confirmed cases of airborne infectious disease in negative pressure rooms, to separate the source from all employees not providing direct patient care. Use partitions, barriers, or ventilated enclosures to separate employees from the source of the hazard.	Place a surgical mask on suspected and confirmed ATD cases. Use closed suctioning systems to minimize the dispersion of aerosol.	Provide vaccinations. Use personal protective equipment (PPE), including respirators.

The 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

The **2007 HICPAC Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings** applies to health care workplaces, including hospitals, long-term care facilities, ambulatory care, home care and hospice, which have the potential to expose employees to ATD pathogens. This guidance recommends that respiratory protection be used to protect certain workers performing specific tasks and that the use of respirators comply with the OSHA respiratory protection standard (**29 CFR 1910.134**; discussed in more detail in a following section). The 2007 HICPAC Guideline serves as a primary resource supporting respirator use policies in health care supplemented by newer guidance issued by CDC, OSHA, public health departments, as well as by relevant scientific literature. HICPAC has categorized each ATD by its mode of transmission (droplet or airborne) and specified the applicable Transmission-Based Precautions for that pathogen (i.e., Droplet or Airborne Precautions); see the boxes on the next two pages for complete listings.

Health care worker wearing a filtering facepiece respirator

In developing its guidance, HICPAC considered epidemiological studies of disease outbreaks, experimental studies, and information on aerosol behavior, and reflects the committee's opinion at that time. However, in most cases the relative contribution of each mode of transmission is not fully understood. HICPAC and other public health guidance should be regularly reviewed the science develops so that the most up-to-date information is used to select respiratory protection. (See Table 1).

HICPAC describes the distinction between droplet transmission and airborne transmission based on particle size and the distance and time over which the pathogens remain infective. HICPAC indicates that droplets responsible for droplet transmission have traditionally been defined as being greater than 5 micrometers in diameter, while the particles or "droplet nuclei" responsible for airborne transmission are less than 5 micrometers in diameter and remain airborne and infectious long enough to travel substantial distances (e.g., through a ventilation system). Although a distance of 3 feet had traditionally been used to define the area of risk when working with patients suspected or known to have diseases requiring Droplet Precautions, HICPAC reports that infection has occurred at distances greater than 3 feet. Thus, HICPAC states that observing Droplet Precautions at a distance up to 6 or 10 feet or upon entry into the patient's room may be prudent (See Table 2).

Table 2. Diseases/Pathogens Requiring Droplet Precautions

- Diphtheria pharyngeal
- Epiglottitis, due to Haemophilus influenzae type b
- Haemophilus influenzae Serotype b (Hib) disease/ Haemophilus influenzae serotype b--Infants and children
- Influenza, human (typical seasonal variations)/influenza viruses*
- Meningitis
  - Haemophilus influenzae, type b known or suspected
  - Neisseria meningitidis (meningococcal) known or suspected
  - Meningococcal disease sepsis, pneumonia (see also meningitis)
- Mumps (infectious parotitis)/Mumps virus
- Mycoplasmal pneumonia
- Parvovirus B19 infection (erythema infectiosum)
- Pertussis (whooping cough)
- Pharyngitis in infants and young children/Adenovirus, Orthomyxoviridae, Epstein-Barr virus, Herpes simplex virus
- Pneumonia
  - Adenovirus
  - Haemophilus influenzae Serotype b, infants and children
  - Meningococcal
  - Mycoplasma, primary atypical
  - Streptococcus Group A
- Pneumonic plague/Yersinia pestis
- Rubella virus infection (German measles)/Rubella virus
- Severe acute respiratory syndrome (SARS)
- Streptococcal disease (group A streptococcus)
  - Skin, wound or burn, Major
  - Pharyngitis in infants and young children
  - Pneumonia
  - Scarlet fever in infants and young children
  - Serious invasive disease
- Viral hemorrhagic fevers due to Lassa, Ebola, Marburg, Crimean-Congo fever viruses (airborne infection isolation and respirator use may be required for aerosol-generating procedures)
- Any other disease for which public health guidelines recommend droplet precautions

http://www.cdph.ca.gov/programs/ohb/documents/HCResp-ATD-RespSelectGuide.pdf

III. Understanding Respiratory Protection

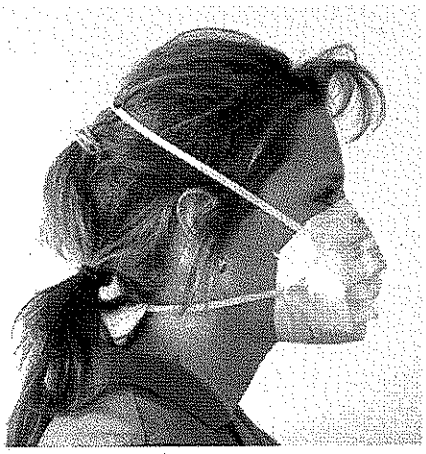
Respiratory Protection Reduces Inhalation of Aerosols

In order to understand how respirators can be used to protect health care workers, it is important to understand what a respirator is and what it is not. One important distinction that must be made when discussing respirator use in health care settings is the difference between **respirators** and **facemasks**. Facemasks include surgical masks, which are fluid resistant, and procedure or isolation masks which are not fluid resistant. While some people may call both respirators and facemasks "masks," this is incorrect as they are very different in their design, performance, and purpose.

The purpose of a facemask, when worn by a health care worker, is twofold. As part of "Droplet Precautions" (explained in more detail later in this document), the surgical mask is worn to protect the wearer from large droplets or sprays of infectious body fluids from patients that otherwise could be directly transmitted to the mucous membranes in the worker's nose or mouth. In other instances, a facemask is worn by a health care worker to protect patients by reducing the amount of large droplets with infectious agents the wearer could introduce into the room by talking, sneezing, or coughing; this protection is especially important in sterile environments, such as operating rooms, or when working with potentially immune- compromised patients.

Health care worker in a surgical mask

The purpose of a facemask, when worn by a patient suspected or confirmed with an illness such as influenza or tuberculosis, is to reduce the amount of large infectious particles released as the patient talks, sneezes, or coughs; this limits their concentration in the room air and reduces the infection risk to others who are present. However, facemasks by design do not seal tightly to the wearer's face. Therefore, they allow unfiltered air to easily flow around the sides of the facemask and be inhaled by the wearer. In addition, the materials used for facemasks are not regulated for their ability to filter particles and are known to vary greatly between models. This makes it possible for small particles to pass through or around the facemask and be inhaled by the worker.



filtering facepiece respirator

This is why they are not considered respiratory protection—facemasks do NOT provide the wearer with a reliable level of protection from inhaling smaller particles which are emitted into the room air by a patient exhaling or coughing, or by conducting certain medical procedures.

The purpose of a respirator is to protect the wearer by reducing the concentration of contaminants in the air inhaled by the wearer. In a hospital setting, these contaminants may come from procedures using hazardous drugs (including some cancer chemotherapy drugs, antiviral drugs, hormones, and bioengineered drugs) and chemicals (e.g., anesthetic waste gases or equipment sterilization); cleaning and maintenance activities; from infectious patients who are exhaling, talking, sneezing, or coughing in the room in which the health care worker is working; from medical procedures performed on infectious patients (e.g., using bone saws); or from laboratory procedures (e.g., operating centrifuges, blenders, or aspirating equipment) that may aerosolize pathogens.

Respirators can provide this protection in a number of different ways, depending on the type of respirator, for example, filtering facepiece respirators are designed to seal tightly to the face when the proper model and size is selected for the individual using a fit-test procedure. The wearer can then be assured that inhaled air is forced through the filtering material, which allows contaminants to be captured and reduces exposure to infectious particles of all sizes. Respirators are designed and regulated to provide a known level of protection when used within the context of a comprehensive and effective respiratory protection program.

Also available, and widely used in health care, is the **surgical respirator**—a filtering facepiece respirator with spray- or splash-resistant facemask material on the outside to protect the wearer from splashes (sometimes referred to as "surgical N95 respirators"). A **two-page factsheet** http://www.osha.gov/Publications/respirators-vs-surgicalmasks-factsheet.pdf and a short video, in **English** http://www.osha.gov/video/20091216-respirator-1-english-high.wmv and **Spanish** http://www.osha.gov/video/20091216-respirator-1-spanish-high.wmv , on the differences between facemasks and respirators are available from OSHA as training resources.

Use Caution when Performing Aerosol-Generating Procedures

CDC also recommends the use of respiratory protection at least as effective as fit tested N95 respirators, as well as airborne infection isolation, when high hazard (aerosol-generating) procedures are performed on patients with suspected or confirmed influenza (See Table 3). This recommendation raises the issue of whether respirator use during high hazard procedures should also be considered for other infectious diseases (e.g., pertussis, meningococcal disease) that currently call for droplet precautions.

Some procedures performed on patients with suspected or confirmed influenza infection may be more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking, or breathing. These procedures potentially put Health Care Professional (HCP) at an increased risk for influenza exposure (See Table 3). These include some procedures that are usually planned ahead of time, such as

bronchoscopy, sputum induction, elective intubation and extubation, and autopsies; and some procedures that often occur in unplanned, emergent settings and can be life-saving, such as cardiopulmonary resuscitation, emergent intubation and open suctioning of airways. Ideally, a combination of measures should be used to reduce exposures from these aerosol-generating procedures when performed on patients with suspected or confirmed influenza. However, it is appropriate to take feasibility into account, especially in challenging emergent situations, where timeliness in performing a procedure can be critical to achieving a good patient outcome.

Table 3. Aerosol Transmissible Diseases High Hazard Procedures

- High hazard procedures are "procedures performed on a person who is a case or suspected case of an aerosol transmissible disease (or on a specimen suspected of containing an aerosol transmissible pathogen in a laboratory), in which the potential for being exposed to aerosol transmissible pathogens is increased due to the reasonably anticipated generation of aerosolized pathogens."
- Such procedures include, but are not limited to:
  - Sputum induction
  - Bronchoscopy
  - Aerosolized administration of pentamidine or other medications
  - Pulmonary function testing
  - Autopsy, clinical, surgical, and laboratory procedures that may aerosolize pathogens.

CDC's guidance titled Prevention Strategies for Seasonal Influenza in Healthcare Settings contains details on the prevention strategies for all health care settings. Specific recommendations are highlighted below. Standard Precautions (See Table 4) are intended to be applied to the care of all patients in all health care settings, regardless of the suspected or confirmed presence of an infectious agent. Implementation of Standard Precautions constitutes the primary strategy for the prevention of healthcare-associated transmission of infectious agents among patients and health care personnel.

Table 4. Examples of Standard Precautions

- Wearing gloves if hand contact with respiratory secretions or potentially contaminated surfaces is anticipated.
- Wearing a gown if soiling of clothes with a resident's respiratory secretions is anticipated.
- Changing gloves and gowns after each resident encounter and using hand hygiene.
- Perform hand hygiene before and after touching the resident, after touching the resident's environment, or after touching the resident's respiratory secretions, whether or not gloves are worn. Gloves do not replace the need for performing hand hygiene.

TB Respiratory Protection Program In Health Care Facilities

http://www.cdc.gov/niosh/docs/99-143/pdfs/99-143.pdf

According to **Administrator's Guide from NIOSH,** the use of respirators in the health care setting is a relatively new but important step forward in the efforts to prevent the transmission of tuberculosis (TB). Air purifying respirators provide a barrier to prevent health care workers from inhaling *Mycobacterium tuberculosis.* 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. A number of studies have shown that surgical masks will not provide adequate protection in filtering out the TB organism. Additionally, surgical masks are not respirators and therefore, are not NIOSH certified and do not satisfy OSHA requirements for respiratory protection. The proper use of respirators represents a significant improvement in employee protection against TB. NIOSH realizes that the use of respirators involves a number of new and perhaps confusing practices for the health care community. The manual is designed to serve as a practical guide for those individuals responsible for initiating and running a TB respiratory protection program in health care facilities.

Prevention Strategies for Seasonal Influenza in Healthcare Settings by the CDC

http://www.cdc.gov/flu/professionals/infectioncontrol/healthcaresettings.htm

Guidelines and Recommendations

This guidance supersedes previous CDC guidance for both seasonal influenza and the Interim Guidance on Infection Control Measures for 2009 H1N1 Influenza in Healthcare Settings, which was written to apply uniquely to the special circumstances of the 2009 H1N1 pandemic as they existed in October 2009.

As stated in that document, CDC planned to update the guidance as new information became available. In particular, one major change from the spring and fall of 2009 is the widespread availability of a safe and effective vaccine for the 2009 H1N1 influenza virus. Components of this vaccine have been included in the 2010-2011 trivalent seasonal vaccine. Second, the overall risk of hospitalization and death among people infected with this strain was uncertain in spring and fall of 2009, but is now known to be substantially lower than pre-pandemic assumptions. In addition, more information has been recently published or presented indicating that face mask use and hand hygiene reduce the risk of influenza infection in health care and household settings. The current circumstances and new information justify an update of the recommendations.

This updated guidance continues to emphasize the importance of a comprehensive influenza prevention strategy that can be applied across the entire spectrum of healthcare settings. CDC will continue to evaluate new information as it becomes available and will update or expand this guidance as needed. Additional information on influenza prevention, treatment, and control can be found on Seasonal Influenza (Flu) web site.

Influenza is primarily a community-based infection that is transmitted in households and community settings. Each year, 5% to 20% of U.S. residents acquire an influenza virus infection, and many will seek medical care in ambulatory healthcare settings (e.g., pediatricians' offices, urgent-care clinics). In addition,

more than 200,000 persons, on average, are hospitalized each year for influenza-related complications. Healthcare-associated influenza infections can occur in any healthcare setting and are most common when influenza is also circulating in the community. Therefore, the influenza prevention measures outlined in this guidance should be implemented in all healthcare settings. Supplemental measures may need to be implemented during influenza season if outbreaks of healthcare-associated influenza occur within certain facilities, such as long-term care facilities and hospitals [refs: Infection Control Measures for Preventing and Controlling Influenza Transmission in Long-Term Care Facilities

Influenza Modes of Transmission

Traditionally, influenza viruses have been thought to spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets generally travel only short distances (approximately 6 feet or less) through the air. Indirect contact transmission via hand transfer of influenza virus from virus-contaminated surfaces or objects to mucosal surfaces of the face (e.g., nose, mouth) may also occur. Airborne transmission via small particle aerosols in the vicinity of the infectious individual may also occur; however, the relative contribution of the different modes of influenza transmission is unclear. Airborne transmission over longer distances, such as from one patient room to another has not been documented and is thought not to occur. All respiratory secretions and bodily fluids, including diarrheal stools, of patients with influenza are considered to be potentially infectious; however, the risk may vary by strain. Detection of influenza virus in blood or stool in influenza infected patients is rare.

Fundamental Elements to Prevent Influenza Transmission

Preventing transmission of influenza virus and other infectious agents within healthcare settings requires a multi-faceted approach. Spread of influenza virus can occur among patients, HCP, and visitors; in addition, HCP may acquire influenza from persons in their household or community. The core prevention strategies include:

- administration of influenza vaccine
- implementation of respiratory hygiene and cough etiquette
- appropriate management of ill HCP
- adherence to infection control precautions for all patient-care activities and aerosol-generating procedures
- implementing environmental and engineering infection control measures.

Successful implementation of many, if not all, of these strategies is dependent on the presence of clear administrative policies and organizational leadership that promote and facilitate adherence to these recommendations among the various people within the healthcare setting, including patients, visitors, and HCP.

Health Care Personnel

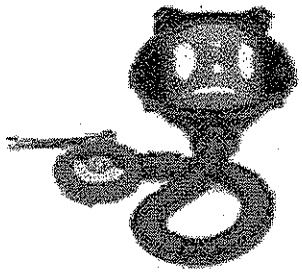
A surgical or procedure mask should be worn by health-care personnel who are in close contact (i.e., within 3 feet) with a patient who has symptoms of a respiratory infection, particularly if fever is present, as recommended for standard and droplet precautions. These precautions should be maintained until the patient has been determined to be noninfectious or for the duration recommended for the specific infectious agent.

Airborne transmission occurs through very small particles or droplet nuclei that contain infectious agents and can remain suspended in air for extended periods of time. When they are inhaled by a susceptible individual, they enter the respiratory tract and can cause infection. Since air currents can disperse these particles or droplet nuclei over long distances, airborne transmission does not require face-to-face contact with an infected individual. Airborne transmission only occurs with infectious agents that are capable of surviving and retaining infectivity for relatively long periods of time in airborne particles or droplet nuclei. Only a limited number of diseases are transmissible via the airborne route. Two examples of airborne transmissible agents include *Mycobacterium tuberculosis* which causes tuberculosis (TB) and the rubella virus which causes measles.

Health care workers who care for patients with ATHs must work in close proximity to the source of the hazard, so even if the room has enhanced ventilation, they are likely to have a higher risk of inhaling infectious aerosols (particles). Exposure of these employees, and others with a higher risk of exposure related to the tasks they perform, can be reduced further by the proper use of respirators.

IV. Respirators

Air-purifying vs. Atmosphere-supplying Respirators

	
Air-purifying Respirators	**Atmosphere-supplying Respirators**
▪ **have filters, cartridges, or canisters that remove contaminants from the air by passing the ambient air through the air-purifying element before it reaches the user.**	▪ **supply clean air directly to the user from a source other than the air surrounding the user.**

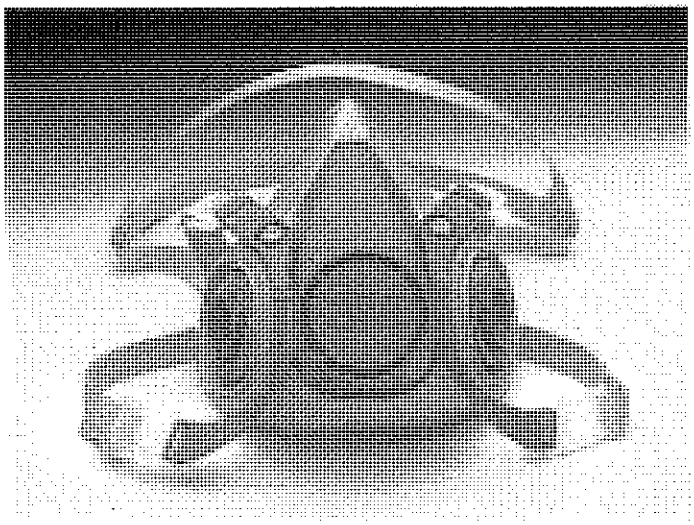
1. Air-Purifying Respirators

Air-purifying respirators (APRs) work by removing gases, vapors, and particulates (mists and solid particles) or combinations of gases, vapors, and/or particulates from the air through the use of filters, cartridges, or canisters. To help employees identify the specific chemicals for which the cartridges are designed, all filters, cartridges, and canisters must be labeled and color-coded with a label approved by NIOSH. APRs with filters will remove particles (also called aerosols) from the inhaled air, while those with cartridges or canisters are designed to remove gases and vapors.

Different types of respirators are designed to protect against different hazards. The type of airborne contaminant, its concentration, and its potential to cause a health effect in exposed workers dictate the type of

respirator that must be worn. Respirators are available in many types, models, and sizes from several manufacturers for a variety of applications. All respirators used in the workplace must be tested by the manufacturer and approved by the National Institute for Occupational Safety and Health (NIOSH).

The half-mask respirator



also meets CDC requirements. This respirator has single or dual filters made of the same material as the N, R, and P disposable respirators (HEPA filters can also be used). Most manufacturers produce more than one size. A face shield may also be used in conjunction with a half-mask particulate filter respirator for protection against body fluids. Described below are two major types of respirators: air-purifying respirators and atmosphere-supplying respirators.

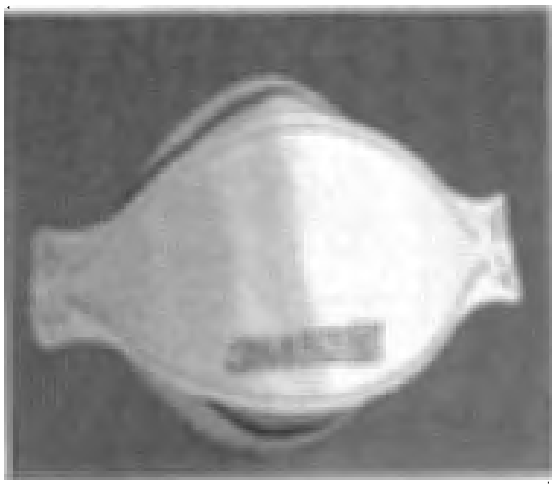
The full facepiece respirator

also meets CDC requirements for respiratory protection against exposure to TB. The respirator can be equipped with the N, R, or P filters (HEPA filters can also be used). It is also manufactured in more than one size.

Types of air-purifying respirators

Non-powered respirators

Non-powered respirators have a tight-fitting facepiece, which can be either a half mask that covers the nose and mouth or a full facepiece (covers the nose, mouth, and eyes). They may be reusable, elastomeric respirators that have replaceable filters or cartridges for removing contaminants, or disposable filtering facepiece respirators where the entire facepiece is made of filtering material.



"N95 respirator" is a term used to refer to a filtering facepiece APR with an approved N95 filter. Approved N95 respirators are also available with surgical mask material on the outside to protect the wearer from splashes. See the box below for more information on different classes of NIOSH-approved filters.

To retain the respirator's assigned protection factor (APF), you must:

- be fit-tested
- use the correct size respirator
- make sure the seal check has a good seal
- provide maintenance for the respirator
- ensure it is in good condition
- don and doff according to manufacturer's instructions

Always read and follow the manufacturer's directions for your respirator.

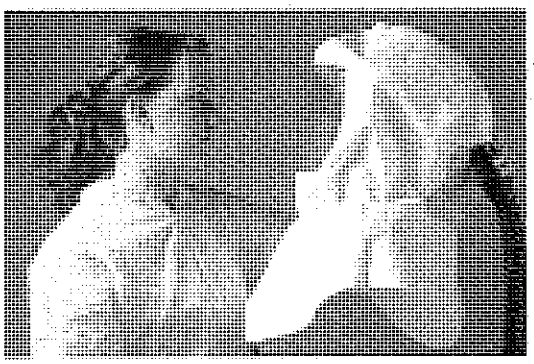
Disposable Particulate Respirators

The NIOSH-certified disposable respirators labeled N, R, or P meet CDC criteria and may be obtained with (right) or without (left) exhalation valves are pictured below. Most manufacturers also produce them in different sizes. A face shield may also be used in conjunction with a half-mask disposable respirator for protection against body fluids.

It is important to check that your disposable respirator fits properly each time you wear it. To "Seal Check" a disposable respirator, cup both of your hands over the mask and inhale. The mask should pull in toward your face. If the mask does not pull in, or if you feel air leaks around the edges of the mask, readjust the nose piece and straps and try again until you get a good fit.

For general guidance, keep track of your disposable respirator and do not share it with other workers. Inspect it before and after each use. Replace the respirator if it develops holes, the straps break or loosen, or it becomes dirty and overly contaminated. Be sure to store your respirator in an area that is free of dirt and contaminants. If the disposable respirator gets splashed with chemicals or other liquid materials while you are working, exit the work area and remove it immediately. If it becomes difficult to breathe through the disposable respirator, exit the work area, throw it away, and replace it with a new respirator. Properly adjust and fit test the new disposable respirator before you re-enter the work zone.

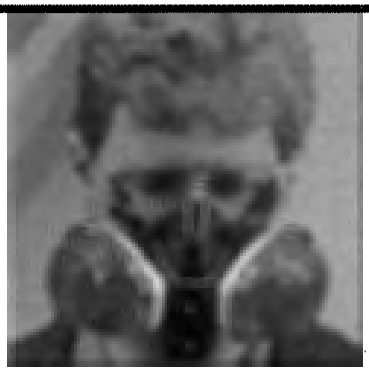
2. Powered air-purifying respirators



Powered air-purifying respirators (PAPRs) can have a tight-fitting facepiece or a hood, helmet, or other type of loose-fitting facepiece. PAPRs have a battery-powered blower that pulls the air in the room through filters (for particles) or cartridges (for gases/vapors) to clean it before delivering it to the breathing zone of the wearer. cartridges (for gases/vapors) to clean it before delivering it to the breathing zone of the wearer.

The most protective type of PAPR is equipped with a filter and chemical cartridge. These PAPRs have a tight-fitting full-facepiece, or a hood or helmet with a collar or inner shroud, and a combination HEPA filter and chemical cartridge. They must be a type that will reduce the exposure of the wearer to 1/1000th of the concentration that is in the air.

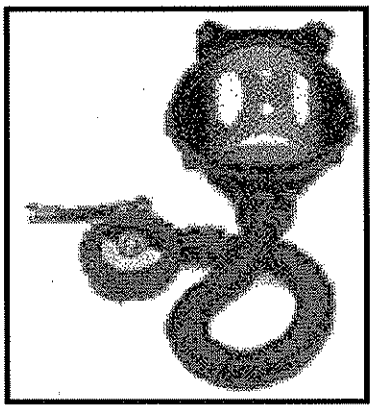
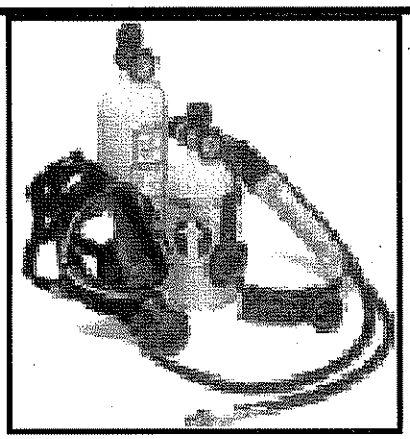
Three Kinds of Air-purifying Respirators

		
Particulate Respirators	**Combination Respirators**	**Gas & Vapor Respirators**
▪ capture particles in the air, such as dusts, mists, and fumes ▪ do not protect against gases or vapors ▪ generally become more effective as particles accumulate on the filter and plug spaces between the fibers ▪ filters should be replaced when user finds it difficult to breathe through them	▪ are normally used in atmospheres that contain hazards of both particulates and gases ▪ have both particulate filters and gas/vapor filters ▪ may be heavier	▪ are normally used when there are only hazardous gases and vapors in the air ▪ use chemical filters (called cartridges or canisters) to remove dangerous gases or vapors ▪ do not protect against airborne particles ▪ are made to protect against specific gases or vapors ▪ provide protection only as long as the filter's absorbing capacity is not depleted ▪ the service life of the filter depends upon many factors and can be estimated in various ways

2. Atmosphere-Supplying Respirators

Atmosphere-supplying respirators work by providing clean breathing air from an uncontaminated source. These respirators consist of a tight-fitting facepiece, a hood, a helmet, or other type of loose-fitting facepiece, and breathing air which is supplied by a compressor or a pressurized cylinder. They do not require filters or cartridges and will protect the wearer from all types of contaminants present (particles or gases/vapors). These respirators are less likely to be used in a hospital setting except, perhaps, by emergency responders or construction contractors.

Three Kinds of Atmosphere-supplying Respirators

		
Air-Supplied Respirators	**Combination Respirators**	**Self-Contained Breathing Apparatus**
▪ uses a hose to deliver clean, safe air from a stationary source of compressed air ▪ provides clean air for long periods of time and are light weight for the user ▪ limits the range of user-mobility and may fail due to hose damage ▪ called airline respirators ▪ normally used when there are extended work periods required in atmospheres that ***are not*** immediately dangerous to life and health (IDLH)	▪ have auxiliary self-contained air supply that can be used if the primary supply fails ▪ self-contained portion can be small since it only needs to supply enough air for escape ▪ can be used for entry into confined spaces ▪ normally used when there are extended work periods required in atmospheres that ***are or may be*** immediately dangerous to life and health (IDLH)	▪ consists of a wearable, clean-air supply pack ▪ no restriction of movement with a hose connection ▪ closed-circuit type provides air up to 4 hours ▪ open-circuit type only provides air for 30 - 60 minutes ▪ normally used when there is a short-time need to enter and escape from atmospheres which ***are or may be*** immediately dangerous to life and health (IDLH)

- Employers are required to provide employees using atmosphere-supplying respirators (supplied air and self-contained breathing apparatus) with breathing gases of high purity, and shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration is in accordance with the specifications of OSHA Standard 29 CFR 1910.134(i).

Filters are classified according to what they are able to filter and how efficiently they perform.

9 Classes of NIOSH-approved Respirator Filters and Filtering Facepieces	
Class	**Description**
N95	Filters at least 95% of airborne particles. Not resistant to oil.
N99	Filters at least 99% of airborne particles. Not resistant to oil.
N100	Filters at least 99.97% of airborne particles. Not resistant to oil.
R95	Filters at least 95% of airborne particles. Somewhat resistant to oil.
R99	Filters at least 99% of airborne particles. Somewhat resistant to oil.
R100	Filters at least 99.97% of airborne particles. Somewhat resistant to oil.
P95	Filters at least 95% of airborne particles. Strongly resistant to oil.
P99	Filters at least 99% of airborne particles. Strongly resistant to oil.
P100	Filters at least 99.97% of airborne particles. Strongly resistant to oil.

N = Not Resistant to Oil;

R = Resistant to Oil;

P = Oil-proof

Respirator Selection Guide for Aerosol Transmissible Diseases

Disease	Job Task	Respirator
Airborne infectious disease (suspected or confirmed)	Routine patient care & support operations	At least N95
	High hazard procedures	At least PAPR
Seasonal Influenza (suspected or confirmed)	Routine patient care & support operations	In accordance with facility policy; CDPH recommends at least permitting optional N95 use
	High hazard procedures	At least N95
Other diseases requiring droplet precautions	In accordance with facility policy	

California Department of Public Health, Occupational Health Branch May 2012

http://www.cdph.ca.gov/programs/ohb/documents/HCResp-ATD-RespSelectGuide.pdf

ADVANTAGES AND DISATVANTAGES OF VARIOUS RESPIRATOR FACEPIECE STYLES

Adapted from: USACHPPM. 2003a. Personal Protective Equipment Guide for Military Medical Treatment Facility Personnel Handling Casualties from Weapons of Mass Destruction and Terrorism Events (Technical Guide 275). August 2003.

FACEPIECE STYLE	ADVANTAGES	DISADVANTAGES
Half facepiece	▪ Employee may wear any appropriate eyewear that does not interfere with the respirator seal.	▪ If there is a break in the seal between the mask and the face, contaminated air can enter. Fit testing must be performed prior to use and user seal checks must be done by the user every time the respirator is used. ▪ Does not provide eye protection.
Full facepiece	▪ When used with a powered air-purifying respirator (PAPR), a tight fitting facepiece might allow a worker to pull filtered air into the facepiece if the battery fails. ▪ Provides eye protection.	▪ If there is a break in the seal between the mask and the face, contaminated air can enter. Fit testing must be performed prior to use and user seal checks must be done by the user every time the respirator is used. ▪ Workers who wear glasses may require spectacle kits to be used inside the facepiece.
Loose fitting helmet/hood	▪ Provides eye protection. ▪ Provides skin protection for the head and (certain models) neck. ▪ Fit testing is not required. ▪ Some workers find loose fitting respirators more comfortable than tight fitting models. ▪ Can be worn by employees with facial hair and facial scars/deformities. ▪ Employees may wear their own glasses under the helmet/hood.	▪ When used with a PAPR, the hood will provide little or no protection if the battery fails.

Adapted from *Personal Protective Equipment Guide for Military Medical Treatment Facility Personnel Handling Casualties from Weapons of Mass Destruction and Terrorism Events* (Technical Guide 275). U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), August 2003.

V. The OSHA Respiratory Protection Standard

In North Carolina, the N.C. Department of Labor (NC DOL) enforces the federal Occupational Safety and Health Act (OSHA) through a state plan approved by the U.S. Department of Labor. North Carolina employers must follow the federal OSHA Respiratory Protection Standard **(29 CFR 1910.134)**. All employers, including hospitals, who have workers who must use respiratory protection to control exposures to airborne contaminants, must comply.

The first respirator approval was issued in 1920 for a self-contained breathing apparatus (SCBA). Following this, other federal respiratory protection standards were developed, leading to the present OSHA respiratory protection standard, (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=standards) and to the current certification and approval of respirators by the National Institute for Occupational Safety and Health (NIOSH). These rules were initially promulgated under 30 CFR Part 11 and were later re-codified to 42 CFR Part 84 (http://www.cdc.gov/niosh/npptl/topics/respirators/pt84abs2.html).

Another reference is the OSHA "Instruction for Inspection Procedures for the Respiratory Protection Standard (http://www.osha.gov/OshDoc/Directive_pdf/CPL_2-0_120.pdf). North Carolina also has an additional general Operational Procedure Notice (http://www.nclabor.com/osha/compliance/publicopn/opn127.pdf) and one for Facial Hair and respirator use (http://www.nclabor.com/osha/PublicSN/SN55A.pdf).

The respiratory protection standard requires that all employers who must use respirators to control hazardous exposures have a comprehensive and effective respiratory protection program (RPP). The program must be in writing and is intended to specify the policies and procedures for the use of respiratory protection in the facility. OSHA requires each respiratory protection program to include several specific elements, but leaves the specifics of these policies and procedures up to individual employers. See Table 3 for a summary of the key requirements of the standard.

VI. Developing a Respiratory Protection Program

Assigning Responsibility

A key component to a successful respiratory protection program (RPP) is the assignment of responsibilities for the implementation and administration of the program. Cal/OSHA requires that "the program be administered by a suitably trained program administrator." Although the program administrator does not have to be a health and safety professional, he/she must have expertise in the principles of respiratory protection.

Hazard Evaluation

The purpose of the hazard evaluation is to identify potential exposures in the workplace that might require the use of respiratory protection so that these hazards can be quantified to the extent feasible and appropriate respiratory protection can be selected.

The hazard evaluation must be completed for all respiratory hazards, including chemical exposures as well as exposure to infectious diseases. The selection of respirators for infectious diseases must be done according to anticipated exposure by task according to public health guidance and following the requirements of the OSHA Respiratory Protection Standard. When conducting a hazard evaluation in the patient care setting, it is useful to start with the requirements of the RRP standard and systematically consider all of the activities in your units.

Policies and Procedures

Once you have determined who will administer the program and which employees will be included, you are ready to develop the written policies and procedures that will make up your written RPP. You may find that customizing a template is the easiest way to develop your written program. Then the policies and procedures must be clearly communicated to all staff. There is a sample program available on the NC DOL web site http://www.nclabor.com/osha/consult/sample_programs.htm). You may find that customizing this template is the easiest way to develop your written program. If you choose to do this, it is best to use this guide and the template together.

Respirator Selection

Document the results of your hazard evaluation and determine which types of respirators will be used by specific staff or job titles, and for specific tasks or procedures based on the hazard and type of exposure. This establishes minimum respirator requirements for certain tasks and infectious agents. However, employers are always responsible to assess respiratory hazards, and the requirements in the OSHA standard are only minimum requirements.

- **What is the identity and nature of the airborne contaminant?**

  Specific characteristics of the airborne hazard must be established in order to select an appropriate respirator.

  - Is the airborne contaminant a particulate (dust, fumes, mist, aerosol) or a gas/vapor?
  - Is the airborne contaminant a chemical and are material safety data sheets available?
  - Is the airborne contaminant a biological (bacteria, mold, spores, fungi, virus)?
  - Are there any mandatory or recommended occupational exposure levels for the contaminant?

- **Factors That Can Influence Respirator Selection**

  ✓ **The Physical Configuration of the Jobsite**

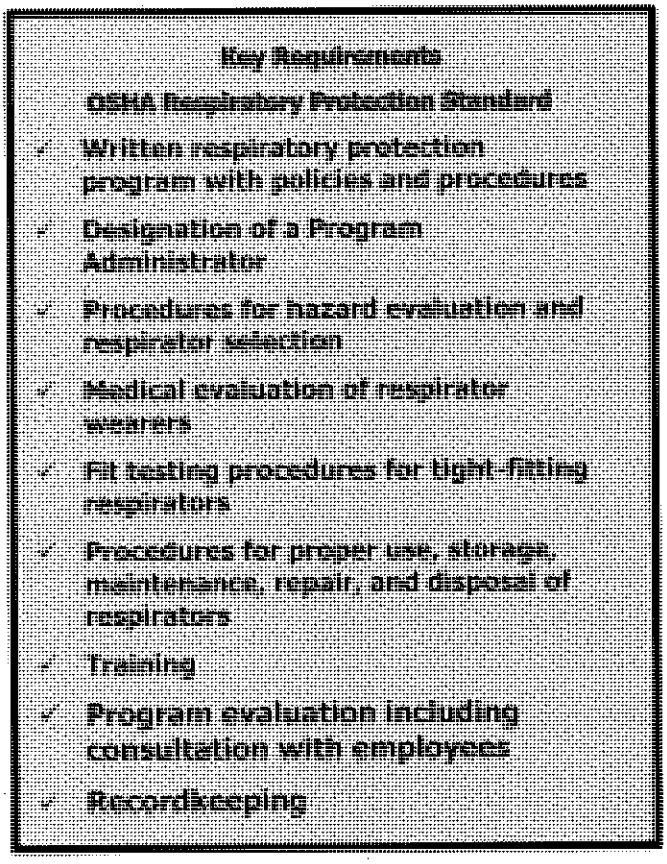
  Tightly constrained areas may not permit the use of self-contained breathing apparatuses even though they might be an acceptable choice otherwise. Likewise, working around obstructions or moving machinery that can snag hoses may limit the use of airline respirators.

  ✓ **Worker Medical Condition**

  Wearing respiratory protection poses a physical burden on the wearer. When a worker's medical condition would prohibit restrictive breathing conditions, negative pressure respirators would not be an appropriate choice.

  ✓ **Worker Comfort**

  Worker preferences should be a consideration during the respirator selection process. Among air purifying respirators, powered air purifying helmets have been subjectively rated the best for breathing ease, skin comfort, and in-mask temperature and humidity while filtering facepieces rated high for lightness and convenience. Each, however, has its own drawbacks, and all these factors should be taken into account during selection.



The North Carolina Department of Health and Human services also has policies and procedures for Respiratory Program Requirements (http://info.dhhs.state.nc.us/olm/manuals/dhs/pol-50/man/Pol5_SB_Respiratory_Protect1.htm).

Wearing the Respirator

The respirator must cover both the nose and mouth to guard the wearer from particulates in the atmosphere. If the respirator does not have a tight fit it will not work properly. Correct fit of the respirator requires contact with smooth skin. It will not work properly for people with beards or facial hair. Even one-day beard growth has been shown to let air leak in.

Checking to Make Sure It Fits

Always use both straps on the respirator to hold it in place to keep air from leaking around the respirator. Do a user seal check to verify that you have correctly put on the respirator and adjusted it to fit properly. To check the respirator-to-face seal, place both hands completely over the respirator and inhale sharply. Be careful not to disturb the position of the respirator. The respirator should pull into your face. If air leaks around the nose, readjust the nosepiece. If air leaks at the respirator edges, work the straps back along the sides of your head. Redo the user seal check. Then put your hands over the respirator and breathe out sharply. No air should escape. If your respirator has an exhalation valve (like the one pictured above) be sure to cover the exhalation valve when you exhale. If the respirator fits properly no air will leak out of the respirator. If air leaks out re-adjust the respirator and exhale again covering the exhalation valve.

When to Throw Out the Respirator

As the respirator becomes clogged, resistance to air flow increases and it becomes more difficult to breathe. When this occurs the respirator should be discarded and a new one used. Also discard the respirator if it gets wet; is deformed (because it may not fit properly); is dirty on the inside part next to your nose; or the filter is torn and will not filter the air. This respirator cannot be cleaned or disinfected.

Medical Requirements

Employees need to be medically cleared to wear respirators before commencing use. All respirators generally place a burden on the employee. Negative pressure respirators restrict breathing, some respirators can cause claustrophobia and self-contained breathing apparatuses are heavy. Each of these conditions may adversely affect the health of some employees who wear respirators. A physician or other licensed health care professional operating within the scope of his/her practice needs to medically evaluate employees to determine under what conditions they can safely wear respirators.

Appendix C of the OSHA Respiratory Protection Standard is a questionnaire that includes information that must be reviewed by a physician or other licensed health care professional (PLHCP) either in questionnaire format, or in person during a visit to the PLHCP. The PLHCP may be a hospital employee, but must not be the employee's supervisor. If the hospital does not have internal occupational health services, the PLHCP may be a contracted provider. The

best outside sources for such evaluations are occupational medicine providers or clinics. These clinics provide medical clearance for respirator use and may also provide fit testing services.

Make sure you are clear where the questionnaires will be sent for evaluation, and describe these procedures in your written RPP. The completed questionnaires are considered personal health information, so there must be a procedure by which they are confidentially provided to the PLHCP. Completed questionnaires should be maintained as confidential medical records and not be accessible to the employee's supervisor. Further evaluation may be required if any positive responses are given to Questions 1-8 of the OSHA Respiratory Protection Standard Appendix C Questionnaire, Not all respirator medical approvals require a Pulmonary Function Test or Chest X-ray, but some do. Based on the hazard exposure, check OSHA -specific standards (i.e., asbestos and cotton dust).

Based on the answers to the questionnaire, as well as on a physical exam or any other tests the PLHCP deems necessary, the PLHCP must make a determination as to whether the individual can safely wear the respirator. Information that is useful for the medical evaluation of respirator users is provided in **ANSI / AIHA Z88 .6-2006**, a voluntary consensus standard. The PLHCP must inform the employer (RPA or supervisor) in writing whether the individual is cleared for respirator use, cleared with certain conditions or restrictions (e.g., only for PAPR use, only for limited duration, etc.), or not cleared for respirator use, whether there is a need for a follow-up medical evaluation, or if the individual requires periodic medical reevaluation. The details of any medical evaluation, including specific medical diagnoses or test results, should not be shared with the employer or supervisor.

Your program should include a clear policy as to what will be done if someone is not cleared for respirator use. Employees who are not cleared cannot be exposed to situations in which a respirator is necessary to protect them. If the PLHCP determines that a person designated to use a non-powered air- purifying respirator cannot do so without added health risks the employer must provide a PAPR if the PLHCP determines that the person can use one and the RPA determines that it will provide adequate protection.

Fit Testing

Fit testing is one of the most important parts of the respirator program because it is the only recognized tool to assess the fit of a specific respirator model and size to the face of the user. OSHA requires employers to provide a sufficient number of models and sizes of respirators so that employees can be fit with a respirator that is comfortable and fits well. Employees are only allowed to use the make, model, style, and size of respirator or respirators that they have been successfully fit tested with.

Fit testing is required for all users of respirators with tight-fitting facepieces, including filtering facepiece respirators. The fit test ensures that, when donned properly, the selected brand and size of respirator fits adequately to protect the wearer from excessive inward leakage of contaminant through the face seal. The fit test must be repeated annually and whenever the employee reports or the employer, PLHCP, supervisor, or program administrator makes visual observations of any changes in physical condition, such as weight gain or weight loss, that could alter the fit of the facepiece.

Describe your procedures for coordinating fit testing for your staff, as well as the specific, detailed fit testing protocol that will be used. **The OSHA Respiratory Protection Standard Appendix A** has specific protocols which must be followed exactly in fit testing employees for respirators, and it is acceptable to copy and paste one or more of these into your RPP. First, there are general requirements that pertain to selecting an appropriately sized respirator, some basic training on donning the respirator and performing a user seal check, and descriptions of the specific exercises that are to be performed during the fit test to verify an adequate seal during several routine work activities. Second, there are detailed protocols for four different qualitative (i.e., wearer indicates fit based on detection of a chemical) fit tests and three quantitative (i.e., provides a numerical test result) fit tests from which you may choose.

Qualitative Tests:

There are four qualitative fit test protocols specified in the respiratory protection standard. Either the saccharin or Bitrex® fit test protocol may be used for fit testing half mask APRs, including filtering facepiece respirators, for particulate exposure. These tests may not be used to determine fit for a respirator with a full facepiece.

In these tests, the user is exposed to a saccharin (sweet-tasting) or Bitrex® (bitter-tasting) aerosol. It is up to the respirator user to let the tester know if he or she tastes the test aerosol at any time. Because these tests rely on the user's subjective detection of leakage when challenged with a test agent, the protocols require pre-screening to determine each user's ability to detect the specific test agent.

Wo***rker receiving qualitative fit testing***

Quantitative Tests

There are three approved quantitative fit tests and all require an investment in relatively expensive equipment (currently over $12,000). The most common quantitative protocol used in hospitals is the ambient aerosol condensation nuclei counter (CNC) test. With the correct equipment, this test protocol can be used for all types of respirators and provides an automated calculation of the effectiveness of fit (fit factor) by consecutively measuring and comparing the concentration of airborne particles inside

Worker receiving quantitative fit testing

It is critical that the person conducting the fit testing follows the **protocol written in the respiratory protection standard**. Most hospitals do qualitative fit testing using either the saccharin or Bitrex® protocol. There are some, however, who do quantitative fit testing.

It is the program administrator's responsibility to ensure that the person conducting thefit tests is competent. There is no licensing or certification required for someone to do fit testing; anyone can do it as long as they understand how to follow the protocol and are skilled at training people on how to don and doff their respirator and perform a user seal check. In some hospitals, the Employee Health Department or an occupational health clinic is responsible for both medical evaluations and fit testing, and they can be done in one visit.

In other hospitals, the Infection Preventionist is responsible for fit testing the health care workers with filtering facepiece respirators. Still others train each of the unit managers to fit test their own staff so that one person is not charged with fit testing hundreds of employees. Some hospitals do all of their fit testing and training in one month. Others spread it out so that each employee is tested during their anniversary month. You should decide which approaches work best for you and your facility.

Employees can only wear the respirator model and size for which they have successfully passed a fit test. Employers should implement a mechanism to ensure that employees know the manufacturer, model, and size of respirator they can wear. Some hospitals issue **wallet-sized cards containing this information**, while others place stickers on the back of employee badges.

SUMMARY OF FIT TEST REQUIREMENTS

1. All employees required to wear respirators must be fit tested after receiving medical clearance, prior to respirator use, and annually thereafter.
2. An OSHA-accepted fit test protocol must be followed exactly as it is written in the standard. This may be a qualitative test using Bitrex® or saccharin, a quantitative test using a condensation nuclei counter, or another appropriate instrument.
3. Fit testing must be performed by an individual knowledgeable in respiratory protection, and qualified to follow the protocol and train the employee in the proper donning and doffing of the respirator.
4. Records of fit tests must be kept on file until the next annual test is performed, and you must make sure that employees use only the respirator model and size for which they have passed a fit test.
5. There is no fit test requirement for PAPRs with loose-fitting facepieces, hoods, or helmets. A PAPR with a tight-fitting facepiece requires fit testing (with the blower off)

Fit testing is critical to ensure the safety of the employees relying on their respirators for the expected degree of protection. If hospital personnel do not have the time or skills to conduct fit testing, there are **consultants who provide fit testing services**. In addition to these consultants, some of the respirator manufacturers will provide train-the-trainer services so you can have multiple in-house staff with these skills. There are also some workers' compensation insurance companies that provide similar assistance to their customers.

Training

Employee training is a critical component of an effective RPP. It requires significant time and resources and must be conducted prior to respirator use, at least annually thereafter, and whenever necessary due to changes in the workplace or identified inadequacies in the employee's knowledge. The annual fit test provides an opportunity for hands-on learning and serves to reinforce some of the topics covered in training. Some hospitals include respirator training as part of a skills day for their health care professionals and require them to pass a competency test.

This section of your written program must include both the mechanism for getting everyone trained in a way that they can understand and a description of the curriculum, including all of the topics that are required by the standard to be covered. These are:

- ✓ Why the respirator is necessary (including when it must be worn);
- ✓ Why proper fit, usage, and maintenance is crucial to its effectiveness;
- ✓ What the limitations and capabilities of the respirator are;
- ✓ How to use the respirator in emergencies if appropriate;
- ✓ Hands-on demonstration of how to inspect, put on, remove, use, and check the seal of the respirator;
- ✓ What the procedures are for storage and maintenance;
- ✓ How to recognize medical signs or symptoms that limit or prevent the safe, effective use of respirators; and
- ✓ The general requirements of the of the OSHA respiratory protection standard.

There are a number of educational tools (including slide presentations, posters, and flyers) listed in the References, Resources, and Tools section at the end of this document. You may use these materials during your annual training and as needed year-round to make sure that employees are up-to-date on their knowledge of respiratory protection and its proper use. However, you must ensure that respirator users are fully trained on the specific risks, programs, and procedures at your hospital; can correctly don and doff their respirators; and can recognize when their respirator needs to be repaired or replaced.

Recordkeeping

The respirator standard requires that several types of records be maintained. The written RPP must be maintained in a location that is accessible to all program participants, and it must be made available to OSHA on request. We recommend documenting the changes that are made to the RPP along with any evaluation checklists that are completed during program evaluation (see next section). The current program, however, can be kept online for access by participants.

You must also keep a record of the employee medical evaluations. The questionnaires and any notes from physical exams are medically confidential, so these are often maintained by the PLHCP who does the medical clearance evaluations. They must be maintained for 30 years after termination of employment. The

medical clearance letters that are provided by the PLHCP should be kept on file by the RPA as evidence that the employee has been cleared. It makes sense to keep these with the fit test records.

Fit test records must be kept on file until a new fit test is completed, so there should always be a record for each tight-fitting respirator user indicating that they have passed a fit test within the last 12 months. The respirator protection standard requires the following information to be kept in the fit test record:

- Name or employee ID;
- Type of fit test performed;
- Specific make, model, style, and size of respirator tested;
- Date of test; and
- Pass/fail result from qualitative test or printout from quantitative test.

Program Evaluation

Regular program evaluation is required by the standard and critical to successful implementation. There should be a section in your written program that describes how you will evaluate the implementation and effectiveness of your program. The standard does not require this to be done at specific intervals (i.e., annually). It requires that the workplace be evaluated as necessary to ensure that the provisions of the written program are being implemented effectively. It also requires that the employer regularly consult employees to assess their views on the effectiveness of the program.

This means that the RPA, or whoever has been designated to evaluate the program, should observe respirator donning and doffing, availability, storage, maintenance, and other practices in all units where respirators are commonly used. The systems in place to manage respirator use should be evaluated to ensure that they support the behaviors you expect to observe among employees. If someone is not using a respirator when they are supposed to, consider all the possibilities why this may be happening. Some hospitals use a labor-management health and safety committee to tap into the knowledge and experience of employees and obtain feedback and suggestions for improvements, while others survey or interview respirator users.

Any deficiencies in the implementation of policies and procedures that are discovered as a result of evaluation must be corrected in a timely manner. In some cases, this might mean revising the written program to conform to actual practices as long as the procedures being followed comply with the standard. In other cases, it might mean re-training personnel on some aspect of the program, or assigning a loose-fitting PAPR to someone who had been using a filtering facepiece respirator, but has since grown a beard.

OSHA Standards and Guidance

Several OSHA standards and directives are directly applicable to protecting workers against airborne transmission of infectious agents. These include OSHA's

1. Personal Protective Equipment standard (29 CFR 1910.132) (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9777) and
2. Respiratory Protection standard (29 CFR 1910.134) (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716) which provide protection for workers when exposed to droplet and airborne transmissible infectious agents; and
3. OSHA's TB compliance directive (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=1586&p_text_version=FALSE) which protects workers against exposure to TB through enforcement of existing applicable OSHA standards and the General Duty Clause of the OSH Act.

California OSHA Guidance

Cal/OSHA ATD Standard—Diseases/Pathogens Requiring Airborne Infection Isolation (designated in the standard as "airborne infectious diseases" or AirIDs)	
Aerosolizable spore-containing powders such as Anthrax/Bacillus anthracis	Severe acute respiratory syndrome (SARS)
Avian influenza/Avian influenza A (strains capable of causing serious disease in humans)	Smallpox (variola)/Variola virus
Varicella disease (chickenpox, disseminated shingles)	Tuberculosis (TB)/Mycobacterium tuberculosis
Measles (rubeola)/ Measles virus	Novel or unknown pathogens as defined by the standard
Monkeypox/Monkeypox virus	Any other disease for which public health guidelines recommend airborne infection isolation

CAL/OSHA ATD STANDARD – DISEASES/PATHOGENS REQUIRING DROPLET PRECAUTIONS	
Diphtheria pharyngeal	Pneumonia Adenovirus Haemophilus influenzae Serotype b, infants and children Meningococcal Mycoplasma, primary atypical Streptococcus Group A
Epiglottitis, due to Haemophilus influenzae type b	Pneumonic plague/Yersinia pestis
Haemophilus influenzae Serotype b (Hib) disease/Haemophilus influenzae serotype b—Infants and children	Rubella virus infection (German measles)/Rubella virus
Influenza, human (typical seasonal variations)/influenza viruses*	Severe acute respiratory syndrome (SARS)
Meningitis Haemophilus influenzae, type b known or suspected Neisseria meningitidis (meningococcal) known or suspected	Streptococcal disease (group A streptococcus) Skin, wound or burn, Major Pharyngitis in infants and young children Pneumonia Scarlet fever in infants and young children Serious invasive disease
Meningococcal disease sepsis, pneumonia (see also meningitis)	Viral hemorrhagic fevers due to Lassa, Ebola, Marburg, Crimean-Congo fever viruses (airborne infection isolation and respirator use may be required for aerosol-generating procedures)
Mumps (infectious parotitis)/Mumps virus	Mycoplasmal pneumonia
Parvovirus B19 infection (erythema infectiosum)	Pertussis (whooping cough)
Pharyngitis in infants and young children/Adenovirus, Orthomyxoviridae, Epstein-Barr virus, Herpes simplex virus,	Any other disease for which public health guidelines recommend droplet precautions
* Note: Seasonal influenza is the only disease requiring droplet precautions for which Cal/OSHA currently requires respirator use under certain circumstances. See the box on page 18 and the "Stay Informed" discussion starting on page 17.	

Keep in mind that respirator requirements to protect against infectious diseases are based on guidance from the Centers for Disease Control and Prevention (CDC). It is important to stay informed about any changes in public health guidance as new pathogens emerge or relevant new scientific information becomes available. You will then need to consider how your facility's policies and practices may need to change.
For example, CDC issued updated guidance on infection control for the 2010-11 seasonal influenza (http://www.cdc.gov/flu/professionals/infectioncontrol/healthcaresettings.htm).

CDC recommends that health care workers don a facemask during patient care involving suspected or confirmed influenza, rather than N95 respirators as were used for 2009 H1N1 influenza. Recognizing that the use of a facemask instead of a fit tested N95 respirator may increase the risk of influenza transmission to health care workers, health care facilities are encouraged to continue to include all employees who have direct contact with influenza patients in their respiratory protection program, and to provide fitted respirators to employees who may request to use them in place of facemasks. This is particularly important for employees who may be immunologically compromised or have other reasons to want to minimize their risk of contracting influenza. A respirator policy such as this will both make respirators available to employees who wish to protect themselves against influenza and help to ensure that preparedness is maintained against other infectious disease threats that may arise.

North Carolina Public Health also provides updated information on influenzae (http://flu.nc.gov/)

Glossary

Airborne precautions—One of three categories of Transmission-Based Precautions that HICPAC may recommend when Standard Precautions are not sufficient to prevent the transmission of disease. When Airborne Precautions are required HCWs should wear respirators and place patients in airborne infection isolation rooms.

Aerosol-generating procedures—Procedures that may increase potential exposure to aerosol transmissible disease pathogens due to the reasonably anticipated aerosolization of pathogens. Aerosol-generating procedures may also be known as high hazard or cough-inducing procedures. See page 11 for a detailed explanation.

Aerosol transmissible disease (ATD) or aerosol transmissible disease pathogen—Any disease or pathogen requiring Airborne Precautions or Droplet Precautions.

Airborne infection isolation room (AIIR)—A single-occupancy patient-care room designed to isolate persons with suspected or confirmed airborne infectious diseases. Environmental factors are controlled in AIIRs to minimize the transmission of infectious agents that can be spread from person-to-person by the airborne route. AIIRs should maintain negative pressure relative to adjacent rooms and halls (so that air flows under the door gap into the room), an air flow rate of 6–12 air changes per hour, and direct exhaust of air from the room to the outside of the building or recirculation of air through a HEPA filter.

Air-purifying respirator (APR)—A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through an air-purifying element. See page 14 for a detailed explanation.

Assigned protection factor (APF)—The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified in 29 CFR 1910.134. The APF is based on the maximum fraction of contaminated air expected to leak into the respirator, not the efficiency of the filter.

Droplet precautions—One of three categories of Transmission-Based Precautions that HICPAC may recommend when Standard Precautions are not sufficient to prevent the transmission of disease. When Droplet Precautions are required HCWs should wear surgical masks and eye protection during patient care, mask the patients during transport, and maintain spatial separation between patients.

Facemask—A loose-fitting, disposable device that creates a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment. Facemasks may be labeled as surgical, laser, isolation, dental, or medical procedure asks. They may come with or without a face shield.

Facepiece—The part of a respirator that covers the nose and mouth of the wearer. Respirators may have half facepieces covering just the nose and mouth, or they may have full facepieces covering the nose, mouth, and eyes. They are designed to form a seal with the face.

Fit factor—A quantitative estimate of the fit of a particular respirator to a specific individual and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test—The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Food and Drug administration (FDA)—An agency within the U.S. Department of Health and Human Services. The FDA is responsible for, among other things, protecting the public health by assuring drugs, vaccines, and other biological products and medical devices intended for human use are safe and effective.

Filtering facepiece respirator—A type of single-use, negative-pressure, air-purifying respirator where an integral part of the facepiece or the entire facepiece is made of filtering material.

Healthcare Infection Control Practices Advisory Committee (HICPAC)—An advisory committee assembled to provide advice and guidance to the CDC and the U.S. Department of Health and Human Services regarding the practice of infection control and strategies for surveillance, prevention, and control of healthcare-associated infections and antimicrobial resistance in United States healthcare settings. HICPAC authored the 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, which describes Standard and Transmission-Based Precautions used for infection control.

Health care worker (HCW)—Paid and unpaid persons who provide patient care in a health care setting or any person who provides services that support the delivery of health care such as dietary, housekeeping, engineering, and maintenance personnel.

High-efficiency particulate air (HEpa) filter—A filter that is at least 99.97% efficient in removing particles 0.3 micrometers in diameter. The equivalent NIOSH particulate filters are the N100, R100, P100, and HE filters.

Loose-fitting facepiece—A respiratory inlet covering that leaves the back of the neck exposed and is designed to form a partial seal with the face.

Hood—A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

N95 filter—A type of NIOSH-approved filter or filter material, which captures at least 95% of airborne particles and is not resistant to oil.

N95 respirator—A generally used term for a half mask negative-pressure air-purifying respirator with NIOSH-approved N95 filters or filter material or a more efficient filter (i.e., includes N95 filtering facepiece respirator or equivalent protection).

Negative-pressure respirator (tight-fitting)—A respirator in which the pressure inside the facepiece is negative during inhalation with respect to ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR)—An air-purifying respirator that uses a blower to force air through filters or cartridges and into the breathing zone of the wearer. This creates a positive pressure inside the facepiece or hood, providing more protection than a non-powered or negative-pressure half mask APR.

Personal Protective Equipment (PPE)—Specialized clothing or equipment worn by an employee to protect the respiratory tract, mucous membranes, skin, and clothing from infectious agents or other hazards. PPE includes gloves, respirators, goggles, facemasks, surgical masks, faceshields, and gowns.

Physician or other Licensed Health Care Professional (PLHCP)—An individual whose legally permitted scope of practice (i.e., license, registration, or certification), as defined by the state where he or she practices, allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required to provide a medical evaluation as described in OSHA's respiratory protection standard.

Qualitative fit testing (QLFT)—A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit testing (QNFT)—An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator—A device worn over the nose and mouth to protect the wearer from hazardous materials in the breathing zone. Respirators must be approved by the National Institute for Occupational Safety and Health (NIOSH) for the purpose for which they are used.

Respiratory protection program (RPP)—Program required by OSHA under the respiratory protection standard that includes development and implementation of detailed policies and worksite-specific procedures for respirator use for control of respiratory hazards.

Respirator program administrator (RPA)—Individual designated to oversee a facility's respiratory protection program (RPP).

Surgical mask—A loose-fitting, disposable device that creates a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment. Surgical masks are fluid resistant and provide protection from splashes, sprays, and splatter.

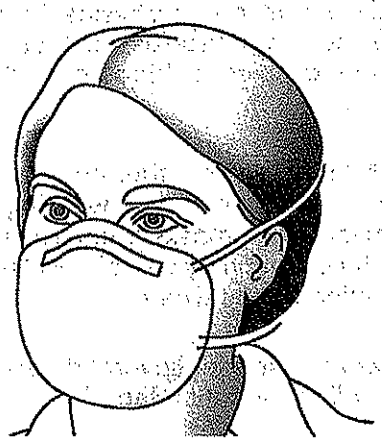
User seal check—An action conducted by the respirator user to determine if the respirator is properly seated to the face. For all tight-fitting respirators, the employer shall ensure that employees perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 of OSHA's respiratory protection standard or equally effective procedures recommended by the respirator manufacturer. User seal checks are not substitutes for qualitative or quantitative fit tests.

OSHA® FactSheet

Respiratory Infection Control: Respirators Versus Surgical Masks

It is important that employers and workers understand the significant differences between these two types of personal protective equipment. The decision whether or not to require workers to use either surgical masks or respirators must be based upon a hazard analysis of the workers' specific work environments and the different protective properties of each type of personal protective equipment.

The use of surgical masks or respirators is one practice that may reduce the risk of infectious disease transmission between infected and noninfected persons. Since there is limited historical information on the effectiveness of surgical masks and respirators for the control of influenza during any previous pandemics, the effectiveness of surgical masks and respirators has been inferred on the basis of the mode of influenza transmission, particle size and professional judgment.



To offer protection, both surgical masks and respirators need to be worn correctly and consistently. If used properly, surgical masks and respirators both have a role in preventing different types of exposures. During an influenza pandemic, surgical masks and respirators need to be used in conjunction with interventions that are known to prevent the spread of infection, such as engineering and administrative controls (e.g., installing sneeze guards, teleworking) and work practices (e.g., cough etiquette, hand hygiene, and avoiding large gatherings).

Respirators

Respirators are designed to reduce a worker's exposure to airborne contaminants. Respirators come in various sizes and must be individually selected to fit the wearer's face and to provide a tight seal. A proper seal between the user's face and the respirator forces inhaled air to be pulled through the respirator's filter material and not through gaps between the face and respirator.

Respirators offer the best protection for workers who must work closely (either in contact with or within 6 feet) with people who have influenza-like symptoms. These generally include those workers who work in occupations classified as *very high exposure risk* or *high exposure risk* to pandemic influenza. For additional information on very high and high exposure risk occupations, please refer to OSHA Publication No. 3327, entitled *Guidance on Preparing Workplaces for an Influenza Pandemic*, which can be found at http://www.osha.gov/dsg/topics/pandemicflu/index.html.

Where workers are required by employers to wear respirators, they must be NIOSH-certified, selected, and used in the context of a comprehensive respiratory protection program, (see OSHA standard 29 CFR 1910.134, or www.osha.gov/SLTC/respiratoryprotection/index.html). It is important to medically evaluate workers to ensure that they can perform work tasks while wearing a respirator. For many workers, medical evaluation may be accomplished by having a physician or other licensed healthcare provider review a

respiratory questionnaire completed by the worker (found in Appendix C of OSHA's Respiratory Protection standard, 29 CFR 1910.134) to determine if the worker can be medically cleared to use a respirator. Employers who have never before needed to consider a respiratory protection plan should note that it can take time to choose an appropriate respirator to provide to workers; arrange for a qualified trainer; and provide training, fit testing and medical evaluation for their workers. If employers wait until an influenza pandemic occurs, they may be unable to implement an adequate respiratory protection program in a timely manner.

Surgical Masks

Surgical masks are used as a physical barrier to protect the user from hazards, such as splashes of large droplets of blood or body fluids.

Surgical masks also protect other people against infection from the person wearing the surgical mask. Such masks trap large particles of body fluids that may contain bacteria or viruses expelled by the wearer.

Surgical masks are used for several different purposes, including the following:

- Placed on sick people to limit the spread of infectious respiratory secretions to others.
- Worn by healthcare providers to prevent accidental contamination of patients' wounds by the organisms normally present in mucus and saliva.
- Worn by workers to protect themselves from splashes or sprays of blood or bodily fluids; they may also keep contaminated fingers/hands away from the mouth and nose.

Surgical masks are not designed or certified to prevent the inhalation of small airborne contaminants. These particles are not visible to the naked eye but may still be capable of causing infection. Surgical masks are not designed to seal tightly against the user's face. During inhalation, much of the potentially contaminated air can pass through gaps between the face and the surgical mask and not be pulled through the filter material of the mask. Their ability to filter small particles varies significantly based upon the type of material used to make the surgical mask, so they cannot be relied upon to protect workers against airborne infectious agents. Only surgical masks that are cleared by the U.S. Food and Drug Administration to be legally marketed in the United States have been tested for their ability to resist blood and body fluids.

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INTEGRATION OF RESPIRATORY PROTECTION INTO PRACTICE AMONG HEALTH CARE WORKERS

May 30, 2013

William and Ida Friday Center for Continuing Education
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May 30 2013

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Appendices

1. Respiratory Protection Evaluation Checklist Tool
2. Template : Respiratory Protection Program for Heath Care Facility
3. Respiratory Protection Program Checklist from TB Guidelines

Web Resources

1. CDC Infection Control in Health Care Settings: http://www.cdc.gov/flu/professionals/infectioncontrol/healthcaresettings.htm
2. TB Respiratory Protection Program In Health Care Facilities- Administrator's Guide: http://www.cdc.gov/niosh/docs/99-143/pdfs/99-143.pdf
3. Small Entity Compliance Guide for the Respiratory Protection Standard: http://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf
4. NC-OSHA Industry Guide 44 "A Guide to Respiratory Protection" http://www.nclabor.com/osha/etta/indguide/ig44.pdf
5. Interim Guidance for the Use of Masks to Control Influenza Transmission http://www.cdc.gov/flu/professionals/infectioncontrol/maskguidance.htm
6. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html
7. Facemasks and Respirators – http://www.cdph.ca.gov/programs/ohb/documents/HCResp-MaskRespFlyer.pdf
8. OSHA Respiratory Protection Booklet: Publication # 3079: www.osha.gov/Publications/osha3079.pdf
9. Federal OSHA Respiratory Protection Topic Page http://www.osha.gov/SLTC/respiratoryprotection/index.html
10. Major Requirements of OSHA's Respiratory Protection Standard 29CFR1910.134 https://www.dir.ca.gov/dosh/etools/08-012/08-01201_Respirators/Major%20Requirements%20of%20OSHA's%20Respiratory%20Protection%20Standard.pdf
11. Link to NC Flu Update: NC DHHS http://www.flu.nc.gov/providers/
12. Link to Respirator Fit Testing Training Card http://www.cdph.ca.gov/programs/ohb/documents/HCResp-FitTestTrainingCard.pdf
13. NC DHHS Respiratory Protection Program Policies http://info.dhhs.state.nc.us/olm/manuals/dhs/pol-50/man/Pol5_SB_Respiratory_Protect1.htm
14. NIOSH National Personal Protective Technology Laboratory www.cdc.gov/niosh/npptl
15. NIOSH Respirator Topic Page: www.cdc.gov/niosh/topics/respirators/
16. NIOSH Respirator Topic Page – Respirators: http://www.cdc.gov/niosh/topics/respirators/
17. NIOSH Respirator Trusted Source Page www.cdc.gov/niosh/npptl/topics/respirators/disp_part/RespSource.html
18. Federal OSHA Respiratory Protection Topic Page www.osha.gov/SLTC/respiratoryprotection/index.html
19. OSHA: A Respirators vs Surgical Masks - Two-page Fact Sheet http://www.osha.gov/Publications/respirators-vs-surgicalmasks-factsheet.pdf
20. CDC: Interim Guidance for the Use of Masks to Control Influenza Transmission - http://www.cdc.gov/flu/professionals/infectioncontrol/maskguidance.htm#

RESOURCES FOR TRAINING FOR RESPIRATORY PROGRAM ADMINISTRATORS

1. North Carolina Occupational Safety and Health Education and Research Center http://osherc.sph.unc.edu/index.html
2. North Carolina Department of Labor http://www.nclabor.com/osha/etta/A_to_Z_Topics/Respiratory%20Protection.htm
3. OSHA Respiratory Protection Training Requirements http://www.osha.gov/video/respiratory_protection/training_transcript.html

Videos

1. OSHA: Respiratory Protection eTool: http://www.osha.gov/SLTC/etools/respiratory/
2. OSHA: January 12, 2011: Respiratory Protection for Healthcare Workers Training Video: http://www.dol.gov/dol/media/webcast/20110112-respirators/
3. NIOSH: Difference Between Respirators and Surgical Masks Video: http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/DifferenceRespSurgical.html
4. NIOSH: Donning and Doffing and User Seal Checks Video: http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/DonningDoffing.html
5. OSHA: Respirator Types Video: https://www.osha.gov/video/respiratory_protection/resptypes.html
6. OSHA: Respirator Fit Testing Video: https://www.osha.gov/video/respiratory_protection/fittesting.html
7. OSHA: Maintenance and Care of Respirators Video: https://www.osha.gov/video/respiratory_protection/maintenance.html
8. OSHA: Medical Evaluation for Workers Who Use Respirators: https://www.osha.gov/video/respiratory_protection/medevaluations.html
9. OSHA: Respiratory Protection Training Requirements: https://www.osha.gov/video/respiratory_protection/training.html
4. OSHA: Differences between facemasks and respirators English: http://www.osha.gov/video/20091216-respirator-1-english-high.wmv and Spanish: http://www.osha.gov/video/20091216-respirator-1-spanish-high.wmv

Activity Title: INTEGRATION OF RESPIRATORY PROTECTION INTO PRACTICE AMONG HEALTH CARE WORKERS

Date: 5/30/2013 **Location:** Friday Center, Chapel Hill, NC **Activity #:** _____

Continuing Education Disclosures

Participants must attend the entire session in order to earn contact hour credit. Verification of participation will be noted by signature on the roster or being "checked off" on a computer print out of participants. No influential financial relationships have been disclosed by planners or presenters which would influence the planning of this activity. If any arise, an announcement will be made at the beginning of the session. No commercial support has influenced the planning of the educational objectives and content of this event. Any commercial support will be used for events that are not CE related. There is no endorsement of any product by NCNA or ANCC associated with this session. No session relates to products governed by the Food and Drug Administration. If it did, appropriate and off-label use will be shared.

I Please rate the effectiveness of this continuing nursing education activity.

Objectives Achieved	Excellent	Good	Fair	Poor
Objective 1 Identify the purpose of the Respiratory Protection Conference				
Objective 2 List the components of Respiratory Protection Program in the Health Care				
Objective 3 Describe the status of the Respiratory Protection use in NC hospitals				
Objective 4 Describe the procedure of Respirator Fit Testing				
Objective 5 Demonstrate correct method of donning and doffing Respirators				
Objective 6 Describe the components of the Joint Commission Tool Kit for Use of Respiratory Protection in Health Care				
Objective 7 Identify strategies for Implementing Respiratory Protection Programs at Health Care Institutions				
Objective 8 Describe the process for conducting focus group meeting				
Objective 9 Identify the role and responsibility of the "practice champion"				

(Note- Add, delete, expand row(s) as needed for the activity's # and length of objectives.)

II. Please rate the audiovisuals/handouts used for this workshop.

Excellent		Good		Fair		Poor	

III. **Please evaluate the expertise of each presenter individually.**

Presenter(s) Add rows if needed for more presenter(s) names.	Excellent	Good	Fair	P
Bonnie Rogers				
Edie Alfano-Sobsey				
John "Pat" Curran				
Kathleen Buckheit				
Debbie Novak				
Judy Ostendorf				

IV. **Please evaluate the physical environment where the workshop was held:**

Excellent		Good		Fair		Poor	

V. **How do you plan to use this information in your practice setting?**

VI. **General comments and/or suggestions:**

Continuing education credit will be provided through the Public Health Nursing and Professional Development (PHNPD) Unit.

Public Health Nursing and Professional Development, Department of Health and Human Services, is an approved provider of continuing nursing education by the North Carolina Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

MAJOR REQUIREMENTS OF OSHA'S RESPIRATORY PROTECTION STANDARD 29 CFR 1910.134

OSHA Office of Training and Education
March 1998

This document discusses the major requirements of OSHA's Respiratory Protection Standard, 29 CFR 1910.134.

No attempt has been made to discuss every detail of the standard. Readers are encouraged to consult the *Federal Register* (63 FR 1152, January 8, 1998) for the complete text. The corresponding page numbers of major paragraphs as they appear in Section VII (Summary and Explanation of the Standard) are provided throughout this document to facilitate further reading.

MAJOR REQUIREMENTS OF 29 CFR 1910.134

Introduction

- This standard, which replaces the respiratory protection standards adopted by OSHA in 1971 (29 CFR 1910.134 and 29 CFR 1926.103), applies to General Industry (Part 1910), Shipyards (Part 1915), Marine Terminals (Part 1917), Longshoring (Part 1918), and Construction (Part 1926).

- Respirator-related provisions of OSHA's existing standards are revised to conform to each other and to revised 29 CFR 1910.134.

- All provisions addressing respirator use, selection, and fit testing are deleted from OSHA's substance-specific standards.

- The entire previous respirator standard, 29 CFR 1910.134, is redesignated as 29 CFR 1910.139 *Respirator protection for M. tuberculosis*, and will continue to apply to respirator use for protection against exposure to TB until the TB standard is finalized (proposal 62 FR 54160, Oct. 17, 1997).

(a) Permissible Practice (p. 1179)

- Paragraphs (a)(1) and (a)(2) are essentially unchanged from the corresponding paragraphs of the prior standard. Paragraph (a)(1) establishes the hierarchy of controls by requiring the use of respirators when "effective engineering controls are not feasible, or while they are being instituted."

- Paragraph (a)(2) requires employers to provide employees with respirators that are "applicable and suitable" for the purpose intended "when such equipment is necessary to protect the health of the employee."

(b) Definitions (p. 1181)

This paragraph contains definitions of important terms used in the regulatory text. The previous respiratory protection standard contained no definitions.

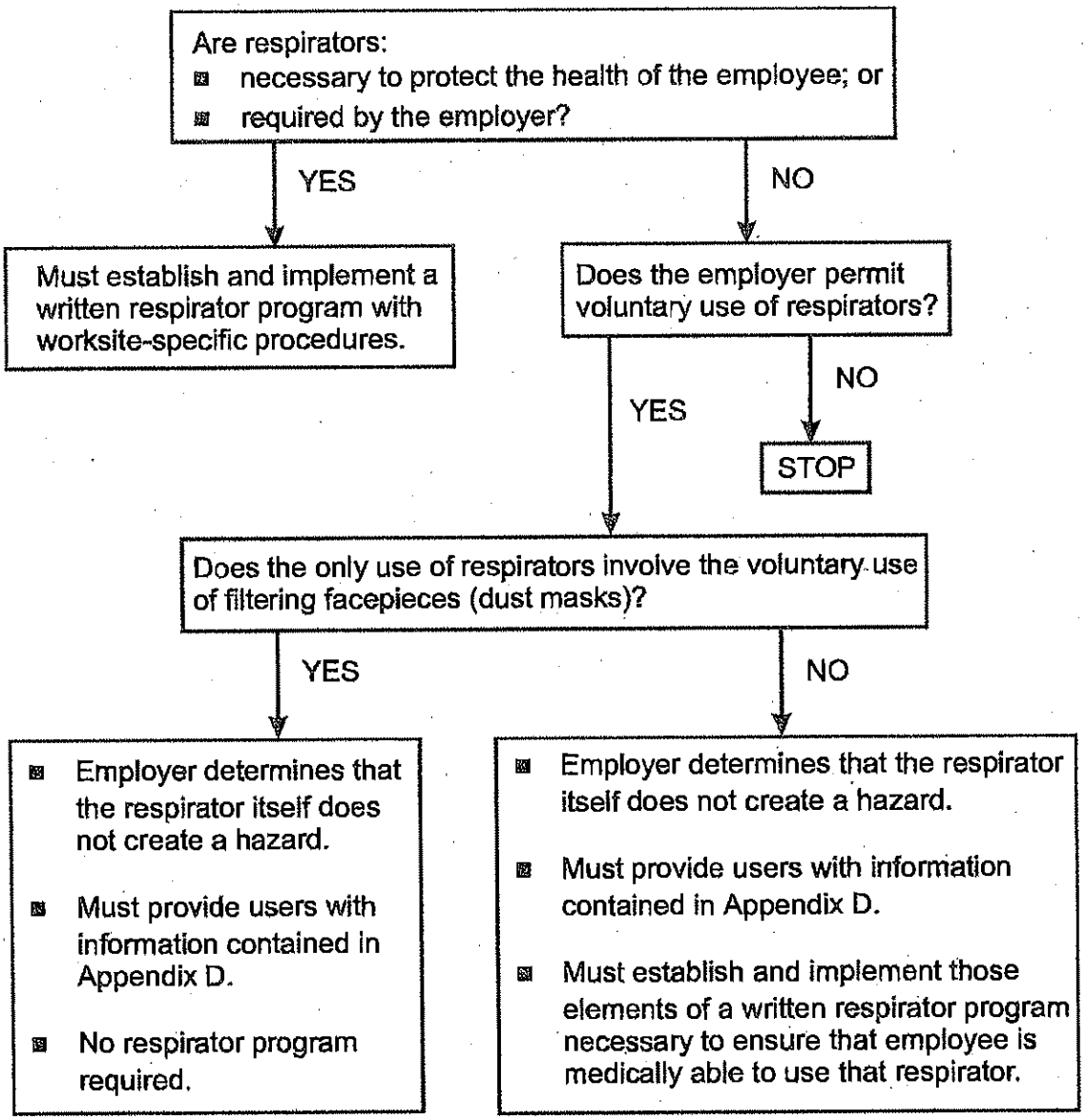
(c) Respiratory Protection Program (p. 1187)

- Must designate a qualified program administrator to oversee the program.

- Must provide respirators, training, and medical evaluations at no cost to the employee.

- OSHA has prepared a *Small Entity Compliance Guide* that contains criteria for selection of a program administrator and a sample program.

Respirator-Use Requirements Flow Chart
29 CFR 1910.134(c)



(d) Selection of Respirators (p. 1195)

- Must select a respirator certified by the National Institute for Occupational Safety and Health (NIOSH) which must be used in compliance with the conditions of its certification.

- Must identify and evaluate the respiratory hazards in the workplace, including a reasonable estimate of employee exposures and identification of the contaminant's chemical state and physical form.

- Where exposure cannot be identified or reasonably estimated, the atmosphere shall be considered immediately dangerous to life or health (IDLH).

- Respirators for IDLH atmospheres:
  - Approved respirators:
    - full facepiece pressure demand self-contained breathing apparatus (SCBA) certified by NIOSH for a minimum service life of thirty minutes, or
    - combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
  - All oxygen-deficient atmospheres (less than 19.5% O_2 by volume) shall be considered IDLH.
    Exception: If the employer can demonstrate that, under all foreseeable conditions, oxygen levels in the work area can be maintained within the ranges specified in Table II (i.e., between 19.5% and a lower value that corresponds to an altitude-adjusted oxygen partial pressure equivalent to 16% oxygen at sea level), then *any* atmosphere-supplying respirator may be used.

- Respirators for non-IDLH atmospheres:
  - For protection against gases and vapors, the employer shall provide:
    - an atmosphere-supplying respirator, or
    - an air-purifying respirator, provided that:
      - respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or
      - if there is no ESLI appropriate for conditions of the employer's workplace, the employer implements a change schedule for canisters and cartridges that will ensure that they are changed before the end of their service life and describes in the respirator program the information and data relied upon and basis for the change schedule and reliance on the data.
  - For protection against particulates, the employer shall provide:
    - atmosphere-supplying respirator; or
    - an air-purifying respirator equipped with high efficiency particulate air (HEPA) filters certified by NIOSH under 30 CFR Part 11 or with filters certified for particulates under 42 CFR Part 84; or
    - an air-purifying respirator equipped with any filter certified for particulates by NIOSH for contaminants consisting primarily of particles with mass median aerodynamic diameters of at least 2 micrometers.

(e) Medical Evaluation (p. 1207)

- Must provide a medical evaluation to determine employee's ability to use a respirator, before fit testing and use.

- Must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire (information required is contained in mandatory Appendix C).

- Must obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP.

- Additional medical evaluations are required under certain circumstances, e.g.:
  - employee reports medical signs or symptoms related to ability to use respirator;
  - PLHCP, program administrator, or supervisor recommends reevaluation;
  - information from the respirator program, including observations made during fit testing and program evaluation, indicates a need; or
  - change occurs in workplace conditions that may substantially increase the physiological burden on an employee.

- Annual review of medical status is not required.

(f) Fit Testing (p. 1221)

- All employees using a negative or positive pressure tight-fitting facepiece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT).

- Fit testing is required prior to initial use, whenever a different respirator facepiece is used, and at least annually thereafter. An additional fit test is required whenever the employee reports, or the employer or PLHCP makes visual observations of, changes in the employee's physical condition that could affect respirator fit (e.g., facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight).

- The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol, as contained in mandatory Appendix A.
  - QLFT Protocols:
    - Isoamyl acetate
    - Saccharin
    - Bitrex
    - Irritant smoke
  - QNFT Protocols:
    - Generated Aerosol (corn oil, salt, DEHP)
    - Condensation Nuclei Counter (PortaCount)
    - Controlled Negative Pressure (Dynatech FitTester 3000)
- QLFT may only be used to fit test negative pressure air-purifying respirators (APRs) that must achieve a fit factor of 100 or less.

- If the fit factor determined through QNFT is ≥100 for tight-fitting half facepieces, or ≥500 for tight-fitting full facepieces, the QNFT has been passed with that respirator.

> Note: If a particular OSHA standard (e.g., 29 CFR 1910.1001 Asbestos) requires the use of a full facepiece APR capable of providing protection in concentrations up to 50 times the Permissible Exposure Limit (PEL), this respirator must be QNFT. This is because a protection factor of 50 (50 X PEL) multiplied by a standard safety factor of 10 is equivalent to a fit factor of 500.
>
> The safety factor of 10 is used because protection factors in the workplace tend to be much lower than the fit factors achieved during fit testing. The use of a safety factor is a standard practice supported by most experts to offset this limitation. This is discussed in the record at 63 FR 1225.

(g) Use of Respirators (p. 1236)

- Tight-fitting respirators shall not be worn by employees who have facial hair or any condition that interferes with the face-to-facepiece seal or valve function.

- Personal protective equipment shall be worn in such a manner that does not interfere with the seal of the facepiece to the face of the user.

- Employees shall perform a user seal check each time they put on a tight-fitting respirator using the procedures in mandatory Appendix B-1 or equally effective manufacturer's procedures.

- Procedures for respirator use in IDLH atmospheres are stated. In addition to these requirements, interior structural firefighting requires the use of SCBAs and a protective practice known as "2-in/2-out" — at least two employees must enter and remain in visual or voice contact with one another at all times, and at least two employees must be located outside. (Note that this is not meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.)

(h) Maintenance and Care of Respirators (p. 1248)

Must clean and disinfect respirators using the procedures in Appendix B-2, or equally effective manufacturer's procedures at the following intervals:

- as often as necessary to maintain a sanitary condition for exclusive use respirators,
- before being worn by different individuals when issued to more than one employee, and
- after each use for emergency use respirators and those used in fit testing and training.

(i) Breathing Air Quality and Use (p. 1252)

Compressed breathing air shall meet the requirements for Type 1-Grade D breathing air as described in ANSI/CGA *Commodity Specification for Air*, G-7.1-1989.

(j) Identification of Filters, Cartridges, and Canisters (p. 1257)

- All filters, cartridges, and canisters used in the workplace must be labeled and color coded with the NIOSH approval label.
- The label must not be removed and must remain legible.

(k) Training and Information (p. 1258)

- Must provide effective training to respirator users, including:
  - why the respirator is necessary and how improper fit, use, or maintenance can compromise the protective effect of the respirator
  - limitations and capabilities of the respirator
  - use in emergency situations
  - how to inspect, put on and remove, use and check the seals
  - procedures for maintenance and storage
  - recognition of medical signs and symptoms that may limit or prevent effective use
  - general requirements of this standard
- Training required prior to initial use, unless acceptable training has been provided by another employer within the past 12 months.
- Retraining required annually and when:
  - workplace conditions change,
  - new types of respirator are used, or
  - inadequacies in the employee's knowledge or use indicates need.
- The basic advisory information in Appendix D shall be provided to employees who wear respirators when their use is not required.

(l) Program Evaluation (p. 1262)

Employer must conduct evaluations of the workplace as necessary to ensure proper implementation of the program, and consult with employees to ensure proper use.

(m) Recordkeeping (p. 1264)

- Records of medical evaluations must be retained and made available per 29 CFR 1910.1020.
- A record of fit tests must be established and retained until the next fit test.
- A written copy of the current program must be retained.

(n) Dates (p. 1264)

- Determination that respirator use is required [paragraph (a)] shall be completed no later than 9/8/98.
- Compliance with all other provisions of this standard shall be completed no later than 10/5/98.

Respiratory Protection Program Checklist

From

TB Respiratory Protection Program In Health Care Facilities
Administrator's Guide
http://www.cdc.gov/niosh/docs/99-143/pdfs/99-143.pdf

In general, the respiratory protection program should be evaluated for each job or at least annually, with program adjustments, as appropriate, made to reflect the evaluation results. Program function can be separated into administration and operation.

A. Program Administration

_____ (1) Is there a written policy which acknowledges employer responsibility for providing a safe and healthful workplace, and assigns program responsibility, accountability, and authority?

_____ (2) Is program responsibility vested in one individual who is knowledgeable and who can coordinate all aspects of the program at the health care facility?

_____ (3) Can administrative and engineering controls eliminate the need for respirators?

_____ (4) Are there written procedures/statements covering the various aspects of the respirator program, including:

- _____ (a) designation of an dministrator;
- _____ (b) respirator selection;
- _____ (c) purchase of NIOSH certified respirators;
- _____ (d) medical aspects of respirator usage;
- _____ (e) issuance of equipment;
- _____ (f) fitting; (g) training;
- _____ (h) maintenance, storage, and repair;
- _____ (i) inspection;
- _____ (j) use under special conditions; and
- _____ (k) work area surveillance?

B. Program Operation

_____ (1) Respiratory protective equipment selection

- _____ (a) Are work area conditions and worker exposures properly surveyed?
- _____ (b) Are respirators selected on the basis of the hazard to which the worker is exposed?
- _____ (c) Are selections made by individuals knowledgeable in proper selection procedures?

_____ (2) Are only NIOSH certified respirators purchased and used; do they provide adequate protection for the specific hazard?

_____ (3) Has a medical evaluation of the prospective user been made to determine physical and psychological ability to wear the selected respiratory protective equipment?

_____ (4) Where practical, have respirators been issued to the users for their exclusive use, and are there records covering issuance?

_____ (5) Respiratory protective equipment fitting

_____ (a) Are the users given the opportunity to try on several respirators to determine whether the respirator they will be subsequently wearing is the best fitting one?

_____ (b) Is the fit tested at appropriate intervals?

_____ (c) Are those users who require corrective lenses properly fitted?

_____ (d) Is the facepiece-to-faceseal tested in a test atmosphere?

_____ (e) Are workers prohibited from wearing respirators in contaminated work areas when they have facial hair or other characteristics which may cause faceseal leakage?

_____ (6) Respirator use in the work area

_____ (a) Are respirators being worn correctly (i.e., head covering over respirator straps)?

_____ (b) Are workers keeping respirators on all the time while in the designated areas?

_____ (7) Maintenance of respiratory protective equipment

Cleaning and Disinfecting

_____ (a) Are nondisposable respirators cleaned and disinfected after each use when different people use the same device, or as frequently as necessary for devices issued to individual users?

_____ (b) Are proper methods of cleaning and disinfecting utilized?

Storage

_____ (a) Are respirators stored in a manner so as to protect them from dust, sunlight, heat, damaging chemicals, or excessive cold or moisture?

_____ (b) Are respirators stored in a storage facility so as to prevent them from deforming?

_____ (c) Is storage in lockers permitted only if the respirator is in a carrying case or carton?

Inspection

_____ (a) Are respirators inspected before and after each use and during cleaning?

_____ (b) Are qualified individuals/users instructed in inspection techniques?

_____ (c) Are records kept of the inspection of respiratory protective equipment?

Repair

_____ (a) Are replacement parts used in repair those of the manufacturer of the respirator?

_____ (b) Are repairs made by trained individuals?

_____ (8) Training and Feedback

_____ (a) Are users trained in proper respirator use, cleaning, and inspection?

_____ (b) Are users trained in the basis for selection of respirators?

_____ (c) Are users evaluated, using competency-based evaluation, before and after training?

_____ (d) Are users periodically consulted about program issues (e.g., discomfort, fatigue, etc.)

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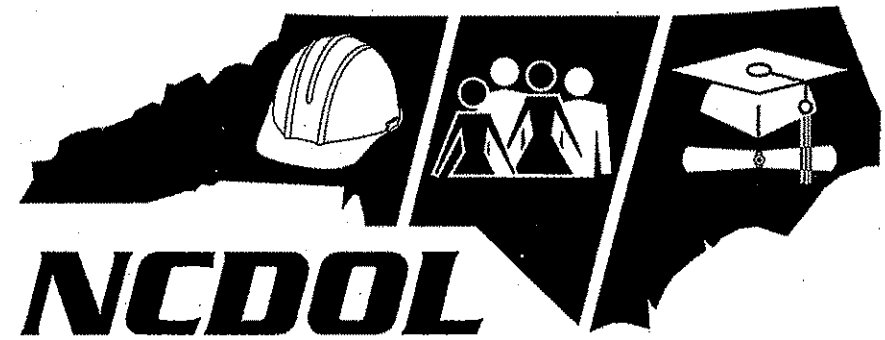
A Guide to Respiratory Protection



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This edition of A Guide to Respiratory Protection is based on information published by the U.S. Occupational Safety and Health Administration and the National Institute for Occupational Safety and Health. This guide was originally compiled by J. Edgar Geddie, Ph.D., health standards officer. The information in this guide was updated in 2012.

This guide is intended to be consistent with all existing OSHA standards; therefore, if an area is considered by the reader to be inconsistent with a standard, then the OSHA standard must be followed instead of this guide. Additional information about respirators and respiratory protection programs can be accessed through the A–Z Safety and Health Topics on the N.C. Department of Labor's Internet site.

To obtain additional copies of this guide, or if you have questions about North Carolina occupational safety and health standards or rules, please contact:

N.C. Department of Labor
Education, Training and Technical Assistance Bureau
1101 Mail Service Center
Raleigh, NC 27699-1101

Phone: 919-807-2875 or 1-800-625-2267

Additional sources of information are listed on the inside back cover of this guide.

The projected cost of the NCDOL OSH program for federal fiscal year 2011–2012 is $17,841,216. Federal funding provides approximately 31 percent ($5,501,500) of this total.

Revised 1/12

Contents

Foreword

The term respirator invokes several images. One of these is that of a single strap dust mask similar to those sold in almost any hardware or home improvement store. Another is that of the gas masks worn by military personnel during combat or anti-terrorist activities. Lastly, the term respirator may conjure up the image of a fire fighter wearing a self-contained breathing apparatus (SCBA) rushing into a burning building. Regardless of the type of respirator worn, if it is not properly used it can have detrimental health effects for the user. These health effects can range from slight irritation of the throat and lungs to illness or, in the worst case, death.

A Guide to Respiratory Protection examines the types of respirators available and the elements of an effective respiratory protection standard that are required by the NCDOL OSHA respiratory protection standard, 29 CFR 1910.134. Particular attention is given to selection, medical evaluation, fit testing and training.

In North Carolina, the N.C. Department of Labor enforces the federal Occupational Safety and Health Act through a state plan approved by the U.S. Department of Labor. NCDOL offers many educational programs to the public and produces publications to help inform people about their rights and responsibilities regarding occupational safety and health.

When reading this guide, please remember the mission of the N.C. Department of Labor is greater than just regulatory enforcement. An equally important goal is to help citizens find ways to create safe workplaces. Everyone profits when managers and employees work together for safety. This booklet, like the other educational materials produced by the N.C. Department of Labor, can help.

Cherie Berry
Commissioner of Labor

Introduction

In industry, respirators are often viewed as a quick fix for protecting employees against overexposures to airborne contaminants when existing ventilation is inadequate. However, there are limitations on the use of respirators that, if exceeded, can subject employees to serious or fatal health consequences.

Respirators have been used throughout history as early as ancient Roman times. Mention of their use appears in reports of industrial processes during the Middle Ages.[1] Early respirators consisted of animal bladders and animal blankets or rags wrapped around the nose and mouth. With the 19th century came the development of masks, primarily for fire fighters, that combined aerosol filters and vapor absorbents.

The use of chemical warfare agents in World War I led to the development of respirators by the Bureau of Mines for use by the army. Following the war, the need to protect individuals against the misuse of wartime respirators led to the development of the first United States respirator standards by the Bureau of Mines that governed the approval and use of respirators. Subsequently, the first respirator approval was issued in 1920 for a self-contained breathing apparatus (SCBA). Following this, other federal respiratory protection standards were developed, leading to the present OSHA respiratory protection standard, 29 CFR 1910.134, and to the current certification and approval of respirators by the National Institute for Occupational Safety and Health (NIOSH). These rules were initially promulgated under 30 CFR Part 11 and were later recodified to 42 CFR Part 84.

1. *Patty's Industrial Hygiene and Toxicology*, 4th Edition, John Wiley & Sons, Inc., 1991, pp 675-676 and references therein.

1

Respiratory Hazards in the Workplace

Exposure Assessment

Respiratory protection should never be used either as a primary solution or as the only solution for controlling employee exposure to harmful airborne contaminants. Rather, respirators supplement engineering and administrative controls and work practices when they are not adequate to control worker exposure to airborne contaminants to safe levels.

To identify the appropriate type and level of respiratory protection, employers must conduct an exposure assessment of their workplace. The purpose of this is to identify the types of air contaminants present and the levels of exposure to these substances to select the appropriate respirator when respiratory protection is necessary.

Air contaminants can exist in several forms that are dependent on their identity, how the exposure is generated, and its physical form or state of matter. These include particulates, gases and vapors.

Particulates

Particulates constitute the most common type of air contaminant in occupational settings and include dusts, fibers, mists and fumes. Dusts are generated during the handling, crushing, grinding, detonation, impact and decrepitation (breaking apart by heat) of solid materials and have a general range of particle sizes ranging from 0.1 to 25 micron (1/25,400 inch) diameter. The health consequences of dust exposure by inhalation depend on the dust particle size and the toxicity of the material from which the dust is generated. Some dusts that are known to produce hazardous health effects include those from beryllium, raw cotton, inorganic lead, nickel, cadmium, chromium and silica.

A fiber is a particle that has a length-to-diameter ratio of 3 to 1 or greater. In the workplace, exposure to fibers can arise from asbestos-containing materials and man-made mineral fibers (MMMF, also referred to as synthetic vitreous fibers (SVF)) such as refractory ceramic fibers, fiberglass (glass wool and glass filament) and mineral wool (rockwool and slagwool).[2]

A fume is formed when volatilized particles condense in air during operations such as welding, brazing and torch cutting. Fume particulates generally have a particle diameter that is less than 1 micron. In most cases, the hot vapor reacts with oxygen in air to form the oxide. Examples include iron oxide fume, zinc oxide fume and chromium (VI) oxide.

Mists are suspended liquid droplets generated by the condensation of liquids from vapor back to liquid or by breaking up liquid into a dispersed state, for example, by atomization or splashing. Mists are often found in electroplating and pickling operations.

The size of the particulate determines what part of the respiratory system will be affected. Particles that have a diameter of 10 microns or greater will be deposited in the upper regions of the lungs and will not impact the alveolar (gas exchange) region of the lungs. These are referred to as non-respirable particles. Particulates that are less than 10 microns in diameter are small enough to reach the alveolar sacs of the lungs in great quantities.

With the exception of fibers, the concentration of particulates in air is expressed in terms of milligrams per cubic meter (mg/m3). The measured concentration of airborne fibers, especially for asbestos fibers, is expressed in fibers per cubic centimeter (f/cc).

Gases and Vapors

Vapors are normally in a liquid state at normal temperature and pressure. Vapors can be returned to the liquid state either by lowering the temperature or by increasing the pressure.

2. National Institute for Occupational Safety and Health (NIOSH), *Criteria for a Recommended Standard: Occupational Exposure to Refractory Ceramic Fibers.* DHHS (NIOSH) Publication 2006-123, 2006.

At room temperature and normal pressure, a gas expands to assume the shape and size of the container it occupies. Unlike vapors, gases can be compressed. Additionally they can be returned to a liquid state by lowering the temperature and increasing the pressure.

Gases and vapors, which are measured in units of parts per million (ppm), exert their effects in the alveolar region of the lungs through irritation of surrounding tissue and by absorption directly into the bloodstream. Sampling for gases and vapors in the work environment is done to determine oxygen content, the presence and concentrations of toxic gases, and to identify whether explosive levels of gases exist. For purposes of respiratory protection, only the first two are relative to the use of respirators.

Immediately Dangerous to Life and Health (IDLH)

Special consideration must be given to atmospheric levels of oxygen or toxic substances that are immediately dangerous to life and health (IDLH). The OSHA Respiratory Protection Standard, 29 CFR 1910.134, defines "immediately dangerous to life and health" as an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

An IDLH atmosphere due to oxygen deficiency is one in which the oxygen concentration is less than 19.5 percent. Where oxygen levels are normal, the concentration of a toxic substance necessary to create an IDLH atmosphere exceeds any regulated or recommended exposure levels and depends upon the specific toxicity of that substance. For example, carbon monoxide has an 8-hour time-weighted average (TWA) permissible exposure limit of 50 ppm and an IDLH concentration of 1,200 ppm (0.12 percent) whereas dimethyl sulfate has an 8-hour TWA permissible exposure limit of 1 ppm—with skin absorption designated as a significant route of exposure—and an IDLH level of 7 ppm.

2

Types of Respirators

What Is a Respirator?

The American Heritage Dictionary defines a respirator as "a screenlike device worn over the mouth or nose or both to protect the respiratory tract."[3] Perhaps a better definition is that from NIOSH, which defines a respirator as "any device designed to provide the wearer with respiratory protection against inhalation of a hazardous atmosphere."[4]

Respirators provide protection either by removing contaminants from the air before it is inhaled or by supplying an independent source of breathable (respirable) air. A respirator that removes contaminants from ambient air is termed an ***air-purifying respirator***. A respirator that provides breathing quality air from an independent source is referred to as an ***atmosphere-supplying respirator***. Each of these categories is further classified according to the type of inlet covering and the mode of operation.

Anatomy of a Respirator

Whether you are considering an air-purifying respirator or a supplied-air respirator, it is important to understand the basic components of a respirator. The *respiratory inlet covering* is that part of a respirator that forms a protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. Depending upon the intended use and the level of protection necessary, the respiratory inlet covering may be a tight-fitting facepiece or a loose-fitting helmet, hood or suit.

The effectiveness of a tight-fitting respirator is dependent upon forming a tight seal between the respirator facepiece and the skin of the respirator user's face. Attached to the facepiece behind the air-purifying device or breathing air source is the *inhalation valve,* which is designed to permit unidirectional (one way) flow of filtered or breathing quality air into the respirator facepiece. Also attached to the facepiece is the *exhalation valve,* which allows exhaled air to leave the facepiece, but does not permit contaminated air to reenter the facepiece.

To help ensure a good seal at all times, tight-fitting facepieces are equipped with adjustable elastomeric straps that are located to permit anchoring around the head and neck of the respirator user.[5] This ensures that the seal with the face of respirator user is not broken as the result of pivoting about a single anchor point. The parts of a tight-fitting respirator are identified in Figure 1a.

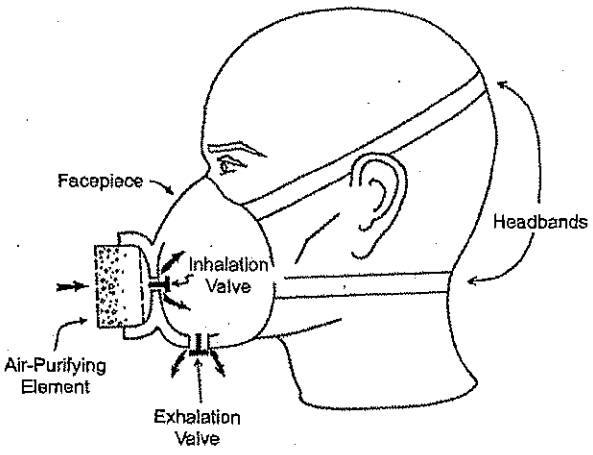
By comparison, a loose-fitting respiratory inlet covering (hood or helmet) does not require the formation of seal with the face but must rely on other means to provide respiratory protection. For this reason, loose-fitting inlet coverings are always used in a continuous flow, positive pressure mode of operation as shown in Figures 1b and 2.

3. The American Heritage Dictionary, Second College Edition
4. 42 CFR Part 84
5. As of the date of this publication there is at least one N95 adjustable single strap respirator approved by NIOSH.

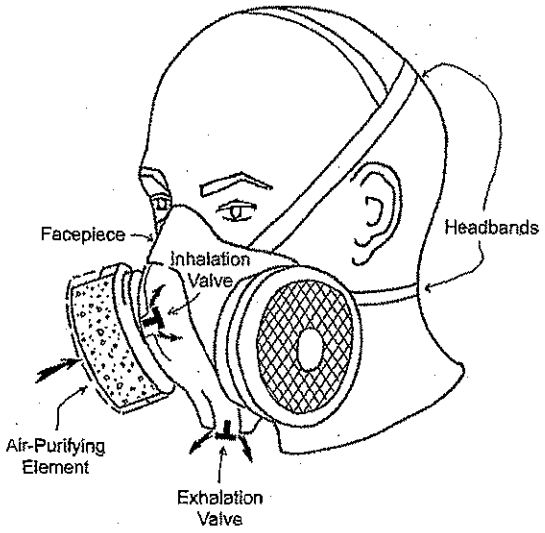
Figure 1a

Tight-Fitting Air-Purifying Respiratory Inlet Coverings

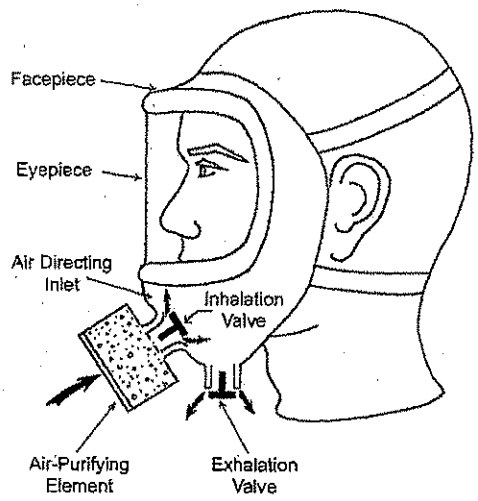
(Courtesy of OSHA)



Typical Quarter-Mask Respirator



Typical Half-Mask Respirator



Typical Full-Facepiece Respirator

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CHAPEL HILL, NC 27516-6248

T 919.962.2101
F 919.966.7579
http://oshere.sph.unc.edu/
oshere@unc.edu

COURSE EVALUATION FORM

Course Title: **Integration of Respiratory Protection into Practice Among Health Care Workers**
Date: **May 30, 2013**
Location: **Chapel Hill, NC**

Your sincere response to the evaluation will enable us to refine existing programs as well as develop more meaningful offerings. Thank you.

PLEASE CIRCLE YOUR RESPONSE.

	LOW				HIGH
1. Will this course be helpful in your job?	1	2	3	4	5
2. Were class handouts adequate?	1	2	3	4	5
3. Were audio-visual aids adequate?	1	2	3	4	5
4. Overall impression of this course?	1	2	3	4	5
5. Please rate the meeting room.	1	2	3	4	5
6. Please rate the UNC staff.	1	2	3	4	5
7. Please rate the hotel & location.	1	2	3	4	5
Name of hotel_____					
8. Would you recommend this course?	1	2	3	4	5

INSTRUCTOR EVALUATION:	LOW				HIGH
Edie Alfano-Sobsey	1	2	3	4	5
Kathleen Buckheit	1	2	3	4	5
Pat Curran	1	2	3	4	5
Debbie Novak	1	2	3	4	5
Judy Ostendorf	1	2	3	4	5
Bonnie Rogers	1	2	3	4	5

9. Please list courses you would like to attend in the future:

_____
_____
_____
_____

10. Suggestions for program improvement:

11. Additional Comments:

12. Please list associates who would benefit from ERC training courses.

NAME:_____
TITLE:_____
FIRM:_____
ADDRESS:_____
CITY:_____ **STATE:**_____ **ZIP:**_____
PHONE:_____ **EMAIL:**_____

NAME:_____
TITLE:_____
FIRM:_____
ADDRESS:_____
CITY:_____ **STATE:**_____ **ZIP:**_____
PHONE:_____ **EMAIL:**_____

Thank You for your assistance and participation in our course.

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PAT CURRAN, CIH

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Respirators

What is a respirator?

A respirator is a device designed to protect the wearer from inhaling harmful airborne dusts, fumes, mists, vapors, or gases. Including bio-aerosols.

A respirator must be NIOSH approved.

A respirator must be selected, worn and maintained in accordance with the OSHA *Respiratory Protection Standard, 29 CFR 1910.134*

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Overview of Respirators

There are 2 types of respirators

1. **Air Purifying Respirators: A respirator that removes harmful airborne contaminants from the worker's breathing zone by either a filter or chemical cartridge**

Air Purifying Respirator

Powered Air Purifying Respirator

Gas Mask

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Overview of Respirators

There are 2 types of respirators

2. **Atmosphere Supplying: Provides clean breathing air that is independent of the worker's breathing zone.**

Supplied Air Respirators

SCBA

Escape SCBA

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N95 RESPIRATORS

N95 Respirators are to be used only for protection against Particulates, including Bio-Aerosols

N95 Respirators do not provide protection against Gases and Vapors, including laboratory solvents and formalin

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N95 Respirators

Respirator

≠

Surgical Mask

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N95 Respirators

Respirators

*NIOSH Approved

*Tight Fitting

*Protects Against Small Airborne Particles – Influenza

*Comply with OSHA to Protect Employees

Surgical Masks

*FDA Cleared

*Loose Fitting

*Barrier For Splashes of Large Droplets of Body Fluids

*Protect Patients and Can't Be Relied on to Protect Workers Against Airborne Infectious Agents

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N95 Respirators

There are Surgical N95 Respirators that are both:

- NIOSH Approved N95 Respirators

AND

- FDA Cleared as Surgical Masks

Resource: OSHA Training Video (5 mins. in duration)
"The Difference Between Respirators and Surgical Masks"
http://www.osha.gov/SLTC/respiratoryprotection/training_videos.html

Note: Video is in both English and Spanish

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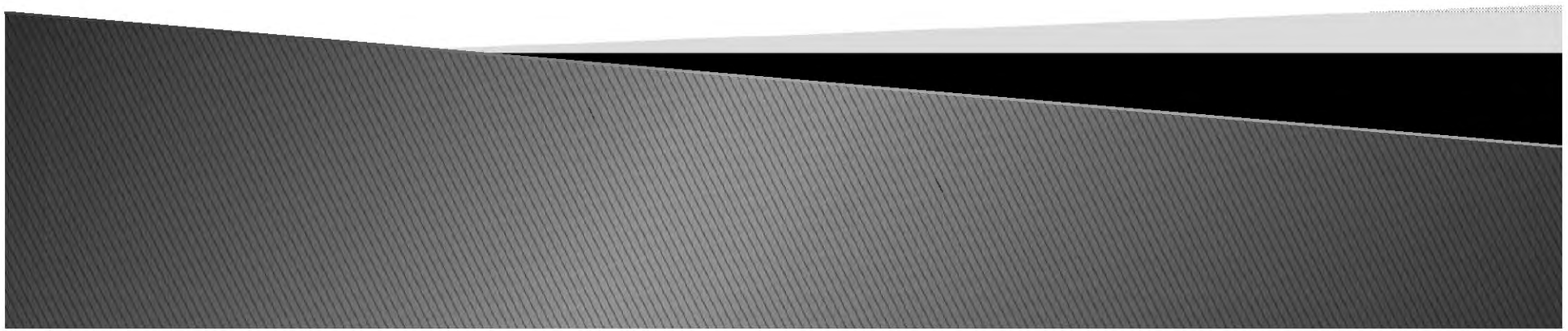
DONNING AND DOFFING RESPIRATORS



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DONNING AND DOFFING A RESPIRATOR

- Each Make and Model of Respirator is put on and taken off differently.
- This can be true even with the same Manufacturer
- Each Respirator comes with Respirator SPECIFIC donning and doffing instructions

Therefore, always take the time to read the Manufacturer's instructions

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DONNING A N95 RESPIRATOR

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RESPIRATOR FIT CHECK

Fit Check Your Respirator Each Time You Put It On

N95
Respirator

Positive or Negative Fit Check

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DOFFING AN N95 RESPIRATOR

There is a correct procedure for taking an N95 Respirator off

- Use the straps
- Do not touch the front of the respirator

This reduces the potential for getting any contaminant on your hands

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DONNING AND DOFFING A RESPIRATOR

Demonstration

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DONNING AND DOFFING A RESPIRATOR

CONGRATULATIONS!

Demonstration Lesson:

- Always follow the Manufacturer's Instructions
- An improperly donned or doffed Respirator poses an preventable health risk to the wearer

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Fit Testing

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FIT TEST DEFINITION

The use of a challenge agent to evaluate the fit of a respirator on an individual

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Reasons for Fit Testing

- Select brand, model, and size of Respirator for each user
- Comfort of Respirator
- Compatibility with other protective equipment, e.g., safety glasses (Fit Testing is done wearing other PPE)
- Meet Legal Requirements
  - 1910.134(f)(1) – (8) and Appendix A

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Fit Testing Frequency

- Employees using any (negative or positive pressure) tight-fitting face piece respirators must pass either a qualitative fit test (QLFT) or quantitative fit test (QNFT):
  - prior to initial use,
  - whenever a different respirator face piece (size, style, model or make) is used, and
  - at least annually thereafter

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Fit Testing Frequency

- Must conduct an additional fit test whenever the employee reports, or the employer or PLHCP makes visual observations of, changes in the employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, or obvious change in body weight) that could affect respirator fit

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Overview of Respirator Fit Testing

Fit Testing

- **Fit testing must be performed for ALL tight fitting respirator face pieces**
- **A medical evaluation must be performed prior to fit testing**
- **Fit testing must be performed before a respirator is required to be used in the workplace**
- **Fit testing must be done following an OSHA protocol**

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Fit Testing

Fit Test Required

Tight Fitting
Face Piece

Fit Test Not Required

Loose Fitting Face Piece

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Overview of Respirator Fit Testing

Fit Testing Protocols

There are 2 types of fit testing:

1. **Qualitative Fit Testing (QLFT) – Pass or Fail (Saccharin, Bitrix, Banana Oil, Irritant Smoke)**

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Overview of Respirator Fit Testing

Qualitative Fit Testing using Saccharin or Bitrix

Pass – if fit test agent is not sensed (taste, smell or irritation)

Fail – if fit test agent is sensed

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Overview of Respirator Fit Testing

Fit Testing

There are 2 types of fit testing:

2. Quantitative Fit Testing (QNFT) – Minimum Fit Factor (100, 500)
(Aerosols, Ambient Air, Negative Pressure)

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Overview of Respirator Fit Testing

Quantitative Fit Testing:
Full face respirator with an adaptor

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Overview of Respirator Fit Testing

Fit Testing

- **QLFT – cheap ($250), easy, subjective, pass/fail**

- **QNFT – expensive ($8,000 +), more technical, objective, numerical fit factor, print out for records**

- **OSHA accepts both fit testing methods**

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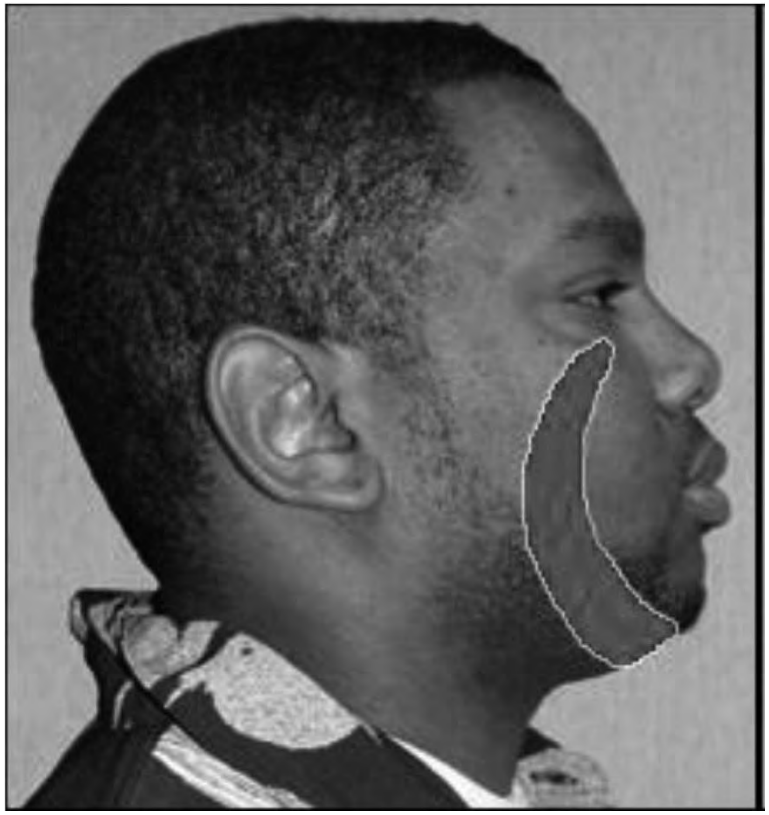
Overview of Respirator Fit Testing

Fit Testing

- **Beards and other facial hair interfere with the face to face piece seal of the respirator**
- **Jeopardizes the health of the wearer**
- **Fit testing shall not be performed as per OSHA**



Experience: A day's stubble will cause a respirator to leak

Must be clean shaven at the start of work

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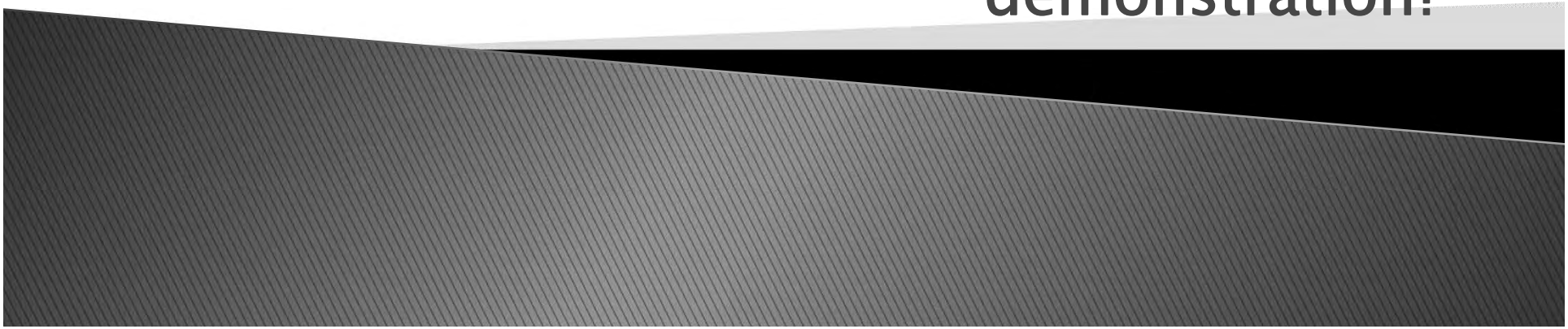
QLFT OVERVIEW AND DEMONSTRATION

I AM LOOKING FOR A VOLUNTEER!

Who is willing to assist in this fantastic demonstration?



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QLFT RESPIRATOR FIT TEST

A QLFT fit test is done in three parts

- Select the model and size of the respirator face piece – small, medium or large.
- Sensitivity test – to see if you can taste saccharin, WHILE NOT WEARING A RESPIRATOR.
- Actual fit test – a series of 7 exercises are done for 1 minute each, WHILE WEARING A RESPIRATOR.

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QLFT SENSITIVITY & FIT TEST
Equipment Overview

Here is the equipment that will be used in performing the saccharin sensitivity and fit tests:

1. Sensitivity and fit test solutions.
   The sensitivity solution is more dilute and not as sweet as the fit test solution.

2. Nebulizer: used to generate a saccharin mist for both the sensitivity and fit tests.

3. Fit test hood  and collar 

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RESPIRATOR SENSITIVITY & FIT TEST
Testing Preparation

Since both the sensitivity test and fit test rely on the sense of taste:

- Do not eat, drink or chew anything sweet for 15 minutes prior to performing both the sensitivity test and the fit test exercises.
- The respirator should be worn for at least 5 minutes before starting the fit testing sequence of exercises.

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QLFT SENSITIVITY TEST

The sensitivity test is done by generating a saccharin mist into the hood while you are not wearing a respirator.

You should mouth breath with you tongue slightly extended.

Let the tester know if you taste the saccharin.

Perform 10, 20, 30 Nebulizer Squeezes

Note number of squeezes to taste saccharin

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QLFT RESPIRATOR FIT TEST
Physical Checks

Fit testing is done by generating a saccharin mist into the hood while you are wearing a respirator.

- The saccharin is misted into the hood during each exercise.
- Respirator must be on for at least 5 minutes before starting the fit testing sequence of exercises.
- Again, you should mouth breath with you tongue slightly extended.
- If you can taste the saccharin while wearing a respirator, the respirator does not fit properly.
- If you do not taste the saccharin, the respirator fits properly.

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QLFT RESPIRATOR FIT TEST
Exercises

- Perform each exercise for 1 minute.
- Mist saccharin into hood at each exercise.

1. Normal Breathing
2. Deep Breathing
3. Turning Head Side to Side
4. Moving Head Up and Down
5. Talking – Pledge of Allegiance
6. Bending Over or Jogging in Place
7. Normal Breathing

- *Remember, if you taste saccharin at any time, let tester know.*

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QLFT DEMOSTRATION

A BIG round of applause for our volunteer!!

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QNFT Fit Testing

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QNFT RESPIRATOR FIT TEST Exercises

- Perform each exercise for 1 minute, except grimace which is done for 15 seconds
    1. Normal Breathing
    2. Deep Breathing
    3. Turning Head Side to Side
    4. Moving Head Up and Down
    5. Talking – Pledge of Allegiance
    6. Grimace (15 seconds)
    7. Bending Over or Jogging in Place
    8. Normal Breathing

Remember you need an overall fit factor $\geq$ 100 for half face piece respirators and $\geq$500 for full face piece respirators

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RESPIRATORS, DONNING & DOFFING AND FIT TESTING

Any Questions, Comments or Observations?

Thanks!

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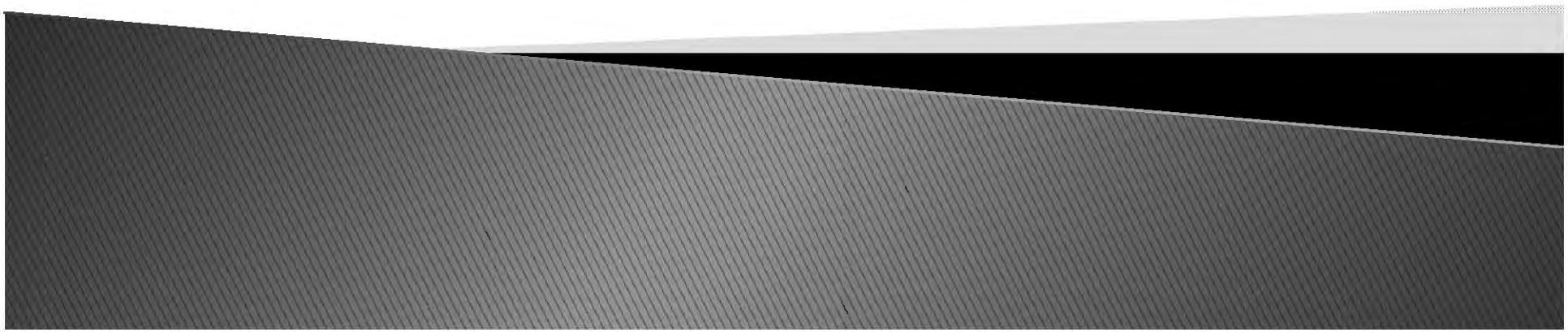
Nurses:
Granddaughter and Grandmother

Respiratory Protection for Health Care Workers: Program Requirements

May 30, 2013

Edie Alfano-Sobsey, PhD



Outline

- Potential Respiratory Hazards for Health Care Workers
- Use of Personal Protective Equipment
- Respiratory Protection Program Requirements

Respiratory Hazards for Public Health Workers

- Some examples

Respiratory Hazards

Biological (organisms or biological agents that can be dispersed through the air)

Non-biological

(respiratory irritants, allergens, chemicals)

Microorganisms are particles!

Examples of Microorganisms Sizes

Agent	Particle Size (microns)	Type
Anthrax	1 - 5	Spore
Tuleremia	0.125 - 0.7	Bact
Plague	0.5 - 2	Bact
TB	0.2 -0.5	Bact
Corona Virus	0.1	Virus

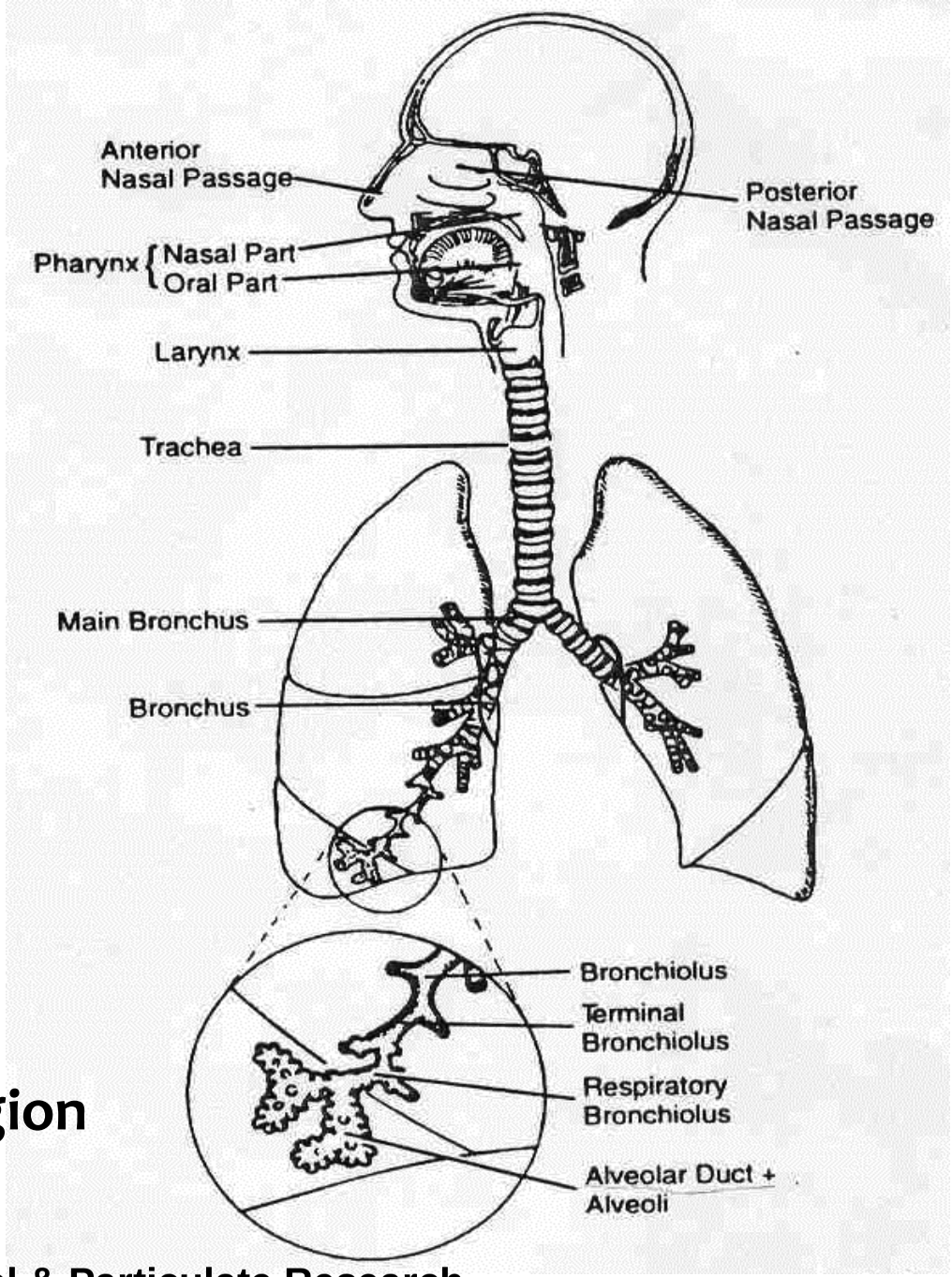
Transmission Mechanisms for Respiratory Diseases

- **Droplet spread**
  - large-particles > 5 μm
  - generated by coughing, sneezing, talking, or performance of procedures and
  - spread over short distance
  - e.g. pertussis, influenza, mumps, meningitis
- **Airborne by droplet nuclei**
  - evaporated droplets, 5 μm or smaller, containing microorganisms
  - remain suspended in air and dispersed widely by air currents within a room or over a long distances
  - e.g. measles, smallpox/monkeypox, tuberculosis (TB)
- **Combination of droplet and airborne**
  - Norovirus, Influenza?
- **Unknown**

Head Airways
5-30 mm

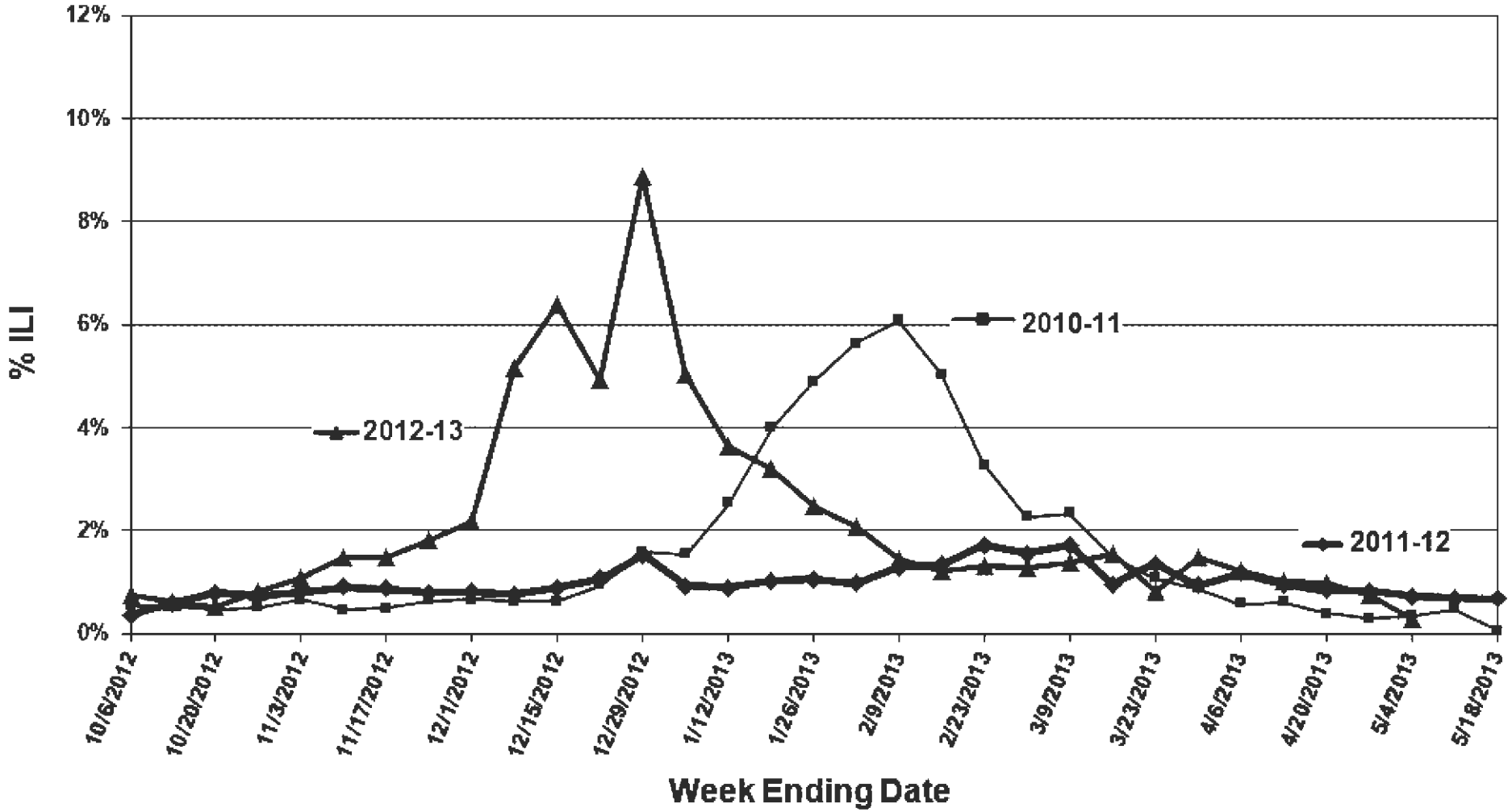
Lung Airways/
Tracheobronchial Region
1-5 mm

Alveolar/Pulmonary Region
< 1 mm

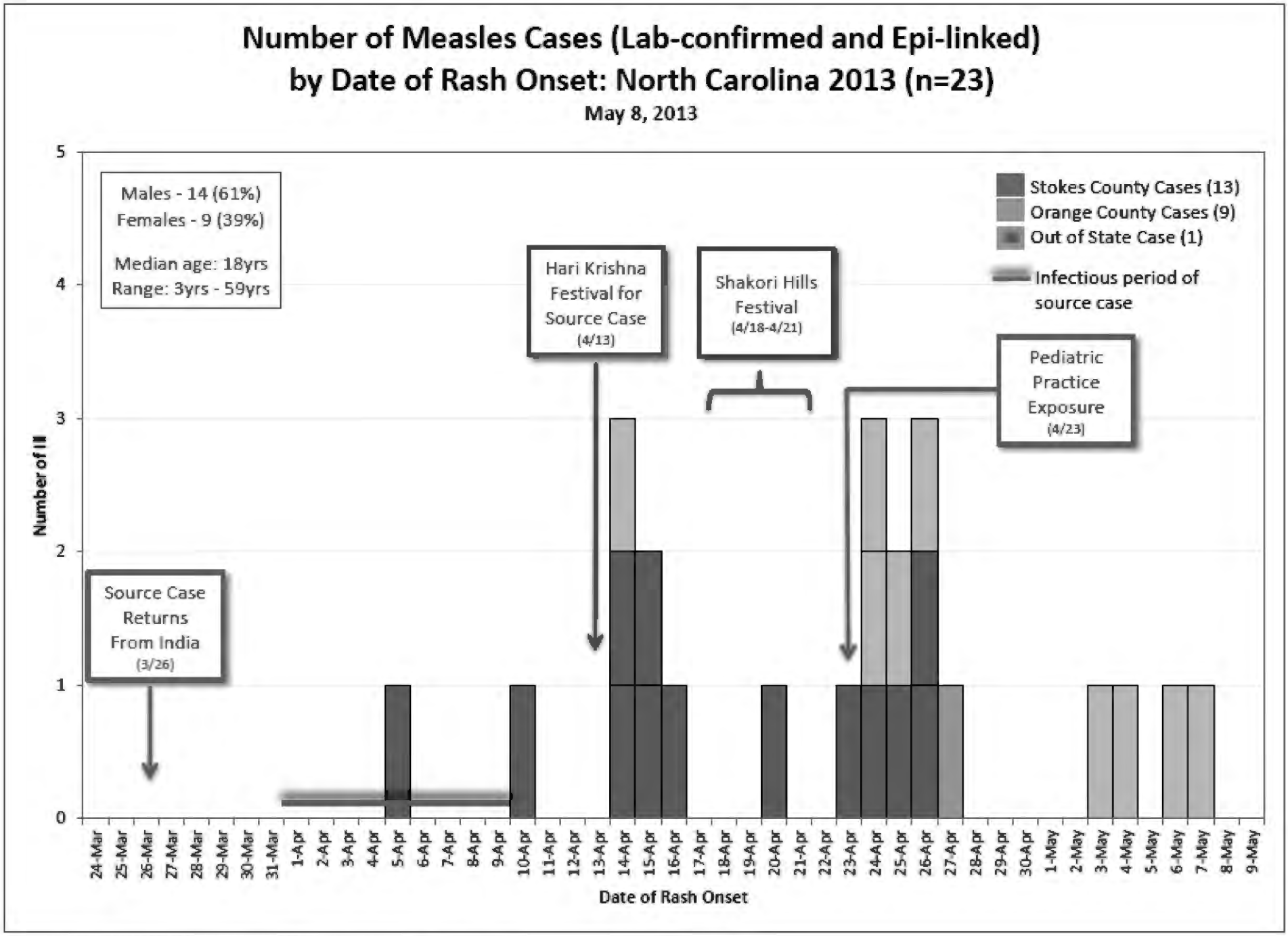


INFLUENZA SURVEILLANCE, NC 2012-2013

Influenza-Like Illness in ILINet Outpatient Visits, by Influenza Season



Note: Week ending displayed is for 2011–2012 influenza season. Flu seasons for previous years may have different week ending dates, but these only vary by a few days.


Number of Measles Cases (Lab-confirmed and Epi-linked)
by Date of Rash Onset: North Carolina 2013 (n=23)
May 8, 2013
Males - 14 (61%)
Females - 9 (39%)
Median age: 18yrs
Range: 3yrs - 59yrs
Stokes County Cases (13)
Orange County Cases (9)
Out of State Case (1)
Infectious period of source case
Source Case Returns From India (3/26)
Hari Krishna Festival for Source Case (4/13)
Shakori Hills Festival (4/18-4/21)
Pediatric Practice Exposure (4/23)
Number of Ill
Date of Rash Onset

When to use Personnel Protective Equipment

Hierarchy of Controls for Exposure Prevention in Healthcare Settings

- **Elimination of exposures**
  - e.g. minimize outpatient visits for patients with mild influenza-like illness, denying entry to visitors who are sick
- **Administrative controls**
  - e.g. Requiring flu vaccines for health care workers
- **Engineering controls**
  - e.g. use of airborne infection isolation room (negative pressure)
- **Personal Protective Equipment (PPE)**
  - gloves, gown, mask, respirator

Last resort

Mask versus Respirator

- **Droplet Precautions:** When infectious agent in respiratory secretions transmitted over short distance

Mask

- **Airborne Precautions:** When infectious agent is transmitted over long distances

Respirator (e.g. N–95)

How does a particulate respirator (N-95) protect us?

Selection: Filter Series

- Selection of N-, R-, and P-series filters depends on the presence or absence of oil particles:
  - If **no** oil particles are present ⟶ use any series (N,R or P)
  - If oil particles **are** present ⟶ use *only* R or P series
  - If oil particles are present **and** the filter is to be used more than one work shift ⟶ use *only* P

N = *N*ot resistant to oil

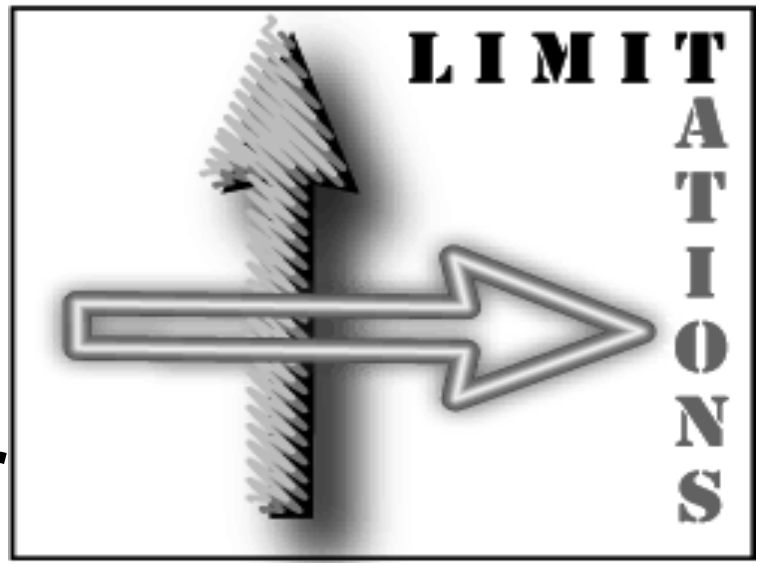
R = *R*esistant to oil

P = Oil *P*roof

Selection:
Filter Efficiency

- **Selection of filter efficiency (i.e., 95%, 99%, or 99.97%) depends on how much filter leakage is acceptable.**
- **N-95- captures at least 95% of the most penetrating particle (0.3 microns) and captures more than 95% of particles if the particle sizes are smaller or larger**

N-95 Limitations



- **Improper fit allows unfiltered air to enter**
- **Can not to be used in an oxygen deficient atmosphere**
- **Can not to be used with gasses or chemicals**
- **Respirators reduce, but do not eliminate airborne contaminants.**

Respiratory Protection Program Requirements

Program Administration

The Administrator:

- **is qualified through training or experience**
- **oversees the program and ensures that the program is OSHA complaint**
- **develops a written program with worksite-specific procedures**
- **updates the program to reflect changes in the workplace that affect respirator use**

Respirator Program Elements

1. **Hazard evaluation**
2. **Selection of respirators**
3. **Medical evaluation**
4. **Fit testing**
5. **Appropriate use, maintenance and care of respirators**
6. **Breathing air quality and use**
7. **Training**
8. **Program evaluation**

Hazard Evaluation

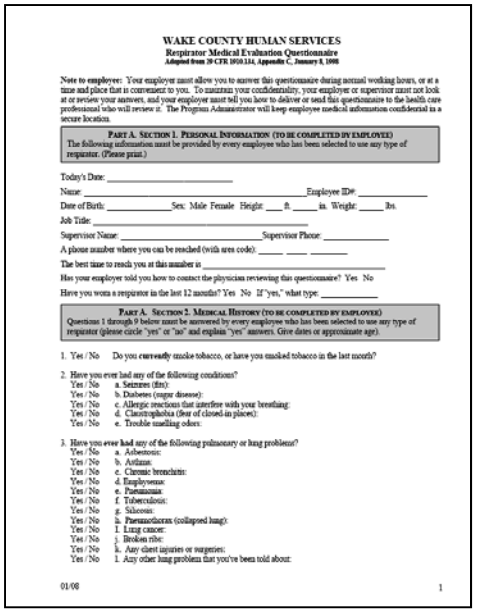
- Identify potential exposure that may require use of respiratory protection
- Complete for all respiratory hazards including exposures to chemical as well as infectious diseases
- Systematically consider activities in your unit

Selection of Respirators

- **Provide NIOSH approved respirators based on the respiratory hazards**
- **Provide a variety of models and sizes**

National Institute for Occupational Safety and Health
NIOSH

Medical Evaluation



WAKE COUNTY HUMAN SERVICES

Respirator Medical Evaluation Questionnaire

Adapted from 29 CFR 1910.134, Appendix C, January 8, 1998

Note to employer: Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it. The Program Administrator will keep employee medical information confidential in a secure location.

PART A. SECTION 1. PERSONAL INFORMATION (TO BE COMPLETED BY EMPLOYEE)

The following information must be provided by every employee who has been selected to use any type of respirator. (Please print.)

Today's Date: _____

Name: _____ Employee ID#: _____

Date of Birth: _____ Sex: Male Female Height: ___ ft. ____ in. Weight: ____ lbs.

Job Title: _____

Supervisor Name: _____ Supervisor Phone: _____

A phone number where you can be reached (with area code): _____ _____ _____

The best time to reach you at this number is _____

Has your employer told you how to contact the physician reviewing this questionnaire? Yes No

Have you worn a respirator in the last 12 months? Yes No If "yes," what type: _____

PART A. SECTION 2. MEDICAL HISTORY (TO BE COMPLETED BY EMPLOYEE)

Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no" and explain "yes" answers. Give dates or approximate age).

1. Yes / No Do you **currently** smoke tobacco, or have you smoked tobacco in the last month?

2. Have you ever had any of the following conditions?
   - Yes / No a. Seizures (fits):
   - Yes / No b. Diabetes (sugar disease):
   - Yes / No c. Allergic reactions that interfere with your breathing:
   - Yes / No d. Claustrophobia (fear of closed-in places):
   - Yes / No e. Trouble smelling odors:

3. Have you **ever had** any of the following pulmonary or lung problems?
   - Yes / No a. Asbestosis:
   - Yes / No b. Asthma:
   - Yes / No c. Chronic bronchitis:
   - Yes / No d. Emphysema:
   - Yes / No e. Pneumonia:
   - Yes / No f. Tuberculosis:
   - Yes / No g. Silicosis:
   - Yes / No h. Pneumothorax (collapsed lung):
   - Yes / No i. Lung cancer:
   - Yes / No j. Broken ribs:
   - Yes / No k. Any chest injuries or surgeries:
   - Yes / No l. Any other lung problem that you've been told about:

01/08 1

- Provide medical evaluation **before initial** fit test
- A physician or other licensed health professional must perform medical evaluations using a medical questionnaire
- Provide follow- up medical examination if positive responses to any questions (among 1 through 9) on the questionnaire or demonstrated need on initial evaluation

Medical Evaluation Continued

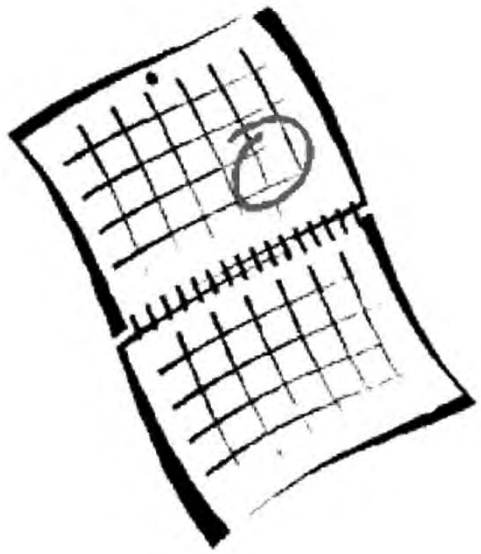
- Annual medical evaluation is not required
- Employer must provide additional medical evaluation if:
  - Employee has medical signs or symptoms related to the ability to use a respirator
  - The medical provider, supervisor, or program administrator decides an employee needs to be reevaluated
  - Information from the respirator program, including observations made during fit testing and program evaluation, indicates a need
  - Change occurs in workplace conditions that increase the physiological burden on an employee

Fit-Testing

- **To assure the respirator fits correctly to eliminate or minimize leakage between the face and respirator allowing unfiltered air to enter respirator**

When Fit Testing is Required

- **Employees using tight-fitting facepiece respirators must pass a qualitative fit test (QLFT) or a quantitative fit test (QNFT):**
  - **Before the respirator is used the first time,**
  - **Whenever a different respirator facepiece (size, style, model or make) is used, and**
  - **At least annually thereafter**
  - **Also if there is a change in the employee's physical condition**



Qualitative Fit Test (QLFT)

QLFT is a pass/fail fit test to assess how the respirator fits and relies on the individual's response to the test agent

Quantitative Fit Test (QNFT)

QNFT is an assessment of how well the respirator fits by numerically measuring the amount of leakage into the respirator.

Respirator Storage

- Store respirators in a place where they will not be damaged or contaminated.
- Keep them away from dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals
- Store them in a way that will prevent the deformation of the face piece and exhalation valve

Training and Information

Employers must provide effective training to employees who are required to use respirators on **respirator use** and **hazards**

Training and Information (cont'd)

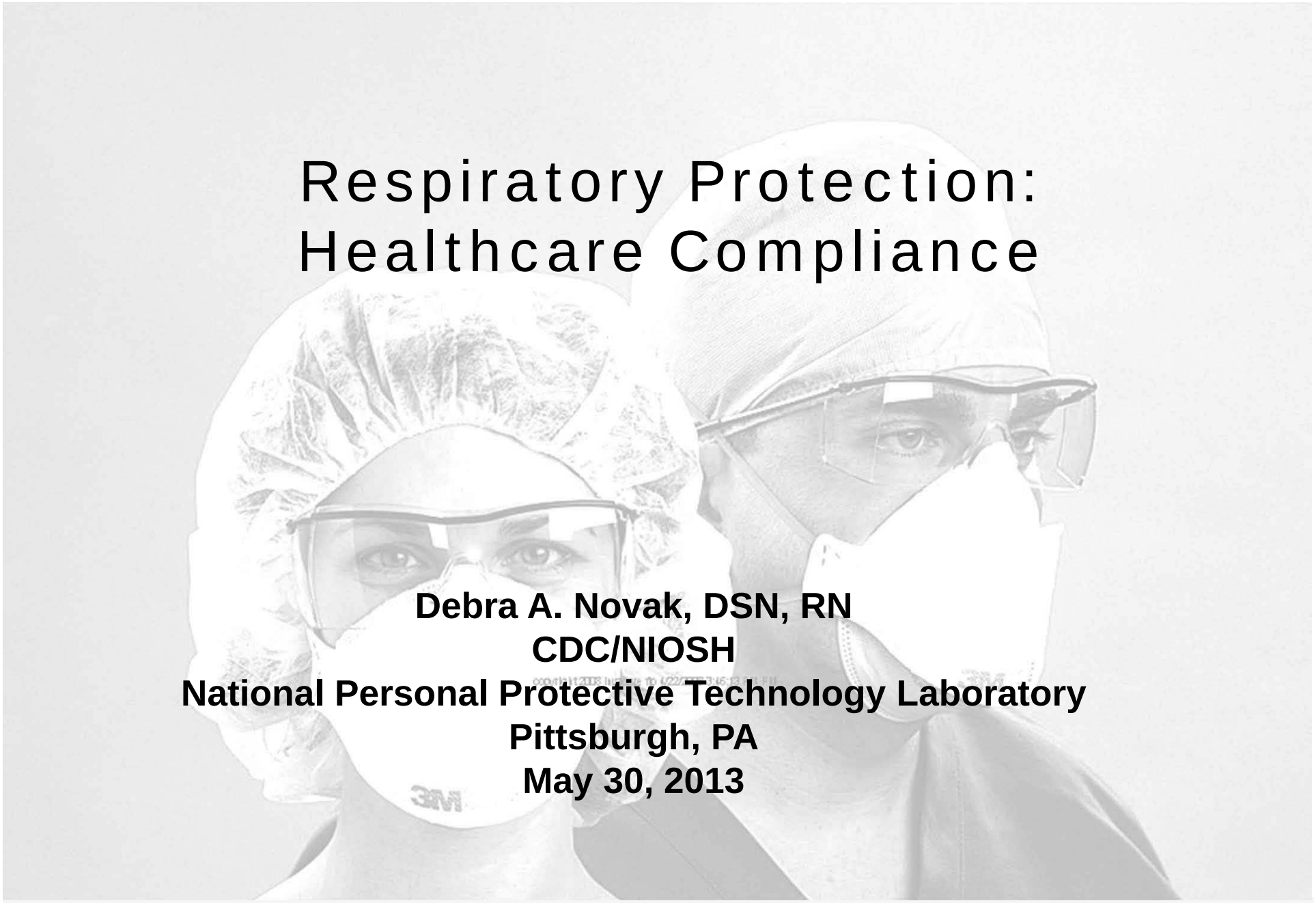
- Training must be provided before a respirator is used
- Retraining is required **annually,** and when:
  - there are changes in the workplace or types of respirators available
  - the employee's knowledge or use is not adequate
  - whenever retraining is deemed necessary by the administrator
- If an employee chooses but is not required by this standard or by the employer to wear a respirator, the basic advisory information in 29 CFR 1910.134 Appendix D must be provided to employees

Program Evaluation

- Ensure that the written respiratory protection program is being properly implemented
- Consult with employees to ensure that they are using the respirators properly
- Identify and correct problems

Questions?

Respiratory Protection: Healthcare Compliance



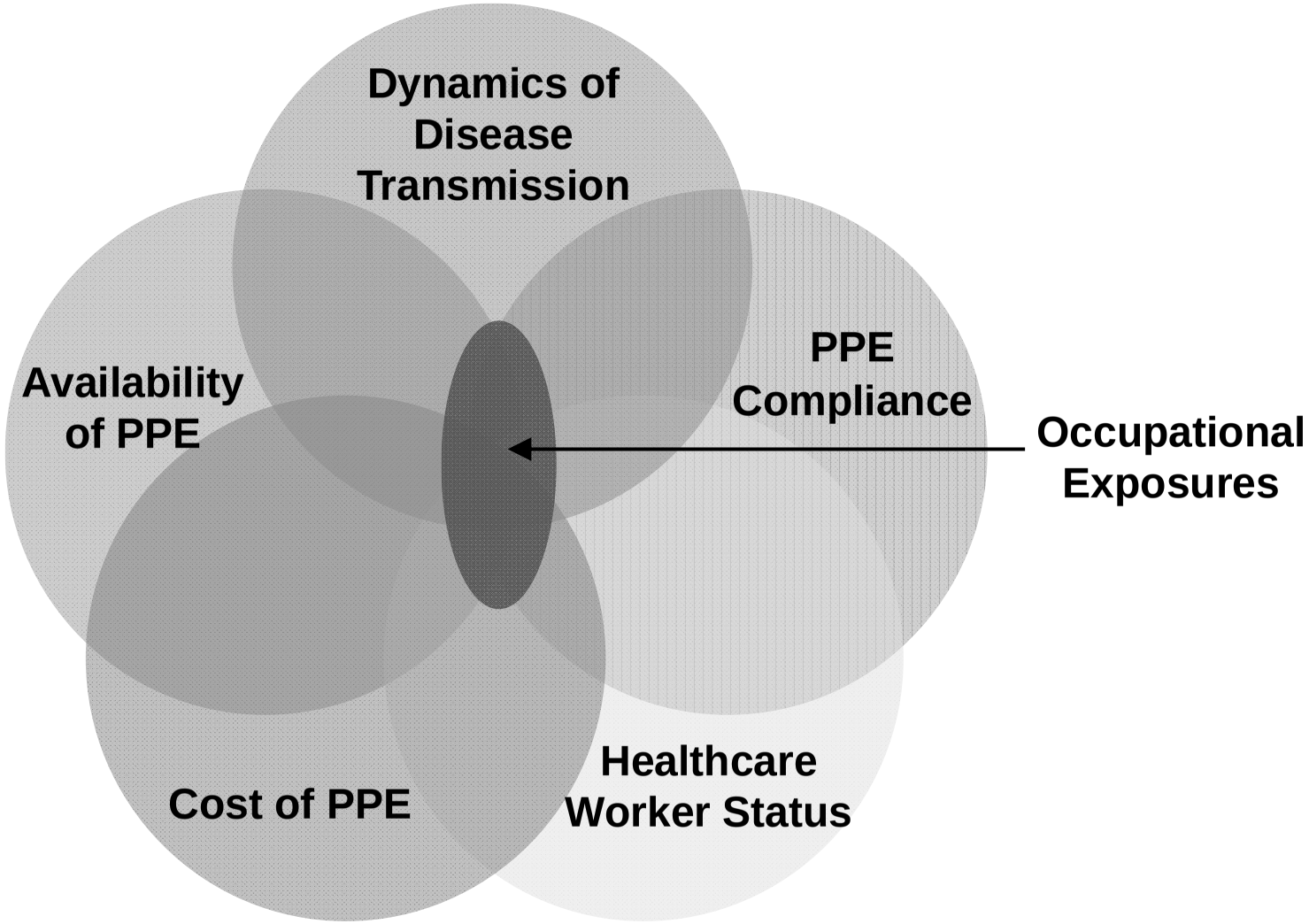
Debra A. Novak, DSN, RN
CDC/NIOSH
National Personal Protective Technology Laboratory
Pittsburgh, PA
May 30, 2013

Objectives

This presentation will:

- **Describe the status of hospitals' respiratory protection programs and healthcare workers' proper use of respiratory protection.**
- **Identify targeted intervention strategies to ensure respiratory protection best practices in healthcare workplaces.**

Variables Influencing Healthcare Workers' Use of PPE



www.thelancet.com/infection **Vol 9 December 2009**

PPE Compliance

The protective effect of PPE is inconsequential if a HCW is **non-compliant.**

268

Clinical Events

California Bacterial Meningitis

H1N1

NPPTL Research Initiatives

Clinical Challenges

OR Smoke Plume

Compliance with Proper Use

269

California Bacterial Meningitis

Background

Two individuals became seriously ill and hospitalized with a highly virulent strain of meningitis.

Hefty fines were issued by Cal/OSHA to the medical center and the police and fire departments.

Lesson

The individuals who voluntarily wore respiratory protection (N95s) did not get sick.

Accessed from: www.sfgate.com/2010/04/21

270

H1N1 Take Home Messages

- Healthcare organizations displayed confusion.
- Preparedness was weak….plans exist on paper.
- Most HCWs recall fit test at hire with minimal updates.
- Fit-testing is the focus…ongoing training isn't.
- HCWs are infrequent and complacent users of RPE.
- HCWs are improperly using (donning and doffing) respirators.
- Respirators (N95s) used for TB.
- HCW deaths were reported due to H1N1.
- Infection control (IC) practices were "*not being faithfully followed".*

Compliance with Use of PPE

- Evidence of marginal compliance with respiratory protection guidance….less than 60%.
- Specifically, there was a lack of adherence to the proper use of infection control precautions (respiratory protection) documented during the H1N1 influenza pandemic. *CDC*

" Infection control (IC) practices are *not being faithfully followed...*. failure to recognize patients and activities that warrant specific IC practices." *CDC*

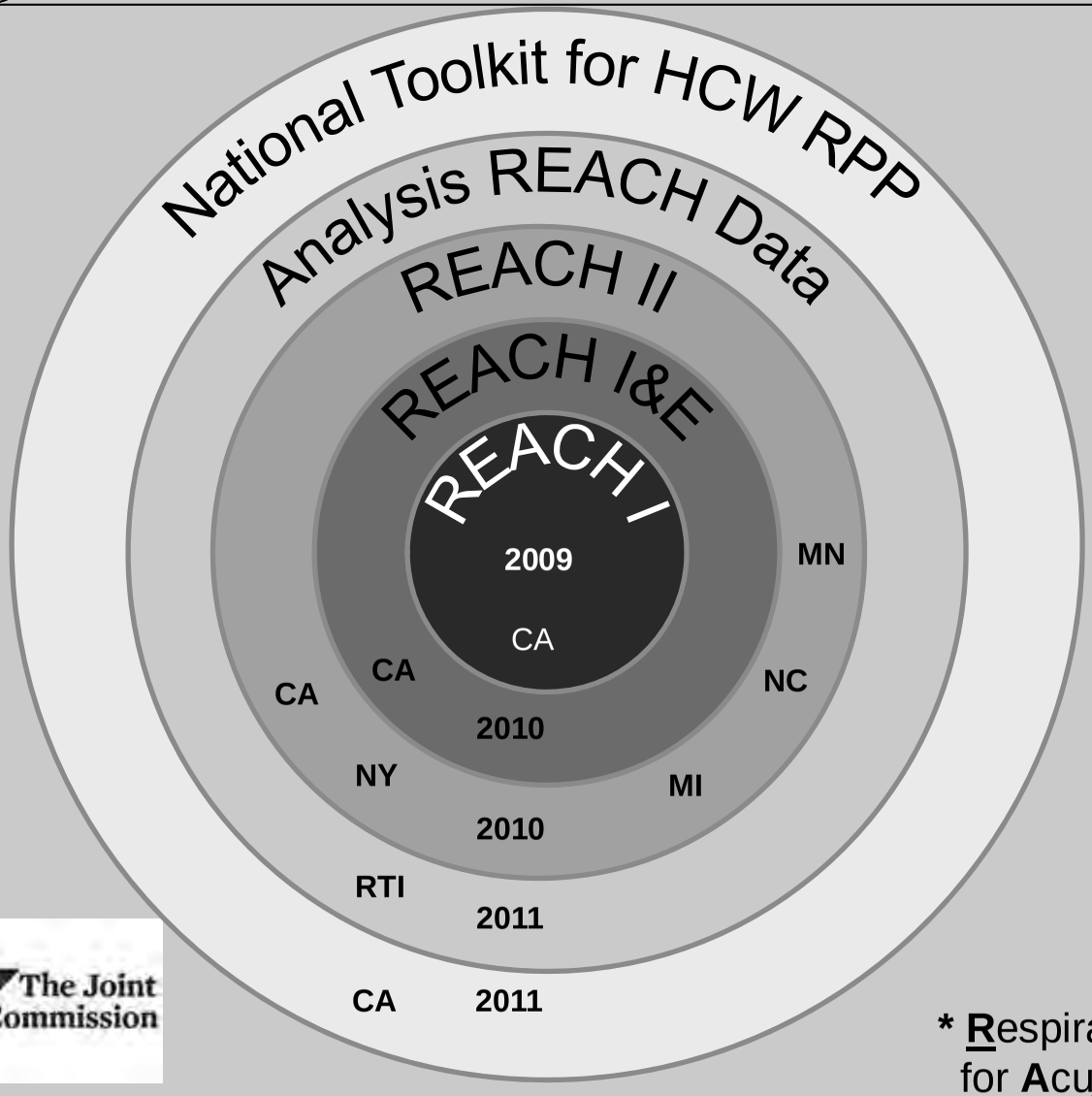
" Compliance with routine infection control procedures is an increasingly important issue ." *OSHA*

HCWs are vulnerable!
Compliance is marginal!

So there needs to be an improved focus on:

- **Infection Control Education**
- **Respiratory Protection Proper Use Practices**

RPP Best Practices Monograph



The Joint Commission

* **R**espirator **E**valuation for **A**cute **C**are **H**ospitals

Respiratory Use Evaluation in Acute Care California Hospitals "REACH I"

California Department of Public Heath

&

NPPTL/NIOSH

Overview

Purpose of the Study

Assess the usage of respiratory protection for influenza exposure among healthcare workers.

Study Methods

- Sixteen healthcare organizations participated in the study.
- Onsite surveys (15-21) and observational data collection methods were employed in each facility.
- 204 healthcare workers participated in the study from a variety of clinical specialties.

Approved by California and NIOSH IRBs as public health practice

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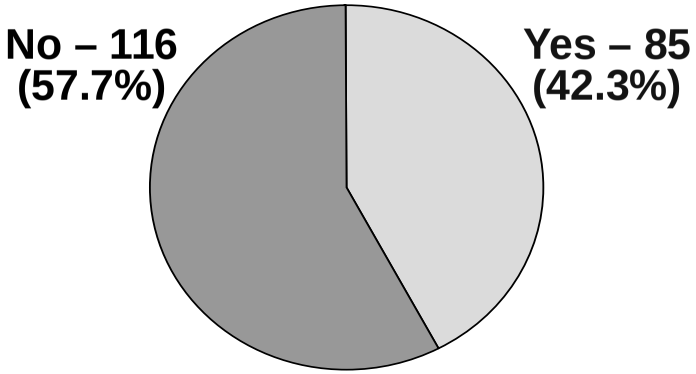
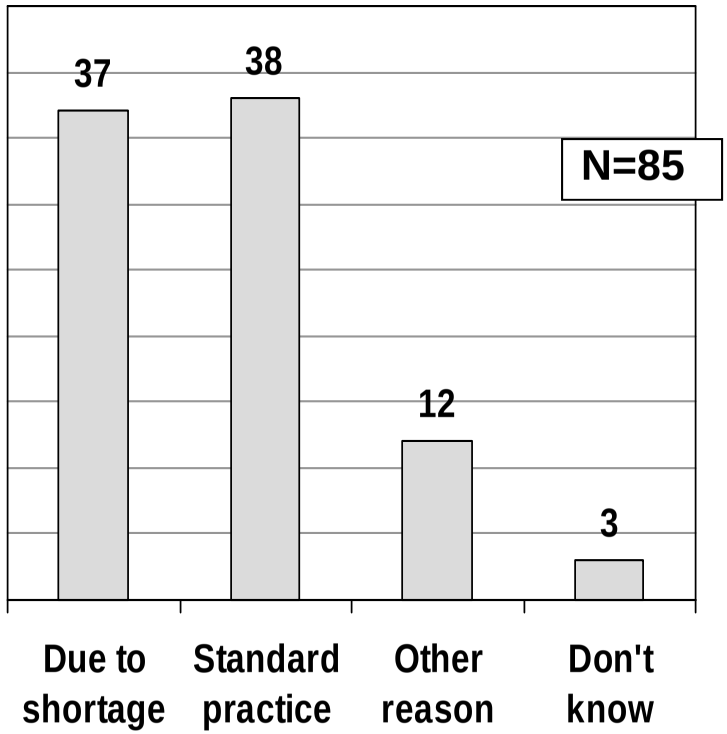
Respirator Redonning

"Have you ever reused an N95 respirator when in close contact with patients who have confirmed or suspected H1N1?"

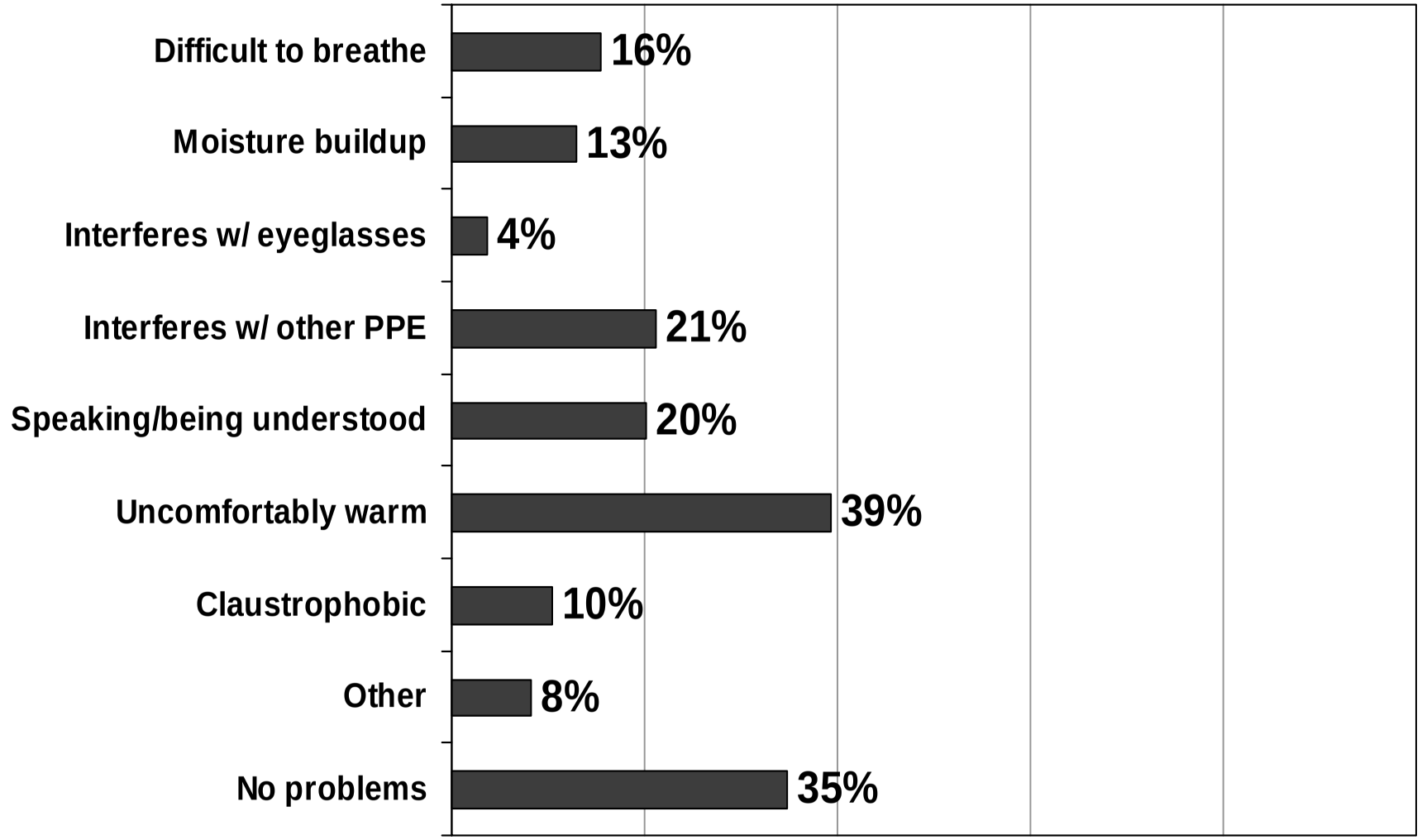


"If yes, why did you reuse the respirator?"



- **Note - More than one response may have been selected by each respondent**

Problems with N95 Respirators



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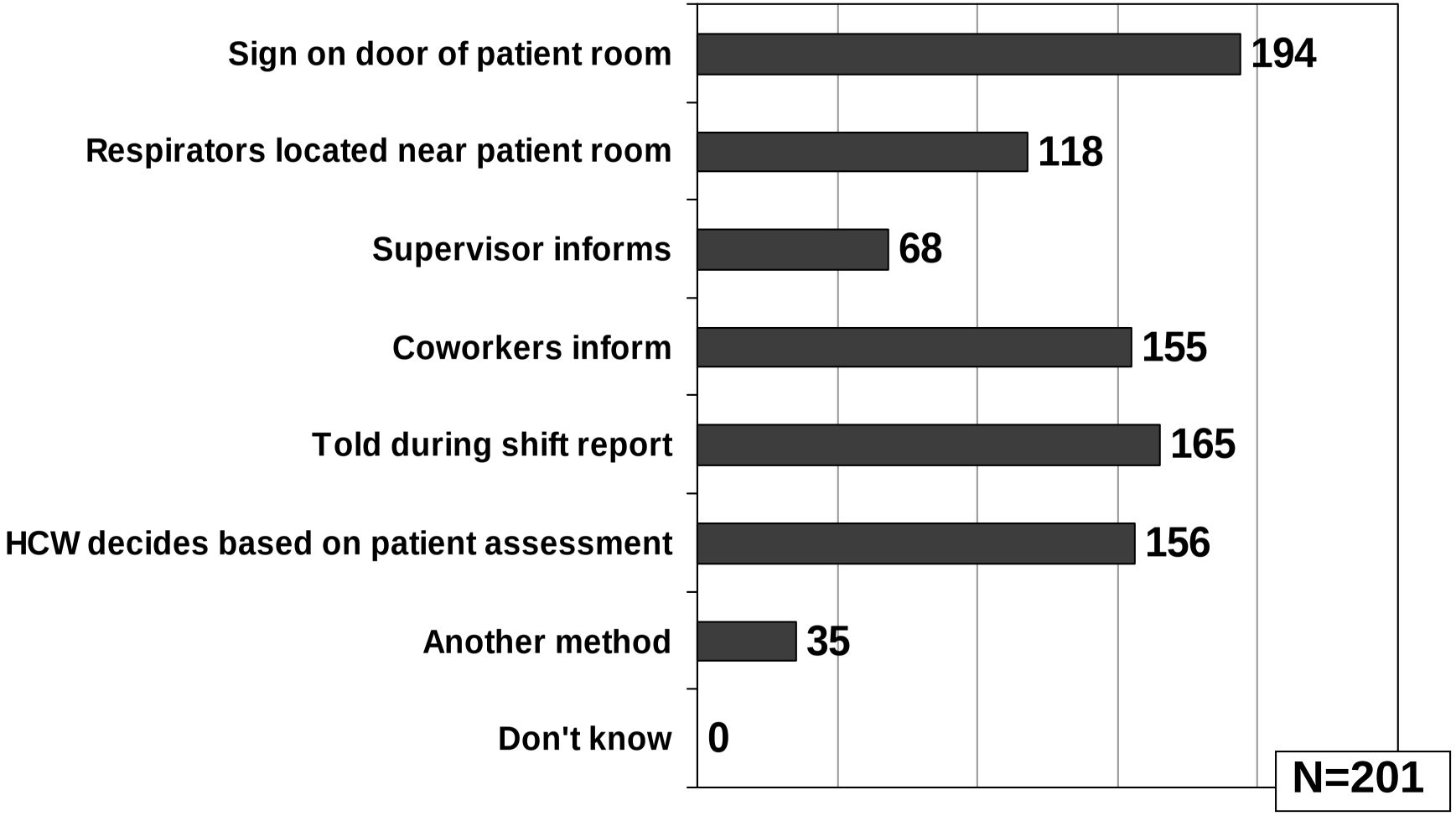
Note - More than one response may have been selected by each respondent

“How do you know that you need to wear a respirator?”



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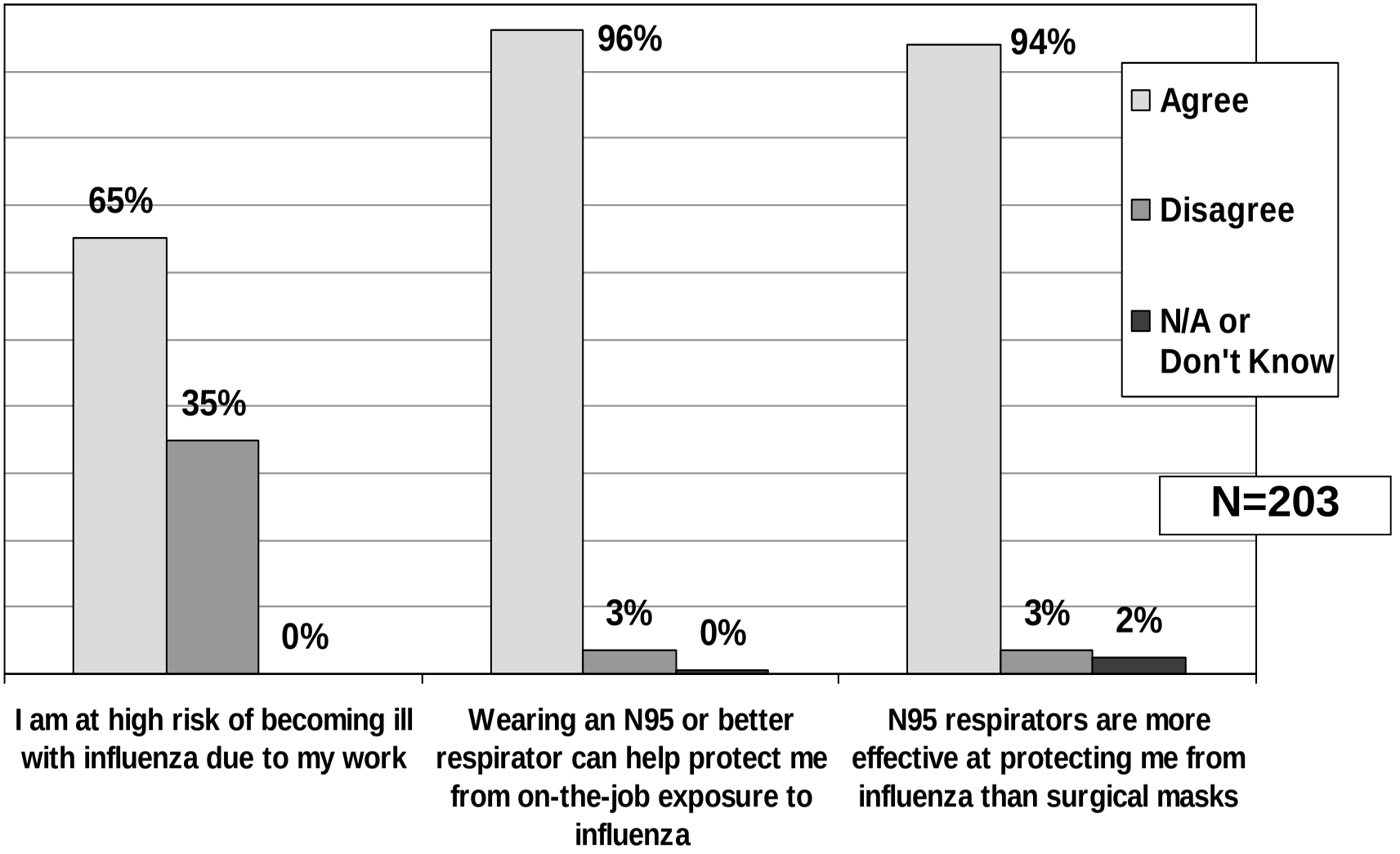
Note - More than one response may have been selected by each respondent

What do healthcare workers believe?



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Other findings

- **50% of the hospital managers reported that their facility had experienced a shortage of respirators between April 2009 and the survey period (January 20 - February 23, 2010).**

- **The observational data indicate improper use of respiratory protective equipment as evidenced by donning and doffing practices.**
  - **Not performing a seal check**
  - **Improper strap placement**
  - **Touching the facepiece upon doffing**

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REACH II

Purpose: Evaluate hospitals' respiratory protection programs and respirator usage in five regions of the U.S.

Regions: North Carolina, Minnesota/Illinois,

New York, Michigan, California

Data Set Includes:

- **98 Hospitals**
- **1500 hospital managers, unit managers & healthcare workers**
- **300 demonstrations of donning & doffing**

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Synopsis
REACH II

- **Respiratory protection program plans exist on paper**

  Response differences between HCWs, unit & hospital managers regarding operations of RPP.

- **Most HCWs recall fit test at hire with minimal updates.**
- **Fit-testing is the focus…ongoing preparedness training isn't (<15 minutes annually).**
- **HCWs are unclear about WHEN to use respiratory protection.**
- **HCWs are unclear about WHAT type of respirator should be used.**
- **HCWs are unclear about HOW to properly donn and doff respirators (strap positions, seal checks, disposal).**

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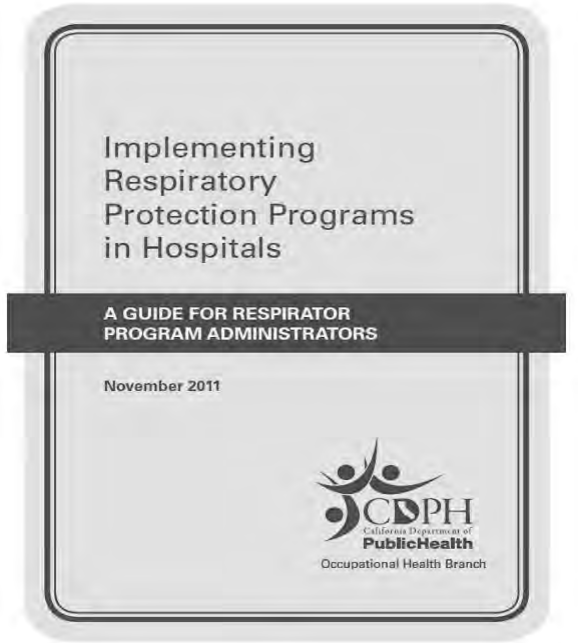
Targeted Education & Resources for Respiratory Protection Practice Compliance

REACH I & E

Compendium of :

- Tools
- Templates
- Online Resources



California Respirator Program Administrators go to- http://www.cdph.ca.gov/programs/ohb/Pages/RespToolkit.aspx

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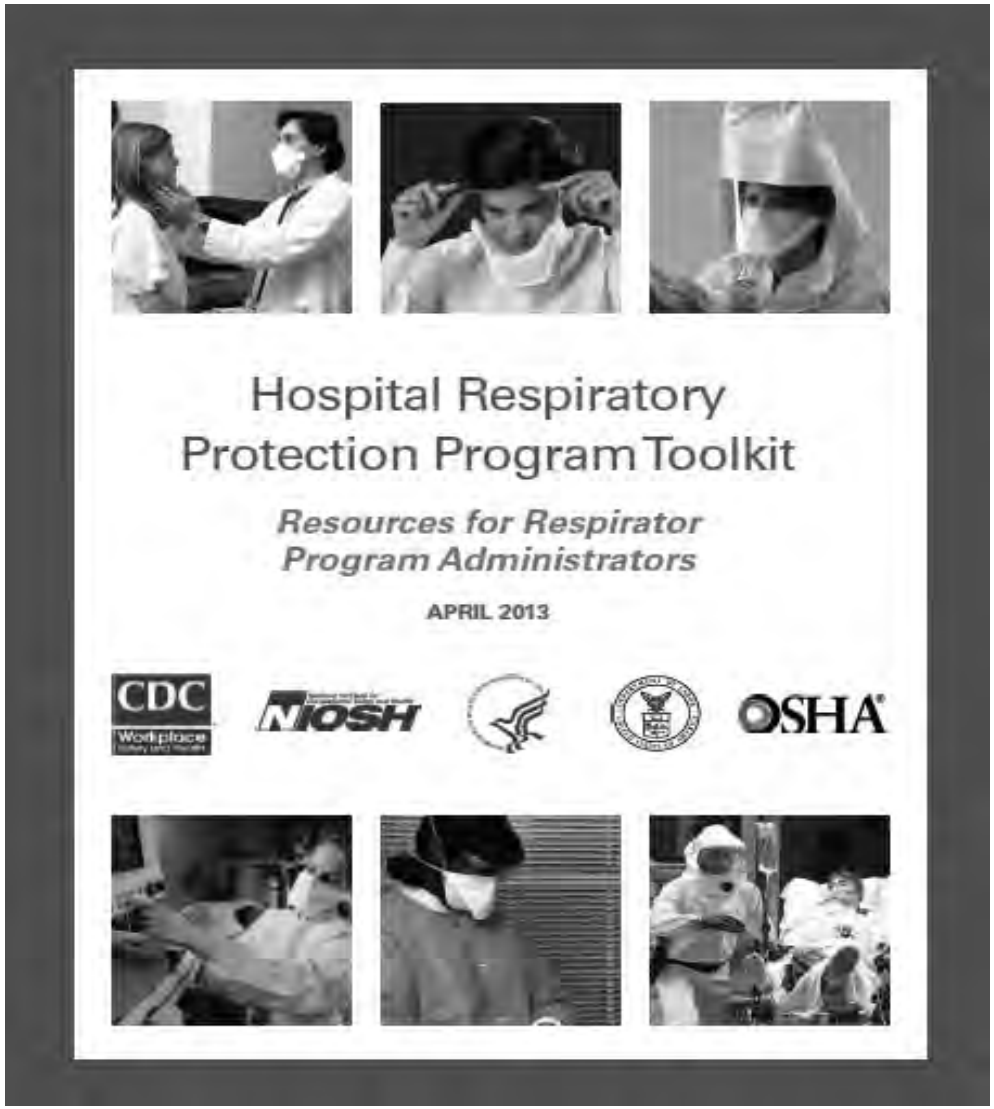
National Toolkit



Respiratory Protection Monograph

The Joint Commission

The monograph is intended to:

- **stimulate greater awareness of the importance of an effective Respiratory Protection Program in a hospital and its potential benefits, and**
- **provide tools, resources & effective and innovative best practices to overcome challenges implementing respiratory protection programs.**

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Quality Partnerships Enhance Worker Safety & Health




Thank you!

Debra Novak

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Visit Us at: http://www.cdc.gov/niosh/npptl/

Disclaimer: The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of The National Institute for Occupational Safety and Health.

Respiratory Protection with PPE of Health Care Workers Project

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May 30, 2013

Influenza in the United States

- Annually 36,000 deaths in the United States
- Attacks disproportionately young, old, immunocompromised, those with chronic diseases
- Novel H1N1 generally affected young, old, pregnant women
- Transmission route debate:
    - Airborne
    - Droplet

Respiratory Protection/ PPE

- **Surgical masks**
  - Aerosol particle penetration 4 to 90%
  - Open on sides, top, bottom
- **Respirators (N95)**
  - Filter 95% to 99% of relevant aerosol particles
  - Cover mouth and nose
  - Fit-test required
- **PPE acts as barrier devices** (i.e., gloves, gowns, respirators, eye, and hearing protection)
  - **Respirators/PPE**
    - Difficulty in communication
    - Difficulty in breathing
    - Difficulty in maintaining tactile sensitivity (gloves)
    - Hot/uncomfortable

Health Care Workers at Risk

- 13.6 million in US
  - 35% hospital
  - 23% nursing/residential facilities
  - 17% physician offices

Project Purpose

Evaluate respiratory usage for respiratory infection among health care workers in a sample of North Carolina acute care hospitals

- Assessment of written respiratory protection program (RPP) policies
- Survey to assess knowledge and beliefs about respiratory protection among direct health care workers and managers
- Use of respiratory protection among health care workers
- Observation of respirator use

Sample

- 21 hospitals in North Carolina were selected by bed size in metropolitan and rural areas:
  - <150 beds
  - 151-300 beds
  - 301-500 beds
  - >500 beds
- Survey participants were selected on units if at-risk of respiratory infection.
- Of these participants, 69 were observed for respirator usage.

Instruments

- Healthcare Worker Interview
- Unit Manager Interview
- Hospital Manager Interview
- Respiratory Protection Observation Checklist
- Respiratory Protection Policy Assessment Checklist

Health Care Worker Instrument

- Assessed:
  - General information
  - Risk assessment and medical evaluation
  - Fit testing
  - RPP training
  - Program evaluation
  - Infection prevention
- Plus workplace safety checklist

Respiratory Observation Checklist

Assessed:

- Location of observation
- Availability of respirators and type
- Sinks or hand rub availability
- Waste receptacle
- Donning criteria
- Doffing criteria

Project Results

Demographic Information

Years of experience	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Less than 1 year	48	14.1	7	10.9	1	5.9
1-2 years	72	21.1	6	9.4	2	11.8
3-4 years	104	30.5	18	28.1	5	29.4
5 or more years	117	34.3	33	51.6	9	52.9

*** Missing data excluded**

****Responses > the sample size = More than one choice selected**

Health Care Worker N=342* Unit Managers N=64* Hospital Managers N=17*

Project Results

Clinical Unit

	Health Care Worker N=378**			Unit Manager			Hospital Manager	
	n	%		n	%		n	%
ICU	103	27.2		16	22.2		N/A	N/A
ER	59	15.6		9	12.5		N/A	N/A
Pediatric	12	3.2		3	4.2		N/A	N/A
Med/Surg	132	34.9		15	20.8		N/A	N/A
Other	72	19.0		29	40.3		N/A	N/A

* Missing data excluded

**Responses > the sample size = More than one choice selected

Health Care Worker N=342* Unit Managers N=64* Hospital Managers N=17*

Project Results

Position Title for Health Care Worker

Registered Nurse	**248**	**72.5%**
Public Health Nurse	2	0.6%
Licensed Vocational Nurse	5	1.5%
Nursing Assistant	54	15.8%
Infection Prevention	1	0.3%
Technician-Radiology, Other	3	0.9%
Respiratory Therapy	20	5.8%
Therapist - Speech, Physical, Other	1	0.3%
Phlebotomist	1	0.3%
Receptionist/Clerk	2	0.6%
Housekeeping	1	0.3%
Other	4	1.2%

Project Results

Trigger elements for use of respiratory protection

	Health Care Worker Total Responses** 677			Unit Manager Total Responses ** 134			Hospital Manager Total Responses** 36	
	n	%		n	%		n	%
Patients signs & symptoms	181	26.7		33	24.6		8	22.2
Lab confirmation of disease	114	16.8		21	15.7		8	22.2
Physicians order	109	16.1		29	21.6		3	8.3
Sign on patient's room door	171	25.3		38	28.4		13	36.1
Verbally informed by co-worker	90	13.3		11	8.2		3	8.3
Don't Know	3	0.4		0	0.0		0	0.0
Other	9	1.3		2	1.5		1	2.8

** Responses > the sample size = More than one choice selected

Project Results

Medical evaluation and clearance before wearing respirator

	Health Care Worker Total Responses** 677		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	300	89	55	87.3	17	100
No	24	7.1	6	9.5	0	0.0
Don't Know	12	3.6	2	3.2	-	-

**Responses > the sample size = More than one choice selected

Project Results

Health Care Workers (Only):
Receive seasonal influenza vaccine

Yes	**271**	**79.5%**
No, but I intend to get it	8	2.3%
No, and I do not intend to get it	58	17.0%
Don't Know	4	1.2%

Project Results

Written respiratory protection program at facility

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	261	77.0	61	95.3	17	100
No	3	0.9	1	1.6	0	0
Don't Know	75	22.1	2	3.1	-	-

Project Results

Health care worker or Unit manager input into respiratory protection program policy decisions

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	66	19.5	34	54	16	94.1
No	218	64.5	15	23.8	1	5.9
Don't Know	54	16.0	14	22.2	0	0.0

Project Results

Fit-tested for respiratory protection at hire

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	265	78.2	60	93.8	16	94.1
No	51	15	3	4.7	1	5.9
Don't Know	23	6.8	1	1.6	0	0.0

** Responses > the sample size = More than one choice selected

Project Results

How do you know which model(s) and size(s) of respirators you have been fit-tested for?

	Health Care Worker Total Responses** 378		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Informed verbally	91	24.1	9	14.1	2	11.8
Given written copy of results	152	40.2	34	53.1	5	29.4
Given a pocket card	115	30.4	16	25.0	8	47.0
Don't Know	9	2.4	3	4.7	1	5.9
Other	11	2.9	2	3.1	1	5.9

** Responses > the sample size = More than one choice selected

Project Results

Problems for Health Care Workers when wearing N95

Total Responses**	**472**	
I find it difficult to breath	**94**	**19.9%**
I'm bothered by moisture buildup	**82**	**17.4%**
It interferes with the wear of other PPE	**21**	**4.4%**
It interferes with the wear of my glasses	**52**	**11.0%**
I find it difficult to speak/be understood	**58**	**12.3%**
I find it uncomfortably warm	**120**	**25.4%**
I am claustrophobic	**45**	**9.5%**

**** Responses > the sample size = More than one choice selected**

Project Results

If unsuccessful fit-test

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Given a PAPR	179	53.4	56	87.5	16	94.1
Reassigned to a lower risk job	7	2.1	0	0.0	0	0.0
Don't Know	117	34.9	2	3.1	-	-
Other	32	9.6	6	9.4	1	5.9

Project Results

Training about respiratory protection

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	320	94.4	64	100	16	100
No	12	3.5	0	0.0	0	0.0
Don't Know	7	2.1	-	-	-	-

Project Results

When is training provided

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
At hire only	20	5.9	7	10.9	1	6.7
At hire, and then annually	254	74.5	52	81.3	12	80.0
At hire, then as required by MD	8	2.4	0	0.0	1	6.7
No requirements	10	2.9	1	1.6	0	0.0
Don't Know	40	11.7	4	6.3	0	0.0
Other	9	2.6	-	-	1	6.7

Project Results

Length of training about respiratory protection

	Health Care Worker			Unit Manager			Hospital Manager	
	n	%		n	%		n	%
1-15 minutes	130	38.6		30	46.9		10	58.8
16-30 minutes	119	35.3		21	32.8		5	29.4
31-60 minutes	24	7.1		2	3.1		0	0.0
More than 60 minutes	2	0.6		1	1.6		0	0.0
Don't Know	61	18.1		10	15.6		2	11.8
Other	1	0.3		-	-		-	-

*Missing data are excluded

Project Results

Can direct health care workers wear a respirator without training

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	14	4.1	1	1.6	0	0.0
No	286	84.1	60	93.8	17	100
Don't Know	40	11.8	3	4.7	-	-

*Missing data are excluded

Project Results

Is worker input solicited during program evaluation

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	91	27.0	12	30.8	4	57.1
No	171	50.7	9	23.1	1	14.3
Don't Know	75	22.3	18	46.2	2	28.6

Project Results

Is there observation about correct wearing of respirators by supervisor

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	158	46.7	24	60.0	5	71.4
No	111	32.8	5	12.5	1	14.3
Don't Know	69	20.4	11	27.5	1	14.3

Project Results

Are respirators properly maintained

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	153	45.3	17	42.5	5	71.4
No	6	1.8	9	22.5	1	14.3
Don't Know	179	53.0	14	35.0	1	14.3

Project Results

Minimum level of respiratory protection required to use when in close contact with a patient who has a suspected or confirmed infectious disease requiring airborne precautions, such as measles

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
None	2	0.6	0	0.0	0	0.0
Surgical Mask	55	16.1	16	25.4	3	17.6
N-95 (disposable) respirator	250	73.1	44	69.8	13	76.5
Elastomeric half-face N-95 respirator	10	2.9	2	3.2	1	5.9
Powered Air Purifying Respirator (PAPR)	4	1.2	0	0.0	0	0.0
Don't Know	19	5.6	1	1.6	0	0.0
Other	2	0.6	-	-	-	-

Project Results

Minimum level of respiratory protection required to use when performing aerosol-generating procedures on a patient who has a suspected or confirmed infectious disease requiring airborne precautions, such as measles

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
None	2	0.6	0	0.0	0	0.0
Surgical Mask	27	8.0	7	11.1	1	5.9
N-95 (disposable) respirator	251	74.0	47	74.6	14	82.4
Elastomeric half-face N-95 respirator	6	1.8	3	4.8	1	5.9
Powered Air Purifying Respirator (PAPR)	9	2.7	2	3.2	1	5.9
Don't Know	43	12.7	4	6.3	0	0.0
Other	1	0.3	-	-	-	-

Project Results

Minimum level of respiratory protection required to use when in close contact with patients who have suspected or confirmed seasonal influenza

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
None	10	3.0	1	1.6	0	0.0
Surgical Mask	241	71.5	46	75.4	12	70.6
N-95 (disposable) respirator	75	22.3	10	16.4	4	23.5
Elastomeric half-face N-95 respirator	1	0.3	2	3.3	0	0.0
Powered Air Purifying Respirator (PAPR)	1	0.3	1	1.6	0	0.0
Don't Know	6	1.8	1	1.6	0	0.0
Other	-	-	-	-	1	5.9

Project Results

Minimum level of respiratory protection you are required to use when performing aerosol-generating procedures on a patient who has seasonal influenza

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
None	3	0.9	1	1.6	1	6.3
Surgical Mask	153	45.4	24	37.5	10	62.5
N-95 (disposable) respirator	135	40.1	32	50.0	5	31.2
Elastomeric half-face N-95 respirator	3	0.9	0	0.0	0	0.0
Powered Air Purifying Respirator (PAPR)	3	0.9	0	0.0	0	0.0
Don't Know	37	11.0	4	6.3	0	0.0
Other	3	0.9	1	1.6	-	-

Project Results

Written policy for redonning (reuse) of respirators at facility

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
Yes	145	43.2	32	50.8	7	43.8
No	58	17.3	17	27.0	8	50.0
Don't Know	133	39.6	14	22.2	1	6.3

Project Results

How are respirators stored between doffing and redonning?

	Health Care Worker		Unit Manager		Hospital Manager	
	n	%	n	%	n	%
In a plastic bag	35	24.5	13	44.8	2	22.2
In a paper (breathable) bag	28	19.6	9	31.0	4	44.4
In a rigid plastic box	7	4.9	0	0.0	1	11.1
Carried by the employee	5	3.5	0	0.0	0	0.0
Hangs in designated area	29	20.3	5	17.2	0	0.0
Don't Know	29	20.3	1	3.4	2	22.2
Other	10	7.0	0	0.0	0	0.0

Respiratory Observation Results of Health Care Workers (cont)

N=69*

Type of healthcare worker observed

	n	%
Physician/Physician Assistant or Nurse Practitioner	**0**	**0**
Registered Nurse/Public Health Nurse	**50**	**72.4**
Licensed Vocational Nurse/Nursing Assistant or Patient Care Assistant	**10**	**14.4**
Infection Preventionist	**2**	**2.9**
Respiratory Therapist	**2**	**2.9**
Environmental Services or Housekeeping	**3**	**4.3**
Other	**2**	**2.9**

***Sub-sample of survey participants**

Respiratory Observation Results of Health Care Workers (cont)

Respirators available in work area

	n	%
Yes	**68**	**98.6**
No	**1**	**1.4**

Type of respirator

	n	%
N95	**67**	**97.1**
PAPR	**1**	**1.4**
Elastomeric	**1**	**1.4**

Respiratory Observation Results of Health Care Workers (cont)

Proper hand hygiene performed before use

	n	%
Yes	37	53.6
No	32	46.4

Respirator positioned correctly on HCWs face

	n	%
Yes	61	88.4
No	8	11.6

Respiratory Observation Results of Health Care Workers (cont)

Is a sink or hand rub available?

	n	%
Yes	**15**	**21.7**
No	**54**	**78.3**

Is a waste receptacle available?

	n	%
Yes	**59**	**85.5**
No	**10**	**14.5**

Respiratory Observation Results of Health Care Workers (cont)

Facial hair under the seal

	n	%
Yes	**3**	**7.5**
No	**37**	**92.5**
N/A	**29**	**-**

Respirator straps correctly placed *

	n	%
Yes	**45**	**66.2**
No	**23**	**33.8**

***Missing data are excluded**

Respiratory Observation Results of Health Care Workers (cont)

Nose clips used properly

	n	%
Yes	**62**	**89.9**
No	**7**	**10.1**

User seal check performed

	n	%
Yes	**19**	**27.5**
No	**50**	**72.5**

Respiratory Observation Results of Health Care Workers (cont)

Respirator removed properly (doffing)

	n	%
Yes	43	62.3
No	26	37.7

Respirator disposed of after use

	n	%
Yes	47	68.1
No	22	31.9

Respiratory Observation Results of Health Care Workers (cont)

Was there proper hand hygiene after use?

	n	%
Yes	**47**	**68.1**
No	**22**	**31.9**

Maintenance/Storage

	n	%
Yes	**48**	**69.6**
No	**21**	**30.4**

Respiratory Protection Written Policy

N=21

Presence of Written RPP: To provide a clear policy and specific procedures for the use of respirators in protecting employees from respiratory hazards	n	%
Yes:	17	81.0
No:	3	14.3
Partial:	1	4.8

Program Administrator: To assign responsibility for ensuring full implementation and evaluation of the written program to suitably trained workers	n	%
Yes:	15	71.4
No:	5	23.8
Partial:	1	4.8

Respiratory Protection Written Policy

N=21

Medical Evaluation: To ensure that employees are able to wear respirators safely	n	%
Yes:	21	100
No:	0	0
Partial:	0	0

Fit-testing: To choose the brand, model, and size of respirator that provides the best fit for each individual employee and to provide an opportunity to review proper donning and doffing procedures	n	%
Yes:	18	85.7
No:	0	0.0
Partial:	3	14.3

Respiratory Protection Written Policy

Recordkeeping: To maintain a record of individual medical evaluations and fit tests and to ensure the availability of the written program	n	%
Yes:	19	90.5
No:	1	4.8
Partial:	1	4.8

Are individual medical records separate from personnel records?(1 missing)	n	%
Yes:	19	95.0
No:	1	5.0

Respiratory Protection Written Policy

Training and Information: To ensure that employees understand the facility's written program and the purpose and limitations of respirators, and that they are trained in the specific procedures for proper use and maintenance	n	%
Yes:	11	52.4
No:	6	28.6
Partial:	4	19.0

Respirator Selection: To determine which types of NIOSH-approved respirators will be required for each job or task based on an evaluation of respiratory hazards	n	%
Yes:	13	61.9
No:	8	38.1
Partial:	0	0.0

Respiratory Protection Written Policy

Use of Respirators: To provide clear, written policies and procedures for proper use of respirators by employees	n	%
Yes:	9	42.9
No:	10	47.6
Partial:	2	9.5

Maintenance and Care of Respirators: To provide clear, written procedures for storage, care, and maintenance of respirators	n	%
Yes:	13	61.9
No:	6	28.6
Partial:	2	9.5

Program Evaluation: To ensure that the written program is being implemented and that it continues to be effective	n	%
Yes:	10	47.6
No:	8	38.1
Partial:	3	14.3

RPP Training/Information Present

N=19

Respirator	n	%
Why the respirator is necessary	17	89.5
How improper fit, use, or maintenance can compromise its protective effect	13	68.4
Limitations and capabilities of the respirator	5	26.3
Effective use in emergency situation	13	68.4
How to inspect, use, and check the seals	14	73.7
How to don and doff	8	42.1
Maintenance and storage	12	63.2
Recognition of medical signs and symptoms that may limit or prevent effective use	9	47.4
Training provided prior to use	19	100
Retraining annually	15	78.9

Recommendations

- Complete policy review
- More thorough training
  - Donning/Doffing
  - Seal checks
  - Return demonstrations
- Better understanding of influenza transmission/prevention strategies
- Program effectiveness evaluation
- Communication

Thank you

Integration of Respiratory Protection into Practice Among Health Care Workers

Focus Groups

Focus Group Purposes

- Purpose is to gather data that can be used to
  - Improve respiratory protection education and training opportunities for all health care workers (HCW)
  - Provide input into proposed competencies for respiratory protection for HCW

Ground Rules for Focus Group

- Names will not be taken
- Each person will have opportunity to speak
- One person will speak at a time
- Recording will be made so that comments can be correctly documented
- Each session will last 1 – 1 ½ hours
- Comments will be used as aggregate data

Focus Group Questions

- Describe your respiratory protection program (RPP)
- Describe how you get your training and education in the RPP
- How do you take care of your respirators

Focus Group Questions (continued)

- Do you have recommendations for improvements in your RPP
- What knowledge and skills do you think are important for people to have who need to use respirators

Focus Group Invitees

- HCW from each department
  - ✓ ER
  - ✓ Peds
  - ✓ Infection control
  - ✓ Respiratory therapy
  - ✓ OHN
  - ✓ Nursing assistants
  - ✓ Lab workers

When and How Often

- How often
  - Would like to have one or two focus groups at your facility
    - One for day shift (time convenient for you) and one for evening shift (around 3 or 4 PM)
- Number of Participants in each group
  - About 8 participants
- When
  - Between June 19 and July 18th
  - On either a Tuesday, Wednesday, or Thursday

Contact Information for Setting up Focus Group Meetings

Judy Ostendorf

judyostendorf@pmi-rtp.com

Respiratory Protection Program Pretest

Please circle correct letter response and write letter response on score sheet

1. An N-95 respirator should not be used to protect against which of the following respiratory hazards.

a) TB
b) Pesticides
c) Measles
d) Severe Acute Respiratory Syndrome (SARS)

2. A medical evaluation must be done:

a) Before the initial respirator fit test
b) If an employee reports medical signs or symptoms related to ability to use a respirator
c) If there is a change in workplace conditions that may increase the physiological burden on the employee
d) All of the above

3. The purpose of the fit test is to:

a) Determine whether an N95 or PAPR should be used
b) Make sure the N-95 respirator provides a tight fitting face seal to prevent unfiltered air (particles) from getting inside the respirator
c) To protect the patient from a health care worker with a respiratory infection
d) Learn about respirator reuse procedure

4. Fit testing is required:

a) Annually
b) Every three years
c) Whenever a different model or size of respirator is used
d) a and c

5. Respirator users should check the seal of the respirator:

a) Only before being fit tested
b) Every time you put on a respirator
c) If the respirator feels loose
d) Only after fit testing

6. Unused respirators should be stored to protect them from which of the following:

a) Sunlight and extreme temperatures

b) Excessive moisture and damage
c) Deformation of the face piece and exhalation valve
d) All of the above

7. You must complete training about the respiratory protection program at least:

a) Annually
b) One time during your employment
c) Every 3 years
d) When you start a new position

8. Which of the following procedures are considered high hazard for exposure to aerosol transmissible pathogens:

a) Sputum induction, bronchoscopy
b) Pulmonary function testing , aerosolized medication administration
c) Bronchoscopy, O_2 administration
d) a and b

9. Who needs to wear respirator:

Employees who:

a) Provide general home health care
b) Change wound dressing
c) Repair equipment that may contain aerosolized pathogens
d) Work in the operating room

Respiratory Protection Score Sheet

Please write in letter response

Pretest	Posttest
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)
7)	7)
8)	8)
9)	9)

Rev 5/13

Practice Champions Observation Checklist/ Log Template

	A. **Date/Location** (e.g., Patient Room):	B. **Briefly describe incident or observation, or guidance request** (e.g., not wearing respirator, improper donning/doffing):	C. **Resolution** (briefly describe action / guidance / resources provided):	D. **Referral needed** (e.g., Refit test) (briefly describe): To whom? For what?	E. **Follow-up provided** (briefly describe / comments):
1.					
2					
3					

Practice Champion Checklist /Log Data

HOSPITAL A					
	A. Date/Location (e.g., Patient Room):	**B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):**	**C. Resolution (briefly describe action / guidance / resources provided):**	**D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?**	**E. Follow-up provided (briefly describe / comments):**
1	6/18/2013 Free standing ED	Overview of Fit-testing. Guidelines to include donning/doffing and review of when to be re-tested.	Explained that weight loss/gain in person needs to be re-tested.	ED Staff.	None at this time.
2	6/25/2013 ICU/PCU	Observed staff entering room prior to completing proper fit of respirator.	Explained/discussed that staff should always perform fit check prior to entering room.	Discussion with department Fit-testers to educate on importance of proper use.	Re-evaluated Staff after education (7/15/13).
3	7/25/2013 ED	Observed staff in ED. Discussed the need to insure patient is placed on precautions early to protect all staff.	Discussion that it is best practice to place patients on respiratory precautions early and that we can always cancel if needed.	ED Staff and providers.	Re-evaluated staff.
4	8/1/2013 Registration Staff in ED	Observed Registration Staff entering room prior to applying respirator.	Discussed importance of applying respirator prior to entering room.	Discussion with Dept. Fit-tester and Manager.	Education of Staff.
5	8-8 to 8-15-13 ICU/PCU	Attended Staff meetings to observe donning/doffing.	Re-educated as needed on proper technique on Donning/Doffing.	ICU/PCU Staff.	
6	8/20 to 8/30/13 Medical units	Attended Staff meeting to observe donning/doffing.	Re-educated as needed.	Medical/Pediatrics Staff.	
7	6/28/13 Med-Surg Ortho floor T.D, NA II	Observed placement (N-95 duckbill). Proper placement except for bottom string placed above hair. No fit check done.	Education performed on string placement and doing fit check of mask for air escape.	No.	N/A
8	6/28/13 Med-Surg Ortho floor DC, RN	Demonstrated placement of mask. Only use one finger to adjust nosepiece.	Education performed on using both hands to adjust nosepiece properly.	No.	No.

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
9	6/28/13 Med-Surg Ortho BH, NA II	Did not know her mask size. Straps placed appropriately but didn't check for seal or adjust nose appropriately.	Contact manager to get correct mask size. Educated on nose adjustment and seal check.	No.	Came to unit 2 days later for recheck.
10	6/28/13 J.J Med Surg	Does not know what mask to wear. Never followed up with Employee Health for initial fitting.	Employee Health Nurse and contact information given for initial Fit-testing.	Manager contacted to make sure Fit-testing was scheduled.	
11	6/28/13 C.H Med Surg	Placed mask on properly. Did not press nose with both sides and did not do seal check.	Proper placement. Nose pinch and seal check reviewed and return demonstration done.	No.	
12	7/1/13 E. NA I Emergency Dept.	Not sure of mask size. 1. Bottom string not placed under hair. 2. Pinched with one finger. 3. Did not do seal check.	Instructed on proper use of mask and proper adjustment of nose check and seal check.	Referred to Employee Health to find out mask size and type from last Fit-test.	
13	7/1/13 RN Emergency Dept.	Knew correct mask size and type. Bottom string over ponytail. Did not do seal check.	Education on proper placement of strings of mask and seal check.	No.	No.
14	7/1/13 RN Emergency Dept.	Knew mask size and type. Thought strings were supposed to be criss-crossed for proper seal.	education on proper placement of strings for mask.	No.	
15	7/1/13 RN Med Surg Tele	Mask placed on properly. Did not pinch nosepiece properly. Needs to remember to do seal check.	Education on nose adjustment and performing seal check before entering patient's room.		
16	7/4/13 RN Cardiac Tele	Mask applied correctly. Did not do seal check and did not pinch nosepiece with 2 fingers.	Educated on proper seal check for mask and using both hands to press nose for seal.	No.	This was a R/O TB room

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
17	7/4/13 RN Cardiac Tele	Mask placed but bands were crossed.	Educated on placement of mask and bands. Reminded proper seal check.	No.	Patient - R/O TB
18	7/12/2013 RN Cardiac Tele	Mask placed. Upper band needed to be higher and lower band on neck. Needs to do seal check.	Education on proper fit and adjustment of nose area and proper seal check before entering patient's room.		Patient positive for TB. TB isolation in effect.
19	7/12/13 RN Cardiac Tele	Mask placed properly. Proper pinch of nose. Did not do seal check.	Education on seal check before entering room.	No.	TB isolation room.
20	7/15/13 RN Med Surg	Mask placed but bottom band not in right position. Did not nose pinch correctly. Did not do seal check.	Complete education on proper placement - seal check and nose adjustment done.	No.	Nurse did return demonstration.
21	7/15/13 RN Cardiac Tele	Mask placed properly. Did not pinch nose correctly.	Education on nose adjustment completed.	No.	
22	7/30/13 RN ED	Mask placed properly except for bottom band over hair. Did not do seal check.	Education on proper placement of mask given. Seal check reviewed.	No.	Nurse did return demonstration.
23	7/30/13 NA I ED	Mask placed properly except top string needed to be higher.	Proper placement of mask strings reviewed and demonstrated.	No.	
24	8/28/13 RN Med -Surg TB Isolation	Proper placement needed to do seal check and proper nose pinch adjustment.	Education on proper seal check and adjustment of nosepiece.	No.	
25	8/27/13 NA I TB Isolation	Proper placement but seal check not done. Drew on the mask a colored a smiley face with teeth to cheer up patient.	Eucation on seal check completed. Also explained that using marker to draw on masks makes mask ineffective. Once wet, mask will not protect properly.	No.	

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
26	6/19/13 RN Main/STICU	Did not take hair out.	Educated to take hair out.		
27	6/19/13 RN Main/Teammate Health	Correct.			
28	6/19/13 RN Annex Onsite	Correct.			
29	6/19/13 Security Main/Security	Correct.			
30	6/19/13 RN Main/ED	Correct.			
31	6/19/13 RN Main/ED Float Pool	Crossed Straps.	Educated on donning correctly.		
32	6/19/13 RN Main/ED	Diagnostics - Crossed straps.	Educated on donning correctly.		
33	6/19/13 Guest Services Main/Guest Services	Both straps on top of ears. Mashed nosepiece.	Educated on donning correctly.		
34	6/26/13 CNA Main/ED	Correct.			
35	6/26/13 Phlebotomist Main/Phlebot.	Both straps behind ears. Did not know how to adjust.	Educated on donning correctly.		

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
36	6/26/13 Phlebotomist Main/Phlebot.	Correct.			
37	6/26/13 MD Main	Both straps together.	Educated on donning correctly.		
38	7/10/13 NA II Main/10 Tower	Did not do proper fit check.	Educated on the spot.		
39	7/10/13 Airport Center Onsite Care	Did not complete fit check.	Educated on the spot.		
40	7/10/13 Student Main	Correct.			
41	7/10/13 NA I 7North	Hair not taken out under bottom strap. Top strap not placed on crown of head.	Educated on the spot.		
42	7/10/13 RN Urgent Care	Correct.			
43	7/10/13 RN Main/ED	Correct.			
44	7/10/13 MOAFamily Practice Dr. Office	No Fit Check.	One-on-one teaching to do fit check.		
45	7/10/13 MD Family Medicine	Correct.			
46	7/31/13 Registrar Main/Registrar	Correct.			

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
47	7/31/13 CNA Health @ Home	Correct.			
48	7/31/13 MD Onsite	Correct.			
49	7/31/13 CNA Main/3T	Correct.			
50	ER	Improper donning/wearing.	Guidance on - 1. strap placement-top straps on top; 2. Fit check-means they did not attempt to check mask at all.	None.	
51	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
52	ER	Improper donning/wearing.	Guidance on - fit check.	Mask not tight (male with hair on face), needs repeat Fit-test. Referred to Employee Health.	
53	Radiology	Improper donning/wearing.	Guidance on - fit checks, strap placement.	None.	
54	Radiology	Improper donning/wearing.	Guidance on - fit check, donning straps (placing straps under the hand before donning the mask).	None.	
55	Radiology	Improper donning/wearing.	Guidance on - fit check.	None.	
56	Radiology	Improper donning/wearing.	Guidance on - fit check and nosepiece fitting (using 2 hands while fitting the nosepiece).	None.	
57	Radiology	Improper donning.	Guidance on - donning straps.	None.	
58	ER	Improper donning.	Guidance on - fit of nosepiece.	None.	
59	ER	Improper donning/wearing.	Guidance on - strap placement.	None.	

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
60	ER	Improper donning/wearing.	Guidance on - strap placement.	None.	
61	ER	Improper donning/wearing.	Guidance on - fit check and donning straps.	None.	
62	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
63	ER	Improper donning.	Guidance on - fit check.	None.	
64	ER	Improper donning/wearing.	Guidance on - donning of straps, strap placement.	None.	
65	ER	Improper donning/wearing.	Guidance on - fit check, strap placement.	None.	
66	ER	Improper donning/wearing.	Guidance on - fit of nosepiece and fit check.	None.	
67	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
68	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
69	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
70	ER	Improper donning/wearing.	Guidance on - strap placement, fit check.	None.	
71	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
72	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
73	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
74	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
75	ER	Improper donning/wearing.	Guidance on - fit of nosepiece.	None.	
76	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
77	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
78	Security	Improper donning/wearing.	Guidance on - strap placement, fit check, nosepiece fitting.	None.	
79	Security	Improper donning/wearing.	Guidance on - fit check.	None.	
80	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
81	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
82	ER	Improper donning/wearing.	Guidance on - fit check.	None.	

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
83	ER	Improper doffing.	Guidance on - did not throw mask away after using it.	None.	Will speak with Manager regarding policy on mask re-use and disposal.
84	ER	Improper donning/wearing.	Guidance on - nosepiece fit.	None.	
85	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
86	ED	Improper donning/wearing.	Guidance on - strap placement.	None.	
87	Security	Improper donning/wearing.	Guidance on - mask upside down, no nosepiece adjustment, no fit check.	None.	Will speak to Employee Health regarding Security Officers being taught to properly wear/don masks.
88	ED	Improper donning/wearing.	Guidance on - nose adjustment, self test.	None.	
89	ED	Improper donning/wearing.	Guidance on - self test.	None.	
90	ER	Improper donning/wearing.	Guidance on - strap placement.	None.	
91	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
92	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
93	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
94	ER	Improper donning/wearing.	Guidance on - nosepiece fitting.	None.	
95	ER	Improper donning/wearing.	Guidance on - strap placement, fit check.	None.	
96	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
97	ER	Improper donning/wearing.	Guidance on - fit check, donning straps.	None.	
98	ER	Improper donning/wearing.	Guidance on - strap placement.	None.	
99	ER	Improper donning/wearing.	Guidance on - Fit-test.	None.	
100	ER	Improper donning/wearing.	Guidance on - Fit-test.	None.	
101	ER	Improper donning/wearing.	Guidance on - nosepiece fit.	None.	
102	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
103	ER	Improper donning/wearing.	Guidance on - donning of straps.	None.	

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
104	ER	Improper donning/wearing.	Guidance on - fit check.	None.	
105	ER	Improper donning/wearing.	Guidance on - nosepiece fitting.	None.	

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
HOSPITAL B					
	A. Date/Location (e.g., Patient Room):	**B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):**	**C. Resolution (briefly describe action / guidance / resources provided):**	**D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?**	**E. Follow-up provided (briefly describe / comments):**
106	8/1/2013 Employee Health (EH)	PAPR training. Fit-testing.	Demonstrated PAPR use, detailed use on N-95, answered questions, described importance of respiratory protection.	N/A	Return as needed or for Fit-testing: directed to return for weight loss/gain, face altering surgery, beard growth, 364 days, 12 months.
107	8/1/2013 EH	PAPR Training.	PAPR use only. Full beard.	Adjust strap as needed.	If employee shaves, Fit-test with EH as soon as possible. Do not wear N-95 until Fit-tested.
108	8/2/2013 1A	Information provided. Talked about PAPR training and use, when to wear N-95, Diseases, etc.	Advised to come to EH for demonstration if needed. Employee has been instructed on respirator use before.	EH to re-enforce learning needs.	Able to discuss appropriate use/needs and correct application, cleaning, and storage.
109	41488	Fit-testing/PAPR training.	Focused on attention to the use of our PAPRs, which are different from ones used in the past.	N/A	Fit-test every 364 days/12 months or whenever the face shape changes: weight loss/gain, face altering surgery, beard growth.
110	8/9/2013 Hallway and EH	Fit-test, PAPR training conducted with employee.	Explained proper technique, reinforced teaching.	Follow-up with EH if needed or with questions.	Reinforced Fit-test requirements, uses, seal technique, proper N-95 size.
111	8/9/2013 EH	Fit-test, PAPR training conducted with employee.	Explained proper techniques, reinforced teaching, allowed for repeat demonstration.	Follow-up in EH or Infection Control (IC) if needed or with questions or concerns.	None

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
112	8/9/2013 Cafeteria/ Security staff	Reviewed N-95 / PAPR use guidelines by asking people who worked in patient care areas.	Fit-test up to date, Reviewed PAPR training by verbal discussion.	Follow-up with EH for demonstration if needed.	Reinforced N-95 and PAPR use.
113	8/9/2013 Cafeteria/OR staff	Reviewed N-95/PAPR use guidelines by asking people who worked in patient care areas.	Fit-test not required for job, Reviewed PAPR training.	Follow-up with EH for demonstration on PAPR if needed.	Reinforced PAPR use.
114	8/14/2013 2A	Discussed with RN disease processes for N-95 use, re-use for PAPR, policy, cleaning of PAPR	Answered questions regarding use, signs posted.	None	Reinforced teaching.
115	8/14/13 1A	Discussed with Care Manager PAPR use, technique. Discussed seal check with aide.	Care Managers call into rooms, but will use PAPR if needed to enter.	None	Reinforced teaching as needed.
116	8/14/2013 Cafeteria	Asked questions about N-95 use with staff.	Most answered correctly.	Follow-up with EH or IC if needed. Call with questions or concerns.	Reinforced teaching.
117	8/14/2013 Cafeteria	Asked questions about N-95 use / PAPR use with staff from different depts. that were in line	Very busy staff. Little opportunity to ask questions.	Follow-up with EH to practice with PAPR if needed.	Reinforce teaching as need, refer to EH, IC
118	8/15/2013 EH	Re-appointment of MD who hadn't been Fit-tested in 2 years.	Discussed in detail Fit-test requirements.	Fit-test, PAPR Training.	Follow-up with EH, IC with questions.
119	8/15/2013 EH	Re-appointment of MD who hadn't been Fit-tested in 2 years. Refuses to wear PAPR.	Discussed in detail Fit-test requirements and OSHA standards.	Fit-test completed and passed after 2 attempts. Re-adjusted.	Follow-up with EH/IC with questions.
120	8/15/2013 EH	Fit-tested new employee.	Discussed reasons and importance of N-95. No hospital experience.	Fit-test/PAPR trained.	Follow-up with EH with questions or concerns.

Practice Champion Checklist /Log Data

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121	8/15/2013 EH	Fit-tested/PAPR trained new employee.	Discussed reasons and importance of N-95 use, no hospital experience	Fit-test/PAPR trained.	Follow-up with EH with questions or concerns.
122	8/15/2013 EH	Radiology tech PAPR trained R/T facial hair and re-scheduled for Fit-test when clean shaven.	PAPR trained only. Discussed reasons for PAPR, N-95 use	Discussed OSHA requirements, standards.	Fit-test re-scheduled employee plans to be shaved.
123	8/19/2013 EH	Rescheduled Fit-test for clean shaven ODS employee. PAPR trained today. No hospital experience.	PAPR trained only today. Discussed reasons for PAPR, N-95 use.	Follow-up with EH.	Re-schedule for fit-testing at later date.
124	8/24/2013 IA	Questioning staff. Educating them on use, technique of N-95, PAPR.	Discussed reasons to wear, signage, items needed, requirements.	Responses appropriate.	Follow-up with EH if needed or with questions, comments or concerns.
125	8/23/2013	PAPR review training and skills check off with MRI staff.	Trained staff one on one re; questions, concerns, proper use and techniques for PAPR.	EH RNs and staff. IC nurses for reinforcement teaching, skills check off; train the trainer.	Follow-up with EH, IC for concerns, issues, questions.
126	8/27/2013 EH	PAPR trained Environmental Services employee and Fit-tested. No hospital experience.	Detailed description of Fit-testing requirements, importance.	Fit-test, PAPR trained employee.	Follow-up with EH with questions, comments, concerns.
127	8/27/2013 EH	PAPR training.	Chaplain desired Fit-testing but doesn't meet requirements for department. PAPR trained. Discussed in detail.	PAPR trained, answered questions, resolved concerns.	Follow up with EH.
128	8/28/2013	Fit-test MD who has never been Fit-tested.	Explained process and reasoning, Discussed requirements in detail.	None	Follow-up with IC and spoke to IC nurse, Follow-up with EH p.r.n.
129	8/28/2013	Fit-test MD who hadn't been Fit-tested in 3 years.	Explained reasoning and process.	None, Fit-test done without difficulty.	Follow-up with EH, IC p.r.n. with questions, concerns.

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130	6/7/2013 (Environmental) Employee Health "EH"	Unaware of difference between "mask" for droplet isolation and N-95 Respirator.	Reviewed isolation signs and showed "N-95" on airborne signs.	Employee Health/Infection Prevention in native language (interpreter present).	Reviewed importance of reading isolation signs and why different diseases are different.
131	6/10/2013 Pt. care/Women and children EH	Not Fit-tested since 1/2007.	Notified manager. Fit-Test scheduled. OSHA/Infection guidelines.	Fit-test scheduled and completed.	Stressed importance of annual Fit-testing.
132	6/10/2013 (Interpreter) EH	Previously failed N-95 Fit-test and does not feel comfortable using PAPR for protection. Also unaware of annual Fit-test requirement.	Instructed on proper fit and placement of straps. Stressed proper placement and seal of metal nosepiece.	Repeat Fit-test.	Wearing N-95 too high. Proper placement on bridge of nose and seal stressed. Overall fit factor 190 after adjustments.
133	6/10/2013 EH (Pt. Care) Women and Children)	Fit Factor not achieved.	Tighten straps.	Repeat Fit-test.	Straps tightened prior to use. Overall fit factor achieved. Instructed employee to tighten straps prior to every use.
134	6/13/2013 EH (Security)	Unaware of need for N-95 – airborne protection.	Encouraged to schedule N-95 Fit-test with Employee Health.	Fit-test scheduled.	Instruction on OSHA guidelines for N-95 respirator use.
135	6/13/2013 EH (Environmental)	Arrived for Fit-test with facial hair (beard).	Do not Fit-test. Must not use N-95.	Employee Health – Fit-test not possible.	Instructed employee on PAPR use. Do not use N-95 with beard. Use PAPR only.
136	6/13/2013 EH (Pt. Care General Surgery)	Wearing inappropriate size. Employee states she wears 1870, but fit factor not achieved.	Reviewed record. 1860 small is previously recorded size.	Repeat Fit-test.	Employee is re-fitted with 1860S, Fit factor achieved. Sticker given for badge as a reminder.

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137	6/14/2013 EH (Pt. Care Women and Children)	Needs to tighten straps. Fit factor not achieved (gap under chin).	Tightened straps; re-Fit-tested.	Repeat Fit-test.	Fit factor achieved after straps tightened. Instructed employee and wrote on "Wear it Right" handout.
138	6/18/2013 EH (Pt. Care ICU)	Unaware of N-95 and beard policy. Employee with full beard (RN) states " I can pass the Fit-test".	OSHA Guidelines reviewed.	Fit-test not completed.	Stressed OSHA guidelines – must not wear N-95 with full beard – Sticker for badge and PAPR instructed.
139	6/24/2013 EH (Environmental)	Employee unsure of proper PPE for isolation. Reviewed signage – use of N-95 vs. surgical mask.	Isolation signage.		
140	6/24/2013 EH (Lab)	Improper reuse of N-95 (Storing N-95 on cart for re-use).	Policy reviewed.	Re-read policy.	Stressed that normal procedure is to dispose of respirator after every use. Never re-use for different patients.
141	6/24/2013 EH (Pt. Care Ortho)	Not properly sealing N-95, not doing seal check.	Re-instructed	Repeat Fit-test.	Demonstrated proper seal on bridge of nose and proper seal check. Fit factor achieved.
142	6/24/2013 EH (Security)	Improper donning.	OSHA guidelines. Wear It Right.	Repeat Fit-test.	Bottom of duckbill tucked completely tucked under – Straps incorrectly placed. Instructed on proper donning and fit factor achieved.
143	6/24/2013 EH (Physician practice)	Not wearing respirator, Unaware of when N-95 and/or patient masking required.	Infection Control Policy.	Fit-test (initial).	Instructed in airborne precautions per IC policy. Proper donning/doffing. Materials given for her office for other staff.

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144	6/24/2013 EH (Physician practice)	Not wearing respirator.	Infection Preventionist (CIC) Referral.	Infection Preventionist.	Provider did not understand requirement for respirator use. Referred to infection Preventionist. Follow-up scheduled with entire practice at next staff meeting.
145	6/26/2013 EH (Pt. Care CCU)	RN not in compliance with annual Fit-test (last tested 2011)	Re-Fit-test Completed	Contacted Manager.	Fit-test completed. Stressed reason and need for annual Fit-test. Manager notified.
146	6/28/2013 EH (Environmental)	Not wearing respirator	Infection Control policy reviewed.	Repeat Fit-test.	Employee unsure of proper times to wear respirator. Instructed on difference between mask and respirator. Stressed reading Isolation signs.
147	6/28/2013 EH (Plant operat.)	Donning with facial hair	OSHA guidelines reviewed.	PAPR Instructed.	Stressed the need for loose fitting respirator (PAPR) due to beard. Notified manager.
148	6/28/2013 EH (Plant operat)	Donning with facial hair.	OSHA guidelines reviewed.	PAPR Instructed.	Stressed the need for loose fitting respirator (PAPR) due to beard. Notified manager.
149	7/3/2013 EH (Security)	Not in compliance with Fit-test.	Fit-test (Initial). Infection Control policy. OSHA guidelines.	Fit-tested.	Contract employee not familiar with respirator use. Fit-tested and stressed OSHA guidelines and isolation policy/signage.
150	7/16/2013 EH (Vascular)	Donning with facial hair.	OSHA guidelines reviewed.	PAPR instructed.	Stressed need for loose fitting respirator (PAPR) due to beard. Notified manager.
151	7/17/2013 EH (Security)	Not wearing respirator.	Notified manager. Fit-test scheduled. OSHA/Infection guidelines.	Fit-test (Initial) scheduled.	Contract worker never Fit-tested. Unaware of proper respirator use. Trained on OSHA guidelines/IC practices.

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152	7/3/2013 EH (Clinical Eng)	Donning with facial hair.	OSHA guidelines reviewed.	PAPR instructed.	Stressed need for loose fitting respirator (PAPR) due to beard. Notified manager.
153	7/19/2013 EH	Improper donning (not sealing/refusal to). (Surgical Tech not sealing metal nosepiece, not pressing firmly).	Manufacturer's guidelines/OSHA stressed.	Repeat Fit-test.	Stressed proper seal. Not protected if not sealed and seal check procedure. Demonstrated and fit factor achieved.
154	7/26/2012 EH (MD practice)	Not wearing respirator.	OSHA Guidelines /Infection Prevention Guidelines reviewed.	Infection Preventionist and policy.	Reviewed airborne isolation policy. Infection Preventionist scheduled meeting for practice at next staff meeting.
155	7/26/2012 EH (private provider)	Improper donning.	Manufacturer's Guidelines for donning. OSHA "Wear It Right".	Repeat Fit-test.	Reviewed guidelines. MD receptive and appreciative. Fit factor achieved after adjustments.
156	6/11/2013	RN not wearing N-95 for bronchoscopy. RN had on regular surgical mask.	RN and MD reminded that N-95s must be worn during ALL bronchoscopies. Both put on N-95s.	No referral needed.	Proper donning/doffing observed the next bronchoscopy. Below.
157	6/12/2013 RN, MD, Lab, RCP	EBUS – I hour procedure	Observed fit throughout.		Observed mask donning/doffing prior to bronchoscopy. Good technique.
158	6/19/2013 RN, MD, Lab, RCP	EBUS			Observed proper donning/doffing.
159	6/28/2013 Tech-Assist, RN, MD, Lab, RCP	EBUS			Observed proper donning/doffing.
160	6/28/2013 RN, Lab, MD	Bronchoscopy.	N/A	N/A	Good donning/doffing.

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161	7/11/2013 RCP x2. RN, Lab, MD	RN came to procedure with regular surgical mask. EBUS – 1.5 hrs.	Spoke to RN about requirements to wear N-95 for ALL Bronchoscopy/EBUS	No. RN had not done EBUS in awhile. Correct mask applied.	Good donning/doffing.
162	7/16/2013 RN, RCP, MD	RN came to procedure with regular surgical mask.	Spoke to RN prior to procedure. Correct N-95 used prior to procedure.	No.	Donning. Good Fit-test up to date.
163	7/19/2013	Bronchoscopy – student requested to observe. Student had not been Fit-tested.	Student observed through a window from outside the room.	No.	N/A
164	7/26/2013 MD, RCP, RN, Lab Tech	Bronchoscopy	N/A	No.	Proper donning and doffing of N-95s.
165	7/30/2013	MD not aware that N-95s had to be worn with all bronchoscopies and in negative pressure room.	Discussed regulations regarding N-95s.	No.	Good donning and doffing by MD and other staff involved with bronchoscopy.
166	8/7/2013 MD	Student asked to observe bronchoscopy. The student had not been fit-tested.	Student wore a PAPR.	No	Good donning and doffing of PAPR.
167	8/27/2013 RN, MD	Bronchoscopy. Observed RN and MD don and doff N-95 mask properly.	_____	N/A	N/A
168	9/6/2013 EMT	Bronchoscopy. EMT had not been fit-tested for Regular N-95.	Wore PAPR	N/A	Good donning and doffing with proper disinfection post removal.

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169	EV	Showed me how she would wear her mask and did great.		Told her to make sure she has a good fit.	
170	CP	Asked what type mask would she wear and how when going in a AFB room.	Put the mask on and took it off correctly.		I told her to make sure she had a good fit before going into the room.
171	CP	Asked what type mask he would wear. He had facial hair.	PAPR - He showed me where they kept the machine and where he would get one if they didn't have one.		I told him how long it needed to be charged.
172	In-service 3 South Staff	Asked what type mask would they wear with facial hair.	PAPR - where they would get the machine if they did not have one. They showed me where they kept the machine.		I told them how long it needed to be charged.
173	RN	She showed how she would wear the mask, when she would wear it, and how she would remove it.			I told her if she had to return to the room to always get a new mask.
174	RN	She showed how she would wear the mask, when she would wear it, and how she would remove it.			I told her if she had to return to the room to always get a new mask.
175	OT	Did know how to wear the PAPR.	Went over how to test for good air flow, charge, where they were kept.		Put PAPR on to show how it worked.
176	CP	Watched her put her mask on correctly.			I told her to make sure she always has a good fit.

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177	RN	ISU unit - all rooms are positive pressure.			
178	SP	Had small amount of facial hair. Explained to him to not wear his N-95 because he would not have a good fit. Need to be clean shaven.			
179	CPU	Went over the Fit-testing process with her.			Watched her put on her mask correctly. Explained to always get a new mask.
180	EV	Showed me where masks were kept. When she would wear the N-95.		Went over the Fit-test process with her.	Make sure she has a good fit. No air leaking out.
181	RN	Nurse asked if BP is normal when passing (Fit-test) but on day of wearing mask BP is high, should they wear mask?		IC/EH	I said "No" if BP is high.
182	CP	Visit to Emergency Department	They told me how they wear the mask and when they wear them.	I was shown all the negative pressure rooms and where they kept masks.	
183	PT	Wear PAPR.	Told him if the floor didn't have a machine, get one from Central.	If you had facial hair or fail Fit-test, you would wear PAPR.	
184	East care	He put mask on the correct way.		When and how they should wear N-95.	Told him to make sure he had a good fit when putting the mask on.
185	CP	Went over how mask should be worn and when they should wear them.			Blood pressure has to be below 160/100.
186	EVM	Would wear PAPR. Told him where he was to get the machine and the hood.			I told him how to test the machine and if it wasn't charged not to use it.

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187	CP	Put mask on wrong. Crossed the straps over her head.	I put her mask on correctly and demonstrated how to remove it.		I told her that the straps should never cross each other; top strap at the crown of her head; bottom strap at the back of her neck.
188	Student	Did an in-service with the Pitt Students on the mask.	Showed them how to put the mask on correctly.		
189	Nurse - male	Went over how and why he would wear the air filter (PAPR). He knew how to wear it.	He knew where they were kept on the unit.		
190	CP	She knew how to wear the mask but took it off wrong. I went over removing the mask and that it should only be worn once.	We put it back on and she removed it the right way.		
191	2N CP MIU 3/9/2013	No patients on AFB. Employee described where supplies are; how to use and discard.	Employee was very aware of when to wear; what type of patient.		
192	2N RN MIU 3/9/2013	No patients. Employee showed where supplies are kept.	Described how mask is used, when, and why.		
193	2N MIU EVS	No patients. Employee was new to area. Showed me where supplies were.	Went over usage of mask, how to use and when.	Ask Employee was she Fit-tested before pre-employment. She remembered when she was told.	
194	2N MIU Resp. Care	No patients. Was aware of supplies, when to use and not to re-use.	Described how to use mask. On and off.		

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195	3N BGSU 7/11/2013 RN	No AFB Rooms in use.	RN described what she would use. Proper placement of mask, where supplies are stored and how to discard.		
196	3N BGSU 7/11/2013 CP	No AFB Rooms in use.	CP wasn't sure at first about AFB vs. just contact.	Explained to CP to wear N-95. How to properly use and when. Once talking with CP, she remembered more of what to wear.	Explained to CP use of PAPR, where to get and how to use. CP was comfortable and aware of use.
197	3N BGSU 7/11/2013 EVS	No AFB Room in use.	Employee was aware of when to use and what mask to use. Demonstrated how to use mask and discard.	Where supplies were kept.	
198	3N BGSU 7/11/2013 PT Tech	No AFB Room in use.	PT Tech knew to wear mask but wasn't aware of PAPR with facial hair.	PAPR not kept on floor. Explained to tech to get PAPR from Central Supply and hood from stock room.	
199	3N BGSU 7/11 RN Asst Nurse Mgr (ANM)	No AFB Room in use.	ANM described what employees would wear and where supplies are kept.	Stated PAPR not kept on floor but knew to get from Central Supply.	
200	5th CIU 7/16 RN	No AFB Room in use.	RN showed me equipment room/supplies and explained how to use and discard.	Stated and showed they had hoods for PAPR, but PAPR was obtained from Central.	
201	5th CIU 7/16 RN	No AFB Room in use.	Male RN with beard explained that he wore PAPR. Was able to explain how to check charge and use.		

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202	5th CIU 7/16 RN	No AFB Room in use	CP explained what she would wear and how to discard after use.	She knows PAPR would be used if mask didn't seal properly and that PAPR came from Central.	
203	5th CIU 7/16 Student RN	No AFB Room in use.	She was aware of AFB room. Went over what to use and how. She knows where supplies were kept.		?
204	7/30 2 East	2 AFB Rooms. None in use.	Spoke with Charge Nurse. She explained use and equipment. Correct mask worn in ante-room.	No PAPR found on floor but is usually kept in unit storage.	
205	8/6 3 EAST Charge Nurse	2 AFB Rooms. None in use.	Charge nurse explained and showed supplies and how to use. N-95 mask and PAPR were on floor in ante-rooms.	Hoods and mask kept in packages.	
206	8/13 MIU Review RN	NO AFB. Room in use.	Spoke with RN. She explained why mask was worn and was able to demonstrate putting on and taking off mask.		
207	8/13 MIU Review	No room in use.	Care partner showed me where supplies were kept. Was able to demonstrate putting on and taking off mask.		
208	8/20 CW review	No room in use.	Respiratory Care Practitioner male w/beard, knew to wear PAPR. Demonstrated how to test and use equipment.		

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209	8/20 CW review	No room in use.	Care partner knew when to wear mask and to only use once.	CP was able to put mask on correctly and CP was comfortable with use. I had to demonstrate and remind CP how to take off.	
210	8/20 CW review	No room in use.	Housekeeping staff knew where supplies were and when to use. Not completely sure of putting on and taking off.	Worked with employee and demonstrated. Employee was able to put on and take off prior to me leaving.	
211	8/27/13 Physical Therapy Asst.	No room in use.	Physical Therapy Asst. demonstrated putting on and taking off mask.		
212	8/28/13 RN	No room in use.	Male RN demonstrated putting on and taking off mask. Was also aware of using PAPR with facial hair.		

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213	9/10/13 OHS	Improper donning N-95; Employee pulled mask over head to cover nose and mouth.	Employee showed proper way to put on N-95.		
214	9/10/13 OHS	Tried to wear N-95 with beard.	Explained that due to facial hair, mask cannot seal properly.	Educated on use of PAPR.	
215	8/13/13	Employee donned N-95 properly.	Reminded to perform seal check after donning mask.		
216	7/9/13	Employee donned mask improperly by pulling both straps overhead at the same time.	Shown proper way to don/doff N-95. Also to always do seal checks.		Will be Fit-tested annually.
217	6/10/13	Employee to wear PAPR due to facial hair. Very knowledgeable about use of PAPR.			
218	7/29/13	Proper donning/doffing exhibited.	Reminded always to perform seal checks when donning N-95.		

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219	6/11 Education dept.	Asked nurse what size respirator she wore. She stated "I think I'm a regular, but I lost weight, so I grab a small."	Explained to nurse she must be re-fit anytime she gains or loses 10 lbs. or more.	I re-fit the nurse that day for accurate respirator which was 3M-small.	Had nurse keep mask she was fitted with to place in locker as a reminder of current size.
220	6/20 Education Dept.	When Fit-testing a nurse, she did not check for seal.	Educated nurse to check for seal every time.	None.	None.
221	6/25 Education Dept.	When fitting several nurses, found them wanting to pinch the nose with one hand.	Explained that pinching the nose could cause a gap and loss of seal.	None.	None.
222	7/9 Education Dept.	Fit-tested new employees. Some said they had never been through this procedure at other facilities. They had the mask on and the filter squirted the solution a couple of times and if she could not smell or taste the test was over.	Fitted properly using proper technique.	In-house fitters have been notified about changes in Fit-testing to ensure most current recommended technique are used.	explained to staff the importance of protecting yourself and being properly fit-tested.
223	7/23	Fit-tested new employees. Most do not know proper donning and doffing.	Educated on proper donning and doffing and seal check.	None.	None.
224	8/6 ICU 3	Nurse entering room improperly donned the N-95.	Explained proper donning and doffing procedure.	None.	Had nurse demonstrate proper donning and doffing.
225	8/8 ICU 3	Respiratory therapist entered room with improperly donned mask.	Explained proper donning and doffing procedure.	None.	Had RT demonstrate proper technique.

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226	8/19 MH 506	Patient was direct admit from another hospital and automatically placed on insolation to rule out TB.	None.	None.	None.
227	8/20 MH 506	CNA came out of room improperly donned, hair was under strap.	Re-educated CNA in proper donning and doffing as well as seal check.	CNA donning and doffing.	Demonstration.

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
Hospital F					
	A. Date/Location (e.g., Patient Room):	**B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):**	**C. Resolution (briefly describe action / guidance / resources provided):**	**D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?**	**E. Follow-up provided (briefly describe / comments):**
228	Medicine ICU (MICU)	Improper respirator storage. N-95 respirator hung from a hook outside airborne isolation room.	Provided instruction on proper disposal and storage of N-95 respirators.	N/A	Followed up by conducting a walkthrough 2 weeks later. No similar incidents observed.
229	Medicine Progressive Care Unit (MPCU)	Failure to perform user seal check.	Provided instruction on the importance of the user seal check and how to perform one.	N/A	Followed up by conducting a walkthrough 2 weeks later. No similar incidents observed.
230	Various Nursing Units	Improper donning. Failure to use both hands to mold N-95 respirator nose piece. Employees pinch nosepiece with fingers of one hand.	Provided instruction on proper donning.	N/A	Followed up by conducting a walkthrough 2 weeks later. Continuing problem.
231	Surgery/Trauma ICU	Improper donning. N-95 respirator straps not placed correctly (crisscrossed).	Provided instruction on proper donning.	N/A	Followed up by conducting a walkthrough 2 weeks later. No similar incidents observed.
232	Neurosurgical ICU	No incidents observed.	N/A	N/A	N/A
233	Emergency Department	No incidents observed.	N/A	N/A	N/A
234	Pediatric ICU (PICU)	No incidents observed.	N/A	N/A	N/A
235	Bone Marrow Transplant Unit (BMTU)	No incidents observed.	N/A	N/A	N/A

Practice Champion Checklist /Log Data

	A. Date/Location (e.g., Patient Room):	B. Briefly describe incident or observation, or guidance request (e.g., not wearing respirator, improper donning/doffing):	C. Resolution (briefly describe action / guidance / resources provided):	D. Referral needed (e.g., ReFit-test) (briefly describe): To whom? For what?	E. Follow-up provided (briefly describe / comments):
236	Intermediate Surgical Care Unit (ISCU)	No incidents observed.	N/A	N/A	N/A
237	Main OR Suite	No incidents observed.	N/A	N/A	N/A
238	Post Anesthesia Care Unit (PACU)	No incidents observed.	N/A	N/A	N/A
239	Burn Center	No incidents observed.	N/A	N/A	N/A