Recruitment Strategies and a Case Study
of Respiratory Protection in Illinois Hospitals

BY
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THESIS
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<table>
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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>AIIR</td>
<td>Airborne Infection Isolation Room</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>EHSO</td>
<td>Employee Health and Safety Office</td>
</tr>
<tr>
<td>IHA</td>
<td>Illinois Hospital Association</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>REACH</td>
<td>Respiratory Protection in Acute Care Hospitals</td>
</tr>
<tr>
<td>SHEA</td>
<td>Society for Healthcare Epidemiology of America</td>
</tr>
</tbody>
</table>
SUMMARY

Respiratory protection is a crucial way workplaces prevent employees from being exposed to hazardous concentrations of biological and chemical airborne contaminants. In hospitals, healthcare workers use respiratory protection to protect themselves from exposure to infectious disease agents. This is not just recommended, but required by the Occupational Safety and Health Administration (OSHA) general duty clause which requires all employers to provide a workplace free from recognized hazards to their employees. All employers who require respiratory protection must adhere to the OSHA respiratory protection standard (29 CFR 1910.134). In order to investigate how acute care hospitals implement and utilize their respiratory protection programs six states across the United States conducted surveys asking hospital management and healthcare workers questions regarding their respiratory protection program. The overarching goal of the study was to identify the best practices identified in effectively implementing the OSHA respiratory protection standard in hospitals. This paper specifically looks at hospital recruitment strategies and a case study, which will be the template used to analyze all the respiratory protection programs in Illinois and Minnesota.

Two phases of recruitment were employed. During the first phase a random sample was employed sorting the hospitals on four criteria (size, location, teaching status, and ownership). Hospitals were randomly selected and three departments in each hospital were called asking them to participate. This strategy resulted in zero hospitals being recruited and so phase two of recruitment was initiated. During phase two, personal networks, mass emailing, and professional organizations were contacted in order to achieve a convenient sample. This method resulted in 10 hospitals being recruited as of August 3, 2011. Recruitment proved to be most effective by
promoting the minimum time constraints and energy required of the hospital. It was easiest to recruit hospitals at which research team members had personal contacts, as the personal contact was able to agree or was able to facilitate communication with the appropriate person who could agree to participate. This strategy resulted in large urban hospitals being oversampled. This lead our study to not be generalizable to small hospitals but since most isolation cases are seen by large hospitals, the oversampling seemed acceptable.

Once data was collected a case study looking at how to best use the information to evaluate hospital respiratory protection programs was conducted. The method to analyze hospital respiratory protection procedures was done in two steps. The first step evaluates the written respiratory protection program and compares it to the OSHA standard. The second step compares the survey responses to the written program which allowed us to gauge the effectiveness of their written program’s implementation.

During the first step a tool was developed outlining each section of the OSHA respiratory protection standard to look at how well the hospital’s written program meets each of these requirements. This tool was determined to be a useful manner to consolidate necessary information required by the OSHA standard. In this way we will be able to standardize written respiratory protection programs across all hospitals in Illinois and Minnesota in order to quickly compare them to the OSHA standard as well as to each other.

The second step utilized a case study to produce a protocol for future data analysis of all hospitals. Survey questions pertaining to each section of the OSHA standard were identified and
SUMMARY(CONTINUED)

analyzed. For each section of the standard, a score was given to the case study hospital (Hospital A) which will allow the comparison of one hospital to all hospitals. Sorting by section of the standard is a useful way to organize the information, and can identify the strengths and limitations in each hospital’s implementation of their respiratory program. We identified that some of the survey questions may be interpreted incorrectly by the interviewee, and will not be helpful in evaluating the program. This will be confirmed in subsequent analyses of the other hospital programs.
I. BACKGROUND

A. Introduction

The Respiratory Protection in Acute Care Hospitals II (REACH II) study looks at how hospitals implement and utilize their written respiratory protection programs with the overall goal of developing “best practices” for hospital respiratory protection programs. The activities of REACH II involved interviewing hospital management as well as healthcare workers at hospitals in 5 regions of the United States. The majority of the interview questions focused around aspects of the OSHA respiratory protection standard, 29 Code of Federal Regulations (CFR) 1910.134. In Illinois, we aim to observe and analyze respiratory protection programs at 15 hospitals. Following data analysis, each hospital will be given a report outlining: areas where they could improve their respiratory protection program, areas in which they are successful, comparison of employee knowledge relative to the hospital’s written respiratory protection program, and comparison of the hospital’s respiratory protection program compares with those at other hospitals within Illinois.

The research presented herein represents a component of REACH II, and explores hospital recruitment strategies, and develops a case study of one hospital which will be the template for analyzing the remaining hospitals. The REACH II study was reviewed by the appropriate Institutional Review Board (IRB) for each of the funded states. In Illinois, the UIC IRB determined the project was human subjects research, but met the criteria for exemption from the regulatory requirements.
Respiratory protection prevents the transmission of infectious diseases that are spread either by droplet or airborne routes of exposure. The CDC currently recommends a surgical mask for droplet precautions in healthcare facilities and an N-95 filtering facepiece respirator for airborne precautions (Siegel, Rhinehart et al. 2007). OSHA does not have an infectious disease standard, but requires hospitals to follow the CDC guidelines.

Wherever respiratory protection is used to protect the health of employees, employers must establish and implement a written respiratory protection program in compliance with the OSHA standard. There are ten elements in the OSHA standard that need to be followed in order for a hospital to be in compliance. The first element is a written respiratory protection program which must include the remaining nine items: a program administrator, medical clearance and evaluation, fit testing, recordkeeping, respirator training, respirator selection, respirator use, respirator maintenance, and program evaluation (29 CFR 1910.134).

B. Literature Review

1. Infectious Diseases

Infectious diseases are a significant occupational health risk for healthcare workers. While there is an abundance of information about the frequency and severity of hospital-acquired infections such as Methicillin resistant *Staphylococcus aureus*, Vancomycin-resistant *Enterococcus*, or *Clostridium difficile* (Pepin, Valiquette et al. 2004; Stein 2005; Benfield, Espersen et al. 2007), very little information about occupational infections is available. In 1996, Sepkowitz completed a thorough review of occupationally acquired infections in health care workers and found that increased risk for occupationally acquired tuberculosis has been identified as early as 1940s. He also noted that during a tuberculosis outbreak, 20% to 50% of
susceptible workers may become infected and that vaccination in the United States is not common (Sepkowitz 1996). Sepkowitz indicated that there is also an increase in hospital employee acquired varicella, measles, mumps, rubella, perussis, and influenza. In most of these diseases vaccination has been shown to be an effective control method (Sepkowitz 1996). In 2008 there were 394 cases of tuberculosis in healthcare workers (OTIS, 2011). This represented 3% of the total number of tuberculosis cases in the United States in 2008 (National Center for Health Statistics, 2010), but since the healthcare industry employed only 0.0047% of the total US workforce in 2008 (BLS 2010), the 394 cases indicates that healthcare workers are approximately 648 times more likely to acquire tuberculosis than the general public. There were 13,278 reported cases of pertussis in 2008, and in Quebec, Canada, pertussis infection was found to be 1.7 times more likely in healthcare workers than in the general population (De Serres, Shadmani et al. 2000). Influenza is under reported in the United States because many people do not seek medical care for influenza and not all that seek medical care are diagnosed via a laboratory test (Reed, Angulo et al. 2009). This makes it difficult to precisely document the full extent of the impact of influenza. It is estimated that between the years 1979 and 2001 more than 200,000 people per year on average in the United States were hospitalized for respiratory and heart conditions associated with complications from the flu (Thompson, Shay et al. 2004). This demonstrates that seasonal influenza is a significant public health threat and would therefore be a threat to healthcare workers.

The costs of infectious diseases include direct costs and indirect costs. Direct costs include all of the costs of providing medical care and public health services. Indirect costs include the costs resulting from the social disruption of the disease, e.g. absenteeism from work
or school. It was estimated that the total economic burden of seasonal influenza is close to $90 billion annually (Molinari, Ortega-Sanchez et al. 2007).

2. **Transmission pathways**

The CDC classifies identifies three infection transmission pathways: contact, droplet, and airborne. Different infectious microorganisms have different transmission pathways. The pathway depends upon a number of environmental and biological factors, including: the sensitivity of the pathogen to inactivation in the environment, the location of cellular receptors (e.g. infection sites) in the host, and the mechanism of emission from the infectious source.

Contact transmission occurs either through direct or indirect pathways. Indirect contact transmission involves the contamination of a fomite, such as a tissue or table between the host and the receptor (Siegel, Rhinehart et al. 2007), or from the hands of the host and receptor (Alfurayh, Sabeel et al. 2000; Bhalla, Pultz et al. 2004). Direct contact transmission occurs when one infected person directly contaminates another person without an intermediate object. This has been shown to occur with blood borne pathogens (Beltrami, Kozak et al. 2003).

Droplet transmission occurs when an infected droplet travels and impacts directly onto the host’s mucosal surfaces. These droplets are usually large (>10 µm), which makes them non-respirable, and do not stay suspended in air for very long (Siegel, Rhinehart et al. 2007). Infectious agents thought to be transmitted through droplet exposure include *Bordetella pertussis*, influenza virus, adenovirus, rhinovirus, *micoplasma pneumonia*, SARS-associated coronavirus, group A streptococcus, and *Neisseria meningitidis* (Siegel, Rhinehart et al. 2007).
Airborne transmission occurs when an infectious particle, in the respiratory size range (<10 µm), remains airborne over longer distances and/or time (Duguid 1946; Lindsley, Blachere et al. 2010). The size distribution of infectious particles in exhaled breath and coughs has been examined and it was found that the majority of the particles were in the respirable size range (Papineni and Rosenthal 1997; Xie, Li et al. 2009). The likelihood of a particle remaining in the air long enough for a second person to become contaminated has to do with the how the particles are expelled from the source, the density and size of the respiratory secretions, and environmental factors such as humidity and temperature (Xie, Li et al. 2007; Myatt, Kaufman et al. 2010). Depending on how long the virus stays active someone could be infected that was not even in the same room as the contaminated person (Leclair, Zaia et al. 1980). Infectious agents transmitted via airborne transmission include *Aspergillus spp*, *Mycobacterium tuberculosis*, rubeola virus, varicella-zoster virus, and variola virus (Siegel, Rhinehart et al. 2007). Expelled droplets, in the larger or “droplet” range evaporate rapidly to form particles that are easily inhaled. These droplets, can become “airborne” depending on the rate of evaporation and the viability of the infectious agent.

Based on current information, it is likely that there is some combination of droplet, airborne, and contact exposure that results in the transmission of the influenza virus from person to person (Spicknall, Koopman et al. 2010). If lower respiratory tract infection of influenza is more likely than an upper respiratory tract infection it has been shown that contact, droplet, and airborne influenza transmission pathways contribute 12%, 25%, and 62%, respectively, on average. If upper and lower respiratory tract infections are equally likely, then contact, droplet, and airborne transmission contribute 79%, 7.55%, and 13%, respectively, on average (Jones, 2009).
3. **Recommended controls**

For guidance on how to minimize the occupational exposures of healthcare workers, we can turn to the hierarchy of controls: engineering controls, administrative or work practice controls, and finally personal protective controls.

Administrative measures include maintaining an infection control and occupational health program, as well the implementation of a successful vaccine program, respiratory hygiene and cough etiquette, and proper hand hygiene (Boyce and Pittet 2002; Siegel, Rhinehart et al. 2007).

Engineering controls include placing patients for whom airborne precautions are recommended in airborne infection isolation rooms (AIIR). AIR feature negative pressure relative to the surrounding area, 12 or 6 air changes per hour for new and existing facilities, respectively, and air exhausted directly to the outside or through a HEPA filter (Sehulster and Chinn 2003).

Personal protective control measures include: gloves, gowns, mouth, nose, and eye protection. The current CDC respiratory recommendations are: a surgical mask for healthcare workers entering a patient room under contact or droplet precautions and a NIOSH-approved N-95 filtering facepiece respirator for entering a room under airborne precautions. For seasonal influenza the CDC recommends adhering to droplet precautions (surgical mask) under normal conditions and airborne isolation precautions (N-95 respirator) when performing an aerosol generating procedure (nebulizer treatment, endotracheal intubation, or bronchoscopy) (Siegel, Rhinehart et al. 2007). OSHA’s recommendations are the same as the CDC recommendations,
and violations can be cited under the general duty clause and the respiratory protection standard (OSHA 2007).

4. **Effectiveness of Controls**

The primary engineering control in hospitals to prevent the spread of infectious disease is AIIRs. Designing and maintaining AIIRs, however, is difficult. In 1993 Fraser et al. studied seven hospitals, and found that many rooms designated as negative pressure rooms were actually positive pressure rooms in which an open door (bathroom, ante room, hallway) could change the direction of flow (Fraser, Johnson et al. 1993). Similarly, in 1999, Conroy, Franke et al showed that 2/5 hospitals met none of the CDC criteria for isolation rooms and the other three hospitals ranged from meeting 20% of the criteria to 100% (Conroy, Franke et al. 1997). More recent studies have not documented substantial improvement in the consistency of performance of AIIRs (Rice, Streifel et al. 2001; Saravia, Raynor et al. 2007); Provider traffic has also been shown to decrease the effectiveness of AIIRs(Adams, Johnson et al. 2011).

Vaccination has been used to prevent healthcare workers from acquiring tuberculosis, pertussis, measles, mumps, rubella, and hepatitis, though not all vaccines are currently recommended for use in the US. Only one vaccine exists to prevent the spread of tuberculosis, Bacillus Calmette-Guérin. It has been shown to reduce risk of disease contraction by an average of 50% (Colditz, Brewer et al. 1994; Brewer 2000). Due to a relatively low risk of acquiring tuberculosis in the United States, it is not a national policy for everyone to be vaccinated((ACET) 1996). Pertussis vaccination is effective, offering a 92% risk reduction (Ward, Cherry et al. 2005) in adolescents and adults, but post-vaccination pertussis antibody concentrations drop quickly, necessitation repeated boosters (Le, Cherry et al. 2004). The
current recommendations for pertussis vaccination of adults is to receive a tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) every ten years (ACIP 2011). According to the Society for Healthcare Epidemiology of America (SHEA), vaccination of patients and healthcare workers is the most effective strategy for preventing the spread of the influenza virus (Talbot, Babcock et al. 2010). Vaccination of people of all ages has been shown to decrease hospitalizations and other serious health effects due to complications from the flu (Nichol 2008).

Shortages of influenza vaccines during epidemic years are due to the fact that a vaccine cannot be made until the virus has shown up in humans (Sprung and Kesecioglu 2010). Currently, there are not enough vaccine manufacturers to deal with the increased demand that would exist during an epidemic. To counteract this, established guidelines prioritize vaccine distribution during times of shortage (Schwartz and Orenstein 2009). This strategy does not align with the CDC’s recommendations to vaccinate everyone as the most effective strategy for preventing the spread of the virus. It is best to create a mechanism to boost production in pandemic years. Strategies to do this include: increase seasonal vaccine demand in non-pandemic years, increase production capacity, and develop new technology to combat influenza (Kieny, Costa et al. 2006).

Personal protective equipment is the last way to ensure workers are protected from airborne contaminants. Facemask use in hospitals was originally intended to prevent microorganisms in doctors from contaminating patients during surgeries. They were shown to be effective in this regard (Ford and Peterson 1963). Now, however, facemasks are used by both infectious and susceptible patients and healthcare workers to prevent disease transmission. Depending on the type of facemask being used there is a large range of effectiveness. One
studies suggests anywhere from 5-80% of submicrometer-sized particles were allowed through the porous materials of a facemask. (Chen and Willeke 1992).

One case controlled study based in Ontario, Canada concluded that there was no statistically significant difference in contraction of influenza in hospital employees between NIOSH approved N-95 facepiece respirators and simple facemasks. This study only looked at one hospital and lacked a control group which would have identified if there was any effect of the intervention at all. (Loeb, Dafoe et al. 2009).

In an intervention study in China, hospitals were randomized to have healthcare workers wear surgical masks, N-95 respirators, or nothing for the duration of work shifts. Infection rates in the no-mask control group were twice that of the surgical mask group, and four times that of N95 respirator group. A challenge in interpreting this study in the US context is that the continuous wearing of masks is more culturally acceptable among healthcare workers in China, whereas in the US the tradition has been to wear masks only during specific work tasks perceived to be high-risk. The second study found that the rates of infection were double in the surgical mask group compared to the N-95 group who wore masks throughout their shift. It also found that the rates of all of the endpoints were highest when there was no mask worn. The authors concluded that it is better to wear any respiratory protection rather than nothing. This study was conducted in China where it is more acceptable to wear respiratory protection or facemasks for an entire shift. In the United States it is standard to only wear respirators or facemasks while treating infectious or potentially infectious patients (MacIntyre, Wang et al. 2011).
It is important to ensure that a given hospital has an adequate supply of personal protective equipment to account for a pandemic in any given year. Supply of properly fitted respirators became an issue in protecting the health of health care workers during the pandemic of 2009 (Murray, Grant et al. 2010). When supply is not adequate it may be necessary to decontaminate N-95 respirators for re-use, such as through the use of ultraviolet light (Heimbuch, Wallace et al. 2010), include vaporized hydrogen peroxide or ethylene oxide (Viscusi, Bergman et al. 2009).

Tuberculosis control programs in California hospitals have been evaluated with respect to implementation of the CDC guidelines for the control of tuberculosis. In 1996 and 1997, three hospitals were evaluated, and none were found to have successfully implemented all guidelines, though the guidelines were successfully implemented most of the time (Sutton 2000; Sutton, Nicas et al. 2000). These results reflect improvement over a 1994 study, in which none of three Californian hospitals were found to have successfully implemented all of the criteria (Sutton, Nicas, 1998). Three hospitals in California were evaluated in 1996 and 1997 for their implementation of the CDC tuberculosis guidelines. It was found that none of them successfully implemented all of the guidelines although it was deemed possible since they had successfully implemented the guidelines most of the time (Sutton, Nicas et al. 2000). In 1994, three hospitals in California were evaluated for their adherence to the CDC tuberculosis guidelines (At that point there was less adherence to the guidelines because none of the hospitals successfully implemented all of the criteria(Sutton, Nicas et al. 1998)
5. **Hospital Recruitment**

The current literature regarding recruitment strategies focuses on how to enroll patients to participate in drug clinical trials. One method employed to recruit patients is to recruit entire groups of patients by first recruiting the hospital, which is similar to approach needed for the REACH-II study. Challenges identified when recruiting healthcare providers or organizations to participate in a study include, among others: Research has low priority over other activities, relevance and value of research to clinical practice is low, lack of rewards and recognition, disagreements with protocol design, time constraints, work load associated with research, and forgetfulness (Sarre, Dyas et al.). To maximize hospital participation, Sarre, Dayes et al, (2008) recommend: research should have a direct and immediate benefit to the practice and should try to minimize the impact on the practice by providing support from the research team to minimize time and costs to the hospital (Sarre, Dyas et al.). Another study looked at recruiting physicians for health services research and found that personal contacts and friendship networks were the most effective strategies. They also found that academic physicians were more likely to participate due to their passion for research and that if the burden on physicians was minimized they were more easily recruited (Asch et al. 2001). This suggests that the use of personal contacts, and targeted recruitment of research and teaching hospitals are more likely to result in hospital participation.

C. **Gaps in Literature**

There is very little information regarding how and when hospitals implement their respiratory protection procedures. Questions that need to be answered include: What sort of criteria has to be met in order for a patient to be placed in isolation? Do hospitals generally
follow state health guidelines and recommendations, or create their own? There is also minimal information on challenges and successes of recruitment of hospitals to participate in a research study. My research should expand on the available literature.
II. RECRUITMENT

A. Objectives

1. The broad, long-term, objective of this research is to gain an understanding of hospital respiratory protection programs’ policies, procedures, and implementation effectiveness in five regions of the US. The specific objectives of this research are 1.) To recruit a representative sample (n=15) of acute care hospitals in Illinois to participate in the study and 2.) To describe recruitment strategies when recruiting hospitals for an interview based study based on a quantitative description of randomly selected hospitals and a qualitative description of conveniently selected hospitals.

B. Methods

1. Phase 1: Random Sampling

In order to select hospitals that are representative of Illinois hospital demographics, all hospitals in Illinois were sorted based on four selection criteria: 1.) Ownership - government, non-profit, or investor owned 2.) Location - rural or urban 3.) Size – large or small based on median number of hospital admissions 4.) Teaching Status - teaching or non-teaching.

Ownership, location, and teaching status were obtained from the Illinois Hospital Association (Illinois Hospital Association, 2010). The distribution of hospitals by each of the criteria along with the recruitment targets is shown in Table I. A random selection of hospitals was established by randomly selecting nine of the ten targeted urban hospitals from Cook County, Illinois in order to limit the travel time. One urban hospital was randomly selected from
a location outside of the Chicago metropolitan area. Rural hospitals were limited to counties within a two hour driving time and then randomly selected to fill out the rest of the fifteen hospitals representative of the Illinois hospital demographics.

**TABLE I:**

TARGETED ILLINOIS HOSPITAL DEMOGRAPHICS IN PHASE 1 OF RECRUITMENT

<table>
<thead>
<tr>
<th></th>
<th>Median = 8022 Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>Large</td>
<td>Large</td>
</tr>
<tr>
<td>Small</td>
<td>Rural</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td>% in Total</td>
<td></td>
</tr>
<tr>
<td>% in 15 selected</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>8</td>
</tr>
</tbody>
</table>

During the random sampling recruitment period blind phone calls and emails were made to directors of nursing, heads of infection control, and/or the head of employee health. A blind phone call or email is to someone with whom we had no previous contact.

2. **Phase 2: Convenience Sampling**

The method of recruitment changed from random to convenient when there was no response from the random sample. In addition instead of 4 categories describing each hospital, 2
categories (size and location) were used. The recruitment targets of this approach were 6 large urban, 4 small urban, 0 large rural, and 5 small rural hospitals.

The recruitment letter was edited to focus on the benefits to the hospital if they participated in the study. If there was still no response from a hospital within a few weeks the hospitals were replaced by a similar hospital in order to maintain the demographic criteria. We recruited many hospitals at once using a professional network. We attended the local meeting of the Illinois Occupational Health Nurses group to ask them to participate in the study. A follow up email was sent to the entire list of nurses in this group emphasizing the benefits of participating. We used personal contacts to recruit hospitals. Emails and phone calls were made through a network of people in local hospitals in Illinois to gather interest and participation. Mass emails were sent out to infection control and employee health contacts at any hospital within a two hour driving distance from the University of Illinois at Chicago to fill out our sample of 15 hospitals.

C. RESULTS

During phase 1 recruitment two strategies were used: blind email and blind phone calls. Table II describes the rates of response (anyone who responded via the method mentioned) and the rates of success (anyone that agreed to participate in the study) during the first recruitment phase.
TABLE II:
RESPONSE RATE AND SUCCESS RATE OF RANDOM SAMPLE BY METHOD OF CONTACT

<table>
<thead>
<tr>
<th>Method</th>
<th>Number Contacted</th>
<th>Response</th>
<th>Success</th>
<th>Response Rate</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blind email</td>
<td>36</td>
<td>4</td>
<td>0</td>
<td>11%</td>
<td>0%</td>
</tr>
<tr>
<td>Blind call</td>
<td>56</td>
<td>16</td>
<td>0</td>
<td>29%</td>
<td>0%</td>
</tr>
</tbody>
</table>

When this did not render any success in recruitment, we switched new, innovative recruitment which had three recruitment strategies: blind contacts at hospitals, personal contacts, and professional organization outreach. The results of the new recruitment approach are shown in Table III. Note that it was not possible to evaluate the response and success rate for these strategies due to there being such a network of people involved in recruiting that it became impossible to keep track of.

TABLE III:
RESULTS OF ALL PHASES OF RECRUITMENT (AS OF AUG. 3, 2011)

<table>
<thead>
<tr>
<th></th>
<th>Large Urban</th>
<th>Small Urban</th>
<th>Large Rural</th>
<th>Small Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Actual</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
The people contacted, who either agreed to participate or facilitated the decision for the hospital to participate in the study, were from a number of different administrative departments in the hospital. The persons who ultimately coordinated our visit were also from several different administrative departments including hospital administration (2), infection control (3), employee health (3), health and safety (2).

D. DISCUSSION

Primarily recruitment utilized phone calls and emails that highlighted the benefits of the study, but we also utilized word of mouth of those already participating and personal contacts. Although the initial recruiting effort was focused on having a representative sample of hospitals in Illinois, the lack of response to blind email and phone calls required us to recruit a convenient sample of hospitals. Large urban hospitals are over-represented in the convenient sample relative to the demographics of Illinois hospitals. This might skew the results somewhat because large, urban hospitals may have very different respiratory practices and/or administrative responsibilities for programs. In small hospitals there might only be one person in charge of the respiratory protection program while in larger hospitals there might be an entire department whose aims include oversight of the respiratory protection program. The study goals included describing how hospitals in Illinois implement and use their respiratory protection programs. By oversampling large urban hospitals, we lose the ability to generalize resulting best practices to smaller rural hospitals. Large urban hospitals, however, are more likely to see patients requiring infection isolation, so the over-sampling of these hospitals may better reflect the burden of risk.

The primary difficulty in hospital recruitment was getting an initial response from the hospitals. The procedure was to send emails and leave voicemail messages with the heads of
nursing, infection control, and employee health. Table II shows that in the initial phase of recruitment, only 11% of people contacted responded to emails and 29% responded to phone calls. None of the people who responded agreed to participate in the study.

During phase 2 of recruitment there did not appear to be a contacted department that resulted in more recruitment success than other departments. Personal contacts resulted in recruitment of four of the ten hospitals, the email to the AAOHN-Hospital list resulted in recruitment of one hospital, and our unsolicited mass emails resulted in recruitment of 5 hospital. The mass emails targeted directors of nursing, infection control, and employee health at each hospital.

Our success with recruiting via emails to people we did not know improved when recruitment materials were revised to emphasize the benefit to participation; in this case, an expert evaluation of their respiratory protection programs along with a list of best practices observed in Illinois and Minnesota. In addition, after the first hospital data collection was finished, we could be more specific about the time commitment and personnel commitment required for participation.

Although recruitment during phase two was more successful, we were using several methods and making changes to the recruitment material throughout phase two; therefore we are unable to identify a single method of recruitment that resulted in success.

In rural hospitals, it was helpful to get a positive word from a successfully recruited hospital to use when recruiting additional rural hospitals because the employee health and/or infection control personnel often interact professionally and there seems to be a sense of trust among them.
Methods that we did not use to recruit hospitals that might have been more successful were having a contact from NIOSH call the hospitals and personally ask them to participate in the study or hiring a consultant with a lot of contacts in hospitals to recruit hospitals for us. Both of these strategies might have been more successful, but there was still no guarantee that the hospitals would participate. These options were rejected because we were beginning to successfully recruit hospitals on our own and believed that the new combination of strategies would result in the successful recruitment of 15 hospitals.

E. CONCLUSIONS AND RECOMMENDATIONS

When recruiting a hospital where you have no prior contacts, it is most successful to recruit via emails to people who have an interest the study. Promoting the minimum effort the hospital will have to employ along with the direct benefits of the hospital will help encourage hospitals to participate in the study. It was easiest to recruit hospitals at which research team members had personal contacts, as the personal contact was able to agree or was able to facilitate communication with the appropriate person who could agree to participate. Hospitals that were over sampled were large urban hospitals which would be the hospitals most likely to see patients requiring infection isolation, and therefore hospitals where staff were more likely to need to wear respiratory protection, however the results may not be generalizable to small hospitals. Since the study is mostly looking at how hospitals use respiratory protection, oversampling hospitals that see the most isolation cases is acceptable.
III. CASE STUDY

A. OBJECTIVES

A case study examining the data from the first hospital was conducted to 1.) Prepare a tool to assess a written respiratory protection program for compliance with the OSHA standard 2.) Develop a protocol for future analysis of all collected data in the study 3.) Prepare a report for a hospital regarding their respiratory protection program that will be the template for all hospitals in the study.

B. METHODS

The survey tools were developed collaboratively by six states and NIOSH personnel. The tools from the pilot study (REACH I) were used as a starting point for the surveys used in REACHII. California researchers based on their experience in REACH I, provided input as to what worked well and identified areas for improvement within REACH II. After the initial tools were developed, everybody working on REACH II had an opportunity to add input before the surveys were finalized. Factors that were considered during survey development included: making sure that the appropriate questions were asked to managers and healthcare workers in order to discover how information is disseminated in hospitals, eliminating questions from healthcare worker surveys that were not applicable to healthcare workers, and the length of each survey questionnaire as well as the total length of time the surveys would take in any given hospital.
Once a hospital agreed to participate, interviews were conducted at each hospital based on the availability of the person organizing the study and other personnel at the hospital. At each hospital we asked to interview: 3 Hospital Managers (Head of Infection Control, Head of Nursing, Head of Employee Health), 3 Unit Managers (Manager of Intensive Care Unit (ICU), Manager of Emergency Room (ER), Manager of a Medical/Surgical Unit that sees isolation cases), 15 Healthcare workers – 5 on each unit where a manager were interviewed, and 3 Observation/Demonstrations of N-95 respirator donning/doffing procedures from healthcare workers (1 on each unit where a manager was interviewed)

Data entry tools were developed using Microsoft Access Version 2007. A separate form for each type of survey was built. Each question answer was assigned a numerical value corresponding to the order of the answers on the surveys in order to provide for easier analysis in Microsoft Excel and SAS. Quality assurance of the entered data was evaluated by double-entering,3 surveys from each hospital (1 hospital manager, 1 healthcare worker, and 1 unit manager). Identification of errors in any of the three surveys resulted in doubly-entry of all surveys for the hospital. This allowed for identification and correction of all errors in the first data entry.

Data from Hospital A provided the framework for how to analyze the data from all of the hospitals. The respiratory protection program was evaluated in a two-fold manner. First, the written respiratory protection program was compared to the requirements of OSHA Standard 1910.134. Next the survey responses were examined to determine managers’ and health care workers’ knowledge and practices related to respiratory protection. A template for evaluating the written program was developed and an evaluation plan and scoring methodology was applied to the survey responses. The template was developed using the required nine elements of the
written respiratory protection program. The scoring methodology resulted in each hospital being given two scores. The written program score reflects whether or not the written program meets the criteria of the OSHA standard and is the percentage of elements, out of 10, that were fully met. If a hospital only partially met the criteria outlined in the standard, no points were given for that element. The overall survey score is based on survey results. All survey questions were sorted into one of the ten elements of OSHA’s respiratory protection standard (29 CFR 1910.134). Each question was assigned a correct answer, based on either the OSHA standard and/or CDC Guidelines, or on the hospital’s written respiratory protection program; whichever was more protective. The overall survey score was calculated as the percent of correct answers for all questions included in the analysis. The percent of correct answers for each element of the respiratory protection standard was also calculated. The overall hospital score was calculated by averaging the written program score with the overall survey score.

C. RESULTS AND DISCUSSION

1. Written Respiratory Protection Program Evaluation

An instrument was developed to compare a hospital’s written respiratory protection program to the OSHA standard. The tool was applied to Hospital A as part of this case study to evaluate its applicability. Slight modifications were made and the final tool, completed for Hospital A is shown in Table IV. The last section of this table is an overall impression of respiratory protection program in which we asked the question, ‘would a trained industrial hygienist be able to implement this program based on the written program and why or why not?’

Based on this tool, Hospital A received a score of 7/10 (70%) for their written respiratory protection program. The tool presented in Table IV outlines whether or not a hospital meets the
minimum OSHA requirements. The tool also provides a brief summary of specific areas where the hospital needs to improve their written program, and includes suggestions for improvement. The tool will be very useful for comparing information between hospitals as hospital written respiratory protection programs are organized in a variety of ways.

2. Protocol for Analyzing Survey Responses to the Hospital’s Written Respiratory Protection Program.

Survey responses at Hospital A that related to the OSHA standard were analyzed in order to prepare a method for evaluation for all hospitals in the study. The following sections are organized by OSHA standard element. Each section describes the OSHA standard requirements and any hospital specific requirements for each element, reviews the written program relative to the OSHA and/or hospital requirements, discusses how employees at Hospital A responded to determine how well Hospital A’s respiratory protection program is being implemented, and discusses the adequacy of the survey questions for evaluating each element of the OSHA standard.
### TABLE IV:

**COMPARISON OF WRITTEN RESPIRATORY PROTECTION PROGRAM TO ELEMENTS OF THE OSHA STANDARD**

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of written respiratory protection program (RPP)</td>
<td>To provide a clear policy and specific procedures for the use of respirators in protecting employees from respiratory hazards.</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td>______</td>
</tr>
<tr>
<td>Program administrator</td>
<td>To assign responsibility for ensuring full implementation and evaluation of the written program to a suitably trained</td>
<td>Yes</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td>______</td>
</tr>
<tr>
<td>Medical evaluation</td>
<td>To ensure that employees are able to wear respirators safely.</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td>______</td>
</tr>
<tr>
<td>Fit testing</td>
<td>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</td>
<td>Yes</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program says that there is a person in charge, it should designate specifically who.</td>
<td></td>
</tr>
<tr>
<td>Recordkeeping</td>
<td>To maintain a record of individual medical evaluations and fit tests and to ensure the availability of the written program:</td>
<td>Yes</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td>Medical record separate from personnel record</td>
<td>(Check (√) if yes)</td>
<td></td>
</tr>
</tbody>
</table>

It would be best to indicate in the written program precisely where these records are stored, not just that they are being saved indefinitely.
<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and information</td>
<td>To ensure that employees understand the facility's written program and the purpose of and limitations of respirators, and that they are trained in the specific procedures for proper use and maintenance:</td>
<td>Yes</td>
<td>The respiratory protection program needs more detail as to the specific hazards in the hospital and how training is conducted for each of hazards</td>
</tr>
<tr>
<td></td>
<td>(Check (✓) if present)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Why the respirator is necessary</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• How improper fit, use, or maintenance can compromise its protective effect</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• Limitations and capabilities of the respirator</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• Effective use in emergency situation</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• How to inspect, use, and check the seals</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• How to don and doff</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• Maintenance and storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Recognition of medical signs and symptoms that may limit or prevent effective use</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• Training provided prior to use</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>• Retraining annually</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respirator selection</th>
<th>To determine which types of NIOSH-approved respirators will be required for each job or task based on an evaluation of respiratory hazards.</th>
<th>Yes</th>
<th>The respiratory protection plan does not cover which respirators are to be used for which hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE IV: (CONTINUED)**  
**COMPARISON OF WRITTEN RESPIRATORY PROTECTION PROGRAM TO ELEMENTS OF THE OSHA STANDARD**

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of respirators</td>
<td>To provide clear, written policies and procedures for proper use of respirators by employees:</td>
<td>Yes  <strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td></td>
</tr>
<tr>
<td>(Check (√) if present)</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Workers able to perform seal checks</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Good face to face piece seal exists</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Defective parts replaced</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>Maintenance and care of respirators</td>
<td>To provide clear, written procedures for storage, care, and maintenance of respirators.</td>
<td>Yes  <strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td></td>
</tr>
<tr>
<td>Program evaluation</td>
<td>To ensure that the written program is being implemented and that it continues to be effective:</td>
<td>Yes  <strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial</td>
<td></td>
</tr>
<tr>
<td>(Check (√) if present)</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Written procedure for RPP</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Staff input</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td>• Respirator usage (donning and doffing)</td>
<td></td>
<td><strong>x</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Overall Impression**  
(would a trained Industrial Hygienist be able to implement this program based off of the written program)  
No.  
- The written respiratory protection program only reiterated the OSHA standard without providing adequate details.  
- It is not site specific  

**a. Program Administrator**

A program administrator provides a clear policy and specific procedures for the use of respirators in protecting employees from respiratory hazards. The OSHA Requirement is to have an appropriately trained and qualified person in charge of the program. Hospital A requires a
designated person qualified by appropriate training or experience commensurate with the complexity of this program.

While the language of Hospital A’s plan describes the correct attributes of the program administrator, the responsibilities section of the hospital’s written respiratory protection plan, does not identify an individual, simply stating that the Environmental, Health, and Safety office (EHSO) is responsible for establishing the program. The OSHA standard calls for a sufficiently trained and qualified individual to be responsible for the respiratory protection program.

There were no questions in our survey asking if there was one person designated as the respiratory protection program administrator. If there is a person whose job responsibilities include respiratory protection program administrator, then it is recommended that this person and their qualifications be identified within the hospital’s respiratory protection plan. If there is not one person in charge then it is recommended that someone be identified to take on these responsibilities.

b. Medical Evaluation

A medical evaluation is necessary to guarantee that it is safe for employees to wear respirators. The process ensures that employees are medically fit to wear a respirator if required. The OSHA requirements are to obtain a written recommendation from a licensed healthcare provider outlining 1.) The limitations of respirator use because of medical conditions 2.) The need for follow-up medical evaluations 3.) A statement saying that the licensed healthcare provider provided the employee with a copy of their recommendations. Hospital A’s requirements are the same as OSHA plus annual medical evaluations.
The written respiratory protection plan outlines in detail exactly how the medical evaluations are to occur. Two questions regarding medical clearance and evaluation were analyzed across all of the survey respondents. Across the board, managers and healthcare workers alike responded affirmatively that they are medically evaluated before being allowed to wear a respirator. In addition to this, nearly all survey respondents answered the questions about the medical evaluation correctly based on the hospital’s respiratory protection plan.

Based on the details provided in the written program and the answers to the surveys, Hospital A appears to be meeting the requirements of the OSHA standard and their hospital specific requirements for medical evaluation before respirator use.

c. Fit Testing

Fit testing ensures a proper seal forms between the respirator user and the respirator, so as to prevent infiltration of pathogens. This can be done either qualitatively or quantitatively and should be done by trained personnel. The OSHA requirements are: 1.) Employer ensures tight-fitting face piece respirator is fit tested prior to initial use of respirator 2.) Qualitative or Quantitative fit test must be performed 3.) Must occur annually. Hospital A’s requirements are the same as OSHA.

The hospital’s written respiratory protection plan discusses the need for fit testing to occur but does not specify who will conduct it nor what type of fit test (qualitative or quantitative) they are using. Since all hospital managers answered that they use a qualitative fit test, it can be assumed that this is the policy and therefore it should be incorporated into the written program. Also, within the written program the person or department responsible for
conducting fit testing should be identified so that employees or outsiders could easily locate information on the fit testing protocol.

The OSHA standard provides an Appendix outlining a series of requirements regarding the fit test procedure (29 CFR 1910.134 App A). These steps include having a sufficient number of respirator models and sizes available to the employees, demonstration for how to position the respirator on the face, an assessment of comfort for each of the available respirators, an assessment of respirator fit, a user seal check, description of the fit test exercises, and the test exercises. There were no questions in the surveys that asked about details of a hospital’s fit checking procedure. This prohibited us from making recommendations about the effectiveness of their fit testing methods.

OSHA requirements state that until an employee has undergone a successful fit test, they are not allowed to don a respirator. There was one question in the surveys that addressed this issue: “Are employees allowed to wear an N95 respirator model or size for which they did not receive a fit test?” Most survey respondents at Hospital A agreed that they were not allowed to don a respirator model or size for which they have not received a fit test. One person disagreed, and said that they would be allowed to. This question could be considered faulty because employees often dwelled on the word ‘allowed’. The interviewers were told that although a respirator user might not be allowed to, since all respirator model and sizes are available on the floor, it would not be unreasonable to assume that sometimes this might occur. The question is an appropriate way to analyze a hospital’s regulations, but did not allow for any best practices to be observed. In this case a best practice might be to somehow only grant access to a particular respirator model and size.
The OSHA standard requires fit testing to be performed before a respirator is required to be used and annually thereafter. Two questions in our surveys were asked to all respondents regarding this issue. The first question “Do employees receive a fit test before being allowed to wear a respirator?” was followed by “How often do employees receive fit testing?” All employees at Hospital A reported that they were fit tested before being required to wear a respirator and that they were tested at hire and then annually (one person reported being tested every 6 months, which is possible and not in violation with the standard or the hospital’s written program).

d. Recordkeeping

Recordkeeping ensures that a hospital maintains a record of individual medical evaluations and fit test results and guarantees the availability of the written program to employees. The OSHA requirements are: 1.) Records of fit testing should be maintained until a new fit test has been administered 2.) Records of medical evaluation and clearance should be maintained for the duration of employment plus 30 years in accordance with OSHA medical records standards. Hospital A requires 1.) Fit test results will be saved until the next successful fit test 2.) Training certification will be retained indefinitely by the hospital 3.) Medical clearance will be stored by the Health Services and/ or the PLHCP (physician or other licensed health care professional) with other medical records

Under the respirator training section of the hospital’s written respiratory protection plan it states that “documentation shall be maintained by EHSO or by the hospital.” This statement should be clarified in order to identify exactly where these documents are stored. If they are saved in the hospital, it should be noted where in the hospital they are stored. Under the documentation section of the written plan it states that the medical evaluation questionnaire is to
be kept either in the health services department or with the licensed healthcare provider with other medical records. Also it states that fit testing results and respirator training will be maintained at the hospital. These statements should all be clarified to say where at the hospital they will be kept. In addition to clarifying where records should be kept, it would be useful to consolidate all of the recordkeeping information to one section of the written program.

Three questions regarding recordkeeping were asked to managers (both unit manager and hospital managers). The questions asked which department is responsible for maintaining records of training, of fit testing, and of medical evaluation. These questions were appropriate in identifying if managers would know where to look for records for their employees. Because the written respiratory protection program did not specify where records were kept, it was impossible to know if the managers were accurate. The managers all agreed that records of fit testing and medical evaluation were kept in the employee/occupational health department. When asked where records for training were kept, the 7 managers that were interviewed, responded with 5 different locations. This lack of knowledge could be resolved by clarifying the written respiratory protection program.

The documentation section of the written respiratory program also identifies that employees are to receive a pocket card at fit testing that identifies the respirator model and size for which they were fit tested. One question from the surveys was asked to determine how employees know what model and size they should wear. The answers received were inconclusive. The unit managers answered in agreement with the respiratory protection program, but only about half of the hospital managers and half of the healthcare workers said that they received any kind of written documentation regarding the model and size of respirator they should be wearing. This suggests either that the written documentation is not getting out to the
healthcare workers or that the pocket card is not sufficient written material for healthcare workers to know what size and model they should wear. It is also possible that employees remember the size and model respirator they should be wearing from fit testing and therefore do not depend on the pocket card for reminders.

e. Training

Training goes beyond the instructions given during fit testing. It usually covers how to don and doff a respirator, when respirators are not useful, how an employee should store a respirator among other topics. The OSHA requirements are: 1.) Nature of respiratory hazard 2.) Limitations and capabilities of the respirator 3.) How to use the respirator in emergency situations 4.) How to put on, remove, and check the seal of the respirator 5.) Procedures for maintenance and storage 6.) Why the respirator is necessary 7.) How improper fit, usage, and maintenance can compromise the protective effect 8.) Occur annually. Hospital A’s requirements are the same as OSHA with the addition of a written examination and performance evaluation to prove employees were properly trained.

The hospital’s written respiratory protection plan effectively outlines the topics that should be covered in the training, but should be expanded to identify how training occurs and, more specifically, how the material is covered. For example, the written program states that “how to put on and remove the respirator” will be covered in training. This should be described in more detail, to explain, for example, that the donning and doffing of the respirator is to be covered in person, during a meeting, online, or in some other manner.

Five survey questions regarding respiratory training were analyzed. The first two questions ask if an employee receives training in how and when to wear a respirator. The
hospital’s written respiratory protection program requires annual training. Everyone at the hospital responded to the survey that they were trained annually. The OSHA standard requires that a respirator not be donned unless the respirator user is properly trained and most of the employees at Hospital A responded that this is also true. Two-thirds of survey participants replied that the main format in which training is offered online while the rest said that it was in-person. Many survey respondents said that training occurs in person at the same time as fit testing. The OSHA standard specifically states that training must occur in addition to fit testing. This question would have been clearer if it specifically asked “In addition to fit testing, what is the main format in which training is offered?” There were no questions asking if employees were tested on their training. Hospital A’s requirement of a demonstration and an exam of respiratory training is a good example and may lead to being the best practice.

f. Respirator Selection

Respirator selection outlines which type of NIOSH approved respirators will be required for each job or task based on an evaluation of respiratory hazards. The OSHA requirements are:

1.) Employer should evaluate the respiratory hazards - perform a risk assessment 2. ) Select appropriate respirator based on respiratory hazards. 3.) CDC Respiratory protection recommendations for Acute Care Facilities a.) Close contact - Airborne precautions: N-95 Filtering Face piece respirator b.) Aerosol generation procedure - Airborne precautions: N-95 Filtering Face piece respirator c.) Close contact - Seasonal influenza: Surgical Mask d.) Aerosol generation procedure - Seasonal influenza: N-95 Filtering Face piece respirator e.) Close Contact - Droplet precautions: Surgical Mask f.) Aerosol generation procedure – Droplet precautions: Surgical mask. Hospital A has not identified any specific infectious disease hazards in their written respiratory protection program.
The OSHA standard states that there should be a risk assessment of the workplace where respiratory hazards are identified in order to properly select a respirator. A respiratory protection risk assessment in a hospital should be based on transmission pathways, types of infectious disease agents, and employee job function. Hospital A’s written respiratory protection program states that respirator selection will be based on CDC recommendations, NIOSH Respirator Selection Decision Logic, Hospital A’s decision flow charts and selection tables. These additional documents are not cross-referenced or included as a part of the written program. The written respiratory protection plan should be updated to include the results of the hospital’s risk assessment including what job functions and infectious disease agent exposures require which level of respiratory protection.

One question was asked to hospital managers from the surveys regarding risk assessment. The question asked “Does your facility conduct a risk assessment to determine which employees should be included in the respiratory protection program?” At Hospital A, all of the hospital managers and 1 of 4 unit managers replied that they do a risk assessment. The lack of knowledge in the unit managers is likely because they are not involved in the risk assessment process.

There were six questions asked to all interview respondents that related to respirator selection. A sample question in this category would be “What is the minimum level of respiratory protection employees are required to use when in close contact with a patient who has suspected or confirmed infectious disease requiring airborne precautions (for example, tuberculosis)?” The other five questions were similar but asked about aerosol generating procedures for airborne precautions, and close contact and aerosol generating procedures for seasonal influenza and patients requiring droplet precautions.
Interviewees had difficulty answering questions about respirator selection. Often they asked the interviewer to shorten or summarize the question before the interviewee would be able to respond. The other problem with these questions was that the survey participants were not always familiar with all of the choices and did not know what the minimum would be.

All survey participants agreed that for airborne precautions a N-95 filtering face piece respirator is to be worn. For seasonal influenza and for droplet precautions there was some disagreement amongst the managers as well as the healthcare workers. In both cases, about half of the people responded with surgical mask while the other half responded that an N-95 mask was necessary. The managers’ responses indicate that the risk assessment and training might be insufficient and the healthcare workers’ responses indicate that the training on which respirator to use for different risk scenarios is insufficient.

When employees choose a respirator contrary to the CDC guidelines, they were usually selecting a respirator that is more protective than the guidelines recommend. This is ideal for protecting the health of the workers. The exception to this finding was survey responses to “What is the minimum level of respiratory protection employees are required to use when performing an aerosol generating procedure on a patient with suspected or confirmed seasonal influenza?” The newest CDC guidelines recommend an N-95 filtering facepiece respirator and only 7 employees out of 22 stated that this was the case (CDC 2010). This is an area where the hospital needs significant improvement in both its policy and the training of employees.
g. Respirator Use

Respirator use provides clear written policies for how to store, care, and maintain respirators. The OSHA requirements are: 1.) Clear instruction on how to perform seal checks 2.) Rules for how to maintain a proper face to face piece seal 3.) What to do with defective respirators. Hospital A’s requirements are the same as OSHA.

The written program addresses the three elements required by OSHA; however the protocols are not specific. For example, while the program states that seal checks will be done according to the OSHA standard, the method by which seal checks are to be done is not included in the written protocol. Including more specific information would make it easier to for workers to access, so that they would not have to locate and read the OSHA standard. The respiratory protection program should be modified to describe the actions that employees must take to identify and reject defective respirators and correctly check the seal between the face and facepiece.

The respirator use category in the OSHA standard was not well covered by the survey tools. Only one question applied to the OSHA standard, “Does the hospital track respirator defects or problems?” Because this question was in a skip pattern, if a manager responded either no or don’t know to an earlier question, the respirator defect question was not asked. In Hospital A, four of the five hospital managers and fourteen of the fifteen healthcare workers that answered the question, reported that the hospital does track respirator defects or problems. This question was vague and often times employees had difficulty answering the question.

The demonstration portion of the study involved asking three healthcare workers to don a respirator and allowed for a better understanding of how employees at the hospital are actually
using the filtering facepiece N95 respirators (Table V). It was observed that none of the 3 people performed a user seal check. Also, only one person correctly placed the respirator straps upon their head. These issues could probably be resolved with more thorough fit testing procedures and training.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly Positioned on face</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>n=3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facial Hair under seal n=3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Straps Correctly placed n=3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Nose Clip Properly Formed n=3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>User Seal Check Performed n=3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Removed Using Straps n=3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

h. Respirator Maintenance

Respirator maintenance requires that respirators be maintained properly in order to ensure that the respirators are working properly. This includes cleaning and inspecting the respirators each time they are used and having a policy in place that dictates when to dispose of respirators. The OSHA requirements are: 1.) Clean and disinfect respirators between uses 2.) Store respirators in an environment which allows them to maintain their structure and not become contaminated. 3.) All respirators should be inspected before use 4.) Repairs should be made by appropriately trained individuals. Hospital A’s requirements are the same as OSHA plus the following: 1.) Respirators should be stored in a sealed plastic bag 2.) Disposable respirators will be destroyed at the end of a work shift.
The respiratory protection plan outlines how respirators are to be properly maintained. One question asked “During the program evaluation, do you determine whether respirators are being maintained properly? For example are PAPRs disinfected after use?” All of the hospital managers answered that they were, while all of the unit managers answered that they were not; and the healthcare workers were evenly divided. It is likely that the assurance of respirator maintenance is the responsibility of the hospital managers and that the unit managers and the healthcare workers are not involved in this process. This could mean that even though the unit managers and half of the healthcare workers got the answer ‘wrong’ the hospital might be maintaining respirators properly. There was some confusion to this question because most healthcare workers use disposable respirators, so proper storage and maintenance only requires them to be stored in a cool, dark, and dry location. Since the question specified PAPRs and healthcare workers are unfamiliar with PAPR storage they might have answered ‘Don’t know’ which would have been recorded as an incorrect answer.

A second requirement of Hospital A’s respiratory protection program indicates that respirators are supposed to be stored in a plastic bag. Only about half of survey respondents confirmed that this is how they are instructed to store respirators when asked “How are employees instructed to store respirators between uses?” Training about respirator reuse and storage needs to be improved.

i. Program Evaluation

The respiratory protection program should be evaluated every year in order to make sure that it is still being effective and implemented correctly. During this evaluation employees should be consulted for information related to respiratory protection including problems and
possible solutions to problems. The OSHA requirements are: 1.) Regularly consult employees to assess their views on the program’s effectiveness and identify problems. 2.) Make sure employees are using the respirators properly. 3.) Make sure that the current written program is being implemented correctly. 4.) Factors assessed could include: respirator fit, respirator selection, respirator use, or respirator maintenance. Hospital A’s requirements are: 1.) Director of Employee Health and Safety office should evaluated the program annually. 2.) This evaluation looks at respirator use and respirator selection during site walk-throughs. 3.) Consultation with employees on effectiveness and problems with the program including respirator interfering with job performance, respirator selection, proper use in workplace, proper maintenance. 4.) Review of injury reports. 5.) This evaluation will result in a list of corrective actions and target dates for implementation.

Several survey questions were selected to assess program evaluation. The first was “Does your facility have a formal mechanism or method to evaluate the effectiveness of the respiratory protection program?” If a manager answered no or don’t know to this question, the remaining questions, described below, were not asked.

The written respiratory protection plan outlines how the facility conducts their program evaluation to meet the OSHA standard. Unfortunately, even though the written program is thorough, the surveys do not indicate that the information has been imparted to employees. The written program states that employees will be consulted on program effectiveness and for any problems. When asked “Is input from respirator users formally solicited during program evaluation?” only 1 hospital manager agreed that was happening while the other two did not know. Also, in the written program, proper respirator use and selection is said to be observed during facility walk-through. The surveys had two questions to healthcare workers that
addressed this issue. The first asked “Does anyone observe you to make sure you are putting on removing, and disposing of your respiratory correctly?” and the second asked “Does anyone observe you to make sure you are using respiratory protection when required?” Nine of fifteen respirator users stated that they were not observed when putting on or removing respirators, and 7 respirator users stated that they were not observed to ensure that they were using respiratory protection when required. This coincided with the managers who did not agree about whether or not respirator users were observed (three responded that they were and 2 responded that they did not know). Lastly, Table VI points out some of the problems respirator users felt while wearing their respirator. The largest group (40%) found it difficult to breathe while wearing a respirator. This might be caused by the fact that the medical clearance is not doing a sufficient job at targeting people with pulmonary problems and possibly needs to be evaluated in the future.

TABLE VI:
HEALTHCARE WORKER REPORTED PROBLEMS WHEN WEARING AN N-95 DISPOSABLE RESPIRATOR

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percent surveyed that experience it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult to breathe</td>
<td>40%</td>
</tr>
<tr>
<td>Moisture buildup</td>
<td>33%</td>
</tr>
<tr>
<td>Interferes with other PPE</td>
<td>13%</td>
</tr>
<tr>
<td>Interferes with regular glasses</td>
<td>20%</td>
</tr>
<tr>
<td>Difficult being understood</td>
<td>33%</td>
</tr>
<tr>
<td>Feel uncomfortably warm</td>
<td>27%</td>
</tr>
<tr>
<td>Feel claustrophobic</td>
<td>33%</td>
</tr>
</tbody>
</table>
3. **Data Management Plan and Scoring Protocol**

To compare a given hospital to the OSHA standard and to benchmark hospitals, a scoring protocol was developed and can be seen in Appendix C. The scoring results for Hospital A are shown in Table VII.

The score was divided into the ten sections of the respiratory protection standard and also sorted by the survey type. The surveys could not be analyzed for Program Administrator because there were no questions in any of the surveys asking who was the program administrator or who was responsible for the overall respiratory protection program.

As described in the methods, the score sheet (Table VII) shows each element of the respiratory protection program. Column 2 highlights the written respiratory protection program evaluation, where a score of 1 indicates the requirements for each element were fully met in the written program and a score of 0 indicates the requirements were partially met or not met. Column 3 indicates the number of survey questions that were included in the analysis for each element of the respiratory protection program. Columns 4-6 show the number of correct responses out of the total survey responses for that element of the program by survey type (Hospital Manager, Unit Manager, and Healthcare Worker). Column 7 indicates the Overall Survey Score, which is the number of correct responses out of the total survey responses for that element of the program, across all survey types. The overall hospital score is the average of the score for the written program and the score for the survey responses across all survey types. Overall, 31 survey questions from the manager surveys and 23 questions from the healthcare worker survey were included in the analysis.
<table>
<thead>
<tr>
<th>Program Element</th>
<th>7/10 (70%)</th>
<th>7/10 (81%)</th>
<th>7/10 (%)</th>
<th>Overall Hospital Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Program</td>
<td>1/15</td>
<td>14/15</td>
<td>1/15</td>
<td>12/15</td>
</tr>
<tr>
<td>Program Administrator</td>
<td>0/3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Respirator Selection</td>
<td>0/2</td>
<td>6/8</td>
<td>73/90</td>
<td>20/28</td>
</tr>
<tr>
<td>Respirator Use</td>
<td>1/2</td>
<td>10/12</td>
<td>19/21</td>
<td>46/65</td>
</tr>
<tr>
<td>Medical Clearance</td>
<td>1/2</td>
<td>28/30</td>
<td>6/8</td>
<td>12/16</td>
</tr>
<tr>
<td>Fit Testing</td>
<td>1/2</td>
<td>46/60</td>
<td>10/12</td>
<td>9/4</td>
</tr>
<tr>
<td>Training</td>
<td>1/2</td>
<td>57/60</td>
<td>15/16</td>
<td>6/4</td>
</tr>
<tr>
<td>Program Evaluation</td>
<td>1/2</td>
<td>15/15</td>
<td>21/30</td>
<td>46/65</td>
</tr>
<tr>
<td>Record Keeping</td>
<td>0/3</td>
<td>N/A</td>
<td>N/A</td>
<td>16/21</td>
</tr>
<tr>
<td>Overall Hospital Score</td>
<td>3/7</td>
<td>5/7</td>
<td>80/90</td>
<td>80/90</td>
</tr>
</tbody>
</table>

70% and 81% equal to approximately 75%.  
The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the results for healthcare workers for this element includes the observation of three healthcare workers.  
The overall hospital score is the average of the results for healthcare workers for this element includes the observation of three healthcare workers.  
Numerator are the number of correct answers for all questions related to the specific program element. Denominators are the number of survey questions times the number of people answering the questions. 

The results for healthcare workers for this element includes the observation of three healthcare workers.
Examining the data presented in Table VII, the lowest score was for the respiratory use element. The result is based on one survey question, asked of 15 healthcare workers, and observation of 3 healthcare workers while they donned an N95 filtering facepiece respirator. Although only 3 observation/demonstration tasks were performed, a score of 55.6% is alarming. This demonstrates that even if an employee was successfully trained in when to wear a respirator, they are not being protected sufficiently because they are not putting the respirator on properly. There is also an overall lack of understanding about how respirators are maintained. This is likely due to confusion regarding the survey questions and not because the respirators are being maintained improperly. Program evaluation is low due to the unit managers being asked all of the questions that the hospital managers were asked and most likely not being involved in the respiratory protection program evaluation process. The question that most people did not know the answer to regarding fit testing was how employees know which model and size respirator they should wear. The written program explicitly describes a pocket card respirator users will be given, but only 2 of 15 healthcare workers said that they received a pocket card. Finally, respirator selection was low because most people in the hospital responded that when performing aerosol generating procedures on someone with seasonal influenza, they would wear a surgical mask. According to the newest CDC recommendations, an N-95 filtering facepiece respirator should be used in this situation.

Unit managers scored the lowest of all the types of people we interviewed (64% compared to 83% for healthcare workers and 89% for hospital managers). This is likely due to a classification bias because the unit managers were asked questions very similar to those asked of hospital managers. In many cases, the unit managers did not have a role in implementation of
the respiratory protection, beyond being a healthcare worker who is in the respiratory protection program. They did not know the answer to many questions, or they answered based on their experience as a healthcare worker rather than as a manager. This bias will most likely change based on the hospital and how each hospital works with their unit managers.

Survey respondents were each given 11 statements and asked if they agreed, disagreed, or did not know regarding issues relating to workplace safety. These statements were separated into 3 categories (respiratory protection, infection control, and general health and safety) and compared across survey type. The results are below in Table VIII.

<table>
<thead>
<tr>
<th></th>
<th>Healthcare Worker</th>
<th>Unit Manager</th>
<th>Hospital Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Protection</td>
<td>75/90</td>
<td>22/24</td>
<td>18/18</td>
</tr>
<tr>
<td>Infection Control</td>
<td>14/15</td>
<td>4/4</td>
<td>3/3</td>
</tr>
<tr>
<td>General Health and Safety</td>
<td>46/60</td>
<td>14/16</td>
<td>12/12</td>
</tr>
<tr>
<td>Overall Percent by Survey Overall Response</td>
<td>82%</td>
<td>91%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table VIII demonstrates that managers at Hospital A, in general, have a higher sense of safety at work. This could be due to the fact that they are, in general, not the ones on the floor being exposed to possible infectious diseases. This could also be due to management setting the policies and if they are appropriately followed, the workplace should be safe. The disagreement
between management and healthcare workers should be addressed at Hospital A in order for everyone to feel safe at work.

D. CONCLUSIONS

A tool was developed to assess hospital written respiratory protection programs. The tool outlines whether or not a hospital meets the minimum OSHA requirements. The tool also provides an opportunity to briefly summarize specific areas where the hospital needs to improve their written program along with suggestions for improvement. This tool helps to standardize written respiratory protection programs across hospitals in order to quickly compare them to the OSHA standard as well as to each other.

The protocol for future data analysis identified questions from the survey tools to evaluate whether or not a given hospital is implementing their written program appropriately, organized by element of the respiratory protection program. Sorting by element is a useful way to organize the information, and can identify the strengths and limitations in the hospital’s implementation of their respiratory program. We identified that some of the survey questions may be interpreted incorrectly by the interviewee, and will not be helpful in evaluating the program. This will be confirmed in subsequent analyses of the other hospital programs. There were other elements (such as program administrator) that the survey tools did not address which would have been useful to know. Overall, however, the questions reflect how well the respiratory protection program is being implemented.

The sample report for Hospital A, which will be provided to the hospital is included as Appendix A. This report prioritizes the strengths and deficiencies of the overall respiratory
protection program. In the future, this report will also include average scores from all of the combined hospital data in order for a given hospital to benchmark themselves against all participating hospitals in Illinois.
APPENDICES
APPENDIX A

FINAL REPORT TO HOSPITAL A REGARDING THEIR WRITTEN RESPIRATORY PROTECTION PLAN AND ITS IMPLEMENTATION

EXECUTIVE SUMMARY

In order to evaluate the hospital’s respiratory protection policy and procedures we visited the hospital on April 5, April 8, and April 15, 2011. We conducted interviews with 3 hospital managers, 4 unit managers, and 15 healthcare workers in 3 units. While we were there we obtained a copy of the hospital’s written respiratory protection program.

The written respiratory protection program was compared to the OSHA Respiratory Protection Standard (29 CFR 1910.134) to make sure that the hospital was in compliance. The interview answers were compared to the OSHA standard to make sure that the hospital’s policies were being properly implemented.

The results of the hospital’s written program compared to the OSHA standard was that it met the standard in most areas, partially met and needs improvement in a couple of areas, and did not meet the standard in one area.

Areas in the hospital’s respiratory protection program identified as successful are:

- All healthcare workers stated that they were familiar

Areas in the hospital’s respiratory protection program identified for improvement are:

- Identify a person in charge of the respiratory protection program
APPENDIX A (CONTINUED)

- Make note of the most recent CDC recommendations regarding respiratory protection for seasonal influenza
- Designate which type of fit test procedure (qualitative or quantitative) the hospital uses
- Identify where records of employee fit test and medical evaluations are stored
- Add details regarding the respiratory hazards within the hospital and how training addresses each of these hazards
- Outline which type of respiratory protection is required for which hazard
- Conduct a risk assessment to determine which employees are exposed to which infectious disease agents and need to be included in the respiratory protection program
- Clarify how employees are to use their respiratory protection including how to conduct user seal checks, what to do with defective parts, and how to maintain a proper face to face piece seal
- Perform an annual program evaluation where input from respirator users is taken into consideration when selecting the model respirators for the hospital
APPENDIX A (CONTINUED)

Results and Discussion

**TABLE IX:**

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of written respiratory protection program (RPP)</td>
<td>To provide a clear policy and specific procedures for the use of respirators in protecting employees from respiratory hazards.</td>
<td>Yes x</td>
<td>Program says that there is a person in charge, it should designate specifically who.</td>
</tr>
<tr>
<td>Program administrator</td>
<td>To assign responsibility for ensuring full implementation and evaluation of the written program to a suitably trained</td>
<td>Yes ______</td>
<td></td>
</tr>
<tr>
<td>Medical evaluation</td>
<td>To ensure that employees are able to wear respirators safely.</td>
<td>Yes x</td>
<td></td>
</tr>
<tr>
<td>Fit testing</td>
<td>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</td>
<td>Yes x</td>
<td>The respiratory protection program should designate which fit test method they use (qualitative or quantitative). Although not required by OSHA, it would be helpful to designate who is responsible for the fit testing</td>
</tr>
</tbody>
</table>
## APPENDIX A (CONTINUED)

### TABLE IX (CONTINUED)

**ANALYSIS OF WRITTEN RESPIRATORY PROTECTION PROGRAM**

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordkeeping</td>
<td>To maintain a record of individual medical evaluations and fit tests and to ensure the availability of the written program:</td>
<td>Yes <strong>x</strong></td>
<td>It would be best to indicate in the written program precisely where these records are stored, not just that they are being saved indefinitely.</td>
</tr>
<tr>
<td></td>
<td>(Check (√) if yes)</td>
<td>No __</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Medical record separate from personnel record</td>
<td>Partial ______</td>
<td></td>
</tr>
<tr>
<td></td>
<td>______________________________________________________________________________________________________________________________________</td>
<td>__________</td>
<td></td>
</tr>
<tr>
<td>Training and information</td>
<td>To ensure that employees understand the facility's written program and the purpose of and limitations of respirators, and that they are trained in the specific procedures for proper use and maintenance:</td>
<td>Yes <strong>x</strong></td>
<td>The respiratory protection program needs more detail as to the specific hazards in the hospital and how training is conducted for each of hazards</td>
</tr>
<tr>
<td></td>
<td>(Check (√) if present)</td>
<td>No __</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Why the respirator is necessary</td>
<td>Partial ______</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How improper fit, use, or maintenance can compromise its protective effect</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Limitations and capabilities of the respirator</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Effective use in emergency situation</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How to inspect, use, and check the seals</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How to don and doff</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Maintenance and storage</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Recognition of medical signs and symptoms that may limit or prevent effective use</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training provided prior to use</td>
<td><strong>x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Retraining annually</td>
<td><strong>x</strong></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX A (CONTINUED)

### TABLE IX (CONTINUED)

**ANALYSIS OF WRITTEN RESPIRATORY PROTECTION PROGRAM**

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Purpose</th>
<th>Element Present</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respirator selection</strong></td>
<td>To determine which types of NIOSH-approved respirators will be required for each job or task based on an evaluation of respiratory hazards.</td>
<td>Yes __ x__ No __ x__ Partial ___ x__</td>
<td>The respiratory protection plan does not cover which respirators are to be used for which hazards</td>
</tr>
</tbody>
</table>
| **Use of respirators** | To provide clear, written policies and procedures for proper use of respirators by employees:  
(Check (√) if present)  
- Workers able to perform seal checks  
- Good face to face piece seal exists  
- Defective parts replaced | Yes __ x__ No __ x__ Partial ___ x__ |  |
| **Maintenance and care of respirators** | To provide clear, written procedures for storage, care, and maintenance of respirators. | Yes __ x__ No __ x__ Partial ___ x__ |  |
| **Program evaluation** | To ensure that the written program is being implemented and that it continues to be effective:  
(Check (√) if present)  
- Written procedure for RPP  
- Staff input  
- Respirator usage (donning and doffing) | Yes __ x__ No __ x__ Partial ___ x__ |  |
| **Overall Impression** (would a trained Industrial Hygienist be able to implement this program based off of the written program) | No.  
- The written respiratory protection program only reiterated the OSHA standard without providing adequate details.  
-It is not site specific |  |  |
## TABLE X: HOW HOSPITAL EMPLOYEES ANSWERED QUESTIONS BY RESPIRATORY PROTECTION STANDARD ELEMENT

<table>
<thead>
<tr>
<th>Program Element Written Respiratory Protection Program</th>
<th>Score</th>
<th>Overall Hospital Score</th>
<th>(%)</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Program</td>
<td></td>
<td>36/44 (67%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Program Administrator</td>
<td></td>
<td>32/44 (50%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Respirator Selection</td>
<td></td>
<td>71/90 (78%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Respirator Use</td>
<td></td>
<td>12/18 (67%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Medical Clearance</td>
<td></td>
<td>28/30 (93%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Fit Testing</td>
<td></td>
<td>46/60 (77%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>57/60 (95%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Program Evaluation</td>
<td></td>
<td>15/15 (100%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Respirator Maintenance</td>
<td></td>
<td>21/30 (70%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Record Keeping</td>
<td></td>
<td>9/12 (75%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>All Elements</td>
<td></td>
<td>7/10 (70%)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Numerator is the number of correct answers for all questions related to the specific program element. Denominators are the number of survey respondents who answered the questions.

The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the percentage of questions answered correctly.

The results for healthcare workers for this element includes the observation of three healthcare workers.

The overall survey score is the average of the percentage of respondents who answered the questions.

The results for healthcare workers for this element includes the observation of three healthcare workers.

The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the percentage of questions answered correctly.

The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the percentage of questions answered correctly.

The results for healthcare workers for this element includes the observation of three healthcare workers.

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The results for healthcare workers for this element includes the observation of three healthcare workers.

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The results for healthcare workers for this element includes the observation of three healthcare workers.

The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the percentage of questions answered correctly.

The results for healthcare workers for this element includes the observation of three healthcare workers.

The overall hospital score is the average of the Written Respiratory Protection Program Score and the Overall Survey Score. In this case, it is the average of the percentage of questions answered correctly.
Examining the data presented in Table VII, the lowest score was for the respiratory use element. The result is based on one survey question, asked of 15 healthcare workers, and observation of 3 healthcare workers while they donned an N95 filtering facepiece respirator. Although only 3 observation/demonstration tasks were performed, a score of 55.6% is alarming. This demonstrates that even if an employee was successfully trained in when to wear a respirator, they are not being protected sufficiently because they are not putting the respirator on properly. There is also an overall lack of understanding about how respirators are maintained. This is likely due to confusion regarding the survey questions and not because the respirators are being maintained improperly. Program evaluation is low due to the unit managers being asked all of the questions that the hospital managers were asked and most likely not being involved in the respiratory protection program evaluation process. The question that most people did not know the answer to regarding fit testing was how employees know which model and size respirator they should wear. The written program explicitly describes a pocket card respirator users will be given, but only 2 of 15 healthcare workers said that they received a pocket card. Finally, respirator selection was low because most people in the hospital responded that when performing aerosol generating procedures on someone with seasonal influenza, they would wear a surgical mask. According to the newest CDC recommendations, an N-95 filtering facepiece respirator should be used in this situation.

Unit managers scored the lowest of all the types of people we interviewed (64% compared to 83% for healthcare workers and 89% for hospital managers). This is likely due to a classification bias because the unit managers were asked questions very similar to those asked of hospital managers. In many cases, the unit managers did not have a role in implementation of
APPENDIX A (CONTINUED)

the respiratory protection, beyond being a healthcare worker who is in the respiratory protection program. They did not know the answer to many questions, or they answered based on their experience as a healthcare worker rather than as a manager. This bias will most likely change based on the hospital and how each hospital works with their unit managers.

Survey respondents were each given 11 statements and asked if they agreed, disagreed, or did not know regarding issues relating to workplace safety. These statements were separated into 3 categories (respiratory protection, infection control, and general health and safety) and compared across survey type. The results are below in Table XII.

### TABLE XI:

<table>
<thead>
<tr>
<th>Workplace Safety Data</th>
<th>Healthcare Worker</th>
<th>Unit Manager</th>
<th>Hospital Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Protection</td>
<td>75/90</td>
<td>22/24</td>
<td>18/18</td>
</tr>
<tr>
<td>Infection Control</td>
<td>14/15</td>
<td>4/4</td>
<td>3/3</td>
</tr>
<tr>
<td>General Health and Safety</td>
<td>46/60</td>
<td>14/16</td>
<td>12/12</td>
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<tr>
<td>Percent by Survey Type</td>
<td>82%</td>
<td>91%</td>
<td>100%</td>
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</table>

Table XII demonstrates that managers at Hospital A, in general, have a higher sense of safety at work. This could be due to the fact that they are, in general, not the ones on the floor being exposed to possible infectious diseases. This could also be due to management setting the policies and if they are appropriately followed, the workplace should be safe. The disagreement
between management and healthcare workers should be addressed at Hospital A in order for everyone to feel safe at work.
TABLE XII:
SCORING MECHANISM FOR HOSPITAL A

<table>
<thead>
<tr>
<th>Survey</th>
<th>Question #</th>
<th>How to Score Answer</th>
<th>Topic</th>
<th>Hospital A Scoring Mechanism</th>
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## APPENDIX B (CONTINUED)

### TABLE XII (CONTINUED)

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### SCORING MECHANISM FOR HOSPITAL A

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### APPENDIX B (CONTINUED)
### TABLE XII (CONTINUED)

#### SCORING MECHANISM FOR HOSPITAL A

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<th>Survey</th>
<th>Question #</th>
<th>How to Score Answer</th>
<th>Topic</th>
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### SCORING MECHANISM FOR HOSPITAL A

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APPENDIX C

HOSPITAL A WRITTEN RESPIRATORY PROTECTION PROGRAM

ENVIRONMENTAL HEALTH & SAFETY OFFICE
Rev. 3/1/01
RESPIRATORY PROTECTION PROGRAM

1.0 PURPOSE

1.1. To provide employees a uniform respiratory protection program for personnel protection when effective engineering controls are not feasible, or when engineering controls are being initiated.

2.0 SCOPE

2.1. The following requirements shall apply to all employees who utilize respiratory protective equipment.

3.0 REFERENCES

3.6. NIOSH 49 CFR 84 Filter Classifications.

4.0 DEFINITIONS

4.1. Air-purifying respirator means a respirator with an air-purifying filter. cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
4.2. Canister or cartridge means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
4.3. Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
4.4. Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
4.5. End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
APPENDIX C (CONTINUED)

4.6. **Escape-only respirator** means a respirator intended to be used only for emergency exit.
4.7. **Filter or air purifying element** means a component used in respirators to remove solid or liquid aerosols from the inspired air.
4.8. **Filtering facepiece (dust mask)** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
4.9. **Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.
4.10 **High efficiency particulate air filter (HEPA)** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter.
4.11. **Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
4.12. **Immediately dangerous to life or health (IDLH)** means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effect or would impair an individual's ability to escape from a dangerous atmosphere.
4.13. **Interior structural firefighting** means the physical activity of fire suppression rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.
4.14. **Loose-fitting facepiece** means a respiratory inlet covering that is designed to form a partial seal with the face.
4.15. **Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
4.16. **Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.
4.17. **Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to provide, or be delegated the responsibility to provide, some or all of the health care services required by this policy.
4.18. **Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
4.19. **Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
4.20. **Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual’s response to the test agent.
4.21. **Quantitative Pit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
4.22. **Respiratory inlet covering** means that portion of a respirator that forms the
APPENDIX C (CONTINUED)

protective barrier between the user’s respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

4.23. **Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

4.24. **Service life** means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

4.25. **Supplied-air respirator (SAR)** or airline respirator means an atmosphere supplying respirator for which the source of breathing air is not designed to be carried by the user.

4.26. **Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.

4.27. **User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

5.0 PROCEDURE

5.1. Each □ department shall designate a Program Administrator or Coordinator, qualified by appropriate training or experience commensurate with the complexity of this program.

5.2. Respiratory protection is provided for employees based on known or suspected potential exposure.

5.2.1. Employees in areas known to have contaminant levels identified through personal industrial hygiene monitoring requiring the use of respiratory protection.

5.2.2. Employees in areas in which contaminant levels requiring the use of respiratory protection may be created without warning (e.g., emergency purposes such as hazardous material spill responses).

5.2.3. Employees in suspect areas, or performing operations known or suspected of being health hazardous but for which adequate sampling data has not yet been obtained.

5.2.4. Employees in suspect areas, or performing operations suspected of being health hazardous but for which adequate exposure limits, such as PELs or TLVs have not yet been established.

5.2.5. Employees having direct contact with patients posing a risk of tuberculosis exposure.

5.3. Selection of Respiratory Protection Devices

5.3.1. Selection of the proper respirator(s) to be used in any work area or operation at □ shall be performed only after a determination as to the real and/or potential exposure of employees to harmful concentrations of contaminants/biological agents in the workplace atmosphere has been made.

5.3.2. This evaluation will be performed prior to the start of any routine or nonroutine task(s) requiring respirators, when a process or task is significantly
changed, or when employees express potential exposure concerns, signs or symptoms.
5.3.3. Respirators will be selected by the Department/EHSO Program Administrator using CDC/USPHS recommendations, NIOSH Certified Equipment List, the NIOSH Respirator Selection Decision Logic, the Selection Flow Charts, and Selection Tables.
5.3.4. The following items will be considered in the selection of respirators:

- Identification of contaminant’s chemical state (valence) and physical form (gas, mist, vapor, dust etc.)
- Effectiveness of the device against the substance of concern;
- Estimated maximum concentration of the substance in the area;
- General environment (open shop or confined space, etc.);
- Properly functioning local ventilation and chemical fume hoods;
- Known limitations of the respiratory protective device;
- Comfort, fit, and worker acceptance;
- Other contaminants in the environment;
- Unknown levels of concentration in spills prior to area monitoring;
- Potential for oxygen deficiency;
- IDLH conditions
- Potential and known tuberculosis patients
5.3.5. Gas and vapor chemical cartridges shall be equipped with an End of Service Life Indicator certified by NIOSH for the contaminant, if available, and replaced when indicated by the ESLI.
5.3.6. When there is no NIOSH approved ESLI appropriate for a contaminant, the manufacturer of the respirator cartridge model shall be consulted for objective data to establish a change schedule. This advisory may be in the form of a telephone help line. Some manufacturers have computer programs available on the Internet that provide the objective data needed.
5.3.7. The Change Out Schedule, utilizing Form EHS P408-008, shall be implemented and followed. This Change Out Schedule shall be developed from the manufacturer’s data, from analogous chemical structure evaluations, and the American Industrial Hygiene Assn. "Rule of Thumb" (The Occupational Environment - Its Evaluation and Control, Chapter 36, Akron OH, AIHA, 1998 0r update) for estimating organic vapor cartridge life.

*Rule of Thumb - If the chemical’s boiling point is > 70°C and the concentration is less than 200 ppm you can expect a service life of 8 hours at a normal work rate. Service life is inversely proportional to work rate. Reducing concentration by a factor of 10 will increase service life by a factor of 5. Humidity above 85% will reduce service life by 50%.
5.3.8. Supervisors shall contact the Program Administrator prior to non-routine work which may expose employees to hazardous substances or oxygen
APPENDIX C (CONTINUED)

deficient atmospheres. Examples of work which may require the use of respirators includes, but are not limited to:
- Asbestos abatement activities
- Abrasive blasting
- Cutting or melting lead or stripping lead-based paints from surfaces
- Welding or burning outside designated shop areas
- Painting, especially with epoxy or non-latex coatings
- Non-routine tasks using solvents, thinners, or degreasers
- Any work which generates large amounts of dust
- A permitted confined space requiring respirators

5.3.9. When a Program Administrator or ERT Incident Commander cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH.

5.3.10. All areas suspected of being oxygen deficient shall be tested for oxygen concentration prior to respirator selection and personnel entry.

5.3.11. All oxygen-deficient atmospheres or atmospheres where the oxygen concentration exceeds 23.5% shall be considered IDLH.

5.3.12. The following respirators are mandatory for employee use in IDLH atmospheres:
- A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators provided only for escape from IDLH atmospheres shall be NIOSHcertified for escape from the atmosphere in which they will be used.

5.3.13. A review of the real and/or potential exposures shall be made at least annually by the site Program Administrator to determine if respiratory protection continues to be required, and if so, if the previously chosen respirators still provide adequate protection.

5.4. Medical Evaluation

5.4.1. The [University Health Service and the PLHCP, initially, and annually thereafter, shall make a determination as to whether or not an employee can wear the required respirator without physical or psychological risk.

5.4.2. Based on the overall health of the individual and special medical tests (pulmonary function studies, EKG, etc.) as appropriate, the [University Health Service determines any individual restrictions in wearing respiratory protective equipment.

5.4.3. If a medical restriction is applied, the employee, his/her supervisor and EHSO are notified of the restriction in writing by the [University Health Service.

5.4.4. Specific medical tests and procedures will be determined by the [University Health Service.
APPENDIX C (CONTINUED)

University Health Service and will be in accordance with OSHA medical surveillance requirements and/or NIOSH recommendations. At a minimum, these will consist of the mandatory OSHA Questionnaire (29 CFR 1910.134 Appendix C), vital signs measurement and pulmonary function testing.

5.4.5. Medical Questionnaires shall be administered in a manner that ensures that the employee understands its contents and the information remains confidential between the employee and the UHS or designated UHS representative.

5.5. Approved Types of Respirators

5.5.1. Only NIOSH Standard 42 CFR Part 84 certified respirators, cartridges and attachments shall be used. NIOSH labels must be legible.

5.5.2. Particulate Filters will be of the Series 95, 99 or 100, with the N, R, or P Classification according to oil mist atmosphere evaluation.

5.5.3. Dust Masks or non-elastomeric non-powered Air-Purifying Respirators (APR) may only be used with evaluation and approval from the Program Administrator.

5.5.4. Surgical or medical masks do not afford any respiratory protection in environments and are not to be used for this purpose. The sole exception is the CPR face mask in Cardiopulmonary Resuscitation.

5.5.5. Interior structural firefighting is not permitted by employees. Consequently, no firefighting is permitted that would require specialized personal protective equipment, including SCBAs.

5.6. Respirator Fit Testing

5.6.1. An initial fit test, and subsequent tests repeated annually thereafter, shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with any air-purifying and/or supplied air (including SCBA) respirator.

5.6.2. Fit testing shall be performed only after initial or annual medical respirator approval/restictions have been provided.

5.6.3. No supervised temporary employee or employee is permitted to wear a negative-pressure and/or supplied air tight-fitting respirator in a work situation until he or she has demonstrated that an acceptable fit can be obtained.

5.6.4. Fit testing will be conducted in accordance with OSHA 29 CFR 1910.134 mandatory Appendix A fit testing protocols by personnel properly trained in the testing method. Either quantitative and qualitative fit tests may be performed.

5.6.5. Tight-fitting positive pressure APRs may be fit tested by shutting off the power unit. Powered loose-fitting positive pressure APRs, such as helmets or hoods, do not require fit testing.

5.6.6. SCBA face masks shall be tested using a negative-pressure cartridge
APPENDIX C (CONTINUED)

attachment specific to the make and model of the SCBA unit. This mask and attachment may be used for non-SCBA respiratory protection.

5.6.7. Test results will be the determining factor in selecting the type, model, and size of respirator for use by each individual respirator wearer. An adequate selection of manufacturers, types, models and sizes of test respirators will be made available to ensure a successful fit test.

5.6.8. No attempt is made to fit a respirator on an employee who has facial hair which comes between the sealing periphery of the facepiece and the face, or if facial hair interferes with normal functioning of the exhalation valve of the respirator.

5.6.9. Proper fitting of a respiratory protective device facepiece for individuals wearing corrective eyeglasses or goggles, with the exception of N-95 respirators, may not be established if temple bars or straps extend through the sealing edge of the facepiece. If eyeglasses, goggles, face shield or welding helmet must be worn with a respirator, they must be worn so as not to adversely affect the seal of the facepiece. Special prescription glasses inserts shall be provided at expense, if needed.

5.7. User Seal Checks

5.7.1. Respirator users must be properly trained in the performance of positive and negative pressure seal checks and understand their limitations.

5.7.2. Respirator seal checks shall be performed in accordance with the mandatory procedures in 29 CFR 1910.134 Appendix B-1.

5.7.3. Each time a respirator is donned, the user will perform positive and negative pressure seal checks.

5.8. Maintenance of Routine-Use Respirators

5.8.1. Respirators shall be maintained in a clean, sanitary and working order, with each individual employee being assigned an exclusive APR respirator.

5.8.2. Respirators used exclusively by one employee shall be cleaned and disinfected, using the OSHA mandatory respirator cleaning procedures 29 CFR 1910.134 Appendix B-2, as often as necessary to maintain a sanitary condition.

5.8.3. Respirators used by more than one employee (such as SCBAs in emergency response) shall be cleaned and disinfected, using the OSHA mandatory respirator cleaning procedures 29 CFR 1910.134 Appendix B-2, before being worn by different individuals.

5.8.4. Respirators used for fit testing shall be cleaned and disinfected, using the OSHA mandatory respirator cleaning procedures 29 CFR 1910.134 Appendix C, after each use.

5.8.5. A visual inspection for cleanliness, tightness of connections, proper function, defects (i.e., cracking rubber, deterioration of straps, defective exhalation and inhalation valves, broken or cracked lenses, etc.) shall be
APPENDIX C (CONTINUED)

conducted before each use and during cleaning.
5.8.6. Worn or deteriorated parts will be replaced prior to use. No respirator with a known defect will be used.
5.8.7. No attempt may be made to replace components, make adjustments or make repairs on any respirator beyond those recommended by the manufacturer. Only the manufacturer’s NIOSH-approved parts will be used.
5.8.8. Any repair to reducing or admission valves, regulators, or alarms will be conducted only by the manufacturer or their authorized representative.
5.8.9. Respirators, filters and cartridges shall be stored in sealed plastic bags that protect from contamination, dust, sunlight, excessive moisture and damaging chemicals, in locations convenient to the work area away from extreme temperatures, and in such a way as to prevent deformation of the facepiece and exhalation valve.
5.8.10 Disposable respirators shall be rendered nonfunctional and destroyed at the end of the work shift in which they were worn.
5.9. Emergency Response Respirator Maintenance
5.9.1. Emergency response units (SCBAs, PAPRs and escape units) shall be inspected monthly and before and after each use in accordance with the manufacturer’s instructions and for proper function, including regulator, filter, battery and warning devices.
5.9.2. Self Containing Breathing Apparatus (SCBA) shall be stored and maintained in a fully charged state with Type 1 Grade D Breathing-Quality Air only and shall be recharged when the pressure falls to 90% of the manufacturer rated pressure level.
5.9.3. Emergency use respirators shall be stored according to manufacturer instructions in a sturdy compartment that is quickly accessible and clearly marked as containing emergency respirators.
5.9.4. Emergency escape-only respirators shall be inspected before being carried into the workplace.
5.9.5. Emergency respirators shall be certified by documenting the following on an in-house tag or a commercially available equivalent tag:
   - Date of the inspection
   - Name and signature of the inspector
   - Findings and any required remedial action
   - Respirator serial number or unit identification number
5.9.6. The certification information document shall be attached to the storage compartment for that respirator or to the respirator itself, and in an easily retrievable report file in either paper or electronic form.
5.9.7. Cylinders shall be hydrostatically tested and maintained according to manufacturer’s recommendations and as prescribed in the Shipping Container Specification Regulations of the Department of Transportation.
APPENDIX C (CONTINUED)

49 CFR part 173 and part 178. No refilling of cylinders is permitted if the hydrostatic test is not current.
5.9.8. Only purchased or cascade-filled cylinders may be provided by a supplier, such as a local fire department, must be accompanied by a certificate of analysis that the breathing air meets the requirements for Type 1 Grade D breathing air.
5.10. Respirator Training
5.10.1. Respirator users and their supervisors will receive training initially, and annually thereafter, on the contents of the Respiratory Protection Program and their responsibilities under it.
5.10.2. Training shall be repeated and documented when changes in the worksite or required respirator render previous training obsolete or inadequate, observations indicate inadequacies in an employee's knowledge or use of the respirator, (including improper storage), and/or other situations arise that require retraining to ensure safe use.
5.10.3. Training shall include:
- Nature and degree of respiratory hazard
- Why the respirator is necessary; the dangers of non-use or misuse.
- The proper selection, wear and use
- The capabilities and limitations of the respirator
- How to put on and remove the respirator
- How to perform and ensure a proper seal check before use
- How to determine when a respirator is no longer providing the protection intended
- Change out schedules and when to replace cartridges
- How to inspect the respirator
- Cleaning, storage, replacement and maintenance procedures
- Emergency situations, including a respirator malfunction
- Medical signs and symptoms that may limit or prevent the effective use of that respirator
5.10.4. Understanding of training shall be verified by written test and performance demonstration of each of the training elements.
5.10.5. Respirator training will be properly documented and will include the type and model of respirator for which the individual has been trained.
5.10.6. Employees who are authorized to enter IDLH atmospheres shall be trained in Procedures for IDLH Atmospheres (also defined in Permit-Required Confined Spaces Policy); refer to this document for additional information/requirements.
5.10.7 Training documentation shall be maintained by EHSO or by the Hospital.
5.11 Respirator Issuance/User Cards
5.11.1. No respirator will be issued to an employee who has not been properly
medically evaluated, fit tested and trained according to the initial, annual
and as-needed schedule requirements.
5.11.2. To facilitate identification of authorized employees, wallet-size Respirator
User Cards will be issued.
5.11.3. A Respirator User Card must include:
- Name and identification number of the worker.
- The statement: ") (name) has been trained, fitted and medically evaluated to use the
respirator(s) indicated."
- The type(s), model(s), and size(s) of respirator(s) that the cardholder was issued.
- Location where authorized (such as [facility] facilities only)
- Expiration date of card.
- Signature of Program Administrator and their extension.
5.11.4. Temporary employees directly supervised by [facility] must be issued a card
only for the specific [facility] facility and department where working. The
name of the supervising [employee] must be provided on the card.
5.12. Voluntary Non-Required Respirator Use
5.12.1. Voluntary elastomeric respirator use is only permissible at a [facility] facility
where a Respiratory Protection Program is in effect.
5.12.2. An employee's request for voluntary respiratory use may indicate the need
for personal monitoring. Careful evaluation shall be made to ensure that
any potential hazardous respiratory exposures have been identified.
5.12.3. Employees electing to wear non-mandatory respiratory protection shall be
included in the site Respiratory Protection Program, and be provided with
awareness training which will provided advisory information on
respirators as outlined in Appendix D of 29 CFR 1910.134. A copy of this
Appendix is found at the end of this document.
5.12.4. Voluntary respirator users shall be furnished a copy of 29 CFR 1910.134
Appendix D "Information for Employees Using Respirators When Not
Required Under the Standard."
5.13. Program Surveillance and Evaluation
5.13.1. At least annually, and when necessary (e.g. employee input, changes in the
workplace or type of respirator used) the EHSO Director shall conduct an
evaluation to ensure that the site written respiratory protection program is
being properly implemented and to consult employees to ensure that they
are using the respirators properly.
5.13.2. This evaluation shall include (but is not limited to):
- Results of medical evaluation provided as a result of employee illness
- Observations of respirator use, care and storage during site walk-throughs.
- Observations of respirator selection and change out during site walk-throughs and
record reviews.
- Consultation with employees for views on program effectiveness and any problems,
including respirator fit without interfering with job performance.
APPENDIX C (CONTINUED)

- Consultation with employees on appropriate respirator selection for the hazards involved.
- Consultation with employees for ability for proper use under workplace conditions.
- Consultation with employees for proper respirator maintenance.
- Review of injury reports relevant to the use of respirators.

5.13.3. A EHSO survey may include this evaluation but not serve as a substitute for it.

5.13.4. Action shall be taken to correct defects found in the program. Evidence of excessive exposure of respirator wearers to respiratory hazards will be followed up by an investigation to determine why inadequate respiratory protection was provided.

5.13.5. The findings of the respirator program evaluation will be documented and will list corrective action plans target dates for the implementation of the plans. A copy of this form shall be forwarded to the Program Administrator/Coordinator.

6.0 DOCUMENTATION

6.1. 29 CFR 1910.134 Mandatory Appendix C: "OSHA Respirator Mandatory Respiratory Questionnaire" to be retained by the University Health Service and/or the PLHCPs with other medical records.

6.2. Individual Fit Testing Record, to be retained at EHSO until the next successful fit test.

6.3. Respirator Training Certification, to be retained at EHSO indefinitely.

6.4. Request for Medical Clearance for Respirator Use, to be provided to the PLHCP on initial and subsequent medical evaluations for respirator use.

6.5. Medical Approval/Restriction for Respirator Use (issued by University Health Service), to be retained at EHSO indefinitely.

6.6. Respirator User Card, to be retained by Employee until expired.

RESPIRATORY PROTECTION PROGRAM

6.7. Emergency Respirator Certification Tag, to be retained with the unit until replaced with next inspection certification.

6.8. Site Respirator Selection Table, to be retained at EHSO until next revision.

6.9. Change Out Schedule, to be retained at EHSO until next revision.

6.10. Site Respiratory Protection Program (Implementation Manual) to be retained at each Department with a copy provided to UHS or other PLHCP.

6.11. Respiratory Protection Program Evaluation, to be retained indefinitely by EHSO.

7.0 RESPONSIBILITIES

7.1. Environmental, Health and Safety Office is responsible for establishing and maintaining a respiratory protection program consistent with the goal of protecting personnel, meeting state and federal regulatory standards (29 CFR 1910.134 and 1910.120) and industry accepted standards (e.g. NIOSH, ACGIH, ANSI).
APPENDIX C (CONTINUED)

7.2. Department Managers and Laboratory Administrators are responsible for ensuring this policy is implemented at their work areas.
7.3. Program Administrators/Coordinators are responsible for the implementation, purchase, maintenance and coordination of the department respiratory protection program with EHSO assistance.
7.4. UHS is responsible for defining medical evaluation and surveillance procedures and reviewing the health status of all personnel who may be required to wear respiratory protective equipment in the completion of their assigned tasks.
7.5. Supervisors are responsible to ensure each employee under his or her supervision using a respirator has a current Respirator User Approval/Card, to ensure the availability of appropriate respirators and accessories, to provide adequate storage facilities, and to enforce proper respirator use, storage and equipment maintenance.
7.6. Respirator Wearers are responsible to wear, care for, and store his/her respirator when and where required and in the manner in which trained. Respirator wearers must guard against mechanical damage to the respirator and report any malfunctions of the respirator to his/her supervisor, Program Administrator or EHSO immediately.
7.7. Contractors are required to develop and implement a respiratory protection program for their employees who must enter into or work in areas where exposure to hazardous materials cannot be controlled or avoided. This program must meet OSHA 29 CFR 1910.134 and other OSHA regulations and include issuance of respirators, medical evaluations, fit testing and training.

8.0. APPROVALS
8.1. Interim Vice Chancellor for Administration
8.2. Director, EHS
APPENDIX D

REACH II Hospital Manager Interview

MN/IL Region

Last Updated: March 11, 2011

REACH II: Respirator use Evaluation in Acute Care Hospitals

Hospital Manager Interview

Instructions for Interviewer:
- Complete one survey form for each interview.
- Check one answer only.
- Directions for interviewer are in italics.
- Boxed text contains information to be read to the respondent about each section of the interview.
- The last section of the survey, Section VII – Workplace Safety, is a handout for the respondent to fill out. If assistance is needed, the interviewer may read the questions and responses aloud.

Script:
- We are working on a project called REACH II – Respirator Use Evaluation in Acute Care Hospitals.
- We are interested in understanding how acute care hospitals have implemented respiratory protection programs for droplet and airborne infectious disease exposures.
- Your responses to this survey will be completely confidential.
- Any report or document that is published using the data from this survey will not contain information that could be used to identify you.
- Participation is voluntary. If you don’t feel comfortable answering a question, we will skip that question.
- If you have any questions after this survey, you can contact the lead investigator whose information is on the project description (provide copy).
- We are using a standard questionnaire that requires we ask all of the questions. Some of the questions may not apply to your job. There are no right or wrong answers. If you don’t know the answer to something, you should feel comfortable answering you don’t know.

This interview will take approximately 30 minutes. Do you have any questions before we begin?
Interview ID#: 

Date: ___/___/____

Facility: _______________________________________________________

Interviewer name: _______________________________________________
I. General Information

These questions ask for general information about you, your facility, and your facility’s respiratory protection program.

1. In which department do you primarily work? [Select response that matches.]
   - Infection Control
   - Environmental Health/Safety
   - Employee/Occupational Health
   - Nursing Administration
   - Unit Manager
   - Human Resources
   - Materials Management
   - Other (specify): _______________

2. How long have you been in your current position?[Select response that matches.]
   - Less than 1 year
   - 1 year
   - 2-4 years
   - 5 or more years

3. What is your level of education?[Select response that matches.]
   - Associate education
   - Four year college degree
   - Graduate degree
   - Other (specify): _______________

3A. Have you received or do you intend to receive a seasonal influenza vaccine this year.
   [If answer “no” then ask about their intentions.]
   - Yes
   - No, but I do intend to get it
   - No, and I do not intend to get it
   - Don’t know

4. Does your facility have a written Respiratory Protection Program?[Select response that matches.]
   - Yes
   - No
   - Don’t know
5. Are there any employees at your facility who have patient contact and who are not included in the respiratory protection program? For example, housekeeping or food service staff.
   - Yes
   - No – **Skip to Question 7**
   - Don’t know

6. Which of these employees with patient contact in your facility are not included in the respiratory protection program?
   
   *Read each choice and select all that apply.*
   - Housekeeping
   - Food service staff
   - Physicians
   - Social Work
   - Physical Therapy
   - Phlebotomy
   - Other (specify): _______________
   - Don’t know

7. 
   A. Are healthcare workers formally asked to provide input on respiratory protection policy decisions?
      - Yes
      - No
      - Don’t know

   B. Are unit managers formally asked to provide input on respiratory protection policy decisions?
      - Yes
      - No
      - Don’t know

8. Does your facility conduct a risk assessment to determine which employees should be included in the respiratory protection program?
   - Yes
   - No
   - Don’t know
9. Which guidelines are used to determine which infectious disease exposures require respiratory protection? [Listen for responses and select all that apply.]
   - CDC recommendations
   - OSHA recommendations
   - State Department of Health recommendations
   - Other (specify): _______________
   - Don’t know

10. What would most commonly trigger the use of a respirator? [Select response that matches.]
   - Patient’s signs and symptoms (i.e. fever, cough, sputum production)
   - Laboratory confirmation of disease
   - Physician order
   - Sign on the door of a patient’s room
   - Verbally informed by co-workers
   - Other (specify): _______________
   - Don’t know

II. Medical Evaluation

The next set of questions is about employee medical evaluation for wearing a respirator. The medical evaluation process ensures that employees are medically fit to wear a respirator if required.

11. Do employees receive medical evaluation and clearance before being allowed to wear a respirator?
   - Yes
   - No – skip to question 15
   - Don’t know

12. How frequently do employees receive medical evaluation for wearing a respirator? [Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements
   - Other (specify): _______________
   - Don’t know
13. How does a manager know that an employee has been medically cleared to wear a respirator? [Select response that matches.]
   - Employee Health, Environmental Health & Safety (or equivalent) notifies them
   - The staff member informs them
   - They contact hospital management to find out
   - Other (specify): _______________
   - Don’t know

14. Which department is responsible for maintaining records of employee medical clearance to wear a respirator? [Select response that matches.]
   - Infection Control
   - Environmental Health/Safety
   - Employee/Occupational Health
   - Nursing Administration
   - Unit Manager
   - Human Resources
   - Materials Management
   - Do not maintain records
   - Other (specify): _______________
   - Don’t know

III. Fit Testing
The next questions are about fit testing for respirator use. During fit testing, each employee tries on a variety of respirators and the fit is tested to ensure that the respirator seals properly and provides an adequate level of protection.

15. Do employees receive a respirator fit test when first hired?
   - Yes
   - No (X)
   - Don’t know

16. Do employees receive fit testing before being allowed to wear a respirator?
   - Yes
   - No (X)
   - Don’t know
17. How often do employees receive fit testing? [Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements – Skip to 25
   - Other (specify): _______________
   - Don’t know

18. Who usually conducts respirator fit testing? [Select response that matches.] [It may be necessary to prompt the respondent.]
   - Hospital personnel
   - Respirator manufacturer
   - Respirator distributor
   - Contracted service
   - Other (specify): _______________
   - Don’t know

19. What type of fit test is administered? [Select response that matches.]
   - Quantitative (Porta-Count)
   - Qualitative (Bitrex, saccharin)
   - Don’t know

20. Which type of qualitative test agent is used? [It may be necessary to prompt the respondent.]
   - Saccharin
   - Bitrex
   - Irritant smoke
   - Other (specify): _______________
   - Don’t know

21. Are employees allowed to wear an N95 respirator model or size for which they have not received a fit test?
   - Yes
   - No
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

22. Which department is responsible for maintaining records of employee fit test results?
   [Select response that matches.]
   ○ Infection Control
   ○ Environmental Health/Safety
   ○ Employee/Occupational Health
   ○ Nursing Administration
   ○ Unit Manager
   ○ Human Resources
   ○ Materials Management
   ○ Do not maintain records
   ○ Other (specify): _______________
   ○ Don’t know

23. How do employees know which model(s) and size(s) of respirators they have been fit tested for?
   [Select response that matches.]
   ○ They are informed verbally only
   ○ They are given a written copy of their fit test results
   ○ They are given a pocket card (or other reminder)
   ○ Other (specify): _______________
   ○ Don’t know

24. What happens if an employee cannot be successfully fit tested?
   [Select response that matches.]
   ○ They are put into a Powered Air Purifying Respirator
   ○ They are reassigned to a lower risk job classification
   ○ Other (specify): _______________
   ○ Don’t know

25. Does your facility have Powered Air Purifying Respirators available when employees need them?
   ○ Yes
   ○ No
   ○ Don’t know
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

Interview ID#:  

26. How do you, as a manager, know if an employee has received and passed a fit test?
   ○ Employee Health, Environmental Health & Safety (or equivalent) notifies me
   ○ The staff member informs me
   ○ I contact hospital management to find out
   ○ Other (specify): ________________
   ○ Don’t know

27. How do you, as a manager, know which type of respirator model and size your employees should wear?
   ○ Employee Health, Environmental Health & Safety
   ○ (or equivalent) notifies me
   ○ The staff member informs me
   ○ I contact hospital management to find out
   ○ Other (specify): ________________

IV. RPP- Training

I am now going to ask you some questions about respirator training provided by your facility. This means detailed training beyond the instructions that are given during fit testing. Training may cover how to properly put on and take off a respirator, when respirators must be worn, and when they are not protective, among other topics.

28. Do employees receive training in how to properly use a respirator?
   ○ Yes
   ○ No
   ○ Don’t know

29. Do employees receive training about when to wear a respirator?
   ○ Yes
   ○ No
   ○ Don’t know

30. How often are employees required to attend respirator training? [Select response that matches.]
   ○ Once at hire only
   ○ Once at hire, and then annually
   ○ Once at hire, then as required by a physician (based on medical necessity)
   ○ No requirements – Skip to Question 36
   ○ Other (specify): ________________
   ○ Don’t know
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

Interview ID#: _______________

31. What is the **main** format in which training is offered? [Select response that matches.]
   - Lectures
   - In-person training with trainee participation
   - Videos
   - Written study materials
   - Quizzes
   - Online training
   - Other (specify): _______________
   - Don’t know

32. How long is the respirator training (the portion of training specific to respirator use only)? [Select response that matches.]
   - 1-15 minutes
   - 16-30 minutes
   - 31-60 minutes
   - More than 60 minutes
   - Other (specify): _______________
   - Don’t know

33. Which department is responsible for maintaining records of training? [Select response that matches.]
   - Infection Control
   - Environmental Health/Safety
   - Employee/Occupational Health
   - Nursing Administration
   - Unit Manager
   - Human Resources
   - Materials Management
   - Do not maintain records
   - Other (specify): _______________
   - Don’t know

34. How do you, as a manager, know if an employee has **NOT** received respirator training?
   - Employee Health, Environmental Health & Safety (or equivalent) notifies me
   - The staff member informs me
   - I contact hospital management to find out
   - Other (specify): _______________
   - Don’t know
35. Do you know if an employee has received respirator training?
   - Yes
   - No
   - Don’t know

36. Are employees permitted to wear a respirator without training?
   - Yes
   - No
   - Don’t know

V. Program Evaluation

The last questions are about any procedures or policies you have for reviewing the respiratory protection program and evaluating how effective it is and whether or not it needs changes.

37. Does your facility formally document respirator use and supply?
   - Yes
   - No
   - Don’t know

38. Does your facility have a formal mechanism or method to evaluate the effectiveness of the respiratory protection program?
   - Yes
   - No – skip to Question 44
   - Don’t know – skip to Question 44

39. How often do these evaluations occur?
   - More than once per year
   - Annually
   - Other (specify): _______________
   - Don’t know

40. Is input from respirator users formally solicited (for example by an anonymous survey or during a meeting) during the program evaluation?
   - Yes
   - No
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

41. During the program evaluation, do you determine whether respirators are available for employees who need them?
   - Yes
   - No
   - Don’t know

42. During the program evaluation, do you determine whether employees are wearing their respirators properly?
   - Yes
   - No
   - Don’t know

43. During the program evaluation, do you determine whether respirators are being maintained properly? For example, PAPRs are disinfected after use.
   - Yes
   - No
   - Don’t know

44. Does your facility track respirator defects or problems?
   - Yes
   - No
   - Don’t know

VI. Infection Prevention Practices

These questions ask about infection prevention practices in your facility.

45. Last year were influenza vaccines made available to employees at no cost?
   - Yes
   - No
   - Don’t know

46. This year are influenza vaccines made available to employees at no cost?
   - Yes
   - No
   - Don’t know

Page 12 of 16
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

Interview ID#: 

47. Are respirators located close to the point of use (i.e. rooms with suspected or confirmed seasonal influenza or patients on airborne precautions)?
   ○ Yes
   ○ No
   ○ Don’t know

48. What is the minimum level of respiratory protection employees are required to use when in close contact with a patient who has a suspected or confirmed infectious disease requiring airborne precautions, [such as tuberculosis]?
   [Select response that matches.]
   ○ None
   ○ Surgical mask
   ○ N95 filtering facepiece (disposable) respirator
   ○ Elastomeric half-face N-95 respirator
   ○ Powered Air Purifying Respirator (PAPR)
   ○ Other (specify): _______________
   ○ Don’t know

49. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures with a patient who has a suspected or confirmed infectious disease requiring airborne precautions, [such as tuberculosis]?
   [Select response that matches.]
   ○ None
   ○ Surgical mask
   ○ N95 filtering facepiece (disposable) respirator
   ○ Elastomeric half-face N-95 respirator
   ○ Powered Air Purifying Respirator (PAPR)
   ○ Other (specify): _______________
   ○ Don’t know
50. What is the minimum level of respiratory protection employees are required to use when in close contact with patients who has suspected or confirmed seasonal influenza?[Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

51. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures on a patient who has seasonal influenza?[Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

52. Does your facility have a written policy for re-using or re-wearing respirators?
   - Yes
   - No
   - Don’t know

52A. Does your facility allow employees to re-use or re-wear respirators?
   - Yes
   - No – Skip to Question 54
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Hospital Manager Interview

53. How are employees instructed to store respirators between uses?[Select response that matches.]
   - In a plastic bag
   - In a paper (breathable) bag
   - In a rigid plastic box
   - Carried by the employee
   - Hang in designated area
   - Other (specify): _______________
   - Don’t know

54. What is the minimum level of respiratory protection employees are required to use when in close contact with a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)?[Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

55. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures on a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)?[Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

THE FINAL SET OF QUESTIONS (#56 – 66 ON THE NEXT PAGE) SHOULD BE GIVEN TO THE EMPLOYEE TO COMPLETE ON THEIR OWN.
VII. Workplace Safety

These questions ask for your personal opinion about conditions in your workplace.

Please indicate whether you agree or disagree with these statements:

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t Know</th>
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<tbody>
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<td>56.</td>
<td>A properly fitted respirator can protect workers from on-the-job exposure to airborne infectious diseases</td>
<td></td>
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<tr>
<td>57.</td>
<td>An N95 respirator is more effective than a surgical mask at protecting workers from airborne infectious diseases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58.</td>
<td>Workers at my workplace use respirators when they are required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59.</td>
<td>Supervisors correct workers if they do not wear a respirator <strong>when required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td>Supervisors correct workers if they do not wear a respirator <strong>properly</strong> (for example, if only one strap was used)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61.</td>
<td>At my workplace, safety hazards are quickly corrected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62.</td>
<td>At my workplace, all reasonable steps are taken to minimize workers’ risk of exposure to airborne infectious diseases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63.</td>
<td>The health and safety of workers is a high priority with management where I work</td>
<td></td>
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<tr>
<td>64.</td>
<td>Workers are provided with training about proper use of respiratory protection</td>
<td></td>
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<tr>
<td>65.</td>
<td>Management communicates information about safety and health on a regular basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66.</td>
<td>Management seeks feedback from workers about health and safety issues</td>
<td></td>
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</table>
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

MN/IL Region

REACH II: Respirator use Evaluation in Acute Care Hospitals

Unit Manager Interview

Instructions for Interviewer:
- Complete one survey form for each interview.
- Check one answer only.
- Directions for interviewer are in italics.
- Boxed text contains information to be read to the respondent about each section of the interview.
- The last section of the survey, Section VII – Workplace Safety, is a handout for the respondent to fill out. If assistance is needed, the interviewer may read the questions and responses aloud.

Script:
- We are working on a project called REACH II – Respirator Use Evaluation in Acute Care Hospitals.
- We are interested in understanding how acute care hospitals have implemented respiratory protection programs for droplet and airborne infectious disease exposures.
- Your responses to this survey will be completely confidential.
- Any report or document that is published using the data from this survey will not contain information that could be used to identify you.
- Participation is voluntary. If you don’t feel comfortable answering a question, we will skip that question.
- If you have any questions after this survey, you can contact the lead investigator whose information is on the project description (provide copy).
- We are using a standard questionnaire that requires we ask all of the questions. Some of the questions may not apply to your job. There are no right or wrong answers. If you don’t know the answer to something, you should feel comfortable answering you don’t know.

This interview will take approximately 30 minutes. Do you have any questions before we begin?
APPENDIX D (CONTINUED)

I. General Information

These questions ask for general information about you, your facility, and your facility’s respiratory protection program.

1. How long have you been in your current position? [Select response that matches.]
   - Less than 1 year
   - 1 year
   - 2-4 years
   - Five or more years

2. What is your level of education? [Select response that matches.]
   - Associate education
   - Four year college degree
   - Graduate degree
   - Other (specify): _______________

3. What type of clinical unit do you manage? [Select response that matches.]
   - ICU
   - ER
   - Peds
   - Med/Surg
   - Other (specify): _______________

4. As a manager, which of the following are part of your routine job functions/responsibilities? For example,
   a. Do you follow-up with employees on issues related to medical clearance, fit test, or training?  
      Yes  No
   b. Do you observe employees to make sure they are using respiratory protection when required?  
      Yes  No
   c. Do you observe employees to make sure they are properly putting on, taking off and disposing respirators?  
      Yes  No
   d. Do you communicate with employees about hospital policies and procedures related to respiratory protection?  
      Yes  No
   e. Do you report respiratory protection implementation problems to hospital management?  
      Yes  No
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

5. What is the main (most important) way that you communicate hospital policies about respiratory protection requirements to your employees? [Select response that matches]
   - Email
   - Signs
   - Trainings
   - Written notification
   - Meetings
   - Inform verbally (one on one)
   - Other (specify): _______________
   - I do not communicate this information (i.e. upper management’s responsibility)

5A. Have you received or do you intend to receive a seasonal influenza vaccine this year. [If answer is “no” then ask about their intentions.]
   - Yes
   - No, but I do intend to get it
   - No, and I do not intend to get it
   - Don’t know

6. Does your facility have a written Respiratory Protection Program?
   - Yes
   - No
   - Don’t know

7. Are there any employees on your unit who have patient contact and who are not included in the respiratory protection program? For example, housekeeping or food service staff.
   - Yes
   - No – Skip to Question 9
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

8. Which of these employees with patient contact in your unit is not included in the respiratory protection program?  
   [Read each choice and select all that apply]
   - Housekeeping
   - Food service staff
   - Physicians
   - Social Work
   - Physical Therapy
   - Phlebotomy
   - Other (specify): _______________
   - Don’t know

9. As a manager, are you formally asked to provide input on respiratory protection policy decisions?
   - Yes
   - No
   - Don’t know

10. Does your facility conduct a risk assessment to determine which employees on your unit should be included in the respiratory protection program?
    - Yes
    - No
    - Don’t know

11. Which guidelines are used to determine which infectious disease exposures require respiratory protection? [Listen for responses and select all that apply.]
    - CDC recommendations
    - OSHA recommendations
    - State Department of Health recommendations
    - Other (specify): _______________
    - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

Interview ID#: 

12. What would most commonly trigger the staff’s use of respiratory protection?[Select response that matches.]
   - Patient’s signs and symptoms (i.e. fever, cough, sputum production)
   - Laboratory confirmation of disease
   - Physician order
   - Sign on the door of a patient’s room
   - Verbally informed by co-workers
   - Other (specify): _______________
   - Don’t know

II. Medical Evaluation

The next set of questions is about employee medical evaluation for wearing a respirator. The medical evaluation process ensures that employees are medically fit to wear a respirator if required.

13. Do employees receive medical evaluation and clearance before being allowed to wear a respirator?
   - Yes
   - No –skip to question 17
   - Don’t know

14. How frequently are employees medically evaluated?[Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements
   - Other (specify): _______________
   - Don’t know

15. As a manager, do you know that an employee has been medically cleared to wear a respirator?[Select response that matches.]
   - Employee Health, Environmental Health & Safety (or equivalent) notifies me
   - The staff member informs me
   - I contact hospital management to find out
   - Other (specify): _______________
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

Interview ID#:

16. Which department is responsible for maintaining records of employee medical clearance to wear a respirator? [Select response that matches.]
   o Infection Control
   o Environmental Health/Safety
   o Employee/Occupational Health
   o Nursing Administration
   o Unit Manager
   o Human Resources
   o Materials Management
   o Do not maintain records
   o Other (specify): _______________
   o Don’t know

III. Fit Testing

The next questions are about fit testing for respirator use. During fit testing, each employee tries on a variety of respirators and the fit is tested to ensure that the respirator seals properly and provides an adequate level of protection.

17. A. Do employees receive a fit test before being allowed to wear a respirator?
   o Yes
   o No
   o Don’t know

18. How often do employees receive respirator fit testing? [Select response that matches.]
   o Once at hire only
   o Once at hire, and then annually
   o Once at hire, then as required by a physician (based on medical necessity)
   o No requirements – **Skip to Question 22**
   o Other (specify): _______________
   o Don’t know
19. Which department is responsible for maintaining records of employee fit test results? [Select response that matches.]
   - Infection Control
   - Environmental Health/Safety
   - Employee/Occupational Health
   - Nursing Administration
   - Unit Manager
   - Human Resources
   - Materials Management
   - Do not maintain records
   - Other (specify): _______________
   - Don’t know

20. Do employees receive fit testing before being allowed to wear a respirator?
   - Yes
   - No
   - Don’t know

21. How do employees know which model(s) and size(s) of respirators they have been fit tested for? [Select response that matches.]
   - They are informed verbally only
   - They are given a written copy of their fit test results
   - They are given a pocket card (or other reminder)
   - Other (specify): _______________
   - Don’t know

22. Are employees allowed to wear an N95 respirator model or size for which they have not received a fit test?
   - Yes
   - No
   - Don’t know

23. What happens if an employee cannot be successfully fit tested? [Select response that matches.]
   - They are given a Powered Air Purifying Respirator
   - They are reassigned to a lower risk job classification
   - Other (specify): _______________
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

Interview ID#:

24. Does your facility have Powered Air Purifying Respirators available when employees need them?
   ○ Yes
   ○ No
   ○ Don’t know

25. How do you know, as a manager, if an employee has received and passed a fit test? [Select response that matches.]
   ○ Employee Health, Environmental Health & Safety (or equivalent) notifies me
   ○ The staff member informs me
   ○ I contact hospital management to find out
   ○ Other (specify): ________________
   ○ Don’t know

26. How do you know, as a manager, which type of respirator model and size you employees should wear?
   ○ Employee Health, Environmental Health & Safety (or equivalent) notifies me
   ○ The staff member informs me
   ○ I contact hospital management to find out
   ○ Other (specify): ________________
   ○ Don’t know

IV. RPP-Training

I am now going to ask you some questions about respirator training provided by your facility. This means detailed training beyond the instructions that are given during fit testing. Training may cover how to properly put on and take off a respirator, when respirators must be worn, and when they are not protective, among other topics.

27. Do employees receive training in how to properly use a respirator?
   ○ Yes
   ○ No
   ○ Don’t know

28. Do employees receive training about when to wear a respirator?
   ○ Yes
   ○ No
   ○ Don’t know
29. How often are employees required to attend respirator training? [Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - **No requirements – Skip to Question 34**
   - Other (specify): _______________
   - Don’t know

30. What is the main format in which training is offered? [Select response that matches.]
   - Lectures
   - In-person training with trainee participation
   - Videos
   - Written study materials
   - Quizzes
   - Online training
   - Other (specify): _______________
   - Don’t know

31. How long is the respirator training (the portion of training specific to respirator use only)? [Select response that matches.]
   - 1-15 minutes
   - 16-30 minutes
   - 31-60 minutes
   - More than 60 minutes
   - Other (specify): _______________
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

32. Which department is responsible for maintaining records of training?[Select response that matches.]
   - Infection Control
   - Environmental Health/Safety
   - Employee/Occupational Health
   - Nursing Administration
   - Unit Manager
   - Human Resources
   - Materials Management
   - Do not maintain records
   - Other (specify): _______________
   - Don’t know

33. How do you, as a manager, know if an employee has not received respirator training?
   - Employee Health, Environmental Health & Safety (or equivalent) notifies me
   - The staff member informs me
   - I contact hospital management to find out
   - Other (specify): _______________
   - Don’t know

34. Are employees permitted to wear a respirator without training?
   - Yes
   - No
   - Don’t know

V. Program Evaluation

The last questions are about any procedures or policies you have for reviewing the Respiratory Protection Program and evaluating how effective it is and whether or not it needs changes.

35. Do you formally document or report the status of respirator use and supply?
   - Yes
   - No
   - Don’t know
36. Does your facility have a formal mechanism or method to evaluate the effectiveness of the respiratory protection program?
   - Yes
   - No - Skip to Question 42
   - Don’t know - Skip to Question 42

37. How often do these evaluations occur?
   - More than once per year
   - Annually
   - Other (specify): _______________
   - Don’t know

38. Is input from respirator users formally solicited (for example by an anonymous survey or during a meeting) during the program evaluation?
   - Yes
   - No
   - Don’t know

39. During the program evaluation, do you determine whether respirators are available for employees who need them?
   - Yes
   - No
   - Don’t know

40. During the program evaluation, do you determine whether employees are wearing their respirators properly?
   - Yes
   - No
   - Don’t know

41. During the program evaluation, do you determine whether respirators are being maintained properly? For example, PAPRs are disinfected after use.
   - Yes
   - No
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

Interview ID#: 42.

42. Do you, as a manager, track respirator defects or problems?
   - Yes
   - No
   - Don’t know

VI. Infection Prevention Practices

These questions ask about infection prevention practices in your facility.

43. Last year were influenza vaccines made available to employees at no cost?
   - Yes
   - No
   - Don’t know

44. This year are influenza vaccines made available to employees at no cost?
   - Yes
   - No
   - Don’t know

45. Are respirators located close to the point of use (i.e. rooms with suspected or confirmed seasonal influenza or patients on airborne precautions)?
   - Yes
   - No
   - Don’t know

46. What is the minimum level of respiratory protection employees are required to use when in close contact with a patient who has a suspected or confirmed infectious disease requiring airborne precautions, [such as tuberculosis]?
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know
47. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures on a patient who has a suspected or confirmed infectious disease requiring airborne precautions, [such as tuberculosis]? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

48. What is the minimum level of respiratory protection employees are required to use when in close contact with patients who have suspected or confirmed seasonal influenza? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

49. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures on a patient who has seasonal influenza? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Unit Manager Interview

50. Does your facility have a written policy for reusing or re-wearing respirators?
   - Yes
   - No
   - Don’t know

50A. Does your facility allow employees to re-use or re-wear respirators?
   - Yes
   - No – Skip to Question 52
   - Don’t know

51. How are employees instructed to store respirators between uses?[Select response that matches.]
   - In a plastic bag
   - In a paper (breathable) bag
   - In a rigid plastic box
   - Carried by the employee
   - Hang in designated area
   - Other (specify): _______________
   - Don’t know

52. What is the minimum level of respiratory protection employees are required to use when in close contact with a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)?[Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know
APPENDIX D (CONTINUED)

53. What is the minimum level of respiratory protection employees are required to use when performing aerosol-generating procedures on a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

THE FINAL SET OF QUESTIONS (#54 - 64 ON THE NEXT PAGE) SHOULD BE GIVEN TO THE EMPLOYEE TO COMPLETE ON THEIR OWN.
VII. Workplace Safety

These questions ask for your personal opinion about conditions in your workplace.

Please indicate whether you agree or disagree with these statements:

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APPENDIX D (CONTINUED)

REACH II Healthcare Worker Interview

Instructions for Interviewer:
- Complete one survey form for each interview.
- Check one answer only.
- Directions for interviewer are in italics.
- Boxed text contains information to be read to the respondent about each section of the interview.
- The last section of the survey, Section VII – Workplace Safety, is a handout for the respondent to fill out. If assistance is needed, the interviewer may read the questions and responses aloud.

Script:
- We are working on a project called REACH II – Respirator Use Evaluation in Acute Care Hospitals.
- We are interested in understanding how acute care hospitals have implemented respiratory protection programs for droplet and airborne infectious disease exposures.
- Your responses to this survey will be completely confidential.
- Any report or document that is published using the data from this survey will not contain information that could be used to identify you.
- Participation is voluntary. If you don’t feel comfortable answering a question, we will skip that question.
- If you have any questions after this survey, you can contact the lead investigator whose information is on the project description (provide copy).
- Please keep in mind -- This is not a test -- there are no right or wrong answers. We are interested in your opinion.
- We are using a standard questionnaire that requires we ask all of the questions. Some of the questions may not apply to your job. If you don’t know the answer to something, you should feel comfortable answering you don’t know.

This interview will take approximately 30 minutes. Do you have any questions before we begin?
Date: ___/___/____

Facility: __________________________________________

Interviewer name: ____________________________________
I. General Information

These questions ask for general information about you, your facility, and your facility’s respiratory protection program.

1. How long have you been in your current position? [Select response that matches.]
   - Less than a year
   - One year
   - 2-4 years
   - Five or more years

2. What is your level of education? [Select response that matches.]
   - Associate education
   - Four year college degree
   - Graduate degree
   - Other (specify): ________________

3. What type of clinical unit do you work on? [Select response that matches.]
   - ICU
   - ER
   - Peds
   - Med/Surg
   - Other (specify): ________________
4. What is your job title or description? [Select response that matches.]
   - Physician
   - Physician Assistant or Nurse Practitioner
   - Registered Nurse
   - Public Health Nurse
   - Licensed Vocational Nurse
   - Nursing Assistant or Patient Care Assistant
   - Infection Preventionist
   - Technician – Radiology, Other
   - Respiratory Therapist
   - Therapist – Speech, Occupational, Physical, Other
   - Phlebotomist
   - Receptionist, Ward Clerk or Admissions Clerk
   - Environmental Services or Housekeeping
   - Maintenance
   - Food services worker
   - Other (Specify: ____________________)

5. Do you belong to a union?
   - Yes
   - No
   - Don’t know

6. Do you belong to any professional organizations (for example, Association of periOperative Registered Nurses/AORN or Emergency Nurses Association/ENA)?
   - Yes
   - No
   - Don’t know

7. Are you an employee of the facility, or a contract employee? [If response is “don’t know”, ask if they are paid directly by the facility or through another agency.]
   - Employee of facility
   - Contract employee
   - Don’t know
8. Have you received or do you intend to receive the seasonal influenza vaccine this year? [If answer “no” then ask about their intentions.]
   - Yes
   - No, but I do intend to get it
   - No, and I do not intend to get it
   - Don’t know

9. Does your facility have a written Respiratory Protection Program?
   - Yes
   - No
   - Don’t know

10. Are you formally asked to provide input on respiratory protection policy decisions?
    - Yes
    - No
    - Don’t know

11. Which guidelines are used to determine which infectious disease exposures require respiratory protection? [Listen for responses and check all that apply]
    - CDC recommendations
    - OSHA recommendations
    - State Department of Health recommendations
    - Other (specify): _______________
    - Don’t know

12. What would most commonly trigger you to use a respirator? [Select response that matches.]
    - Patient’s signs and symptoms (i.e. fever, cough, sputum production)
    - Laboratory confirmation of disease
    - Physician order
    - Sign on the door of a patient’s room
    - Verbally informed by co-workers
    - Other (specify): _______________
    - Don’t know
II. Medical Evaluation

The next set of questions is about employee medical evaluation and clearance for wearing a respirator. Medical clearance is when you fill out a questionnaire about your respiratory health to see if it is safe for you to wear a respirator. The medical evaluation process ensures that employees are medically fit to wear a respirator if required.

13. Did you receive medical evaluation and clearance before wearing a respirator?
   - Yes
   - No– **Skip to question 16**
   - Don’t know

14. How frequently are you medically evaluated? [Select response that matches.]
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements
   - Other (specify): _______________
   - Don’t know

III. Fit Testing

The next questions are about fit testing for respirator use. During fit testing, each employee tries on a variety of respirators and the fit is tested to ensure that the respirator seals properly and provides an adequate level of protection.

15. Did you receive a respirator fit test when you were first hired?
   - Yes
   - No
   - Don’t know

16. Did you receive fit testing before being allowed to wear an N95 respirator?
   - Yes
   - No
   - Don’t know
17. How often do you receive fit testing? [Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements
   - Other (specify): _______________
   - Don’t know

18. Are you allowed to wear an N95 respirator model or size for which you have not received a fit test?
   - Yes
   - No
   - Don’t know

19. Do you experience any problems when wearing an N95 respirator?
   - Yes
   - No
   - Don’t know

20. I am now going to ask you a series of questions about wearing an N95 respirator:
   a. When you wear an N95 respirator is it difficult to breathe? Yes No
   b. When you wear an N95 respirator are you bothered by moisture buildup? Yes No
   c. Does the N95 respirator interfere with your other personal protective equipment, such as your face shield or goggles? Yes No
   d. Does the N95 respirator interfere with the eyeglasses your normally wear? Yes No
   e. When you wear an N95 respirator, do you have difficulty speaking or being understood? Yes No
   f. When you wear an N95 respirator, do you feel uncomfortably warm? Yes No
   g. When you wear an N95 respirator, do you feel claustrophobic? Yes No
   h. Do you experience any other problems when wearing an N95 respirator? Yes No

   **If yes:** Describe: __________________________
21. How do you know which model(s) and size(s) of respirators you have been fit tested for? [Select response that matches.]
   - I am informed verbally only
   - I am given a written copy of my fit test results
   - I am given a pocket card (or other reminder)
   - Other (specify): __________________
   - Don’t know
   - I haven’t been fit tested

22. What happens if you cannot be successfully fit tested? [Select response that matches.]
   - I am given a PAPR
   - I am reassigned to a lower risk job classification
   - Other (specify): __________________
   - Don’t know
   - I haven’t been fit tested

23. Does your facility have PAPRs available when employees need them?
   - Yes
   - No
   - Don’t know

24. How would your manager know if you have received and passed a fit test? [Select response that matches.]
   - Employee Health, Environmental Health & Safety (or equivalent) notifies them
   - I inform my manager
   - They contact hospital management to find out
   - Other (specify): __________________
   - Don’t know

25. How would your manager know which type of respirator model and size you should wear? [Select response that matches.]
   - Employee Health, Environmental Health & Safety (or equivalent) notifies them
   - I inform my manager
   - They contact hospital management to find out
   - Other (specify): __________________
   - Don’t know
IV. RPP- Training

I am now going to ask you some questions about respirator training provided by your facility. This means detailed training beyond the instructions that are given during fit testing. Training may cover how to properly put on and take off a respirator, when respirators must be worn, and when they are not protective, among other topics.

26. Did you receive training in how to properly use a respirator?
   - Yes
   - No
   - Don’t know

27. Did you receive training about when to wear a respirator?
   - Yes
   - No
   - Don’t know

28. How often are you required to attend respirator training? [Select response that matches.]
   - Once at hire only
   - Once at hire, and then annually
   - Once at hire, then as required by a physician (based on medical necessity)
   - No requirements – Skip to 31
   - Other (specify): __________________
   - Don’t know

29. What is the main format in which training is offered? [Select response that matches.]
   - Lectures
   - In-person training with trainee participation
   - Videos
   - Written study materials
   - Quizzes
   - Online training
   - Other (specify): __________________
   - Don’t know
APPENDIX D (CONTINUED)

REACH II Healthcare Worker Interview

Interview ID#

30. How long is the respirator training (the portion of training specific to respirator use only)? [Select response that matches.]
   - 1-15 minutes
   - 16-30 minutes
   - 31-60 minutes
   - More than 60 minutes
   - Other (specify): _______________
   - Don’t know

31. Are you permitted to wear a respirator without training?
   - Yes
   - No
   - Don’t know

VI. Program Evaluation

These questions are about any procedures or policies you have for reviewing the respiratory protection program and evaluating how effective it is and whether or not it needs changes.

32. Is your input formally solicited (for example by an anonymous survey or during a meeting) during the program evaluation?
   - Yes
   - No
   - Don’t know

33. Are the correct model and size of N95 respirators available when you need them?
   - Yes
   - No
   - Don’t know

34. Does anyone observe you to make sure you are correctly putting on, removing, and disposing of your respirator?
   - Yes
   - No
   - Don’t know
35. Does anyone observe you to make sure you are using respiratory protection when required?
   - Yes
   - No
   - Don’t know

36. Are respirators being maintained properly? For example, are Powered Air Purifying Respirators disinfected after use?
   - Yes
   - No
   - Don’t know

37. Are you expected to report defects or problems with your respirator?
   - Yes
   - No
   - Don’t know

VII. Infection Prevention Practices

These questions ask about infection prevention practices in your facility.

38. Last year were influenza vaccines made available to you at no cost?
   - Yes
   - No
   - Don’t know

39. This year are influenza vaccines made available to you at no cost?
   - Yes
   - No
   - Don’t know

40. Are respirators located close to the point of use (i.e. rooms with suspected or confirmed seasonal influenza or patients on airborne precautions)?
   - Yes
   - No
   - Don’t know
41. What is the minimum level of respiratory protection you are required to use when in close contact with a patient who has a suspected or confirmed infectious disease requiring airborne precautions, such as measles? [Select response that matches.]
   ○ None
   ○ Surgical mask
   ○ N95 filtering facepiece (disposable) respirator
   ○ Elastomeric half-face N-95 respirator
   ○ Powered Air Purifying Respirator (PAPR)
   ○ Other (specify): ________________
   ○ Don’t know

42. What is the minimum level of respiratory protection you are 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? [Select response that matches.]
   ○ None
   ○ Surgical mask
   ○ N95 filtering facepiece (disposable) respirator
   ○ Elastomeric half-face N-95 respirator
   ○ Powered Air Purifying Respirator (PAPR)
   ○ Other (specify): ________________
   ○ Don’t know

43. What is the minimum level of respiratory protection you are required to use when in close contact with patients who have suspected or confirmed seasonal influenza? [Select response that matches.]
   ○ None
   ○ Surgical mask
   ○ N95 filtering facepiece (disposable) respirator
   ○ Elastomeric half-face N-95 respirator
   ○ Powered Air Purifying Respirator (PAPR)
   ○ Other (specify): ________________
   ○ Don’t know
44. What is the minimum level of respirator protection you are required to use when performing aerosol-generating procedures on a patient who has seasonal influenza? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): _______________
   - Don’t know

45. Does your facility have a written policy for reusing or re-wearing respirators?
   - Yes
   - No
   - Don’t know

45A. Does your facility allow employees to re-use or re-wear respirators?
   - Yes
   - No – Skip to Question 47
   - Don’t know

46. How are employees instructed to store respirators between uses? [Select response that matches.]
   - In a plastic bag
   - In a paper (breathable) bag
   - In a rigid plastic box
   - Carried by the employee
   - Hang in designated area
   - Other (specify): _______________
   - Don’t know
47. What is the minimum level of respiratory protection you are required to use when in close contact with a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): ____________________
   - Don’t know

48. What is the minimum level of respiratory protection you are required to use when performing aerosol-generating procedures on a patient who has a suspected or confirmed disease requiring droplet precautions (for example, pertussis)? [Select response that matches.]
   - None
   - Surgical mask
   - N95 filtering facepiece (disposable) respirator
   - Elastomeric half-face N-95 respirator
   - Powered Air Purifying Respirator (PAPR)
   - Other (specify): ____________________
   - Don’t know

49. Please describe any important observations you think may be important to capture in the box below.

THE FINAL SET OF QUESTIONS (#49-59 ON THE NEXT PAGE) SHOULD BE GIVEN TO THE EMPLOYEE TO COMPLETE ON THEIR OWN.
VIII. Workplace Safety

These questions ask for your personal opinion about conditions in your workplace.

Please indicate whether you agree or disagree with these statements:

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t Know</th>
</tr>
</thead>
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<td>Workers at my workplace use respirators when they are required</td>
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NOTES:

- Need to inform the facility contact person that employees will be asked to demonstrate respirator donning.
- The sample size per facility will be **three observation/demonstrations**.
- The rater needs to determine if and how managers and healthcare workers will have access to a respirator, or if samples should be provided to the rater.
- If possible, raters should also get a sample of the manufacturer’s user instructions, to confirm the N95 model specific recommended user seal check method.
- **DO NOT** instruct the employee on how to use the respirator. If the employee asks for feedback before the demonstration is complete a suggested response would be: “When you’ve finished putting on the respirator, I will give you feedback.”
- If the employee employs hand hygiene before donning and after doffing, note this under the additional comments section.

Additional Resource Link for Respirator Donning Instructions:


**NOTE:** Tape a copy of these instructions on your clipboard, so you can refer to them when talking with the employee at the end of an observation.
APPENDIX D (CONTINUED)

Last Updated: January 3, 2011

ID Number: ______________________________

Respirator Demonstration/Observation Tool

Date: ___________________________  Observer: ________________________

Location: ICU / Pediatric / ED / Med-Surg / Other: __________________

Employee Job Title: ______________________________

1. The following questions require that the employee obtain a respirator, either by accessing one in their unit or selecting one from samples you provide.

   A. Does the employee have access to the respirator model and size for which they have been fit tested?

      Yes --
      ○ ASK THE EMPLOYEE TO OBTAIN A RESPIRATOR AND GO TO Q2
      ○ No

   B. Do you (the observer) have samples from which the employee can make a selection?

      Yes --
      ○ ASK THE EMPLOYEE TO SELECT A RESPIRATOR AND GO TO Q2
      ○ No  - END THE SURVEY

The following questions require that you examine the respirator before it is donned by the employee.

2. Is respirator approved by NIOSH?

   [NIOSH approved respirators should have the word “NIOSH” and type, such as “N95” printed on the filter, exhalation valve or strap. Approval number, if included, will be in the following format: TC-84A-xxxx.]

      ○ Yes
      ○ No – Skip to A

3. What type of respirator is being donned?

      ○ Filtering facepiece (N95 or other)
      ○ Elastomeric half-facepiece
      ○ Elastomeric full-facepiece
      ○ Other (specify)__________________________
APPENDIX D (CONTINUED)

4. What company manufacturers the respirator?
   ○ Describe: ___________________________
   ○ Not indicated

5. What is the model number?
   ○ Describe: ___________________________
   ○ Not indicated

6. What is the NIOSH approval number?
   ○ Describe: ___________________________
   ○ Not indicated

7. What is the size of the respirator?
   ○ Describe: ___________________________
   ○ Not indicated

The following questions require that you observe how the respirator is donned by the employee (refer to the NIOSH instructions). Do not provide any assistance or make any comments before you have answered Questions 8 – 14.

“Now I’d like you to put on your respirator the way you would normally wear it when you are caring for a patient. Please take your time – there is no rush.”

8. Is the respirator correctly positioned on the face?
   ○ Yes
   ○ No

9. Is there any facial hair under the seal?
   ○ Yes
   ○ No

10. Are the straps correctly placed?
    ○ Yes
    ○ No

11. Is the nose clip properly formed around the nose?
    ○ Yes
    ○ No
APPENDIX D (CONTINUED)

Last Updated: January 3, 2011  ID Number: ____________________________

12. Was a user seal check performed?
   O Yes
   O No

13. Was the respirator removed using the straps?
   O Yes
   O No

14. Additional Observations:

AFTER ANSWERING QUESTIONS 8 – 14, IF YOU HAVE OBSERVED ANY INCORRECT PROCEDURES, YOU MAY PROVIDE FEEDBACK TO THE EMPLOYEE, USING THE PRINTED NIOSH INSTRUCTIONS FOR ILLUSTRATION.
CITED LITERATURE


Centers for Disease Control and Prevention. Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005. MMWR 2005;54(No. RR-17): 75-77

CITED LITERATURE (CONTINUED)


CITED LITERATURE (CONTINUED)


*Vaccine* 24(40-41): 6367-6370.


Murray, M., J. Grant, et al. (2010). "Facial Protective Equipment, Personnel, and Pandemics: Impact of the Pandemic (H1N1) 2009 Virus on Personnel and Use of
CITED LITERATURE (CONTINUED)

Facial Protective Equipment." Infection Control and Hospital Epidemiology31(10): 1011-1016.


Sarre, G., J. Dyas, et al. An analytical framework for planning and sustaining recruitment to research studies in primary care based on evidence from the literature.
CITED LITERATURE (CONTINUED)


CITED LITERATURE (CONTINUED)


VITA

NAME: Margaret Sietsema

EDUCATION: B.S., Pharmaceutical Science, Purdue University, West Lafayette, Indiana, 2008

HONORS: NIOSH Trainee Recipient, University of Illinois at the Medical Center, Illinois, 2010-2011.

PROFESSIONAL MEMBERSHIP
American Industrial Hygiene Association
American Society of Safety Engineers
International Society of Exposure Science