The Joint Commission

Hospital Respiratory Protection Programs: Usefulness of Resources and Informational Gaps

FINAL REPORT

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Submitted by:

The Joint Commission
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Background

Protecting workers from exposure to all types of respiratory hazards is an important issue for all hospital staff, yet often does not receive the attention it deserves. As part of a constellation of research initiatives designed to improve respiratory protection programs (RPP), CDC/NIOSH/NPPTL supported the development of two educational resources, which were released in the spring of 2015: A national toolkit, *Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators,* developed in collaboration with OSHA (2015); and an educational monograph, *Implementing Hospital Respiratory Protection Programs: Strategies from the Field,* developed in collaboration with The Joint Commission (2014).

These resources were designed to work together to assist hospitals in the development and implementation of their respiratory protection programs. In order to capitalize on the complementary material in both educational documents, and to reach slightly different audiences, these resources have been promoted and disseminated together by the three organizations (NIOSH, OSHA, and The Joint Commission). Dissemination efforts have included announcements and press releases, website, electronic, and social media postings, promotion at professional conferences, various publications, and a joint educational webinar conducted by NIOSH and The Joint Commission (with CE credits available).

Despite widespread dissemination, it was unclear if these resources were reaching their targeted audiences and if they are helpful to those responsible for respiratory protection programs in hospitals Government agencies (such as CDC NIOSH) and professional associations continued to receive questions from the field regarding how to handle specific issues related to respirators, such as "should visitors wear respirators when they are in airborne isolation units even though they have not been fit-tested" and "should staff exposed to surgical smoke in the OR wear respirators?" Many of these situational and clinical questions were not directly answered in existing published guidelines, such as CDC's *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings* (2007) or *Guidelines for Environmental Infection Control in Health-care Facilities* (2003). Nor were they specifically addressed in the two newer resources. It was apparent there was a need to identify new and ongoing issues and problems (clinical conundrums) to determine how to best support healthcare professionals as they implement and operationalize their respiratory protection programs.

In September of 2016, The Joint Commission received a contract from CDC/NIOSH/NPPTL (Contract #200-2016-M-90738) to conduct a research study to explore these ongoing issues. The project consisted of two goals:

1. To assess the perceived usefulness of the 2015 toolkit and monograph related to respiratory protection programs (Goal 1); and

2. To identify information gaps. This goal was narrowed to focus specifically on the identification of clinical situations whereby clarification regarding use of respiratory protection might be needed (Goal 2).

The findings of the project will be summarized in a manuscript and submitted for publication. It is hoped that these findings will help identify respiratory protection issues that may need more definitive guidance or additional research, or will uncover ongoing implementation challenges associated with existing guidance regarding use of respirators in clinical settings.

Project Activities

Administrative and reporting

Project team members met weekly for the duration of the project to discuss and plan for upcoming tasks and deliverables. The Joint Commission project team included Barbara Braun (principal investigator), Maria Montero (project manager), Brette Tschurtz (project contributor) and Hasina Hafiz (research associate). Scott Williams (director of health services research) also participated intermittently to assist with project oversight.

In addition to project team meetings, monthly calls with the CDC/NIOSH/NPPTL program officer (Debra Novak, PhD, RN) and the CDC scientific officer (Lewis Radonovich, MD) were conducted. These meetings were used to share progress on project-related activities, discuss overall strategic direction and to review materials and data. Ad hoc telephone calls and meetings were scheduled as necessary during periods of heavy workload and material review.

For all scheduled meetings, agendas were prepared and distributed in advance and minutes were compiled. The minutes from the monthly CDC/NIOSH/NPPTL meetings were sent for review and approved by the project officer prior to submission.

A project overview (Attachment A) and a project webpage were developed to assist general project communications, TAP recruitment, dissemination and outreach, and eventually data collection. Link to project webpage: https://www.jointcommission.org/topics/respiratory_protection_hospitals_resources_practices.aspx

Technical Advisory Panel (TAP)

In order to assemble a TAP with the knowledge and expertise necessary to inform the work of the project, a matrix of possible candidates, along with their professional affiliations, areas of expertise (e.g., national policy, infectious diseases, occupational health, respiratory therapy), and professional role (e.g. MD or RN, front line worker vs. policy/research) was developed. From this list, a scientific officer (Lewis Radonovich, MD) was selected and invited to participate (see Attachment B: TAP matrix).

The project team then identified seven additional members who collectively possessed the necessary background, professional affiliations (SHEA, APIC, AOHP, ACOEM), and respiratory protection expertise to serve as TAP members. Possible candidates were contacted via telephone call and later sent official invitation letters, a project overview, and a link to the project webpage. All seven TAP members who were invited agreed to participate on the project. The final list of TAP members is below. Please refer to Attachment C: Project participant list for addresses and contact information.

- Cynthia Alexander, MS, RRT
- MaryAnn Gruden, MSN, CRNP, NP-C, COHN-S/CM
- David Kuhar, MD
- Melanie Swift, MD, FACOEM
- Loretta Litz Fauerbach, MS, FSHEA, FAPIC, CIC
- Marcia T. Isakari, MD, MPH
- Lisa Pompeii, PhD, COHN-S, FAAOHN

Each TAP member was offered an honorarium of $500.00. As per Joint Commission policy, conflict of interest attestations and W9 tax forms were collected for all TAP members. The TAP met three times by conference call (January 30, 2017, July 18, 2017, September 29, 2017) and contributed to the following activities:

1. Development of a methodology to accomplish aims of the project
2. Gathering and sharing of unresolved respiratory protection issues/challenges
3. Assistance with outreach to the field to solicit unresolved respiratory protection issues and challenges
4. Reviewed and commented upon drafts of project-related materials and data gathering sources
5. Assisted with data analysis, specifically classification of clinical conundrums and operational issues (see Methodology section)
6. Discussed possible project-related recommendations and next steps
7. Assisted with dissemination of findings to the clinical and respiratory protection fields

Methods to gather information and data related to goals one and two

Two methods of direct submission of feedback and issues were used to gather information: structured telephone interviews and electronic questionnaires posted to the project webpage. These direct submission methods were used for both goals one and two. Issues for goal two were also identified indirectly through TAP members based on previous inquiries, as well as through professional list-serve queries and postings.

Structured interviews

Interviews were conducted with all eight members of the TAP as well as with two individuals who had previously contributed material for earlier respiratory protection projects. Two additional interviews were conducted with individuals who had expressed interest in providing information through their response to the electronic survey or through their professional

associations with TAP members. A structured interview guide was developed to guide the calls (Attachment D) and interviews were recorded and transcribed. For goal one, interviewees were asked to provide feedback on the usefulness of two resources related to respiratory protection: *Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators*, developed (OSHA) and *Implementing Hospital Respiratory Protection Programs: Strategies from the Field* (The Joint Commission). For goal two, interviewees were asked to describe any clinical situation or scenario whereby there was a question or uncertainty as to the proper use of respiratory protection. The interviewees' name, professional role and affiliation were also noted.

Project webpage and Qualtrics™ questionnaire

To facilitate collection of data, the existing project webpage was reconfigured to allow for direct submission of information for both goals one and two. Questionnaires were developed for each goal and entered into an electronic survey platform (Qualtrics™). The links to the questionnaires were embedded into signal buttons so submitters needed only to click on a button for goal one or two to provide feedback. Submitters had the option of providing information for only one goal or both goals. In addition to providing feedback on the goals, submitters were asked to provide basic demographic information (type of hospital, professional role) and were given the option to provide contact information. No identifiable information was required, and submitters were also not required to answer every question. If the submitter wished to speak directly to a project team member regarding their inquiry, they had the option of requesting that we contact them. All responders requesting this option were later contacted via telephone call or email and either provided answers to their questions or were referred to a source of information or relevant resources (please see Appendix E for goals one and two questionnaires).

Call for information / dissemination strategies

The project team worked with The Joint Commission department of communications to develop a communications plan to promote the project and the solicitation of information. Many TAP members also assisted with dissemination and promotion efforts. Several outreach approaches and dissemination strategies were utilized to gather feedback and data. [TAP assistance noted where applicable]:

- A project announcement and a link to the webpage was sent by the Director of the department of communications to the PR manager/communications liaison at several key professional associations on April 17, 2017
- An email blast with a link to the project webpage was sent to all Joint Commission subscribers on April 18, 2017 (81,223 e-alert subscribers)
- Outreach on Joint Commission social media, including Facebook, LinkedIn, and Twitter was sent on April 18, 2017 and again on May 31, 2017 (Facebook: 11,483 page followers; LinkedIn: 17,813 followers; Twitter: 22,400 followers)

- An article in *JC Online* was published on May 10, 2017 (33,000 subscribers)
- An article in Environment of Care (EC) Newsletter was published in July
- 3 x 5 cards highlighting the project and soliciting submission of information with a link to the webpage were printed and distributed at the following meetings:
    - Society for Healthcare Epidemiology of America annual conference (3/29/2017 – 3/31/2017) (25 cards distributed)
    - Association of PeriOperative Registered Nurses (AORN) conference (4/1/2017 – 4/5/2017) (6 cards distributed)
    - American College of Occupational and Environmental Medicine (ACOEM) conference (4/23/2017 – 4/26/2017) [Distributed by TAP members Melanie Swift and Marcia Isakari] (70 cards distributed)
    - American Association of Occupational Health Nurses (AAOHN) conference (4/24/2017 – 4/27/2017) (50 cards distributed)
    - Association for Professionals in Infection Control and Epidemiology annual conference (June 14-16, 2017) (19 cards distributed)
- Email with a link to webpage was sent to occupational medicine physicians at the University of California San Diego and University of California Los Angeles (May 5, 2017) [facilitated by TAP member Marcia Isakari] (unknown number)
- Announcement to the NORA HCSS Council sector member listserv (May 5, 2017)
- Announcement to the Medical Council of American College of Occupational and Environmental Medicine list serve (May 8, 2017) [information shared by TAP member Melanie Swift] (313 members)
- Announcement on the American Association for Respiratory Care (AARC) newsletter (May 11, 2017) [facilitated by TAP member Cynthia Alexander] (unknown number)
- Announcement in Association of Occupational Health Professionals (AOHP) newsletter (May 11, 2017) [facilitated by TAP member MaryAnn Gruden] (>1000 members)
- Announcement on the American Association for Occupational Health Nurses (AAOHN0 website (June 12, 2017) (4500 members reached)
- Announcement on the SHEA Newsletter (July 25, 2017) (approximately 1,000 recipients)
- Announcement on the SHEA Research Network Survey (July 28, 2017) (n=131 institutions (domestic and international)

The Association for Professionals in Infection Control and Epidemiology (APIC) was also targeted for outreach, however due to policy restrictions they declined. APIC policy states they do not promote projects on which APIC is not involved unless the submitter pays an advertising fee. The budget of this project did not allow for advertising costs.

Data Analysis Methodology

Online questionnaires, TAP, and other interviews were completed by August 11, 2017. Responses for both goals one and two from all data sources (interviews, submissions to

Qualtrics™ online questionnaires, inquiries sent by TAP members) were entered into two different MS Excel tracking spreadsheets for analysis. Responses to open-ended questions were analyzed using a basic qualitative approach (e.g., grouping by themes and categories).

For goal two, if numerous issues were identified by one submitter (either via the interview or through the online questionnaire) they were separated so that each issue was a discrete record. If an issue was "answerable" (e.g., there was published literature with recommendations or guidance available to answer the question), the "answer" was identified in the spreadsheet, along with the relevant sources. Project team members made a preliminary determination of whether an issue could be considered a "clinical conundrum" or whether it was an issue that "needs discussion." For the purposes of this analysis, a clinical conundrum was defined as "an issue for which there is no specific recommendation in an existing evidence-based or consensus based guideline (e.g., from HICPAC, OSHA), or there is conflicting guidance." Something that needed discussion was defined as "likely not a true conundrum but seems to be causing confusion or difficulty with implementation. More guidance and education may be needed."

On a TAP call, all clinical conundrums and issues that needed discussion were reviewed and the issues were clarified. Those items for which resolution was reached were removed from the list of conundrums and "needs discussion." The TAP and the project officer then independently reviewed all the remaining issues and voted "yes" or "no" as to whether an issue was indeed a clinical conundrum. The project team then used the TAP member majority rule for decisions as to whether issue was to be considered a clinical conundrum. For those issues that resulted in a tie, a tiebreaking vote was later applied by the project team based on the project officer's prior vote. Any remaining issues for which the majority rule couldn't be applied were brought back to the TAP for discussion and a decision as to whether or not the issue was a conundrum. After the first round of TAP review, eleven additional issues were identified and reviewed by the TAP and votes were taken on the call.

Many issues on the list were not technically conundrums (as defined for the project), yet were frequently identified as such (by submitters, by the TAP, in the literature, and through questions sent to TAP members). These issues represent operational or implementation challenges with which health care organizations continue to struggle. It was decided that these issues would remain on the list for further categorization and are labelled as "operational issues."

The project team later classified all issues according to a hierarchal algorithm based on topic and subtopic. Each issue was reviewed by three project team members and assigned a code. When very specific issues were identified, they were paraphrased and included into a more general topic area. The list of topics, subtopics and codes used for analysis was based on the type of hazard (airborne infectious pathogens, hazardous chemicals) or the equipment and environment in which RP was used.

For both goals, statistical analyses were limited to frequencies and counts. Based on the number of responses received, it was determined that additional statistical testing would not strengthen the findings of the report.

Results

Goal One

Goal One: To assess the perceived usefulness of the 2015 toolkit and monograph related to respiratory protection programs

A total of 25 responses were provided in Qualtrics™ and 13 interviews were conducted with TAP members and health care professionals who had been referred to The Joint Commission or were involved in previous respiratory protection research projects.

Blank questionnaires (n=1) were removed from the analysis. Responses were counted and open-ended questions were reviewed for content and themes.

Sample

Qualtrics™ questionnaire

The Qualtrics™ questionnaire responses came from a variety of healthcare organizations: academic teaching hospitals (15), healthcare systems (3), community hospitals (2), specialty hospitals (2), as well as one response from a security service and one from a labor union representing hospitals. One respondent did not identify the type of organization. Additional organizational data was not collected (e.g., bed size, geographical location, etc.).

Questionnaire respondents identified their role as physician (7), respiratory therapist (6), infection prevention practitioner (3), occupational or employee health professionals (3), and environmental/safety staff (3). Other responses include senior executive (1) and nursing (1). One respondent did not provide their role.

TAP and other interviews

All eight TAP members and the project program officer were interviewed. Among this group, there were four physicians (Radonovich, Kuhar, Swift, and Isakari) three RNs (Fauerbach, Gruden, Novak), one respiratory therapist (Alexander) and one PhD researcher (Pompeii). As noted above in the discussion of the TAP, this group contained expertise in national policy, infectious diseases, infection prevention and control, respiratory therapy and occupational health in addition to their professional roles. The professional roles of the four additional interviews included two RNs (Morgan, Gemeinhart) and two practicing infection preventionists who are both industrial hygienists (Scales, Kady).

OSHA Toolkit

Use of the OSHA Toolkit

A total of 22 questionnaire respondents and interviewees reported they used the OSHA Toolkit (Toolkit). Among the questionnaire respondents, nine of 22 reported using it and 12 of the 13 TAP members and other interviewees had used the Toolkit. The Toolkit was used in the following ways*:

	Questionnaire	Interviews	**Total**
Policy and procedure development	6	3	9
Training	3	4	7
Assessment/evaluation/development of RPP program	2	3	5
As a resource document	1	0	1

*Some respondents did not answer this question and others identified more than one way of using the Toolkit.

There were four questionnaire respondents who did not currently use the Toolkit, but provided information on how they might use it going forward:

- Two would use it as a starting point for building a respiratory protection program
- Two would use it for education and training

What is helpful in the OSHA Toolkit

Eighteen interviewees and questionnaire respondents provided information as to what they found helpful in the Toolkit. *

	Questionnaire	Interviews	**Total**
Overall structure and content	5	3	8
Templates (e.g., policies, forms, sample documents)	3	4	7
Checklists	3	3	6
Tables (e.g., when to use respirators)	0	5	5
Specific sections (e.g. fit testing, evaluation, etc.)	0	3	3

*Numbers do not add up to 18 as some respondents did not answer this question and others identified more than one component.

Suggestions for improvement in the OSHA Toolkit

Three comments from TAP members suggested the inclusion of training/educational materials (PowerPoint slides/handouts) and other supplementary materials (posters, screen savers). Other suggestions for improvement among both groups include:

- Needs a simpler format – too much text (2 comments)

- More information on hazardous materials and drugs (2 comments)
- Needs more depth in area of non-infectious disease hazards
- More information regarding reusable elastomeric half face respirators in health care
- More specifics for failure of N95 fit testing, what alternatives to use in sterile environments, on air transport, etc.
- More focus on security and other ancillary staff is needed, especially on whether to use a PAPR or N95 when dealing with violent patients
- One stated the title is off-putting due to the word "administrator." The responder stated that this led to not opening the document because it was not applicable to this person's role.

Joint Commission Monograph

Use of the Joint Commission Monograph (Monograph)

A total of 15 respondents (questionnaire respondents and interviewees) reported they used the Monograph. Among the questionnaire respondents, six of 22 reported using it and nine of the 13 TAP members and other interviewees had used the Monograph. The Monograph was used in the following ways*:

	Questionnaire	Interviews	**Total**
Policy and procedure development	6	0	6
Training	3	2	5
Assessment/evaluation/development of RPP program	3	1	4
As a resource / educational document	1	2	2

*Some respondents did not answer this question and others identified more than one way of using the Monograph.

What is helpful in the Joint Commission Monograph

Fifteen interviewees and questionnaire respondents provided information as to what they found helpful in the Monograph.* Some respondents did not answer at all and others provided numerous answers. Numbers in table reflect number of comments.

	Questionnaire	Interviews	**Total**
Case studies	1	6	7
Examples	0	5	5
Checklists	0	3	3
Resources	1	3	4
Emphasis on leadership	0	3	3
Other (crosswalk with standards, evaluation, general)	1	2	3

*Numbers do not add up to 15 as some respondents did not answer this question at all and others identified more than one factor/component helpful.

Suggestions for improvement in the Joint Commission Monograph

Three comments were provided relating to length / difficulty in navigating the resources or need for a summary or abbreviated version. Other suggestions for improvement (>2 comments) among both groups include [verbatim comments listed below]:

- Provide information on potential use of reusable elastomeric half face respirators and supplied air respirators (in OR for example)
- Provide more information on hazardous spill response
- What to do re: non-compliance (e.g. facial hair) (2 comments)
- Simplify case studies, identify problem being identified at beginning of case study
- More information on staff education and competencies
- Needs to VERY clearly separate the infectious respiratory information from the other respiratory hazards. Occupational pulmonary diseases take such a long time to develop, that there is likely a significant amount of occupational lung disease as a result of chemical / aerosolized medication exposure.
- There is not enough attention paid to the staff doing the night chemical cleaning work. Joint commission typically doesn't make nocturnal visits--they should. I recall 5 years of concern that after nocturnal cleaning people began to cough, wheeze, sneeze, rhinorrhea and watery eyes. [The] complaints by clinical staff were dismissed by daytime housekeeping managers. A discovery made that the nocturnal housekeeping staff was inappropriately mixing some type of cleaning chemical finally came to light

Goal Two

Goal 2 was designed to identify information gaps and clinical situations whereby clarification regarding use of respiratory protection might be needed. In this report, we refer to the situations and gaps we received as "issues."

Using the same outreach mechanisms as for goal 1, the section below summarizes the findings. We received a total of 95 issues from 35 unique submitters.

Table 1 describes methods of submission and characteristics of those who submitted issues. Most issues were submitted via telephone interview and email (n=74) rather than through the website link (n=21). Some submitters provided multiple issues. Of the 35 submitters, 18 submitted 1 issue, 7 submitted 2 issues, 2 submitted 3 issues up to maximum of 17 (from one TAP member). 50 issues were submitted directly or indirectly by TAP members.

The most common background among those submitting issues were physicians (n=28 issues), occupational health practitioners (n=20 issues) and infection preventionists (n=12 issues). More than half of the issues were submitted by persons affiliated with an academic teaching hospital (n=52 issues). This is most likely because several of the TAP members came from this setting.

Table 1. Characteristics of Respondents and Issues Received

Source of issues Issue classification	**On-line submission** Number of issues 21	**Email and Interviews** Number of issues 74
-Clinical conundrum	1	28
-Operational issue / other	20	46
Number of issues from unique submitters	N=16 submitters	N=19 submitters
One	11	7
Two	4	3
Three	1	1
Four	0	3
Five	0	2
Nine	0	1
Ten	0	1
Seventeen	0	1
Description of submitter by issue	N=21 issues	N=74 issues
Role - Senior Executive - Advanced Practice Nurse/NP - Case Manager/Care Manager/Social Worker - Infection Preventionist (IP) - Nurse - Physician - Physician Assistant - Respiratory Therapist - Occupational Health Practitioner - Other (please specify) - Missing (includes sources from webinar)	 0 0 0 3 2 5 0 4 5 0 2	 0 0 0 9 9 23 0 3 15 9 6
Type of hospital/facility		
-Community	5	4
-Academic/teaching	11	41
-Specialty	2	1
-Other (includes TAP members not currently affiliated with hospitals)	3	20
-Missing (includes sources from webinar)	0	8

The topics associated with the submitted issues were distributed across 6 major categories and 24 sub-categories (Table 2). Among the major categories, eighteen issues were related to airborne infectious pathogens. Thirteen issues were related to surgical, diagnostic or therapeutic procedures and another thirteen were related to hazardous medications or chemicals. Twenty-four issues were specifically related to equipment (most often respirators), 8 related to regulatory issues, and 19 were classified as other. Other included non-healthcare worker issues and hospital-specific situations and policies.

Table 2. Topic areas of submitted issues

Category	**On-line submission n=21**	**Email (n=25) and Interviews (n=49) total=74**
1. Airborne Infectious Pathogens:		
a. Emerging pathogens (novel or unknown pathogens)	0	2
b. Known pathogens sometimes requiring respiratory protection (measles, zoster, influenza)	3	5
i. Lack of scientific consensus on need for RP	3	1
c. Know pathogens always requiring respiratory protection (e.g., TB, MERS, SARS)	2	1
d. Known pathogen not requiring respiratory protection	1	0
2. Procedure:		
a. Aerosol generating	1	3
b. Surgical smoke	0	2
c. Procedures performed in surgical suite	0	4
d. Procedures performed outside the surgical suite	1	2
3. Hazardous Medication:		
a. Aerosolization compounding and/or administration	3	4
c. Handling and spill containment	0	2
3.5 Hazardous Chemicals:		
a. Cleaning, disinfecting and sterilization agents	1	2
b. Anesthetic gases (e.g., desflurane, isoflurane, sevoflurance, nitrous oxide)	0	0
c. Other (e.g., formaldehyde, oily aerosol)	0	1
4. Equipment:		
a. Eye protection	0	1
b. Respirator	1	17
c. Environment	0	4
d. Supply shortage	1	0
5. Regulatory:		
a. Fit testing	1	4
b. Medical clearance	0	2
c. Other	0	1
6. Other:		

a. Not directly related to patient care (e.g., transport)	0	1
b. Not health care worker related (e.g., visitors, patients)	0	7
c. HCO specific practice related	3	8

After applying the criteria for what constitutes a conundrum, the TAP classified 29 (30%) of the issues as true clinical conundrums with the remaining 66 considered to be operational issues for which guidance exists but may not be widely known or understood in the field. The tables below summarize the issues received by topic area. Please see Appendix F: Comprehensive list of issues and verbatim language to see a listing of the issues and exact wording of the submitted issues.

Pathogens sometimes requiring respiratory protection

Subcategory	Conundrum	Operational Issue
Emerging pathogens	How do you prepare for RP related to unknown or emerging pathogens?	There is a need for better communication of advice on choice of mask during outbreaks associated with emerging pathogens
Measles	What is the preferred type of RP for HCW related to suspected measles. What RP should family members and visitors use? How is it affected by immune status?	
Uncovered zoster	What RP is required? What constitutes an exposure? How do you deal with immunosuppressed patients?	
Pleural TB		Why are respirators needed for pleural TB?
Influenza		When are respirators needed for influenza?
Fungal infections	Are respirators needed during podiatric procedures on patients with fungal infections on their foot?	
Norovirus		Are there situations in which aerosolization of Norovirus occurs (such as toilet flushing

		or violent vomiting)? Is RP needed?
Rhinovirus		What respiratory protection is needed for rhinovirus?
Neonatal and pediatric populations		Are RP requirements for these populations different than for adults?
Other		What constitutes a face to face exposure? Is there a general rule?
		How does one handle persons with a history of TB? When staff put masks on infected persons, it makes it harder for them to breathe which was the problem to begin with.

Known pathogens always requiring respiratory protection

Subcategory	Conundrum	Operational
TB	If family member is the likely source of TB, what RP is required for protecting HCW from becoming exposed through contact with families?	In pediatric patients with TB, are the requirements different from adults?
MERS		What type of RP is needed when ruling out MERS?

Issues related to procedures

Subcategory	Conundrum	Operational
Aerosol-generating bronchoscopies	Even if you have multiple negative AFB smears, do you always need RP for bronchoscopies?	What RP is needed when performing bronchoscopies?
Intimate bedside care for patients with virulent pathogens		Should one wear RP when obtaining nasal or pharyngeal swabs, cleaning, turning and

		general bedside care for patients with virulent pathogens?
Surgical smoke	What type of RP is needed for surgical smoke? What is needed for laser procedures on patients with HPV?	
Procedures in OR	How should one handle staff who fail N95 fit testing, but need respiratory protection while maintaining a sterile surgical field (thus cannot use a PAPR)? What about elastomeric half face respirators?	
Procedures outside OR	What type of RP should be used in the MRI suite (especially when some have metal components)?	What type of RP is needed for air medical transport staff?

Hazardous medications and chemicals

Subcategory	Conundrum	Operational
General	Generally, what type of RP is needed when compounding or administering hazardous drugs? The USP requirement recommends different respirators for whether the drugs are in powder (regular N95) or liquid form (surgical N95) which makes education difficult.	
Hazardous drugs	What RP is needed for pregnant staff working with aerosolized pentamidine?	What RP is needed for staff working with Ribavirin, Gentamycin, Amikacin, Tobramycin, Amphotericin B? What about pediatric doses of ribavirin?

Other	What RP is needed for BCG live vaccine?	What RP is needed for Epoprostenol (Flolan), Furosemide (Lasix)? What about albuterol, racemic epinephrine, and hypertonic saline
Handling and spill containment		The respirators in chemo spill kits may be different from those staff were fit tested on.
Cleaning, disinfecting and sterilizing agents		What type of RP is needed for exposure to glutaraldehyde?
		People don't know when respirators are needed with floor cleaning chemicals, particularly those being sprayed.
Other		What type of RP is needed for exposure to oily aerosols?

Equipment-related

Subcategory	Conundrum	Operational
Eye protection	How do you overcome challenges with poor fit when wearing N95 with goggles?	It is difficult to wear N95s with eye protection.
N95s	How do you wear N95s with helmets and other equipment required for flight staff?	How do you overcome the challenges of wearing N95s (e.g. heat, discomfort, glasses fogging, awkward to use), especially when wearing for prolonged time periods
		Can N95s be used beyond the expiration date?
		Can you ever re-use N95s?
Elastomeric Half-facepiece Respirators (EHFR)	Can EHFR cartridges be decontaminated?	

Supply shortages		Is there really sufficient supply for a pandemic?
PAPRs		PAPRs inhibit communication (speaking and hearing) with patients and intimidating to patients.
		PAPRs make clinical assessment more difficult (e.g. stethoscope, fundoscope, otoscope).
		PAPRS are cumbersome to use in tight environments; hoses tangle, etc.
		Battery life is unknown when in use and can run out unexpectedly.
		What are the pros and cons of converting to all PAPRs in the RP program?
Environmental design		Are there better designs that allow one to control alarms from greater distances?
		Are there ventilation and airflow systems that better protect workers?
		What kind of RP is needed for fumes of unknown origin?

Regulatory Issues

Subcategory	Conundrum	Operational
Fit testing	How do you determine who needs to be fit tested? Are there tools and templates for conducting a risk assessment, other than the one that exists for TB?	Which individuals or groups should be included in respiratory protection program?
		Who is responsible for managing and fit testing non-employees (e.g. licensed

		independent practitioners, contracted workers, construction staff)?
		Do Elastomeric Half-facepiece Respirators (EHFR) require fit testing?
		The leak test is cumbersome.
Medical clearance		Questionnaire is too time consuming and clearance process is not effective.
Non-hospital settings	Are non-hospital settings required to have respiratory protection programs (e.g. ambulatory and dialysis settings)?	

Other Issues

Subcategory	Conundrum	Operational
Transporting		What type of PPE is needed for both staff and patients when transporting a patient with active TB?
Visitors	How do you protect visitors entering isolation rooms?	Visitors see staff wearing respirators in room but when patient comes out of room he/she is wearing a mask. How do you explain and educate others about this?
	What type of RP is needed for immunocompromised patients and their visitors?	There are concerns about low literacy in families and visitors that affect their taking precautions.
Situations where policies and procedures are not being followed or policies and procedures are lacking		During a code, staff rush in with equipment and don't wear RP. Also when answering alarms, they don't wear it appropriately.
		Workers do not feel comfortable letting managers

		know when PPE is not available as needed or RP is not being used when it should be.
		There is a lack of clarity on how to deal with facial hair and respirators; should they automatically get a PAPR?
		Some occupational health staff mark that staff with facial hair passed fit testing when it was done incorrectly.
		Staff don't understand why fit testing is needed and how important it is.
		Staff don't follow proper procedures for donning and doffing.
		How should one deal with staff who refuse who to wear RP when performing bronchoscopies?
		Can one make vaccinations (e.g., varicella) a condition of employment?

Limitations for both Goals 1 and 2

There are, of course, several limitations to our findings:

- Because of the approach used for identifying issues, we cannot assume the results are generalizable or comprehensive. We likely missed issues in the field and may not have reached all the target populations of interest at the hospitals. Because of the difficulty encountered with engaging APIC in dissemination of the call for issues, the results likely under-represent the perspective of APIC member infection preventionists.

- The questionnaire may not have been crafted in a way that adequately captured the information we were seeking. Some of the submitted issues were worded in a way that could have been misinterpreted by the project team and TAP. We were not able to follow-up with submitters to obtain direct clarification.

- Despite numerous outreach approaches and strategies, we received few responses to the online questionnaires. The small number of respondents for both goals compared to numbers in target audience could be a variety of reasons. Either we did not reach the right people, they had no RP issues or feedback on the guides, or the topic of respiratory protection is not a high priority.

- Respirator and respiratory protection articles and other relevant literature was gathered throughout the project, however, a comprehensive literature review was not conducted. As a result, it is possible that published emerging issues in respiratory protection or relevant research or studies are missing from our analysis for this report. In addition, every effort was made to consult and review relevant guidance and source documents from recognized and reputable experts (e.g. HICPAC, CDC, OSHA) to determine if there were answers to the identified "conundrums," and to determine if guidance exists for any identified "issue." However, it is entirely possible that other guidance documents exist.

Discussion

Goal 1

The first goal of this study was to gauge the perceived usefulness of two RPP related resource documents, *Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators,* (OSHA toolkit) and *Implementing Hospital Respiratory Protection Programs: Strategies from the Field* (Joint Commission monograph). It is never an easy task to quantify to what extent a document is being used and if it is helpful and this study proved no exception. Only nine of the questionnaire respondents reported using the OSHA toolkit and even fewer reported using the Joint Commission monograph. More of the interview respondents reported using both documents, but as most of the interviewees were TAP members and had been given both resources prior to the interview, and other interviews were with those who had worked on previous RPP projects at the Joint Commission, it is possible that they may not have actually used (or even seen) these documents but for their affiliation with the project(s). In addition, many TAP members were not actually frontline staff, nor were they individuals tasked with administering RPP programs. As a result, no real conclusions can be drawn regarding how helpful or useful these documents are to those attempting to administer or operationalize RPP programs in the field.

Nevertheless, important feedback on the documents was obtained. Respondents and interviewees reported development of policies and procedures and training as the most frequent way in which the resources were used. Respondents reported that the templates, examples, and checklists were the most helpful in the OSHA toolkit, and that the case studies and examples were most helpful in the Joint Commission monograph. Several responders commented that length of the guides, as well as complexity in navigating the documents was problematic. Many

of the suggested areas for improvement in both resource documents (e.g. addressing of non-compliance related to facial hair, more clarification needed for fit testing requirements) are consistent with the types of operational issues/questions submitted for goal two, which underscores that the field continues to struggle with these issues, despite the availability of resources. This feedback suggests that the field could benefit from more real-world examples and scenarios to assist in implementation of respiratory protection programs and use of respirators in clinical settings. While the availability of resource and educational documents is important, the feedback we received (or more to the point, the lack of feedback) may indicate that simpler or more direct ways of getting this information to those who need it (in real time) would be beneficial.

Goal 2

The second goal of this study was to identify unresolved issues in the field. The tables above indicate that many unique issues were identified, several of which cut across types of hazards and situations.

For example, the issue of facial hair was raised quite frequently. The confusion around facial hair ran the gamut from what respirators can be used with facial hair (PAPRs? EHFRs?) to questions regarding the legality of policies (can those with facial hair be made to shave?) to unclear policies or non-compliance with policies and procedures related to facial hair (e.g., people with facial hair "passing" an N95 fit test when facial hair clearly prevents a good seal). Though not defined strictly as a conundrum by our TAP, the number and nature of facial hair related questions suggests that this issue is causing a lot of confusion in the field.

Another issue that cuts across hazards and situations was what to do about visitors. Again, there was confusion not only about what respiratory protection can be used to protect visitors (as fit testing is rarely an option), but also with perception – why must staff wear N95s or other respirators in the presence of patients with suspected or confirmed airborne transmissible diseases yet there is no protection available for visitors who are in close proximity to these patients? A related issue was what to do with family who may be the source of the infection (e.g. tuberculosis). The issue of respiratory protection for visitors remains a predicament for the field.

As mentioned, classification of conundrums was determined by simple majority across the responses from the 9 experts. There were several issues for which there was a split among members whether or not new or better guidance is needed (e.g., it was a conundrum). This suggests that even among subject matter experts, there is variation of opinion and lack of clarity regarding the recommendations. While this is a common phenomenon during guideline and consensus development efforts (Umscheid, 2010) and should not be surprising, it also suggests that existing recommendations for use of RP in the field are not widely known.

Why are existing recommendations not widely known? One reason is that there it can be difficult to find the answers to RP-related questions when needed because there is no single source for guidance. Though the RP standard was promulgated by OSHA in 1998, guidance for healthcare organizations is provided by two different federal departments and agencies (the OSHA within the Department of Labor and CDC within the department of Health and Humans Services). Within CDC, there are two branches that provide guidance, CDC NIOSH focuses on technical aspects of respirator use and protection of worker safety across all settings while the CDC Division of Healthcare Quality Promotion (DHQP) and its guideline development council, the Healthcare Infection Control Practices Advisory Committee (HICPAC) focuses on guidance related to infectious pathogens for patients and as well as protecting health care workers from occupational injuries (HICPAC, 1998).

Some states, such as California, have their own more stringent standards and offer additional guidance. Professional associations and others also provide guidance intended to supplement the primary sources. For example, the AAOHN offers a training program (Respiratory Protection Program Training and Resources) and The Joint Commission developed a monograph (Implementing Hospital Respiratory Protection Programs: Strategies from the Field) (AAOHN, 2017; The Joint Commission, 2014).

While OSHA, CDC NIOSH, CDC DHQP, and the professional associations work closely together through a variety of mechanisms to ensure consistency of guidance, there remain opportunities for variation due to the addition of new knowledge and updates to existing guidance at different points in time. Similarly, the mechanisms used and extent to which updates and new guidance are disseminated to field varies widely, from posting notification of updates on websites to urgent email blasts directly to key leaders.

On the guidance receiving end at hospitals, frontline users also vary substantially and often come from different disciplines and training backgrounds (medicine, nursing, respiratory therapy, etc). Similarly, responsibility for implementing the recommendations within healthcare organizations is often siloed or sometimes shared between employee health personnel and IPC staff as well. Those responsible for management and oversight of RP programs need to ensure staff at the frontlines of nursing, environmental services, respiratory care, medicine and others have the equipment, knowledge and training needed to do the right thing at the right time. Under the best of circumstances, this dual challenge of oversight for providing clinical care together with safeguarding workers and visitors is subject to a variety of barriers and facilitators including resource constraints, competing priorities, safety culture, learning environment, etc.

Even if guidance was perfectly consistent across sources and well-understood by all users, there will inevitably be gaps in content and unanticipated situations that require judgement and real-time solutions. One example was the changing RP recommendations across agencies during the

2009 H1N1 influenza outbreak (Institute of Medicine, 2009). Hence there will always be variability in knowledge and practice.

Nevertheless, findings from this project suggest some simple opportunities for improvement and some possible longer-term solutions that address the conundrums and operational issues identified. Specifically:

- There should be a single, free, easy to access resource that addresses common RP issues, questions and answers, and suggestions for implementation that was developed in collaboration with key stakeholders. A similar process was used by the Society for Healthcare Epidemiology of America to create *A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals: 2014 Updates* (Yokoe, 2014).
- Basic research may be needed for some of the identified clinical or technical conundrums. For example, those issues related to fungal infections and surgical smoke and whether N95s can be used beyond listed expiration date or EHFR cartridges can be decontaminated. Similarly, there is a need for alternative respirator designs and technologies that address the concerns related to discomfort, use with glasses and eye protection, and challenges to clinical assessment.
- Expert consensus is needed to address gaps in operational guidance in several areas. For example, practical strategies are needed for which and how non-hospital settings can comply with OSHA requirements for those rare instances when respiratory protection is needed. What are the best strategies for conducting risk assessments to determine which staff need to be included in respiratory protection programs? How can the effectiveness of the medical clearance process be improved?
- When faced with ambiguous situations such as preparing for emergencies caused by unknown pathogens, persons should consider basing decisions on the precautionary principle. The precautionary principle states that "in cases of serious or irreversible threats to the health of humans or ecosystems, acknowledged scientific uncertainty should not be used as a reason to postpone preventive measures" (World Health Organization, 2004).
- Leaders within healthcare organizations should promote efforts to improve the culture of safety for both workers and patients. Empowering people to speak up when witnessing unsafe practices or non-adherence to policies and procedures helps establish new norms for the desired behaviors.

In general, our findings are consistent with those of Peterson et al. (2015) who found that many HCWs were unclear about when and how to use respiratory protection in acute care hospitals and which type of protection was needed in specific situations. In addition, the challenges related to respirator discomfort and use (e.g., heat, diminished visual field and problems trying to communicate) gathered as part of this study were consistent with findings reported by Radonovich et al. (2009) regarding respirator use and tolerability.

Clearly the issues identified in this study are not new, and there are many excellent educational tools and guidance attempting to ameliorate some of the challenges related to the use of respirators in clinical settings. Though our data was limited, it appears that many in the healthcare field are still struggling to comply with respiratory protection requirements and with operational challenges. As a national organization involved in evaluating hospitals and other healthcare organizations, The Joint Commission is committed to assisting with developing and implementing solutions to the issues identified in this report.

Dissemination of findings

Manuscript

A manuscript with project information and findings will be developed and submitted for publication. All project team and TAP members will be listed as a workgroup for purposes of authorship. The following journals will be targeted:

- The *Journal of the American Medical Association* (JAMA)
- *American Journal of Infection Control* (AJIC)
- *Journal of the Association of Occupational Health Professionals in Healthcare*, the official publication of the AOHP
- *Infection Control & Hospital Epidemiology (ICHE)*, the official SHEA journal.

Other journals may be targeted as necessary.

Presentation at SHEA Spring 2018 Conference (April 18-20, 2018, Portland, OR)

The findings from this project will be presented at a combined session regarding isolation precautions (under item number 3: Current controversies and advances in airborne isolation).
Session Title(s): It's Not an Isolated Issue
Talk Title(s):

1. To Isolate or Not: that is the question!
2. Isolation Duration: How Long is Too Long?
3. Current Controversies & Advances in Airborne Isolation

Learning Objectives:

1. Synthesize current data and guidelines supporting and refuting use of Contact Precautions for endemic "bad bugs" such as MRSA, ESBLs, and *C. difficile* in acute care facilities.
2. Understand the rationale and most recent data to generate informed recommendations for the duration of contact precautions for colonization of "bad bugs" such as MRSA, CRE, and *C. difficile*.
3. Discuss and understand controversial issues and best practices in administering an effective respiratory protection program.

Once the manuscript is published, TAP members have agreed to assist with dissemination to their professional associations and colleagues. This dissemination may include mentions at additional conferences or requests for speaking engagements. When possible, TAP members will attend and present at conferences, but project staff may accept speaking and poster requests as budget and resources allow.

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Appendices

Appendix A: Project Overview

Appendix B: TAP matrix

Appendix C: Project participant list

Appendix D: Structured interview guide

Appendix E: Goals one and two questionnaire

Appendix F: Comprehensive list of issues/verbatim language

Appendix G: Excel analysis spread sheet

PROJECT OVERVIEW: ***Hospital Respiratory Protection Programs: Usefulness of Resources and Information Gaps***

Protecting workers from exposure to all types of respiratory hazards is an important issue for hospital staff, yet often does not receive the attention it deserves. In an effort to raise awareness and assist hospitals in the development and implementation of their respiratory protection programs, Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), National Personal Protective Technology Laboratory (NPPTL) supported the development of two educational resources in 2015. The first is a national toolkit entitled *Hospital Respiratory Protection Program Toolkit; Resources for Respiratory Program Administrators* which was developed in collaboration with OSHA. The second was an educational monograph, *Implementing Hospital Respiratory Protection Programs: Strategies from the Field,* developed in collaboration with The Joint Commission.

In addition to these resources, several clinical guidelines address respiratory protection in health care such as CDC's *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings* (2007) or *Guidelines for Environmental Infection Control in Health-care Facilities* (2003). Nevertheless, there remains many unanswered clinical questions related to optimal use of respiratory protection.

In order to understand how to better support healthcare professionals as they implement and operationalize their respiratory protection programs, and to identify unanswered clinical questions, The Joint Commission's Department of Health Services Research is engaging in a respiratory protection project entitled ***Hospital Respiratory Protection Programs: Usefulness of Resources and Informational Gaps.*** This is a twelve-month project, supported through a contract with CDC/NIOSH/NPPTL, with the goals to (1) assess the perceived usefulness of the 2015 toolkit and monograph related to respiratory protection, and (2) to identify clinical situations whereby clarification might be needed. The Joint Commission will solicit practical input from experts by engaging an eight-member Technical Advisory Panel (TAP) under the leadership of a Scientific Advisor. The project will involve gathering feedback about the awareness and usability of the 2015 respiratory protection resources, as well as unresolved issues regarding proper usage of respiratory protection in certain clinical situations. For more information about the project, please contact:

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Appendix B: TAP member matrix

TECHNICAL ADVISORY PANEL MEMBERS – MEMBER PROFILE MATRIX

	Name / Title/ Contact Information	Professional Affiliation / Background	*Infection Prev & Control*	*Occ. Health*	*Health care Epi/ Infectious Diseases*	*Quality or Risk Management*	*National Policy*	*Front -line*	*Discipline (RN, MD, IH)*	*Other / comments*
1	**Lewis Radonovich, MD** Senior Physician Scientist, National Personal Protective Technology Laboratory (NPPTL) National Institute for Occupational Safety Health (NIOSH) 626 Cochrans Mill Road Building 40, Room 109 Pittsburg, PA 15236 Office: 412-386-6478 Cell: 412-403-3454 Mto5@cdc.gov Scientific Advisor	NIOSH/NPPTL/CDC	X		X		X		MD	Previous research related to respiratory protection (e.g., ResPect and project Breath in partnership with the VA.) Co-principal investigator of ResPect trial
2	**Loretta Litz Fauerbach, MS, FSHEA, FAPIC, CIC** 2416 NW 32nd Street Gainesville FL 32605-2741 Office: 352-376-8028 lalfauerbach@yahoo.com Confirmed TAP member	Fauerbach & Associates, LLC Gainesville, FL	X		X				RN	APIC 2016 Fellow; experienced evaluating CDC guidelines. HICPAC member

	Name / Title/ Contact Information	Professional Affiliation / Background	*Infection Prev & Control*	*Occ. Health*	*Health care Epi/ Infectious Diseases*	*Quality or Risk Management*	*National Policy*	*Front -line*	*Discipline (RN, MD, IH)*	*Other / comments*
3	**David Kuhar, MD** Medical officer Division of Healthcare Quality Promotion Centers for Disease Control and Prevention 1600 Clifton Rd, MS A31 Atlanta, GA 30333 Office: 404-778-5000 Jto7@cdc.gov Confirmed TAP member	Medical Officer in the Division of Healthcare Quality Promotion (DHQP at the CDC. Healthcare and Worker Safety Team Lead CDC Ebola Response CDC	X	X	X		X	X	MD	Frontline Ebola Treatment CDC/DHQP
4	**Lisa Pompeii, PhD, COHN-S, FAAOHN** Associate Professor Division of Epidemiology, Human Genetics & Environmental Sciences The School of Public Health University of Texas 1200 Herman Pressler, RAS E617 Houston, TX 77030 Office:713-500-9474 Lisa.pompeii@uth.tmc.edu Confirmed TAP member	Associate Professor Epidemiology, Human Genetics and Environmental Sciences, University of Texas Certified Occupational Health Nurse Specialist		X	X				PhD	Developed educational modules for AAOHN

	Name / Title/ Contact Information	Professional Affiliation / Background	*Infection Prev & Control*	*Occ. Health*	*Health care Epi/ Infectious Diseases*	*Quality or Risk Management*	*National Policy*	*Front -line*	*Discipline (RN, MD, IH)*	*Other / comments*
5	**Melanie Swift, MD, FACOEM** Associate Professor of Medicine Director, Vanderbilt Occupational Health Clinic Vanderbilt University Medical Arts Building 1211 21st Avenue South, Suite 640 Nashville, TN 37212 Office: 615-322-5000 Melanie.swift@vanderbilt.edu Confirmed TAP member	25 years of experience in occupational/employee health; she is an active ACOEM member on the local and national level		X	X				MD	Affiliated with Vanderbilt, they were contributors to the RPP monograph
6	**Cynthia Alexander, MS, RRT** Director of Respiratory Care Grady Health System 80 Jesse Hill Jr. Drive SE Atlanta, GA 30303 Office: 404-616-2270 calexander@gmh.edu Confirmed TAP member	Director of Respiratory Care						X		Contributor to monograph

	Name / Title/ Contact Information	Professional Affiliation / Background	*Infection Prev & Control*	*Occ. Health*	*Health care Epi/ Infectious Diseases*	*Quality or Risk Management*	*National Policy*	*Front -line*	*Discipline (RN, MD, IH)*	*Other / comments*
7	**Mary Ann Gruden, MSN, CRNP, NP-C, COHN-S/CM** Manager, Employee Health Services West Penn Allegheny Health System Allegheny General Hospital 320 East North Ave. Pittsburgh, PA 15212 Office: 412-359-6470 & 412-359-3131 Maryann.gruden@ahn.org Confirmed TAP member	Executive Board Member of AOHP, NIOSH Board of Scientific Counselors as of January 2016		X					RN	AOHP
8	**Marcia T. Isakari, MD, MPH** Medical Director Center for Occupational & Environmental Medicine UC San Diego Health System 8899 University Center Lane, Suite 160 San Diego CA 92122 Office: 858-657-1600 & 619-417-9210 misakari@ucsd.edu Confirmed TAP member	Medical Director, Board Certified in Occupational & Environmental Medicine		X					MD	ACOEM Has used TJC monograph. Expressed interest at ACOEM conference

Appendix C: Project participants list

Hospital Respiratory Protection Programs:
Usefulness of Resources and Information Gaps
Project Team List

The Joint Commission: Team Members

Barbara Braun, PhD Associate Director Department of Health Services Research Division of Healthcare Quality Evaluation The Joint Commission One Renaissance Blvd Oakbrook Terrace, IL 60181 630-792-5928 (o) bbraun@jointcommission.org	**Maria Montero, MPH, MT(ASCP)SM, CIC** Associate Project Director-Clinical Department of Health Services Research Division of Healthcare Quality Evaluation The Joint Commission One Renaissance Blvd Oakbrook Terrace, IL 60181 630-792-5372 (o) mmontero@jointcommission.org
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CDC/NIOSH/NPPTL Members

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Hospital Respiratory Protection Programs:
Usefulness of Resources and Information Gaps
Project Team List

Technical Advisory Panel (TAP) Members

Cynthia Alexander, MS, RRT Director of Respiratory Care Grady Health System 80 Jesse Hill Jr. Drive SE Atlanta, GA 30303 404-616-2270 calexander@gmh.edu	**Loretta Litz Fauerbach, MS, FSHEA, FAPIC, CIC** Infection Preventionist Fauerbach & Associates, LLC 2416 NW 32nd Street Gainesville, FL 32605-2741 352-376-8028 lalfauerbach@yahoo.com
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Melanie Swift, MD, FACOEM Associate Professor of Medicine Director, Vanderbilt Occupational Health Clinic Vanderbilt University Medical Arts Building 1211 21st Avenue South, Suite 640 Nashville, TN 37212 (615) 322-5000 melanie.swift@vanderbilt.edu	

Appendix D: Structured interview guide

Questionnaires (for interviews)

TAP Member Name: _____

Date: _____ **Time:** _____

Primary TJC Interviewer: Maria _____

Second Interviewer: _____

Assistant's phone #:

CALLING INSTRUCTIONS: Five minutes before the interview time please call __**1-888-537-7715**_____and enter the Leader passcode, __**41305183**#, (participant code is 91290991#) when prompted. Dial "*0" to access operator and ask operator to call the informant's number

Good Afternoon

Thank you so much for your time this afternoon. We have two major goals for this interview 1) to pilot test the questions and 2) to obtain your answers to the specific items. In the interest of full disclosure, this is our first interview with an advisory panel member on this project so please understand if things are not quite perfect.

With regard to the first goal, it is very important that we get candid feedback on the draft questions. Did you have a chance to look at the questions we sent previously? These questions will be used both for interviews and for an electronic survey posted on our website. People will be sent to these questions with very little background information about the project. If one of the staff members at your organization were to answer these questions through our website, would there be some questions that are unclear or confusing? How could we better phrase them? Feel free to give us your comments now or give us feedback on the individual items as we proceed through the interview.

Would you like to talk about the questions now?

I'll be recording this interview to make sure that I don't miss anything.

IF YES: please note that you will hear silence for a moment – as I start the recording, and you will then hear "the conference is now being recorded" after which I will start with my first question.

INTERVIEWER: After permission for recording is granted, press *2 to reach recording menu and *1 to begin recording. **ALTERNATELY:** IF RESPONDENT ASKS NOT TO RECORD, OR OTHERWISE INDICATES DISCOMFORT WITH RECORDING, DO NOT RECORD – PLEASE TAKE NOTES.

For Goal 1

As part of a new project entitled *Hospital Respiratory Protection Programs: Usefulness of Resources and Informational Gaps*, we are gathering information regarding the usefulness of:

- The OSHA toolkit *Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators,* and
- The Joint Commission monograph, *Implementing Hospital Respiratory Protection Programs: Strategies from the Field*.

1. Have you used the OSHA toolkit?
   - ☐ Yes

     1.a. If yes, please describe how you have used it (e.g. in developing policies/procedures, in training)?

     1.b. What did you find helpful (e.g. general content, evaluation checklist, templates)?

1.c. What could be improved (e.g. content, format)?

☐ No

1.d. If no, how might you use it?

2. Have you used The Joint Commission monograph?

☐ Yes

2.a. If yes, please describe how you have used it (e.g. in developing policies/procedures, in training)?

2.b. What did you find helpful (e.g. general content, case studies, resources)?

2.c. What could be improved (e.g. content, format)?

- ☐ No

2.d. If no, how might you use it?

3. Which of the following best represents your organization? (please select one)
    - ☐ Community Hospital
    - ☐ Academic Teaching Hospital
    - ☐ Specialty Hospital (please specify):
    - ☐ Other (please specify):

4. Which of the following best describes your role:
    - ☐ Senior Executive
    - ☐ Advanced Practice Nurse / Nurse Practitioner
    - ☐ Case Manager / Care Manager / Social Worker
    - ☐ Infection Prevention Practitioner
    - ☐ Nursing (including Nurse Manager)
    - ☐ Physician
    - ☐ Physician Assistant
    - ☐ Respiratory Therapist
    - ☐ Occupational / Employee Health
    - ☐ Other (please specify)

For Goal 2:

Staff are sometimes faced with questions regarding the use of respiratory protection such as “should visitors wear respirators when they are in airborne isolation units even though they have not been fit-tested” and “should staff exposed to surgical smoke in the OR wear respirators if they have not been fit tested?” For the questions below, think of your experience when caring for patients for whom respiratory protection is necessary.

1. Please describe any clinical situations in which you’ve encountered questions regarding proper use of respiratory protection.

2. Which of the following best represents your organization? (please select one)

    - ☐ Community Hospital
    - ☐ Academic Teaching Hospital
    - ☐ Specialty Hospital (please specify):
    - ☐ Other (please specify):

3. Which of the following best describes your role: Need to be able to check more than one

    - ☐ Senior Executive
    - ☐ Advanced Practice Nurse / Nurse Practitioner
    - ☐ Case Manager / Care Manager / Social Worker
    - ☐ Infection Prevention Practitioner
    - ☐ Nursing (including Nurse Manager)
    - ☐ Physician
    - ☐ Physician Assistant
    - ☐ Respiratory Therapist
    - ☐ Occupational / Employee Health
    - ☐ Other (please specify)

As mentioned during the TAP call in January, we are asking our experts to reach out to professional associations with whom they are affiliated. If I recall correctly, you indicated a willingness to reach out to ACOEM. We are planning to have the revised questions and updated web page operational by April first so we can kick-off the outreach around that time.

ACOEM members are important stakeholders. We know there is a conference coming up in late April. We are creating some flyers/informational cards about the project and wondered if you would be willing to help distribute them at the meeting. Also, we are developing a couple sentences for posting on websites or sharing on listservs around the time the website is live. May we send you the brief description for you to ask ACOEM to help get the word out using their preferred communication mechanism? We can tailor the description as needed. Or perhaps you can bridge an introduction to ACOEM staff and we can follow-up with communications from there. Whatever you think is best.

Thank you so much……

Questionnaires (for posting on website)

For Goal 1

As part of a new project entitled *Hospital Respiratory Protection Programs: Usefulness of Resources and Informational Gaps*, we are gathering information regarding the usefulness of:

- The OSHA toolkit *Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators,* and
- The Joint Commission monograph, *Implementing Hospital Respiratory Protection Programs: Strategies from the Field*.

Please take a few minutes to answer the following questions, your responses will remain anonymous unless you request follow-up.

1. Have you used the OSHA toolkit?
   - ☐ Yes

     1.a. If yes, please describe how you have used it (e.g. in developing policies/procedures, in training)?

     1.b. What did you find helpful (e.g. general content, evaluation checklist, templates)?

     1.c. What could be improved (e.g. content, format)?

   - ☐ No

     1.d. If no, how might you use it?

2. Have you used The Joint Commission monograph?
   - ☐ Yes

2.a. If yes, please describe how you have used it (e.g. in developing policies/procedures, in training)?

2.b. What did you find helpful (e.g. general content, case studies, resources)?

2.c. What could be improved (e.g. content, format)?

☐ No

2.d. If no, how might you use it?

3. Which of the following best represents your organization? (please select one)

- ☐ Community Hospital
- ☐ Academic Teaching Hospital
- ☐ Specialty Hospital (please specify):
- ☐ Other (please specify):

4. Which of the following best describes your role: (please select one)

- ☐ Senior Executive
- ☐ Advanced Practice Nurse / Nurse Practitioner
- ☐ Case Manager / Care Manager / Social Worker
- ☐ Infection Prevention Practitioner
- ☐ Nursing (including Nurse Manager)
- ☐ Physician
- ☐ Physician Assistant
- ☐ Respiratory Therapist
- ☐ Occupational / Employee Health
- ☐ Other (please specify)

For Goal 2:

Staff are sometimes faced with questions regarding the use of respiratory protection such as “should visitors wear respirators when they are in airborne isolation units even though they have not been fit-tested” and “should staff exposed to surgical smoke in the OR wear respirators if they have not been fit tested?” For the questions below, think of your experience when caring for patients for whom respiratory protection is necessary.

1. Please describe any clinical situations in which you’ve encountered questions regarding proper use of respiratory protection.

2. Which of the following best represents your organization? (please select one)

   - ☐ Community Hospital
   - ☐ Academic Teaching Hospital
   - ☐ Specialty Hospital (please specify):
   - ☐ Other (please specify):

3. Which of the following best describes your role: (please select one)

   - ☐ Senior Executive
   - ☐ Advanced Practice Nurse / Nurse Practitioner
   - ☐ Case Manager / Care Manager / Social Worker
   - ☐ Infection Prevention Practitioner
   - ☐ Nursing (including Nurse Manager)
   - ☐ Physician
   - ☐ Physician Assistant
   - ☐ Respiratory Therapist
   - ☐ Occupational / Employee Health
   - ☐ Other (please specify)

If you would like us to contact you to discuss any clinical questions / challenges regarding respiratory protection, please provide the following information:

Name: _____

Phone number (best number we can reach you at): _____

Or email: _____

Goal Two: Issues related to preventing healthcare worker exposure to airborne infectious pathogens (verbatim language and rephrasing)

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Emerging pathogens (novel or unknown pathogens) (1a)	Preparing for emerging pathogens - Ebola is an example. There were differences in types of PPE to use / **How do you know which type of PPE (or should it be respirators) to use when trying to be prepared for emerging pathogens**	Clinical Conundrum
2		Appropriate mask to use during novel viral outbreaks / **What is the appropriate mask to use during novel viral outbreaks?**	Operational Issue
3	Known pathogens sometimes requiring respiratory protection (1b)	Based on recommended infection prevention guidance, what type of respiratory protection should healthcare workers use with a suspected case of measles? / **What type of respiratory protection should healthcare workers use with a suspected case of measles?**	Clinical Conundrum
4		Uncovered zoster in healthcare worker: A healthcare worker performed clinical duties in several areas including ICU and outpatient surgery for several days with localized zoster of face that was not covered. Zoster was NOT disseminated and employee not immunosuppressed. How much threat of transmission to patients or staff would there be in such situations? / **In what circumstances would uncovered zoster require the use of respirators?**	Clinical Conundrum
5		Regarding a HCW with uncovered Zoster; would face to face contact, being in enclosed airspace be significant exposure or only direct contact? Would you do a line list and notify patients who were exposed and furlough and other non-immune healthcare workers exposed to this employee? / **What is considered an exposure to uncovered zoster?**	Clinical Conundrum
6		What type of protection is needed for measles, especially with children, family members in the room? (re: measles outbreak in Minnesota Children's) / **What type of respiratory protection is needed for family members or visitors of measles patients?**	Clinical Conundrum

7		Trying to determine if a patient with shingles needs airborne precautions per CDC HICPAC guidelines for disseminated shingles or in the presence of immunosuppression. / **Is shingles considered a condition for which airborne precautions are necessary?**	Operational Issue
8		Is there a clear definition of what constitutes face-to-face exposure (e.g., face-to-face, within a few feet)? This would help clarify who needs to be fit tested. / **What constitutes a face-to-face exposure (number of feet) which would require use of respirators?**	Operational Issue
9		Should N95 respirators be used for influenza? The requirement for fit testing is burdensome to fit a whole hospital staff. / **Are respirators required for influenza?**	Operational Issue
10		It is really necessary to use an N95 in cases of PLEURAL TB? / **Are respirators necessary for pleural TB?**	Operational Issue
11	Known pathogens sometimes requiring respiratory protection -Lack of scientific (1bi)	Toe nail tech who works with patients who have a fungal infection of the feet - should they wear N95's? / **Are respirators required for podiatry procedures involving fungal infections of the feet?**	Clinical Conundrum
12		Use of respiratory protection in pediatric and neonatal settings. for example: Does a neonate produce an "effective cough" that could create infectious aerosol? also the CDC guidance documents are 10 years old and designed for adult situations, in pediatrics we see patients co-infected with RSV and Influenza (or other viral etiologies) that require contact and droplet precautions. / **Are requirements for use of respirators different for pediatric and neonatal patients?**	Clinical Conundrum
13		Patient with clinically suspected Norovirus who has violent vomiting with or without diarrhea. Should healthcare worker in the same room or room connected with the bathroom wear PPE that protects against aerosols? / **Are there situations in which Norovirus can become aerosolized (violent vomiting) and is respiratory protection needed?**	Operational Issue

14		Patient with clinically suspected Norovirus who has violent vomiting with or without diarrhea. If patient has vomiting or diarrhea in toilet and toilet is flushed, is there increased risk for aerosol exposure and need for respiratory protection? / **Are there situations in which Norovirus can be aerosolized (diarrhea)?**	Operational Issue
15	Know pathogens always requiring respiratory protection (1c)	There are challenges with TB and family, visitors when child's TB source is likely family. / **If family member is likely source of TB, what RP is required?**	Clinical Conundrum
16		When ruling out MERS what type of mask is required (N95 vs surgical mask) / **What type of RP is required for ruling out MERS?**	Operational Issue
17		TB in pediatric patients (child < 3) does one really need an N95? **In TB pediatric and neonatal patients, are requirements for use of respirators different from adult patients?**	Operational Issue
18	Known pathogen not requiring respiratory protection (1d)	Pt diagnosed with Rhinovirus **What respiratory protection is required for rhinovirus?**	Operational Issue

Goal Two, Table 4. Issues related to procedures

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Aerosol generating (2a)	We do not have a negative air flow room for bronchoscopies. All patients must have 3 negative AFB smears before they can have the procedure. Are staff required to wear an N95, no matter what, because it is an aerosol generating procedure? **/ Do you always need RP for bronchoscopies?**	Clinical Conundrum
2		Use of PAPR's during bronchoscopies, physicians feel this is a nuisance, they are invincible and therefore refuse to use them **/ How to deal with staff/clinicians who refuse to wear PAPRs during bronchoscopies?**	Operational Issue
3		I am an ICU nurse at Emory University Hospital and was on the team that took care of our Ebola virus disease patients. During that time, I tried to research aerosol generating procedures that were not physician based and found very little that had been documented. Yet my experience with these patients, and to a less dangerous extent all of my patients, is that the intimate level of care required at the bedside puts us in great danger. The passing of large volumes of liquid stool and flatus sometimes occurs while we are turning, cleaning or assisting patients. Caregivers are often within inches of patients when this occurs. We are also likely to be the professional who obtains a respiratory sample for a patient. This involves inserting a swab into the nose of a patient approximately back to their ear. You can imagine patients don't enjoy this and coughing, sneezing and even vomiting are very common occurrences. Again, intimate contact during which patients are likely to produce droplets and close enough to be in danger of contamination with droplets of any size. I would LOVE to be part of making nursing and all bedside care safer! **/ Should one wear RP when obtaining nasal swabs, cleaning, turning, assisting while providing general bedside care?**	Operational Issue

4		What type of respiratory protection should a pulmonologist use during bronchoscopy procedures? **/ What respiratory protection is required for bronchoscopies?**	Operational Issue
5	Surgical smoke (2b)	Based on recommended infection prevention guidance, what type of respiratory protection should be used when performing laser procedures on patients with HPV? **/ What respiratory protection is required for laser procedures on patients with HPV?**	Clinical Conundrum
6		What type of respiratory protection does staff use when exposed to surgical smoke? **/ What respiratory protection is required for staff exposed to surgical smoke?**	Clinical Conundrum
7	Procedures performed in surgical suite (2c)	One issue that is coming up when trying to implement a more robust respiratory protection program at my Academic institution, is what to do with sterile surgical fields and employees who fail N95 fit testing. We have some ideas and work arounds, but is there good guidance on this? **/ What to do with staff who fail fit testing but need respiratory protection in a surgical field?** **What respiratory protection is required for surgical procedures (or while maintaining a sterile surgical field) for employees who can't wear an N95.**	Clinical Conundrum
8		Regular PAPR's in the surgical suite, they are not approved for the OR, there is a lack of proper guidance/confusion regarding use of PAPR's in the OR **/ What respiratory protection can be used in the OR when N95s not an option?**	Clinical Conundrum
9		If you cannot be fitted for an N95 mask, what is the acceptable respiratory protection to use in an OR? **/ What respiratory protection can be used in the OR when N95s not an option**	Clinical Conundrum
10		Can you use elastomeric half-face respirators in the operating room? **/ Can elastomeric half-face respirators be used in the OR?**	Clinical Conundrum

11	Procedures performed outside the surgical suite (2d)	What type of respiratory protection to use when in MRI suite; PAPR's cannot be used. Can all N95's be brought into the MRI suite? **/ What respiratory protection can be used in the MRI suite?**	Clinical Conundrum
12		Which N95 respirator mask do you use in the MRI suite? None of 3Ms's products work as they all have ferrous metal components. **/ What respiratory protection can be used in the MRI suite?**	Clinical Conundrum
13		Often in the OR there are people either not fit tested or who have failed N95 fit testing and what to do there. Same with our air med transporting group. **/ What respiratory protection is required for air med transporting?**	Operational Issue

Goal Two, Table 5. Issues related to Hazardous medications and chemicals

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Aerosolization compounding and/or administration (3a)	[We] had a case where aerosolized pentamidine was used, and there was a concern of people that were pregnant using this. The agreement that was made was if someone is to comply to use more than an N95, then they should have PAPR's available. Can a pregnant HCW work with aerosolized pentamidine and if so is N95 enough? **/ What respiratory protection is needed for all staff working with aerosolized pentamidine?**	Clinical Conundrum
2		Our facility is going to begin using BCG Live vaccine for treatment of bladder cancer. I can find very limited information regarding how to protect our employees who are administering this medication. It will be mixing in our pharmacy under a hood however, it will be administered as a bladder irrigation by our nurses. Does anyone have a policy for the administration of this agent and what PPE is required both for mixing and administering since it is a live virus? **/ What respiratory protection is needed when working with BCG live vaccine?**	Clinical Conundrum
3		What type of respiratory protection to use when working with hazardous drugs? / **What type of respiratory protection should be used when working with hazardous drugs?**	Clinical Conundrum
4		USP-800 requirements have a separate set of challenges when it comes to RP since they recommend the use of different respirators depending on whether staff are working with hazardous drugs in powder or liquid form. How do you manage having various type of respirators and staff education? **/ The USP requirement recommends different respirators for whether the drugs are in powder (regular N95) or liquid form (surgical N95) which makes education difficult?**	Clinical Conundrum

5		Use of respiratory protection in pediatric and neonatal settings. Also on occasion we will see children with RSV infection needing Ribavirin therapy and the question of appropriate respiratory protection arises. **/ Are respiratory protection requirements different when working with pediatric or neonatal populations?**	Operational Issue
6		We aerosolize several types of medications that made staff concerned about the safety to health care workers. This includes Gentamycin, Amikacin, Tobramycin, Pentamidine, Abelcet, Flolan, Lasix and others. We had the university environmental safety department study particle suspension, which showed a 20 minute sustained suspension. We bought scavenger units with airborne pathogen level air exchanges. We also bought a scavenger unit with a tent for aerosolized Pentamidine and Ribavirin (used occasionally for lung transplant patients). I have seen a couple of therapists develop severe airway reactive response to aerosolized Pentamidine. After contacting NIOSH I decided no to use a scavenger with Flolan. We started tis 5 years ago and have not yet had any issues. **/ What type of respiratory protection is appropriate when using aerosolized medications?**	Operational Issue
7		What type of protection is recommended when a healthcare worker is delivering aerosolized antibiotics to a patient. What about other aerosolized medications such as albuterol, racemic epinephrine and hypertonic saline? **/ What type of respiratory protection is appropriate when using aerosolized medications?**	Operational Issue
8	Handling and spill containment (3c)	Hazardous drugs and the use of respiratory protection. The chemo spill kits have an N95 in them but it may not be the same one that the facility uses, do you fit test staff for multiple types of N95? **/ What do you do when the respirator from the spill kit is different than the one staff is fit-tested on?**	Operational Issue

9		Respiratory protection around hazardous drugs (chemo in particular). Current chemo spill kits have an N95 inside but it may not be the same the facility is using **/ What do you do when the respirator from the spill kit is different than the one staff is fit-tested on?**	Operational Issue
10	Cleaning, disinfecting and sterilizing agents (3.5a)	Glutaraldehyde and staff use of respiratory protection? **/ What type of respiratory protection is needed for staff using glutaraldehyde?**	Operational Issue
11		Is this the appropriate protection for this hazard; using it for nuisance hazard (when cleaning floors); people misapply respirator for wrong reason **What type of respiratory protection is needed when handling hazardous cleaning materials?**	Operational Issue
12		There is lack of knowledge on situations with chemicals that might call for the use of respirators. Especially cleaners that are being sprayed **What type of respiratory protection is needed when handling hazardous cleaning and disinfection materials?**	Operational Issue
13	Other (e.g. formaldehyde?) (3.5c)	Which respirator should you use with an oily aerosol? **What type of respiratory protection is needed when exposed to oily aerosols?**	Operational Issue

Goal Two, Table 6. Equipment

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Equipment – Eye protection (4a)	Appropriate selection and use of N95, what about when you need eye protection? Staff are more likely to grab a surgical mask with a face shield then they are to put on an N95 and use goggles. **/ How do you use eye protection with N95s?**	Clinical Conundrum
2	Equipment – Respirator (4b)	Flight staff and the use of respiratory protection. Can they wear N95 along with other equipment they are required to use during flight (e.g., helmets) **/ How do you wear N95s with helmets and other equipment required for flight staff?**	Clinical Conundrum
3		Can EHFR cartridges be decontaminated? **/ Can EHFR cartridges be decontaminated?**	Clinical Conundrum
4		It is hard for patients to understand healthcare workers when they are wearing PAPR's. Is there a better way to provide respiratory protection to HCW's and patient feels more comfortable communicating with them? **/ What respirators can be used in lieu of PAPRS so that patients can better communicate with the HCW and so as not to scare the patients?**	Operational Issue
5		Trying to understand how to contain secretions, decrease exposures and provide safety for HCW's and other patients. How can we improve health of HCW and keep them comfortable while working? **/ What equipment is needed to better protect the health and safety of HCWs?**	Operational Issue
6		N95 can have heat escaping and glasses fogging and they are uncomfortable to use **/ How do you overcome challenges or wearing N95s with (e.g. heat, discomfort, glasses fogging, awkward) especially with prolonged time periods?**	Operational Issue

7		In ICU and ER it can be a problem for staff to wear PAPRs in an emergent situation or when they need to hear really well. One issue is that some of them don't have really sensitive stethoscopes or the throw away ones in the isolation rooms aren't very sensitive. **/ What respiratory protection to wear in emergency situations?**	Operational Issue
8		Any type of facial hair and fit-testing/use of respiratory protection **/ What should organizations do when facial hair prevents an employee from passing a fit test?**	Operational Issue
9		Wearing them correctly. I think that with just routine use, people have difficulty with glasses and wearing them appropriately. And then, just the heat and they don't tolerate it for very long, which we saw a lot of demonstration of that when we were dealing more with Ebola, and we still do when we do those drills. So, we use PAPR's for the dedicated team that is taking care of those patients, but an Ebola rule-out patient in the ER could be seen with a N-95, but it's just the duration of wearing it. Fortunately, I guess, in that case, they're not wearing it that long, but respiratory protection is uncomfortable to use for prolonged periods of time. **/ How to overcome the impaired visibility (fogging), heat, and / or discomfort while using N95s?**	Operational Issue
10		PAPR's are not patient friendly. They are intimidating and scary to patients, especially pediatric patients, and difficult to communicate with the patient while wearing them. It is hard to do a full exam like stethoscope exam, funduscopic exam, even using an otoscope would be hard while wearing one. **/ What respirators can be used in lieu of PAPRS so that patients can better communicate with the HCW and so as not to scare the patients?**	Operational Issue

11		Design better PPE, N95's are awkward, uncomfortable, leak test is cumbersome to check and you can't use eye protection with N95; therefore, staff are still exposed to droplets during potential splashes/splatters **/ How to overcome the impaired visibility (fogging), heat, and / or discomfort while using N95s?**	Operational Issue
12		During Ebola outbreak staff taking care of patient had to use PAPR's (3M) and these have battery pack which is carried on the back, staff unable to tell battery life until is shuts off. **/ How to overcome the challenges associated with using PAPRS? (e.g. alerts for dead batteries)**	Operational Issue
13		PAPR motor is carried on the back and can get caught on everything, this includes the hose. **/ How to overcome the challenges associated with using PAPRS? (e.g. tangled hoses)**	Operational Issue
14		CO2 vent hose is by the wearer's chin and during certain exposures to fluids, it is possible to overcome positive pressure and get a jet of fluids up into the hose and expose user. **/ How to overcome the challenges associated with using PAPRS? (e.g. fluids/contaminants in hose)**	Operational Issue
15		PPE not designed for healthcare, it may be for industry but not for healthcare **/ How to overcome the communication and other challenges associated with PPE in clinical settings?**	Operational Issue
16		Can the expiration date of N95 respirators be extended beyond the listed date (e.g. 5 years)? **/ Can N95s be used beyond their expiration date?**	Operational Issue

17		Healthcare workers who have facial hair due to religious reasons, can they be made to shave, should they automatically get a PAPR? **/ Can healthcare workers with facial hair be made to shave so they pass a fit test?**	Operational Issue
18		Has anyone converted to almost all PAPR use versus N-95s? **/ What are the pros and cons of using only PAPRS?**	Operational Issue
19		Can you ever re-use N95s? **/ Can you ever reuse N95s?**	Operational Issue
20	Equipment – Environment (4c)	Room design and location of where things are placed in the room make it difficult for staff to work with all PPE required. Staff need to enter the room to shut off an alarm. **/ How to overcome structural facility challenges when using respiratory protection?**	Operational Issue
21		There should be a room control panel for controlling alarms such as IV controls, etc. this way staff can be farther than 6 feet from the patient and be able to respond quickly **/ How to overcome structural facility challenges when using respiratory protection?**	Operational Issue
22		Room ventilation, with air flow, flow patterns that reduces risk to patient. Work on changing design and biomedical engineering. **/ Are there better ventilation designs and airflow systems to better protect workers?**	Operational Issue
23		Fumes in the bronchoscopy lab, staff started to get sick and they needed to close the lab and have air testing done. They discussed with safety officer to see if N95 masks were appropriate to wear for the fumes; there was concern that PAPR's wouldn't help because staff had asthma and couldn't wear mask for a significant period of time. **/ How do you handle fumes of unknown origin?**	Operational Issue

24	Equipment – Supply shortage (4d)	Is there really enough supply in a national stockpile in the case of a pandemic? **/ Are there sufficient supply models for a pandemic?**	Operational Issue

Goal Two, Table 7. Regulatory

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Regulatory – Fit testing (5a)	The other obstacle is that doing fit testing on every single person for N95, it goes back again on the transmission and what constitutes an exposure. Risk stratification - how many feet or what is face-to-face exposure. Because our policy has face-to-face, it's so vague, but when we have a TB exposure the policy states that the healthcare worker needs to be with the patient for an hour or between three to six feet. Are there better stratification tools and definitions to determine who all needs to be fit tested? **/ How should my organization conduct a risk assessment to determine which staff need to be fit tested. Or how does an organization know who should be fit tested?**	Clinical Conundrum
2		Main question we encounter is which individuals/groups in hospital should be included in respiratory protection program **/ How should my organization conduct a risk assessment to determine which staff need to be fit tested. Or how does an organization know who should be fit tested?**	Operational Issue
3		LIP's who are not employed by the facility for example physicians who go to various hospitals that may have different types of N95's. Who is responsible for fit testing them and managing them? **/ Who is responsible for managing and fit testing non-employees?**	Operational Issue
4		Do EHFRs require fit-testing? **/ Do EHFRs require fit testing?**	Operational Issue
5	Regulatory – Medical Clearance (5b)	The questionnaire for the medical clearance is very long and time consuming for the very low yield of people found to be exempt from use **/ Can the medical clearance requirement be revised?**	Operational Issue

6		Medical clearance - it is very rigorous and in my 16yr experience only 2 people were identified as not being able to use N95 based on medical clearance. Most cases are found after they are cleared and they start using the respirators **/ Can the medical clearance requirement be revised or modified?**	Operational Issue
7	Regulatory – Other (5c)	Are non-hospital settings expected to have respiratory protection programs (e.g. dialysis centers)? **/ Are RPPs required in non-hospital settings?**	Clinical Conundrum (out of scope for project)
8		Do we need a respiratory protection program (and fit testing) for free standing ambulatory clinic (as opposed to hospitals)? **/ Are RPPs required in non-hospital settings?**	Operational Issue

Goal Two, Table 8. Other

	Subcategory	Issue verbatim **/ Issue restated**	**Clinical Conundrum or Operational Issue**
1	Other – Not directly related to patient care (e.g. transport) (6a)	What type of PPE should be used for both the patient and staff when transporting an active TB to X-ray? **/ What type of respiratory protection is required for staff and transport of active TB patients?**	Operational Issue
2	Other – Not health care worker related (e.g. visitors, patients) (6b)	[How to protect visitors] entering rooms in which patients with suspected or confirmed infectious TB disease are being isolated? **/ What type of respiratory protection should be used with visitors of TB patients?**	Clinical Conundrum
3		What type of respiratory protection do visitors wear? **/ What type of respiratory protection should visitors wear?**	Clinical Conundrum
4		What type of respiratory protection to use for immunocompromised/suppressed patient, what does the patient and visitor use. **/ What type of respiratory protection is needed for immunocompromised patients and their visitors?**	Clinical Conundrum
5		Patients and families will see staff enter rooms and use respirators but when patient is taken out of the room families/visitors see patient wearing a surgical mask, there should be a way to manage this so people understand what's happening and why the difference. **/** **Visitors see staff wearing respirator…** **How can I educate patients and families about use of respiratory protection?**	Operational Issue

6		Literacy is big issue for pts and families re use of precautions **/ How can I educate patients and families about use of respiratory protection?**	Operational Issue
7		Construction contractors and compliance with respiratory protection **/ Who is responsible for managing and fit testing construction workers?**	Operational Issue
8		Clarification needed regarding patient having had TB and enters facility, whether they have something else that requires a respirator for a staff member to wear. Many times staff just put masks on the person that's infected, and that's difficult because they may not be breathing really well to begin with. **/ What is the proper protocol to follow when a patient with confirmed TB enters facility?**	Operational Issue
9	Other – HCO specific practice related (6c)	Mostly during code situations where staff are all rushing in the room with equipment **/ How does an HCO handle respiratory protection in emergency situations?**	Operational Issue
10		Good afternoon, Our hospital recently had JCAO visit and were cited for wearing surgical masks around the neck in the cardiac cath lab. I am wanting clarification regarding is it a JCAO policy to wear hat and mask during procedures in the cath lab or is it a hospital policy? Also, are individual personal scrub hats allowed? Thank you! **/ Does TJC require hats and masks in the cath lab?**	Operational Issue
11		Training and competency of staff that perform fit testing. Departments don't always allow staff the required amount of time needed for training. / How to ensure that staff are appropriate trained to conduct fit testing?	Operational Issue

12		Healthcare workers (e.g., LPN's or nurse aides) when they don't have the PPE they need at bedside or prior to entering the room they don't feel comfortable letting manager's know that the PPE is not available and end up entering room without PPE, placing themselves at risk **/ How to ensure that staff feel comfortable expressing concerns to supervisors re: availability or use of respiratory protection?**	Operational Issue
13		Facial hair and fit-testing - respirators don't work when a person has any type of facial hair, and yet some occupational health nurses go through the fit testing and mark them off as being fit tested. **/ How to handle occupational health staff who improperly or incorrectly manage fit testing process?**	Operational Issue
14		Employers don't have policies or there is a lack of adherence to policies regarding fit testing employees with facial hair. **/ How to handle staff who do not adhere to RPP policies and procedures or what to do when no policies are available**?	Operational Issue
15		Front line staff not empowered to initiate respiratory protection when needed **/ How to ensure that staff feel comfortable expressing concerns to supervisors re: availability or use of respiratory protection?**	Operational Issue
16		Staff sometimes do not understand how crucial fit and fit checks are for situations where airborne pathogens are **/ How to educate staff so they understand the risks of airborne hazards**	Operational Issue
17		Healthcare workers not following proper order for donning and doffing of PPE **/ How to handle staff who do not adhere to RPP policies and procedures?**	Operational Issue

18		Working in an ICU, when staff are in a hurry to answer alarms or respond to patient needs, RN's act in what is in the best interest of the patient and not necessarily what is best for them. They may hold a mask up to face and over nose and mouth, they don't have the time to put on the mask and do the seal check, etc. **/ How to ensure adherence to RPP policies and procedures during busy or resource intensive times?**	Operational Issue
19		We had a HCW that works in the ICU recently employed. At screening in Employee Health Services, she was found to be varicella non-immune by titer and no history of exposure. She refused vaccination (because she knew she was pregnant, but didn't want us to know at hire). Still, she was put on duty and within a few weeks, was exposed to shingles. Our policy currently states that any employee may decline any vaccination (flu vaccination rate is 84%). This was discovered on IPC case finding review of the exposure, and the employee was taken off work until day 21 (paid time off). Leadership found this understandably distasteful, and risk management noted that we put this HCW intentionally in harm's way (since EHS knew she was titer negative, refused the vaccine and went to work in the ICU where her exposure risk was, oh, about 100%). We would be at risk if she became ill, had fetal loss, fetal malformation or if one or both of them had died. Fortunately, she did not become ill. We tried to put in the policy that if you become ill with a vaccine preventable illness, that you could not get workman's comp, short term disability or other payment, but would have to use PTO or time off without pay. But that might violate employment law. The obvious solution is to make vaccination a condition of employment. To that end, I would like to know what institutions in the Mid-west have gone that route? Clearly, we have to address that a pregnant woman was allowed to work in the ICU without explaining the risks prior to employment. Who has vaccination a condition of employment? **/ Can vaccinations be a condition of employment?**	Operational Issue