Respiratory Protection Program Implementation

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1

Objectives

After this presentation, the learner will be able to:

- Determine who needs to use an N95 respirator.
- Describe the larger requirements of a respiratory protection program & where to find them.
- Perform a qualitative fit test of an N95 respirator per the OSHA Respiratory Protection Standard, 29 CFR1910.134.
- Recognize challenges that might arise when conducting fit testing.

2

Audience Feedback

How it your respiratory protection program?

- ❑ Awesome, we invest in the safety of our personnel & our respirator users feel safe
- ❑ Awesome, we have an external vendor handle it
- ❑ Emerging, ugh, it's a lot of work
- ❑ Emerging, not sure we're doing everything right
- ❑ Struggling among other demands
- ❑ Struggling, respirator users think it's stupid
- ❑ Others?

N95: The typical healthcare respirator

- N means "nonoil". No oil-based particulates are present.
- Masks ending in a 95 have 95% efficiency in removing 0.3 µ particles.
- Masks ending in 99 have 99% efficiency.
- Masks ending in 100 are 99.97% efficient and that is the same as a high-efficiency particulate air (HEPA) quality filter.
- The filtration material on the mask is an electrostatic nonwoven polypropylene fiber.

Reference: Sureka, B., Garg, M. K., & Misra, S. (2020). N95 respirator and surgical mask in the pandemic of COVID-19. *Annals of thoracic medicine*, *15*(4), 247–248. https://doi.org/10.4103/atm.ATM_264_20
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7720739/

Warning! Too much jargon…

- Apologies in advance:
- OSHA: Occupational Safety and Health
- CDC: Centers for Disease Control and Prevention
- RPP: Respiratory Protection Program
- N95: type of respirator common in healthcare
- FFR: Filtering Facepiece Respirator
- PAPR: Powered Air Purifying Respirator
- APR: Air Purifying Respirator (ie.elastomeric)
- SAR: Supplied Air Respirator

Filtering Facepiece Respirators

- Multiple
- Brands
- Sizes (often reg & small)
- Styles
  - Molded
  - Trifold
  - Duckbill

Photo courtesy of UNMC HEROES

How do you prioritize fit testing?

Risk Assessment

- Will the person be exposed to people isolated in airborne precautions in a healthcare facility?
  - Caregiving
  - Cleaning
  - Food service
  - Maintenance
- Is the person performing or observing an aerosol-generating procedure with a person, tissues, or biological materials (i.e. centrifugation, autopsy, dental work)?

What is the purpose of fit testing?

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10

Why do we fit test?

- To ensure the respirator model is a good fit for the wearer (like trying on a shoe).
- This will prevent fine aerosols containing harmful contaminants from entering the wearer's breathing zone (seal matters).
- It is part of the Respiratory Protection Program.

11

What is a respiratory protection program?

- A written respiratory protection program must include:
  - Medical evaluation
  - Training of the user
  - Fit testing
- Example: At UNMC the respiratory protection program is administered by Environmental Health and Safety.
- OSHA Requirement under 29 CFR 1910.134

More on Medical Evaluation

- Guidance, Training
  - Respiratory Protection - Overview | Occupational Safety and Health Administration (osha.gov)
- Required elements for medical evaluation:
  - https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppC
  - Appendix C says “health care professional” will review it.
- Other sources note Physician or licensed health care professional (PLHCP).
- Many PLHCPs can review the evaluation, but if follow up is needed, a physician or advanced practice provider should provide oversight for any follow up testing or orders.

Med Eval Follow Up

- A follow-up medical examination is required if certain questions are answered "yes" on the questionnaire, or the initial examination warrants it. Further evaluations are needed when any of the following occurs:
  - An employee reports medical symptoms that are related to the ability to use a respirator.
  - A PLHCP, supervisor or program administrator informs the contractor that the employee needs reevaluation.
  - Information from the RPP, including observations made during fit-testing and program evaluation, indicates need for re-evaluation.
  - There is an increase in the physiological burden placed on the employee from temperature changes, changes in PPE, etc.
- This is directly quoted from OSHA.

Fit Testing vs. Seal Checking

FIT TEST

- Tests the seal between the respirator's facepiece and your face.
- Annually or with significant weight change, surgery, or scarring.
- 2 Kinds:
  - Qualitative – taste/smell
  - Quantitative – instrument measures leakage

SEAL CHECK

- Is the respirator properly seated to the face or does it need adjustment?
- Feel around edges of respirator, breathe in and out, should not feel air going around respirator.
- Done each time a respirator is used.

Qualitative vs. Quantitative

Photo courtesy of 3M:

Photo courtesy of TSI:

16

So…you are fit tested to a 3M 1860 N95. You only have access to a Kimberly Clark N95. Do you need to be fit tested to the new model?

Yes or No?

17

How do you conduct a fit test?

Preparation

Participants must:

- Complete health history, review educational videos, and be medically approved for fit test.
- Be clean shaven at mask edges. Even stubble will impact seal.
  - https://www.cdc.gov/niosh/newsroom/feature/beardsinfographic.html
- No smoking, flavored drinks, or food at least 30 minutes before qualitative fit test.

2 Part Qualitative Test

Part one: Sensitivity or "Taste Test"

Determine how much sweet solution is needed to taste.

If nothing tasted within 30 puffs, try bitter solution.

Part two: Fit Testing

Dosing will depend on Sensitivity test (see fit testing squeeze chart).

Have person don respirator correctly.

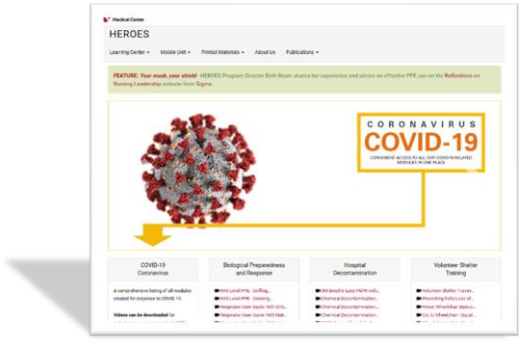
Fit Testing Squeeze Chart

# of squeezes in Part 1	# of squeezes for initial dose	# of replenishing squeezes every 30 secs
1-10	10	5
11-20	20	10
21-30	30	15

**If more than 30 squeezes are required with sweet solution, change to the bitter solution.

This will be your dosing for the solution as the participant works through 7 exercises.

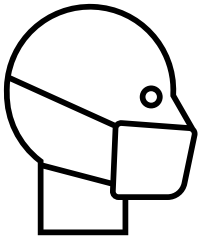
Donning the respirator correctly



- HEROES Media Resources:
  - N95 Donning and Doffing https://youtu.be/BnXN1OD6VRw

Fit Testing – Seven Exercises

- One Minute Each:
  - Breathe normally
  - Breathe deeply
  - Head side-to-side
  - Head up and down
  - Talking
  - Bend over at waist
  - Breathe normally



Pass or Fail

Pass:

Completes all exercises without tasting the solution.

When test is complete and hood in place, allow the person to lift the lower part of the respirator so they can experience the "taste" of what the respirator protected them from.

Fail:

Stop test if fails during exercises.

Rinse mouth/face/hands, refit the same respirator.

If fails second time, consider a different respirator.

What challenges might arise as you conduct a fit test?

Determining 1st respirator to try.

- Small or narrow faces may require smaller respirators.
- Ensure correct placement of straps.
- DO NOT CROSS STRAPS.
- Press nose clip to face instead of pinching.
- Ensure seal check is done.
  - Breathe in and out deeply. Feel for leaks. Respirator may collapse and inflate slightly as you breathe, but seal at edges should be maintained.
  - Time often leads to better seal, settles into tissues.

What about all that solution?

- The room can become oversaturated from repeated testing.

- You may need to identify 2 testing locations and alternate areas OR wait a period of time before another session starts and allow the room to ventilate. Fans may also help.

Issues with fit testing.

- Nebulizers can clog.
- Wash them out with warm water. May need to use provided needle to clear crystals/debris.
- Do not overfill nebulizers.
- Hoods/respirators can make participant claustrophobic (Focal point helps).
- What if they fail all the available respirators?
  - Consider quantitative fit test.
  - Inform Respiratory Protection Program coordinator.
  - Seek out another respirator model or consider PAPR.

Completing the test:

- Document the date of test, evaluator, any failed test, and respirator that passed the test.
- Ensure that the participant knows exactly which respirator that they are to wear. Give them both brand and type. Consider giving people a record of their test result (sticker or business cards work nicely).
- Best storage is paper sacks (air flow).
- Clarify they understand the critical safety behaviors for donning, doffing and limited reuse (for pandemic).

How to store your respirators

- Encourage the people you fit test to keep their paper bag with the N95 respirators in a safe place.
- Clean, dry environment. Room temperature.
- Keep the bag and respirators from being squeezed, pressed or bent. Not in book bags.
- Do not store in vehicle or area where temperatures may vary to extreme hot and cold.

Reuse

- Extended use and limited reuse are not recommended at this time.
- That can change with supply & demand.
- CDC Capacity Strategies:
  - https://www.cdc.gov/niosh/topics/pandemic/strategies-n95.html
- Respirator Reuse (HEROES Media):
  - https://www.youtube.com/watch?v=Cfw2tvjiCxM

Quantitative Fit Testing

- Was less popular during pandemic as N95 respirator is destroyed in process.
- Test is more accurate as the fit is measured by an instrument.
  - Instrument must be calibrated & maintained.
  - Instrument is more expensive than qualitative components.
  - May be cost effective for larger institutions (faster).
  - Some agencies may have instruments to share.
- Test process is main difference in the requirements discussed.

Review Objectives

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- Hospital Respiratory Protection Program Toolkit:
  - Hospital Respiratory Protection Program Toolkit (osha.gov)
- COVID-19 Resources
  - Site Index | COVID-19 | CDC

Questions?

Easy peasy, right?

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