

Respirator Use & Fit Testing for Maui County Health Volunteers

Plus! Fit Test & AED Demos

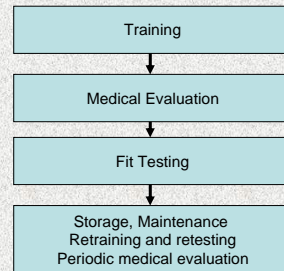


MCHV Training April 28th, 2010

Presented by: Rachel Heckscher & Selene LeGare

Respiratory Protection Program

Per OSHA*...



*Occupational Safety and Health Administration

Training Objectives

- Why respirator is necessary
- What respirators can and can't do
- How to get a proper fit
- Demos – fit testing, AED

Definitions

OSHA — Occupational Safety and Health Administration

Donning — Putting on (a mask, respirator, hat, etc.)

Doffing — Taking off (a mask, respirator, hat, etc.)

Tachycardia — rapid heartbeat (>100 bpm)

Fibrillation — rapid and irregular heartbeat

Defibrillation — correcting irregular heartbeat by delivering an (intentional) electrical shock (using a defibrillator)

Precautions

Level:	Protects you from Exposure to:
Standard	Bodily fluids*
Contact	Skin, surfaces
Droplet	Large particles
Airborne	Small particles



Droplet PPE (Surgical Mask)

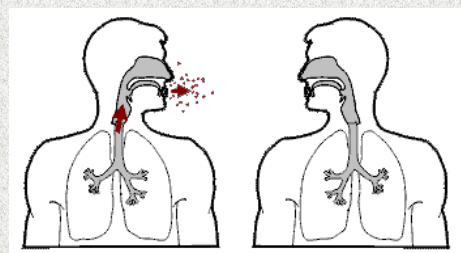


Airborne PPE (N95 Respirator)

*Note: MCHV requires all members to complete a separate training on Bloodborne Pathogens

Respiratory protection is needed

to help protect you from **droplet** and **airborne** pathogens



Respiratory protection is needed

to help protect you from **droplet** and **airborne** pathogens

- Larger particles, >5 microns
- Coughing, sneezing, talking → recipient's eyes, nose, mouth
- Usually travel less than 3 ft. before falling, but can go up to 6 or 10 feet
- Generally: flu viruses, rhinovirus, strep throat, meningitis, SARS, smallpox

- Small infectious particles (<5 microns)
- Stay suspended in the air
- Can travel long distances
- Examples – TB, measles

Surgical masks are adequate

to protect you from **pathogens transmitted by droplet.**

But respirators are necessary

for the additional protection required for **airborne pathogens.**

Think of a crowded airplane.

You are the epidemiologist on call.

Flu
Mumps
Meningitis

Droplet transmission



Active Tuberculosis
Measles

Airborne transmission

A few calls to be made, prophylactic antibiotics for a few people maybe...

No big deal.

Nightmare!

Mask vs. Respirator



Surgical Mask

- Reduces your **exposure to droplets** (protects you)
- Reduces the **particles you expel** (protects others)
- Does not seal tightly to the face (leaks around the edges)



Respirator

- Reduces your **exposure to airborne particles**
- Seals tightly to the face

Selection of Respirators

➢ Based on:



Exposure hazards

e.g., TB ward



Workplace factors (activities)

e.g., autopsy vs. examining flu patient



User factors (face shape)

➢ Additional PPE may also be needed (gloves, eye shields or goggles, gowns)

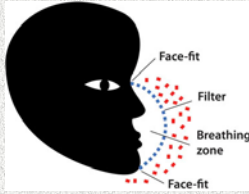


N95 Particulate Respirator

- **N** means the respirator is **Not** designed for oil
- **95** means at least 95% of particles of a certain size are filtered out



What an N-95 Can Do



- Reduces inhalation of chemicals, dust, and droplets in the air
- Filters airborne particles as small as 0.1 microns in size
- Resistant to splash and splatter

What It Can't Do



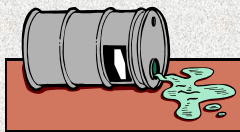
It's not SCBA gear



- If a respirator does not seal tightly to the face, airborne hazards can enter into the breathing zone
- Even if worn properly, an N95 respirator will **not totally eliminate** the risk of exposure, infection, illness or death
- Does not supply oxygen

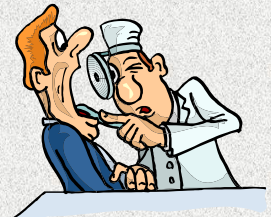
N95 respirators are not good for:

- Chemical spills or leaks
- Thick dust clouds
- Asbestos removal or paint fumes
- Any environment with a lack of oxygen (e.g. confined spaces with high levels of toxic chemicals)



Medical Evaluation

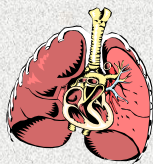
- Required *before* you wear a respirator
- Can be done by a doctor, nurse, physician assistant, but not an EMT or paramedic



Why is the evaluation required?

Because breathing through a respirator...

- Creates extra work for your body
- Can be hazardous if you have heart or lung problems



MCHV medical evaluation

- Confidential medical questionnaire reviewed by Dr. Pang (or your doctor, NP, or PA)

Fit Testing



- Some N95 respirators come in S, M, L
- Pick the best size and shape for your face. Only a secure and snug fit protects you
- Inspect the respirator for visible defects
- Stretch the elastic straps slightly

Facial Hair



- Beards, stubble, or sideburns will prevent a good seal
- **Do not** use an N95 respirator unless you are clean-shaven
- Other respirators that work with facial hair may be available (e.g. PAPR)

PAPR = Powered Air Purifying Respirator

Donning

- Use both straps
- Upper strap should be high on the head
- Lower strap below the ears and *under* any long hair
- Tighten nose clip to avoid gaps between the respirator and the skin



Positive Pressure Seal Check

With the respirator securely in place, **exhale!**
The respirator will **bulge** slightly.



If air leaks between the face and the face-seal of the respirator, reposition it and readjust the nose clip for a more secure seal.

Negative Pressure Seal Check

With the respirator securely in place, **inhale!**
The respirator will **collapse** slightly.



If air leaks between the face and the face-seal of the respirator, reposition it and readjust the nose clip for a more secure seal.

The Fit Test

Qualitative fit test

- Yes it fits
- No it does not fit - you detect a bitter or sweet-tasting mist



Preparation

- Wash hands (tester and subject)
- Do not eat, drink or chew gum for 15 minutes prior to test (subject)
- Only the tester should handle testing equipment



Step 1: Sensitivity Test



- Place test hood over the subject's head, with no respirator on
- Mist sensitivity solution into the hood
- Make sure the subject **can** detect Saccharin or Bitrex

Step 2: Fit Test

- Remove hood and have subject don respirator
- Replace hood over the subject's head
- Mist testing solution into the hood
- Make sure the subject **cannot** detect Saccharin or Bitrex



Test Exercises



- Have the subject perform several exercises:
 - normal breathing
 - deep breathing
 - turn head side to side
 - nod head up and down
 - read a test paragraph or just talk
- If the test solution is **not** detected during these exercises, the subject has a properly fitted respirator.
- Write down the brand, model, and size that fits you!

Respirator Storage and Maintenance

- Dispose of disposable respirators after use
- Don't share with others
- Keep unused respirators clean, dry and ready
 - Ziploc bag
 - Original shape (don't crush)
 - Inspect periodically
 - Keep a spare in your car



Questions?

Take a 5 minute break 😊

Next up: AEDs
(Automated External Defibrillators)

AED demonstration by Marc Runyon

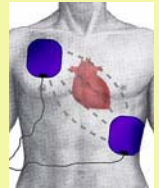
Part 2 - AED: Automated External Defibrillators

- AEDs are used to automatically diagnose certain potentially life-threatening arrhythmias (irregular heartbeats).
- Caused by electrical malfunction of the heart
 - Abnormal heart rhythm – heart just quivers, unable to pump
 - V-Fib: ventricular fibrillation (most common)
 - V-Tach: ventricular tachycardia
 - Both of these are "shockable"
- Heart stops beating abruptly
 - No pulse
 - Unconscious
 - Not breathing

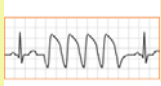


Solution: early defibrillation by electric shock

- Survival rates go down 10% for every minute victim remains in V-Fib
- (Have someone) call 911 first
- If needed, operators can provide CPR instructions while emergency responders are en route
- Defibrillation using AED device



Automated External Defibrillator (AED)



A portable electronic device that:



- Checks heart rhythm
- Recognizes a rhythm that requires a shock
- Guides you how to use it
- Anyone can learn to use safely

AED Use



- Turn on AED
- Attach electrodes to bare, dry chest
- Everyone clear
- Oxygen removed (if used)
- Follow the voice prompts and screen messages

❖ Run video at: <http://www.youtube.com/watch?v=QQNedXBJ4S8&feature=related>