MASKS & COVID-19: N95, SURGICAL MASKS & SCARVES
UPDATES FROM THE FRONT LINES
APRIL 8, 2020
<table>
<thead>
<tr>
<th>WEBINAR SERIES PARTNERS</th>
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<tbody>
<tr>
<td>American Academy of Clinical Toxicology (AACT)</td>
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<tr>
<td>American Academy of Emergency Medicine (AAEM)</td>
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<tr>
<td>American Association of Poison Control Centers (AAPCC)</td>
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<tr>
<td>American College of Medical Toxicology (ACMT)</td>
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<td>Asia Pacific Association of Medical Toxicologists (APAMT)</td>
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<tr>
<td>European Association of Poison Centers and Clinical Toxicologists (EAPCCT)</td>
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<tr>
<td>Middle East &amp; North Africa Clinical Toxicology Association (MENATOX)</td>
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TELECONFERENCE | APRIL 9, 2020
VIRUSES AND OTHER KILLERS

8 – 9 a.m. People are Dying; Move Fast and God Bless Everyone: Chloroquine in the Age of Coronavirus
Sarah Watkins, D.O., Assistant Medical Director, West Texas Regional Poison Center; University Medical Center of El Paso; Assistant Professor, Department of Emergency Medicine, Assistant Director of Clinical Services, Medical Toxicology, Texas Tech University Health Sciences Center El Paso

9 – 10 a.m. COVID-19 Personal Protective Equipment (PPE): When is Enough, Enough? Will There be Enough?
Stephen W. Borron, M.D., M.S., FAACT, FACEP, FACMT, Professor, Department of Emergency Medicine, Medical Toxicology, Texas Tech University Health Sciences Center El Paso; Medical Director, West Texas Regional Poison Center, University Medical Center of El Paso; Medical Director, Southwest Center for Pediatric Environmental Health

10 – 11 a.m. Pesticides: Pest Pillagers, Plagues and Poisons
Kim Aldy, D.O., M.S., M.B.A., Medical Toxicology Fellow Physician, University of Texas Southwestern Medical Center, Dallas, Texas

Registration Required: https://ttuhscep.webex.com/ttuhscep/k2/j.php?MTID=t3cc59fec9a217a277c38ac7671a0fddb
MEDICAL AND PUBLIC HEALTH CONSIDERATIONS OF COVID-19 WEBINAR SERIES

April 8, 2020
Masks and Virus: N95s, Surgical Masks and PAPRs; Updates From the Front Lines: Tehran, New Orleans & New York

April 1, 2020
ACEs/ARBs, NSAIDS, Remdesivir & Updates from the Front Lines

March 25, 2020
Medical Experts Explain the Use and Potential Adverse Effects of Chloroquine & Hydroxychloroquine for COVID-19

www.acmt.net/COVID-19_Webinars.html
Moderators

Paul Wax, MD, FACMT
Executive Director,
American College of Medical
Toxicology (ACMT)

Ziad Kazzi, MD, FACMT
President, Middle East &
North Africa Clinical
Toxicology Association
(MENATOX),
Board Member, ACMT

Mark Kostic, MD, FAACT
President, American
Academy of Clinical
Toxicology (AACT)
NONE OF OUR SPEAKERS HAVE ANY CONFLICTS OF INTEREST TO DISCLOSE
MASKS AND COVID-19
N95, SURGICAL MASKS AND SCARVES

Joseph A. Cocciardi, PhD MS
CIH, CSP, RS/REHS
joccciardi@cocciardi.com
The current COVID-19 pandemic is a fluid situation. As new information about the virus becomes available, guidance for protecting healthcare workers changes.

Does an N-95 really work?

Can you reuse N-95?

Are PAPR better than N-95?
Proper use of PPE and Respirators is critical for healthcare workers.

95% of airborne particles are prevented from getting through an N95 Respirator → Another 10-15% of particles can penetrate the mask around breaches in the seal*

Even if PPE is used correctly, you are still at risk of exposure if removed incorrectly*

A respirator is only as good as the seal - Fit Testing is a critical part of use

Are gowns/caps needed?
<table>
<thead>
<tr>
<th>OSHA</th>
<th>“How to Use Respirators Safely”</th>
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</thead>
<tbody>
<tr>
<td>CDC</td>
<td>“When to Use Respirators Relative to Infectious Diseases”</td>
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<tr>
<td>NIOSH</td>
<td>“What is a Respirator?”</td>
</tr>
<tr>
<td>FDA</td>
<td>“What is a Surgical Mask?”</td>
</tr>
</tbody>
</table>
HIERARCHY OF HAZARD CONTROLS

Most Effective

Elimination

Substitution

Engineering

Administrative

PPE

“The 6 Foot Rule”
Do facemasks protect me?
BODY PROTECTION

Selection
- Exposure type (spray/splash vs. touch), durability, comfort

Fluid Resistance
- Synthetic Blood Penetration (ASTM F-1670)
- Viral Penetration (ASTM F-1671)

Performance (ASTM F2407)
- Tensile Strength
- Tear Resistance
- Seam Strength
- Breathability

Liquid Barrier Performance (ANSI/AAMU PB70-03)
- Level 1 (minimal risk) to Level 4 (high risk)
# Face and Eye Protection

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Faceshields</strong> protect face, nose, mouth and eyes</td>
<td></td>
</tr>
<tr>
<td>Should cover forehead and extend below chin</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Masks</strong> cover nose and mouth</td>
<td></td>
</tr>
<tr>
<td>Prevent fluid contact</td>
<td></td>
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<tr>
<td><strong>NOT CONSIDERED RESPIRATORS</strong></td>
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<tr>
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<tbody>
<tr>
<td><strong>Protect eyes</strong></td>
<td></td>
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<tr>
<td>Glasses are not a suitable replacement for goggles</td>
<td></td>
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</table>
AIR PURIFYING RESPIRATOR: HOW THEY WORK

- A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. It can be negative (N-95) or positive (PAPR) pressure.

Disadvantages:
- Filter change-out
- Not for O₂ deficient areas
AIR PURIFYING RESPIRATORS

Tight Fitting Respirators

Loose Fitting Respirators

Does a loose respirator work?
Only if positive pressure.
A powered air-purifying respirator is an air-purifying respirator that uses a battery-powered fan to force the ambient air through air-purifying elements to the inlet covering.

- Tight fitting masks, or loose-fitting hoods/helmets are available.
- Purified air is provided under positive pressure.

**Advantages:**
- Higher protection
- Comfort
- Fit testing not always required
- Facial hair acceptable (loose)

**Disadvantages:**
- Cumbersome
- Battery charging
- Noise
- Not for O_2_ deficient areas
- Filter change-out

Source: OSHA
APR FILTERS AND CARTRIDGES

- Must be contaminant-specific
- Combination filter/cartridges are available
- Color coded
- Respirator brand/model-specific
- NIOSH-certified
- Changeout schedule
FILTERING FACEPIECE / DUST MASKS / N95

- NIOSH Certified
- Tight-Fitting, Air-Purifying
- Limitations:
  - Not for use in Oxygen deficient areas
  - Disposable, limited use
Filter Degradation

N: Not Resistant to Oil
R: Resistant to Oil
P: Oil Proof

Particulate filter efficiency

95%: 95 Series
99%: 99 Series
99.97%: 100 Series
Surgical masks are not Respirators however they are “Engineering Controls
<table>
<thead>
<tr>
<th>Respirator Type</th>
<th>Assigned Protection Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half Face APR</td>
<td>10:1</td>
</tr>
<tr>
<td>Loose Fitting PAPR</td>
<td>25:1</td>
</tr>
<tr>
<td>Full Face APR</td>
<td>50:1</td>
</tr>
<tr>
<td>Supplied Air Respirator w/ Full Facepiece</td>
<td>1,000:1 (Continuous Flow)</td>
</tr>
<tr>
<td>Supplied Air Respirator w/ Full Facepiece</td>
<td>10,000:1 (Pressure-Demand)</td>
</tr>
</tbody>
</table>
PRIOR TO USING A RESPIRATOR, EMPLOYEES MUST BE:

1. Medically Cleared

2. Trained

3. Fit Tested

QLFT ↔ QNFT

NOT REQUIRED FOR VOLUNTARY USE

ANNUALLY

ANNUALLY*

*CURRENT OSHA EXEMPTION
N95 USE: SEAL CHECK

- User seal check each time equipment is donned
  - Positive pressure
  - Negative pressure

(MUST HAVE LESS THAN 24 HOURS OF FACIAL HAIR GROWTH!)
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Performance Standard</th>
<th>Acceptable product classifications</th>
<th>Standards/ Guidance Documents</th>
<th>Protection Factor $\geq$ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>ABNT/NBR 13698:2011</td>
<td>PFF3, PFF2</td>
<td>Fundacentro CDU 614.894</td>
<td>YES</td>
</tr>
<tr>
<td>Europe</td>
<td>EN 149-2001</td>
<td>FFP3, FFP2</td>
<td>EN 529:2005</td>
<td>YES</td>
</tr>
<tr>
<td>Korea</td>
<td>KMOEL-2017-64</td>
<td>Special 1st</td>
<td>KOSHA GUIDE H-82-2015</td>
<td>YES</td>
</tr>
<tr>
<td>Mexico</td>
<td>NOM-116-2009</td>
<td>N100, P100, R100, N99, P99, R99, N95, P95, R95</td>
<td>NOM-116</td>
<td>YES</td>
</tr>
</tbody>
</table>

1Canada is not listed because it allows self-declaration to NIOSH or equivalent standards.
NIOSH: OPTIMIZATION STRATEGIES (PRIORITIZED)

- Annual Fit Testing Suspended (OSHA)
- Extended Use of Expired Respirators
- Use of Respirators Approved in Other Countries
- Limited Re-Use of N-95 Respirators
- Use of Expired Respirators (Other Countries)
- Use of Community Face Covering
WHEN NO RESPIRATORS ARE LEFT?

- Administrative Controls:
  - Exclude Those at Risk
  - Utilize Those with Immunities
- Engineering Controls:
  - Ventilation
“HOW TO MAKE YOUR OWN FACE COVERING”

- For Difficult Social Distancing Situations
- The “Jenny Cocciardi” Science Fair Project
THANK YOU

PLEASE REACH OUT WITH ANY QUESTIONS

Joseph A. Cocciardi, PhD MS
CIH, CSP, RS/REHS
jcocciardi@cocciardi.com
UPDATES FROM THE FRONT LINE

Hossein Hassanian-Moghaddam, MD FACMT
- Clinical Toxicologist, Shahid Beheshti University of Medical Sciences
- Tehran, Iran

Lisa Moreno, MD MS MSCR FAAEM FIFEM
- President-Elect, American Academy of Emergency Medicine (AAEM)
- Professor of Emergency Medicine, Director of Research and Director of Diversity, Section of Emergency Medicine, Louisiana State University Health Sciences
- New Orleans, LA
Updates from the Front Line

Hossein Hassanian-Moghaddam, MD FACMT
- Clinical Toxicologist, Shahid Beheshti University of Medical Sciences
- Tehran, Iran
VIDEO SHOWING ILLICIT PRODUCTION OF ALCOHOL USING INDUSTRIAL ALCOHOL THAT CONTAIN METHANOL

https://www.aparat.com/v/hZYHT/%D9%86%D8%AD%D9%88%D9%87_%D8%B3%D8%A7%D8%AE%D8%AA_%D8%A7%D9%84%DA%A9%D9%84_%D8%B3%D9%81%DB%8C%D8%AF_%D8%B7%D8%A8%DB%8C_%D8%AA%D9%82%D9%84%D8%A8%DB%8C_%D8%AF%D8%B1_%D8%A2%D8%B0%D8%B1%D8%A8%D8%A7%DB%8C%D8%AC%D8%A7%D9%86
HAND SANITIZERS CONTAIN METHANOL
CT SCAN OF COVID-19 PATIENT POISONED WITH METHANOL
UPDATES FROM THE FRONT LINE

Lisa Moreno, MD MS MSCR FAAEM FIFEM

- President-Elect, American Academy of Emergency Medicine (AAEM)
- Professor of Emergency Medicine, Director of Research and Director of Diversity, Section of Emergency Medicine, Louisiana State University Health Sciences
- New Orleans, LA
ON-DEMAND RESOURCES

- All webinars are recorded and posted to the ACMT website
- PDFs of webinar slides are also available on the website
- Questions? Email: info@acmt.net

www.acmt.net/COVID-19_Webinars
NEXT WEBINAR

Topic To Be Announced on Monday 4/13

Wednesday, April 15, 2020 @ 3:00 PM EDT