Use of Elastomeric Respirators in Health Care Settings: additional healthcare facility experience and the 2019 NAS Report

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Cal/OSHA webinar
Wednesday, August 26, 2020
10:00-11:30 AM PT
Successful use for more than 20 years by the Texas Center for Infectious Disease (TCID)

TCID is a 75-bed specialty public hospital in San Antonio, currently the only freestanding inpatient TB treatment facility in the United States.
The Allegheny Health Network adopting elastomeric respirators, Spring 2020

9 hospital system comprising approximately 2200 licensed beds with sites in Pennsylvania and Western NY, employing 21000 staff
Implementation of an Elastomeric Mask Program as a Strategy to Eliminate Disposable N95 Mask Use and Resterilization: Results from a Large Academic Medical Center

Sricharan Chalikonda, MD, MHA, FACS, Hope Waltenbaugh, MSN, RN, CNOR, NE-BC, Sara Angelilli, MSN, RN, CNOR, Tiffany Dumont, DO, Curt Kvasager, MBA, Timothy Sauber, MD, Nino Servello, CRNA, Anil Singh, MD, Rafael Diaz-Garcia, MD, FACS

BACKGROUND: The COVID-19 global pandemic has placed a large demand on personal protective equipment for healthcare workers. N-95 respirators, required to perform aerosolizing procedures, are in short supply and have increased significantly in cost. The lack of a clear end to the

https://doi.org/10.1016/j.jamcollsurg.2020.05.022
University of Colorado Hospital adopted Spring 2020

Academic medical center with 700 beds and 6,000 staff.
Purchased 800 elastomeric respirators in 2010, after H1N1.
Models of Elastomeric Half Facepiece Respirators

Texas Center for Infectious Disease (TCID)

University of Colorado Hospital – North model

The current Elastomeric Respirator TCID institutes:

North 7700 - S, M, L
134 Employees

Moldex – S, M, L
2 Employees

Powered Air Purifying Respirators
2 Employees

The Allegheny Health Network

MSA Advantage 200 Half Face, S, M, L
Models of Elastomeric Half Facepiece Respirators

VHA Awards Sperian Respiratory Protection USA a 65,000 Reusable Respirator Order

07/12/2010

The U.S. Veterans Health Administration (VHA) has awarded Sperian Respiratory Protection USA a contract to purchase 65,000 special configuration modified Sperian Blue1 half-mask respirators with speaking diaphragm for use in VHA hospitals nationwide. VHA is the largest integrated healthcare system in the United States with over 150 hospitals and 130,000 healthcare workers. This award is a result of Sperian's emphasis on developing

2010
Discontinued by Manufacturer
Models of Elastomeric Half Facepiece Respirators

Respirator Trusted-Source Information

Section 1: NIOSH-Approved Respirators

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Approval #</th>
<th>Manufacturer</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>84A</td>
<td>0022</td>
<td>3M Company</td>
<td>5000, 7501, 7502, 7503 with 2091 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0071</td>
<td>3M Company</td>
<td>6x00, 7501, 7502, 7503 with 7093 Filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0078</td>
<td>3M Company</td>
<td>7x00 with 7093 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0117</td>
<td>Moldex-Metric, Inc.</td>
<td>8000 facepiece with 8940 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0118</td>
<td>MSA Innovation, LLC</td>
<td>Comfo P100</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0179</td>
<td>Louis M. Gerson Company, Inc.</td>
<td>9200 halfmask with G70 filter</td>
<td>Half Mask</td>
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<tr>
<td>84A</td>
<td>0236</td>
<td>Wilson &amp; Daloz Safety Products</td>
<td>5100 halfmask with P100 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0248</td>
<td>Wilson &amp; Daloz Safety Products</td>
<td>Freedom 2000; 2X10 P100</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0452</td>
<td>Honeywell Int’l. Inc.</td>
<td>Belt-mounted Halfmask with 1090 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0550</td>
<td>Honeywell International Inc.</td>
<td>5500 with 7580P100</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0592</td>
<td>Honeywell International Inc.</td>
<td>7700 with 7580P100</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0876</td>
<td>MSA Innovation, LLC</td>
<td>Adv. 200 with Comfo P100 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>0943</td>
<td>Dentec Safety Specialists Corp.</td>
<td>100, 200, 300, 400 with 180SLR</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>1033</td>
<td>3M Company</td>
<td>5000, 7501, 7502, 7503 Halfmask with 2096 or 2097</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>1129</td>
<td>Drager Safety AG &amp; Co. KGaA</td>
<td>X-Plore 2100 facepieces w/ 6736777 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>1239</td>
<td>Honeywell Int’l. Inc.</td>
<td>2000, BLUE 1 or Low Maintenance w/ 1050 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>1241</td>
<td>Honeywell Int’l. Inc.</td>
<td>250050, 260050, 270050 w/ 1050 filter</td>
<td>Half Mask</td>
</tr>
<tr>
<td>84A</td>
<td>1443</td>
<td>Moldex-Metric, Inc.</td>
<td>8000 with 8990 filter</td>
<td>Half Mask</td>
</tr>
</tbody>
</table>

https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource1quest3.html#half
Half Facepiece Elastomeric Respirators
Filter Selection

Avoid filter with no covers
<table>
<thead>
<tr>
<th></th>
<th>Elastomeric Respirators</th>
<th>N95s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effective respiratory protection program must be in place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Medical Approval</strong></td>
<td>OSHA Respirator Medical Evaluation Questionnaire</td>
<td>OSHA Respirator Medical Evaluation Questionnaire</td>
</tr>
<tr>
<td><strong>Fit testing</strong></td>
<td>OSHA approved methods</td>
<td>OSHA approved methods</td>
</tr>
<tr>
<td><strong>User Seal Check</strong></td>
<td>User can be reliably trained to do &amp; user can readily perform during work</td>
<td>Can be difficult for user to perform reliably</td>
</tr>
<tr>
<td><strong>Assigned Protection Factor</strong></td>
<td>10</td>
<td>10 *</td>
</tr>
<tr>
<td><strong>Filter</strong></td>
<td>N95, but others available (99 and 100)</td>
<td>N95</td>
</tr>
</tbody>
</table>

*previously 5
Fit Testing & User Seal Checks

Fit Testing Procedures, for tight fitting models

User Seal Checks, for tight fitting models
OSHA Respirator Standard – Program Elements

(a) Permissible practice
(b) Definitions
(c) Respirator program
(d) Selection of respirators
(e) Medical evaluation
(f) Fit testing
(g) Use of respirators
(h) Maintenance and care
(i) Breathing air quality and use
(j) Identification of filters, cartridges, and canisters
(k) Training and information
(l) Program evaluation
(m) Recordkeeping
(n) Dates
(o) Appendices (mandatory)

A: Fit Testing Procedures
B-1: User Seal Checks
B-2: Cleaning Procedures
C: Medical Questionnaire
D: Information for Employees Wearing Respirators When Not Required Under the Standard
Respirator Program Elements

Training and information

<table>
<thead>
<tr>
<th>Facility</th>
<th>Respirator Care</th>
<th>Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas Center for Infectious Disease (TCID)</td>
<td><strong>Decentralized</strong>&lt;br&gt;- Staff issued respirator for their exclusive use&lt;br&gt;- Wearer cleans/disinfects between patients with wipes&lt;br&gt;- Wearer inspects, deep cleaning and disinfecting at end of shift</td>
<td>Annual with fit test or if trouble breathing</td>
</tr>
<tr>
<td>The Allegheny Health Network (AHN)</td>
<td><strong>Decentralized at beginning, but moving to more centralized</strong>&lt;br&gt;- Shared use - respirators from Central Processing&lt;br&gt;- Wearer cleans/disinfects between patients with wipes&lt;br&gt;- Wearer returns respirator at end of shift, Central Processing inspects, cleans, disinfects</td>
<td>Monthly or if trouble breathing</td>
</tr>
<tr>
<td>University of Colorado Hospital (UCH)</td>
<td><strong>Hybrid - decentralized at beginning, but moving to more centralized for nonmobile staff</strong>&lt;br&gt;- Shared use - respirators available from department supply&lt;br&gt;- Wearer cleans/disinfects between patients with wipes&lt;br&gt;- Wearer inspects, deep cleaning and disinfecting at end of shift and returns to department supply</td>
<td>Annual ? or if trouble breathing</td>
</tr>
</tbody>
</table>
Respirator Storage & Availability

Key to successful implementation

- Involve staff
- Might vary across the facility
- Support for staff and audits
Reusable Elastomeric Respirators in Health Care
Considerations for Routine and Surge Use

Protecting the health and safety of health care workers is vital to the health of each of us. Preparing for and responding to a future influenza pandemic or to a sustained outbreak of an airborne transmissible disease requires a high-level commitment to respiratory protection for health care workers across a wide range of work settings. Keeping health care workers healthy despite occupational risks is an ethical commitment to the workers. Their good health also provides lifesaving continuity of care to patients and communities.

Reusable respirators (specifically, reusable half-facepiece elastomeric respirators) are the standard respiratory protection device used in many industries. Their durability and reusability make them desirable for stockpiling for emergencies, during which large volumes of respirators can be needed. Until now, options for using reusable half-facepiece elastomeric respirators in routine and surge use in health care have not been fully explored.

https://www.nationalacademies.org/our-work/study-on-the-use-of-elastomeric-respirators-in-health-care
# TABLE S-1 Routine and Surge Use of Reusable Elastomeric Respirators

<table>
<thead>
<tr>
<th>Definition</th>
<th>Examples</th>
<th>Advantages</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surge use</td>
<td>Facility capacity (beds, staff, supplies) is exceeded</td>
<td>Avert shortage of disposable filtered facepiece respirators</td>
<td>Cleaning and disinfection protocols</td>
</tr>
<tr>
<td></td>
<td>Respiratory illness incidence extends beyond epidemic curve</td>
<td>Health care workers’ perception that the institution is investing in their safety and well-being</td>
<td>Storage issues between uses</td>
</tr>
<tr>
<td></td>
<td>Atypical illness that requires airborne isolation</td>
<td>Viral hemorrhagic fever or other airborne-outbreak</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seasonal influenza that persists beyond traditional time-frame</td>
<td>Pandemic influenza</td>
<td></td>
</tr>
</tbody>
</table>
Resources

https://www.cdc.gov/niosh/docs/2015-117/default.html
About the Worker Training Program (WTP)

Training for Workers in Hazardous Environments

WTP provides grants to nonprofit organizations, including labor-based health and safety organizations and academic institutions, so they can deliver training to a variety of workers who may face a hazardous work environment. Training is provided to workers across many occupational sectors, such as:

- Environmental cleanup workers
- First responders
- Health care employees
- Industrial or construction workers
- Law enforcement officers

https://www.niehs.nih.gov/careers/hazmat/about_wetp/index.cfm
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Thanks – we look forward to your questions