Healthcare Facilities During and After COVID-19...Are you prepared for the firestopping of modified and converted facilities?
And your first presenter is...

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The views expressed in this presentation are the opinion of the speaker and may not be the official position of FGI or the Health Guidelines Revision Committee.
First let’s thank our front-line care givers...
...and first responders!
FGI Guidelines: Where can the standards assist in the pandemic
Who is FGI?

Consumer Reports

We view ourselves as the *Consumer Reports* of the health care physical environment.

We have a similar view and mission...

*Consumer Reports* is an **expert, independent, nonprofit** organization whose mission is to work for a fair, just marketplace for all consumers and to empower consumers to protect themselves.
Who is involved in developing the Guidelines?
Participating organizations

ACHA
AIA-AAH
ASHE
ACHE
AHRQ
AORN
ASHRAE
ACS
CHD
NIH
CDC
TJC
CMS
2022 HGRC
140+ Multidisciplinary Committee

20% - Architects
18% - Medical professionals
16% - State AHJs
13% - Engineers
10% - HC administrators/HC org. reps
  8% - Federal AHJs (IHS, CMS, HUD, VA)
  7% - Infection control experts + NIH/CDC
  4% - Construction professionals
  4% - Interior designers
Health Care Organizations Represented

- University of Utah Health
- Kaiser Permanente
- Michigan Institute for Neurological Disorders
- Yale New Haven Health
- Medical University of South Carolina
- AmSurg Corporation
- Universal Health Services
- Wentworth-Douglass Hospital
- Mayo Clinic
- University of Pennsylvania Health System
- Memorial Sloan Kettering Cancer Institute
- Northwestern University School of Medicine
- Cambridge Health Alliance
- Oklahoma University Medicine
- Chickasaw Nation Department of Health--Medical Center
- Thomas Jefferson Health
- Atrium Health
- INTEGRIS Baptist Medical Center
- University of California, Los Angeles
- Swedish Hospital, Seattle
- Ascension Health
- UMASS Memorial Health Care System
- National Institutes of Health
- Stanford Hospital and Clinics
- Massachusetts General Hospital
Government Agencies Represented

- Indian Health Service
- Department of Veterans Affairs
- New York Department of Health
- Colorado Department of Health
- Minnesota Department of Health
- North Carolina Department of Health
- South Dakota Department of Health
- CA OSHPD
- Indiana Department of Health
- US Army Corps of Engineers
- CDC/NIOSH
- The Joint Commission
- DNV
- National Institutes of Health
- Defense Health Agency (DoD)
- Washington State Department of Health
- Pennsylvania Department of Health
- Wisconsin Department of Health
- Michigan Department of Health
- Oregon Health Authority
- Texas Department of Health
- Florida Agency for Health Care Administration
- Oklahoma Department of Health
FGI’s Mission

Establish and promote consensus-based guidelines and publications, advised by research, to advance quality health care.
Patient and staff safety are guiding principals of the FGI Guidelines!
Guidelines History

• 1947: First Guidelines Published – General Standards of Construction for Hospitals

• 1985: AIA-AAH assumes responsibility for managing the revision process & publishing the document; organizes multidisciplinary consensus process.

FGI’s New Committee and Guideline on Emergency Conditions in Health and Residential Care Facilities
When do the Guidelines apply to existing facilities?

- Not written to be enforced in existing conditions
- Not intended for emergency conditions
- Does not cover operational issues
- When the Authority Having Jurisdiction enforces them
- During major renovations
- As a good template for delivering safe patient care
So what is changing?

Please be careful when you put revision clouds on your drawings some of the contractors do not understand.
Health care facilities are being reimagined

- Adding surge capacity to increase patient beds
- Converting floors to airborne isolation units
- Erecting tents for screening during pandemics
- New concepts in modular and portable units
- Converting convention centers to become hospitals
- Converting hotels to become hospitals
- Modifying ventilation systems to be 100% fresh air and 100% exhaust
- Modifying patient room ventilation to be easily converted to negative pressure
So what do you need to know?

• Inspections and surveys are not currently being conducted by state, federal and private organizations
• Modifications and installations are being made at a hectic pace – just get it done philosophy
• As new requirements are made for making patient rooms negative pressurization – walls will need to be sealed to assure proper pressure relationships
• Firestopping is not top of mind for most health care organizations during this pandemic
https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html
Table 6. Engineered specifications for positive- and negative pressure rooms*

<table>
<thead>
<tr>
<th></th>
<th>Positive pressure areas (e.g., protective environments [PE])</th>
<th>Negative pressure areas (e.g., airborne infection isolation [AII])</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pressure differentials</strong></td>
<td>+2.5 Pa§ (0.1” water gauge)</td>
<td>-2.5 Pa (0.1” water gauge)</td>
</tr>
<tr>
<td><strong>Air changes per hour (ACH)</strong></td>
<td>&gt;12</td>
<td>≥12 (for renovation or new construction)</td>
</tr>
<tr>
<td><strong>Filtration efficiency</strong></td>
<td>Supply: 99.97% @ 0.3 μm DOP†</td>
<td>Supply: 90% (dust spot test)</td>
</tr>
<tr>
<td><strong>Room airflow direction</strong></td>
<td>Out to the adjacent area</td>
<td>In to the room</td>
</tr>
<tr>
<td><strong>Clean-to-dirty airflow in room</strong></td>
<td>Away from the patient (high-risk patient, immunosuppressed patient)</td>
<td>Towards the patient (airborne disease patient)</td>
</tr>
<tr>
<td><strong>Ideal pressure differential</strong></td>
<td>+8 Pa</td>
<td>-2.5 Pa</td>
</tr>
</tbody>
</table>

* Material in this table was compiled from references 35 and 120. Table adapted from and used with permission of the publisher of reference 35 (Lippincott Williams and Wilkins).

§ Pa is the abbreviation for Pascal, a metric unit of measurement for pressure based on air velocity; 250 Pa equals 1.0 inch water gauge.

† DOP is the abbreviation for diocylphthalate particles of 0.3 μm diameter.

** If the patient requires both PE and AII, return air should be HEPA-filtered or otherwise exhausted to the outside.

† HEPA filtration of exhaust air from AII rooms should not be required, providing that the exhaust is properly located to prevent re-entry into the building.

Figure 3. Example of negative-pressure room control for airborne infection isolation (AII)* + §

* Stacked black boxes represent patient’s bed. Long open box with cross-hatch represents supply air. Open boxes with single, diagonal dashes represent air exhaust registers. Arrows indicate direction of air flow.

† Possible uses include treatment or procedure rooms, bronchoscopy rooms, and autopsy.

§ Negative-pressure room engineering features include
- Negative pressure (greater exhaust than supply air volume);
- Pressure differential of 2.5 Pa (0.01-in. water gauge);
- Air flow volume differential >125 cfm exhaust versus supply;
- Sealed room, approximately 0.5 sq ft leakage;
- Clean to dirty air flow;
- Monitoring;
- <12 air changes per hour (ACH) new or renovation, 6 ACH existing, and
- Exhaust to outside or HEPA-filtered if recirculated.

† This diagram is a generic illustration of airflow as a typical installation. Alternative air flow arrangements are recognized.

Adapted and used with permission from A. Steinfeld and the publisher of reference 338 (Penton Media, Inc.)
Ventilation of Health Care Facilities
2.1-2.4.2.2 All room requirements. Each airborne infection isolation room shall comply with the requirements in sections 2.1-2.2 (Patient Room) and 2.2-2.2.2 (Medical/Surgical Patient Care Unit—Patient Room) as well as the following requirements:

(1) Capacity. Each ALL room shall contain only one bed.
(2) Provision shall be made for personal protective equipment (PPE) storage at the entrance to the room.
(3) Hand-washing station. Section 2.1-2.2.5.3 (Hand-washing station in the patient room—Renovation) shall not apply to ALL rooms.
(4) The patient toilet room shall serve only one ALL room.
(5) The patient toilet room shall have a bathtub or shower.
(6) A door from the ALL room directly to the corridor shall be permitted.

(1) Architectural details
(a) ALL room perimeter walls, ceiling, and floor, including penetrations, shall be constructed to prevent air exfiltration.

(b) Doors
(i) ALL rooms shall have self-closing devices on all room exit doors. Omission of self-closing devices shall be permitted if the alarm required by Section 2.1-2.4.2.5 (Pressure alarm) has an arrangement that allows activation of the audible alarm when the ALL room is in use as an isolation room.
(ii) Edge seals shall be provided along the sides and top of the doorframe for any door into the ALL room.
*(iii) Use of bottom edge door sweeps to assist in maintaining negative pressure shall be permitted.
Thank you for this opportunity!

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