Academy of Architecture for Health
On-line Professional Development

The 2018 *Guidelines*:

How to Use and Major Updates

Health Care 101 Series

10 July 2018

2:00 pm – 3:00 pm ET

1:00 pm – 2:00 pm CT

12:00 am – 1:00 pm MT

11:00 am – 12:00 pm PT

Presenter
Douglas Erickson, FASHE, CHFM, HFDP, CHC
CEO, Facility Guidelines Institute (FGI)

Moderator
Gregg D. Ostrow, AIA

AIA Knowledge Community
Academy of Architecture for Health

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Health Care 101 Series

The Academy's multi-channel on-line approach provides emerging professionals, journeymen, and master professionals with convenient and economical opportunities to develop their chosen area of interest.

The HC 101 Series sessions are tailored to provide budding healthcare design professionals with conceptual and practical primer-level knowledge.

Series topics include: Master planning; Programming; Ambulatory care; Clinical support services; Emergency; ICI-acute care; Imaging; Long-term care; Maternal care; Mental health; Surgery.

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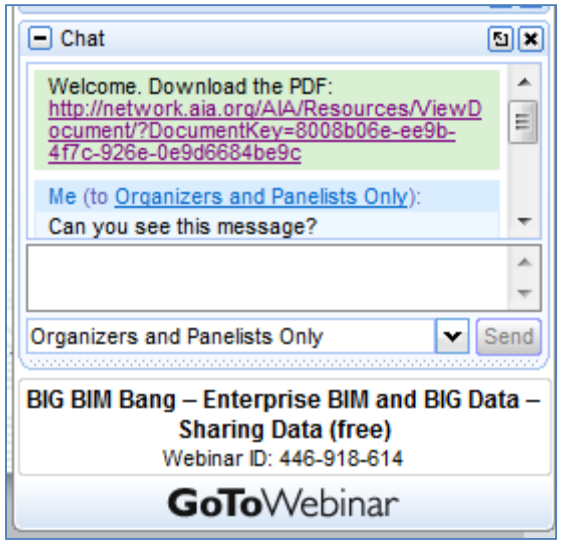

Content-related questions will be answered during the Q&A portion at the end as time allows.

Tech support questions will be answered by AIA staff promptly.

The 2018 *Guidelines*: How to Use and Major Updates

Presenter

Doug Erickson, FASHE, CHFM, HFDP, CHC
CEO, Facility Guidelines Institute (FGI)
Chair of the 2010, 2014, and 2018 editions

Moderator

Gregg D. Ostrow, AIA

AIA Knowledge Community
Academy of Architecture for Health

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The views and opinions 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.

Presentation overview

Introduction to the Facility Guidelines Institute (FGI) and the *Guidelines for Design and Construction* documents

- Who are we?
- What do we do?
- FGI process
- How are FGI's standards applied?
- How to apply the *Guidelines*
- Brief update on the 2018 changes

Who is FGI?

History

- Minimum construction requirements, 1947–84
  - First published in 1947 to support the Hill-Burton Act
  - Turned over to the public sector in 1985 and called the *Guidelines* ever since
- Published by AIA from 1987 – 2006
- Published by ASHE from 2010 – 2014
- Since 2001:
  - The Facility Guidelines Institute (FGI) holds the copyright in the *Guidelines* documents.
  - FGI is responsible for development of the content of the *Guidelines* documents.
- FGI became publisher in 2018

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 FGI?

Past major issues…and innovations

- Functional program
- Safety risk assessment
- Single-bed room
- Infection control (hand-washing, surfaces, etc.)
- Acoustics
- Medication safety zones
- Patient handling and movement
- Critical access hospitals
- Person-centered care

What do we do?

Set fundamental standards for **program, space, and equipment** for:

- Hospitals
- Nursing Homes
- Outpatient Facilities
- Rehabilitation Facilities
- Psychiatric Hospitals and OP Facilities
- Mobile and Relocatable Units
- Long-term Care Facilities

Referenced by TJC, PHS, IHS, HUD 242 hospital mortgages & **more than 40 states** for licensure or accreditation of health care facilities requiring clinic licensure

Referenced in more than **60 countries**

Guidelines purpose and use

What do we do?

National committee of experts

What do we do?

Participating organizations

- ACHA
- AIA/AAH
- ASHE
- ACHE
- AHRQ
- ARON
- ASHRAE
- ACS
- CHD
- NIH
- CDC
- TJC
- CMS

What do we do?

HGRC: a 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

The role of the *Guidelines*

- As a consensus-based **fundamental** standard, the *Guidelines* promotes a level of building performance that will not detrimentally affect the health and safety of patients and staff when buildings are operated as designed.

- The FGI *Guidelines* provides baseline design and construction **requirements** for health care facilities that (1) recognize the mission of health care, including "first, do no harm," and (2) consider how the built environment supports safe, effective, and efficient health care delivery.

FGI process

Consensus-based process for *Guidelines* development utilizing:

- Collective **multi-disciplinary** experience
- Professional stakeholder consensus including many AHJs (**no manufacturers**)
- **Public review** process
- Clinical & evidence-based research
- Continual improvement process
- Every new edition of the FGI *Guidelines* is different and an “evolution” from previous editions

Multiple editions of the *Guidelines* are currently in use.

Overview of the revision process

- Publication of 2018 edition fundamental documents
- Manuscripts approved by the HGRC and the Steering Committee and published in digital and print formats
- Development of “beyond fundamentals”
- Items identified during the revision process as “beyond fundamental” are being developed and published at this time.

Overview of the revision process

HGRC topic groups

- Working groups review topics identified by the Steering Committee – includes outside subject matter experts

- The goal is to determine how each topic is addressed across all the FGI *Guidelines* documents:
  - Hospitals
  - Outpatient facilities
  - Residential health, care, and support facilities

Why the *Guidelines* are special

Why do people use the *Guidelines*?

- *Guidelines* requirements are considered:
  - **Fundamental** (reflect the "standard of care")
  - **Non-biased** (multidisciplinary development)
- Vendors and manufacturers have no direct influence on the final vote.
- FGI is a credible source of up-to-date information.
- The *Guidelines* revision process is increasingly research-informed, striving for the most objective and universal standards.

How are the *Guidelines* being applied?

Current use

The *Guidelines* documents are used by the design industry as a reference for planning and design of health care and residential health, care, and support facility projects.

They are adopted or referred to by authorities having jurisdiction that regulate facility construction:

- State departments of health
- The Joint Commission
- Federal agencies such as the Bureau of Indian Affairs, the Veterans Administration, the Army Corps of Engineers, the Public Health Service
- DNV GL

How are the *Guidelines* being applied?

Use of the *Guidelines* varies

- Used by public and private entities
- Adopted by reference or used as a reference document without adoption
- Adopted as a regulatory requirement (in full or in part)
- States can/do modify in state-generated document(s)
- Sometimes a requirement of lending institutions
- Helps to strengthen & standardize the fundamentals of patient-centered health care facility design & construction worldwide

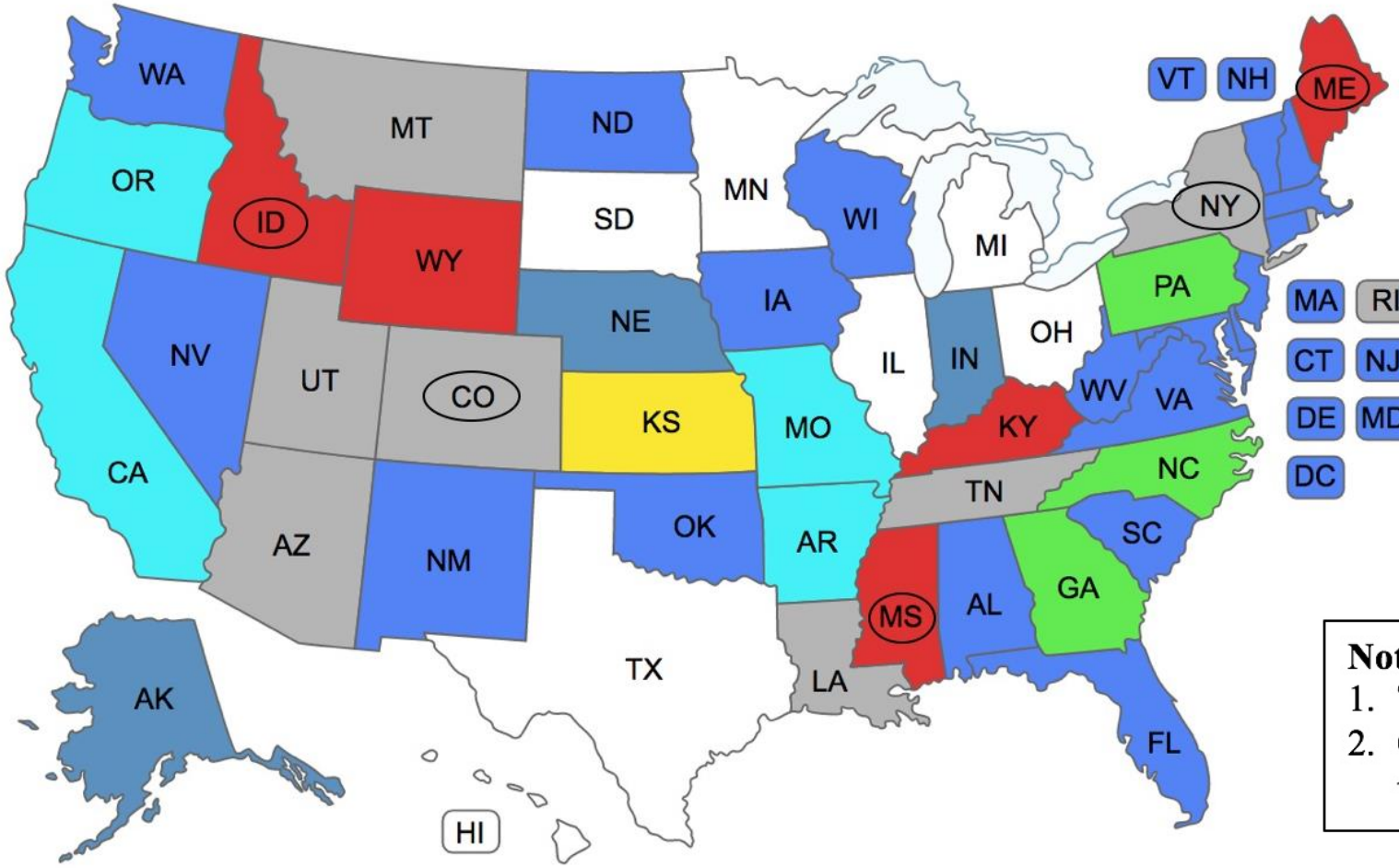
How are the *Guidelines* being applied?

Guidelines limitations

The *Guidelines* recommendations do not become a regulatory document until formally adopted as law by a governing entity.

Compliance with the *Guidelines* recommendations does not guarantee that a project will meet all the additional needs of a health care organization.

Guidelines adoption map



KEY

2018	
2014	
2010	
2006	
2001	
1996–97	
Equivalency*	

**Guidelines* may be applied as an equivalency to state rules.*

Notes

1. This map shows adoption for hospitals.
2. Circled states permit use of a newer edition than that shown in some cases.

How to apply the *Guidelines*

Minimum is difficult to define

The *Guidelines* documents are considered to be a series of minimum, or fundamental, consensus requirements for the design and construction of new or renovated health care facilities.

- Risk of being too minimal (creates opportunity for harm)
- Consider risk/benefit for new minimum
- The minimum benchmark changes over time
- Cost is a reality in determining minimum standards

How to apply the *Guidelines*

Minimum is difficult to define

2014 edition: First-cost impact review

- HGRC Cost-Benefit Committee in conjunction with ASHE
- Review of Hospital/Outpatient document to identify the **first cost** impact of implementing the 2014 edition *(approx. 2% increase in first cost with no credits for cost reductions)*

2018 edition: Benefit-cost impact review

- **Every 2018 proposal for change was reviewed** by the HGRC for clinical and operational benefit. The Benefit-Cost Committee also reviewed for benefit, first cost, and life cycle cost of major changes.

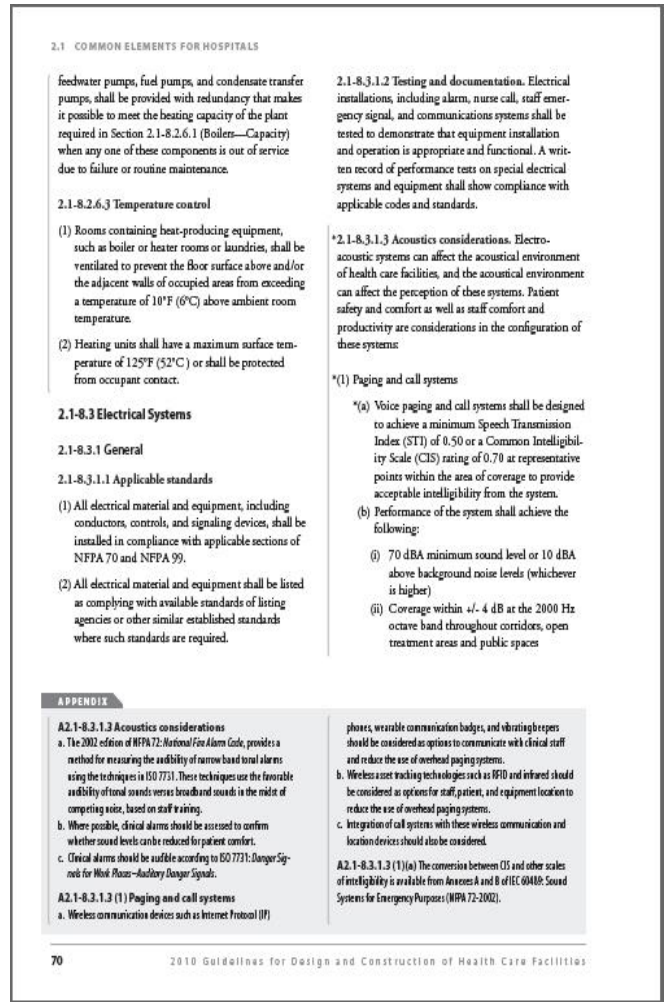
How to apply the *Guidelines*

Appendix often references other documents

The Appendix is located at the bottom of each page in a shaded box.

The Appendix is **not** considered to be part of the document that is adopted as code.

It functions as a reference and educational tool that discusses concepts that are “beyond minimum” standards and also provides clarification information.



2.1 COMMON ELEMENTS FOR HOSPITALS

feedwater pumps, fuel pumps, and condensate transfer pumps, shall be provided with redundancy that makes it possible to meet the heating capacity of the plant required in Section 2.1-8.2.6.1 (Boilers—Capacity) when any one of these components is out of service due to failure or routine maintenance.

2.1-8.2.6.3 Temperature control

(1) Rooms containing heat-producing equipment, such as boiler or heater rooms or laundries, shall be ventilated to prevent the floor surface above and/or the adjacent walls of occupied areas from exceeding a temperature of 10°F (6°C) above ambient room temperature.

(2) Heating units shall have a maximum surface temperature of 125°F (52°C) or shall be protected from occupant contact.

2.1-8.3 Electrical Systems

2.1-8.3.1 General

2.1-8.3.1.1 Applicable standards

(1) All electrical material and equipment, including conductors, controls, and signaling devices, shall be installed in compliance with applicable sections of NFPA 70 and NFPA 99.

(2) All electrical material and equipment shall be listed as complying with available standards of listing agencies or other similar established standards where such standards are required.

2.1-8.3.1.2 Testing and documentation. Electrical installations, including alarm, nurse call, staff emergency signal, and communications systems shall be tested to demonstrate that equipment installation and operation is appropriate and functional. A written record of performance tests on special electrical systems and equipment shall show compliance with applicable codes and standards.

*2.1-8.3.1.3 Acoustics considerations. Electroacoustic systems can affect the acoustical environment of health care facilities, and the acoustical environment can affect the perception of these systems. Patient safety and comfort as well as staff comfort and productivity are considerations in the configuration of these systems:

*(1) Paging and call systems

*(a) Voice paging and call systems shall be designed to achieve a minimum Speech Transmission Index (STI) of 0.50 or a Common Intelligibility Scale (CIS) rating of 0.70 at representative points within the area of coverage to provide acceptable intelligibility from the system.

(b) Performance of the system shall achieve the following:

(i) 70 dBA minimum sound level or 10 dBA above background noise levels (whichever is higher)

(ii) Coverage within +/- 4 dB at the 2000 Hz octave band throughout corridors, open treatment areas and public spaces

APPENDIX

A2.1-8.3.1.3 Acoustics considerations

a. The 2002 edition of NFPA 72: *National Fire Alarm Code*, provides a method for measuring the audibility of narrow band tonal alarms using the techniques in ISO 7731. These techniques use the favorable audibility of tonal sounds versus broadband sounds in the midst of competing noise, based on staff training.

b. Where possible, clinical alarms should be assessed to confirm whether sound levels can be reduced for patient comfort.

c. Clinical alarms should be audible according to ISO 7731: *Danger Signals for Work Places—Auditory Danger Signals*.

A2.1-8.3.1.3 (1) Paging and call systems

a. Wireless communication devices such as Internet Protocol (IP) phones, wearable communication badges, and vibrating beepers should be considered as options to communicate with clinical staff and reduce the use of overhead paging systems.

b. Wireless asset tracking technologies such as RFID and infrared should be considered as options for staff, patient, and equipment location to reduce the use of overhead paging systems.

c. Integration of call systems with these wireless communication and location devices should also be considered.

A2.1-8.3.1.3 (1)(a) The conversion between CIS and other scales of intelligibility is available from Annexes A and B of IEC 60849: Sound Systems for Emergency Purposes (NFPA 72-2002).

70 2010 Guidelines for Design and Construction of Health Care Facilities

How to apply the *Guidelines*

Layout of 2018 Hospital *Guidelines*

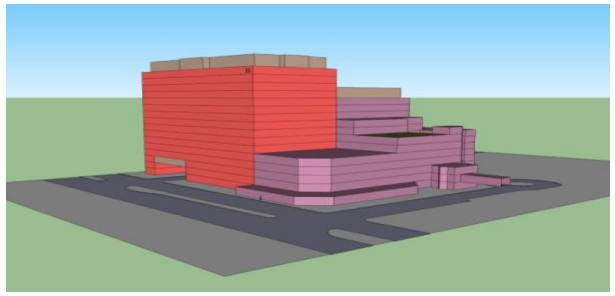
Opening Section

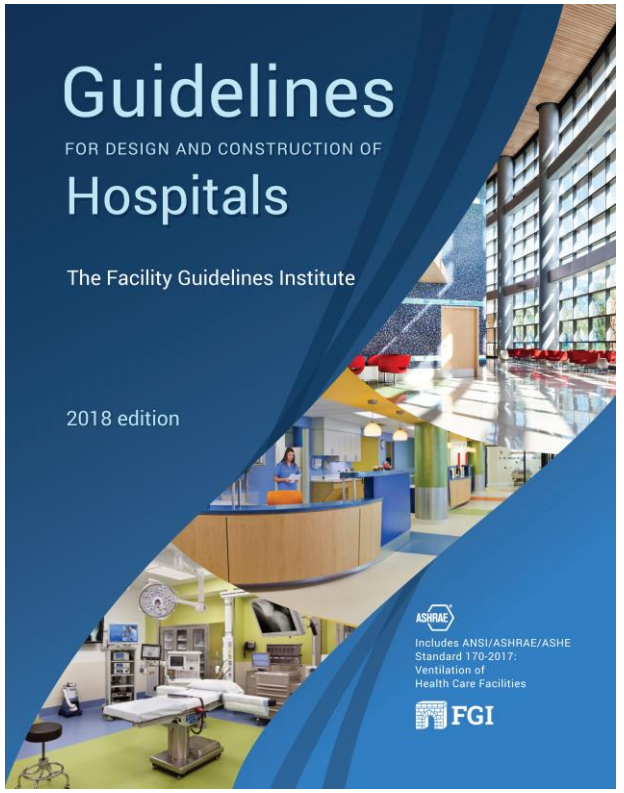
- Acknowledgements
- Major Additions and Revisions
- Glossary of Terms

Part 1: General

Chapter 1.1, Introduction

- Use of the *Guidelines*
- Government Regulations
- Building Codes and Standards
- Equivalency Concepts





How to apply the *Guidelines*

Layout of 2018 Hospital *Guidelines*

Chapter 1.2, Planning, Design, Construction (PDC) and Commissioning

Functional Program

- Owner driven
- Completed during planning stage
- Updated as the project is designed and constructed

Space Program

Safety Risk Assessment

- Infection Control
- Patient Handling and Movement
- Fall Prevention
- Medication Safety
- Behavioral and Mental Health
- Patient Immobility
- Security

How to apply the *Guidelines*

Layout of 2018 Hospital *Guidelines*

Chapter 1.2, PDC and Commissioning

Environment of Care Requirements

- Delivery of Care Model Concepts
- Physical Environment Elements

Planning and Design Considerations

- Acoustic Design
- Sustainable Design
- Wayfinding
- Design Accommodations for Patients of Size
- Emergency Preparedness and Management

Renovation

Commissioning

How to apply the *Guidelines*

Layout of 2018 Hospital *Guidelines*

Chapter 1.3, Site
Location
Site Features

Chapter 1.4, Equipment Requirements
Classification
Space

How to apply the *Guidelines*

Layout of 2018 Hospital *Guidelines*

Part 2: Hospital Facility Types
Chapter 2.1, Common Elements for Hospitals

Specific Requirements for:
Chapter 2.2, **General Hospitals**
Chapter 2.3, **Freestanding Emergency Care Facilities**
Chapter 2.4, **Critical Access Hospitals**
Chapter 2.5, **Psychiatric Hospitals**
Chapter 2.6, **Rehabilitation Hospitals**
Chapter 2.7, **Children's Hospitals**
Chapter 2.8, **Mobile/Transportable Medical Units**

How to apply the *Guidelines*

Layout of 2018 Outpatient *Guidelines*

Chapter 2.1, Common Elements for Outpatient Facilities

Specific Requirements for:

Chapter 2.2, **General and Specialty Medical Services Facilities**
Chapter 2.3, **Outpatient Imaging Facilities**
Chapter 2.4, **Birth Centers**
Chapter 2.5, **Urgent Care Centers**
Chapter 2.6, **Infusion Centers**
Chapter 2.7, **Outpatient Surgery Facilities**
Chapter 2.8, **Freestanding Emergency Care Facilities**

How to apply the *Guidelines*

Layout of 2018 Outpatient *Guidelines*

Specific Requirements for:

Chapter 2.9, **Endoscopy Facilities**

Chapter 2.10, **Renal Dialysis Centers**

Chapter 2.11, **Outpatient Psychiatric Centers**

Chapter 2.12, **Outpatient Rehabilitation Therapy Facilities**

Chapter 2.13, **Mobile/Transportable Medical Units**

Chapter 2.14, **Dental Facilities**

How to apply the *Guidelines*

Layout of 2018 Residential *Guidelines*

Part 2: Common Elements for Residential Health, Care, and Support Facilities

Part 3: Residential Health Facilities

Specific Requirements for:
Chapter 3.1, **Nursing Homes**
Chapter 3.2, **Hospice Facilities**

Photo by Elien Dumon on Unsplash

How to apply the *Guidelines*

Layout of 2018 Residential *Guidelines*

Part 4: Residential Care and Support Facilities

Specific Requirements for:

Chapter 4.1, **Assisted Living Facilities**

Chapter 4.2, **Independent Living Settings**

Chapter 4.3, **Long-Term Residential Substance Abuse Treatment Facilities**

Chapter 4.4, **Settings for Individuals with Intellectual and/or Developmental Disabilities**

Part 5: Non-Residential Support Facilities

Specific Requirements for:

Chapter 5.1, **Adult Day Care and Adult Day Health Care Facilities**

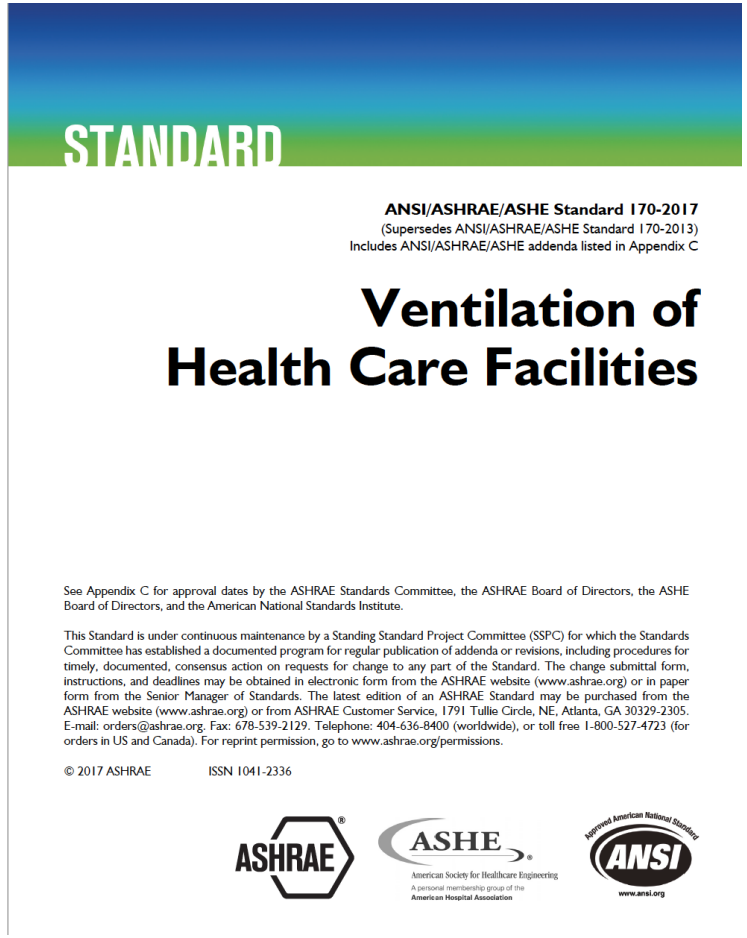
Chapter 5.2, **Wellness Centers**

Chapter 5.3, **Outpatient Rehabilitation Therapy Facilities**

How to apply the *Guidelines*

Hospital and outpatient ventilation requirements

This section is a reprint of the 2017 ASHRAE Standard 170. FGI and ASHRAE have a partnership to work on the content together and to publish Standard 170 as a part of the *Guidelines*.


STANDARD

ANSI/ASHRAE/ASHE Standard 170-2017
(Supersedes ANSI/ASHRAE/ASHE Standard 170-2013)
Includes ANSI/ASHRAE/ASHE addenda listed in Appendix C

Ventilation of Health Care Facilities

See Appendix C for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the ASHE Board of Directors, and the American National Standards Institute.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE website (www.ashrae.org) or in paper form from the Senior Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

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ASHRAE

ASHE
American Society for Healthcare Engineering
A personal membership group of the American Hospital Association

Approved American National Standard
ANSI
www.ansi.org

Major updates and hot topics

- Design/clearances to accommodate patients of size
- Pre- and post-procedure patient care areas – flexibility to combine areas and correct ratios when doing so
- Procedure and operating room sizes that reflect space requirements for anesthesia team and equipment
- Classification system for imaging rooms
- Guidance for when exam/treatment, procedure, and operating rooms are needed
  - Clearances and spatial relationships
  - Locations for procedure types

Major updates
Hospital and Outpatient

- Design of telemedicine spaces
- Sterile processing facilities
- Mobile/transportable medical unit revisions
- Expanded sustainable design requirements
- Emergency preparedness

Emergency preparedness

- The design must provide space for resources needed to respond in an emergency.
- Design supports:
  - Sheltering in place
  - Continuance of service
- New appendix provides guidance on creating an emergency preparedness assessment, infrastructure assessment, and resiliency plan to absorb and recover from adverse events.

Telemedicine services

- Requires telemedicine space when clinical telemedicine services are provided
- May be a bay, cubicle, or room, permitted to be used for other purposes: e.g., patient room, physician's office, conference room
- Appendix recommendations on:
  - Room features
  - Placement of cameras and microphones
- Addresses privacy, acoustics, lighting, site identification (for reimbursement and orientation)

Accommodations for patients of size

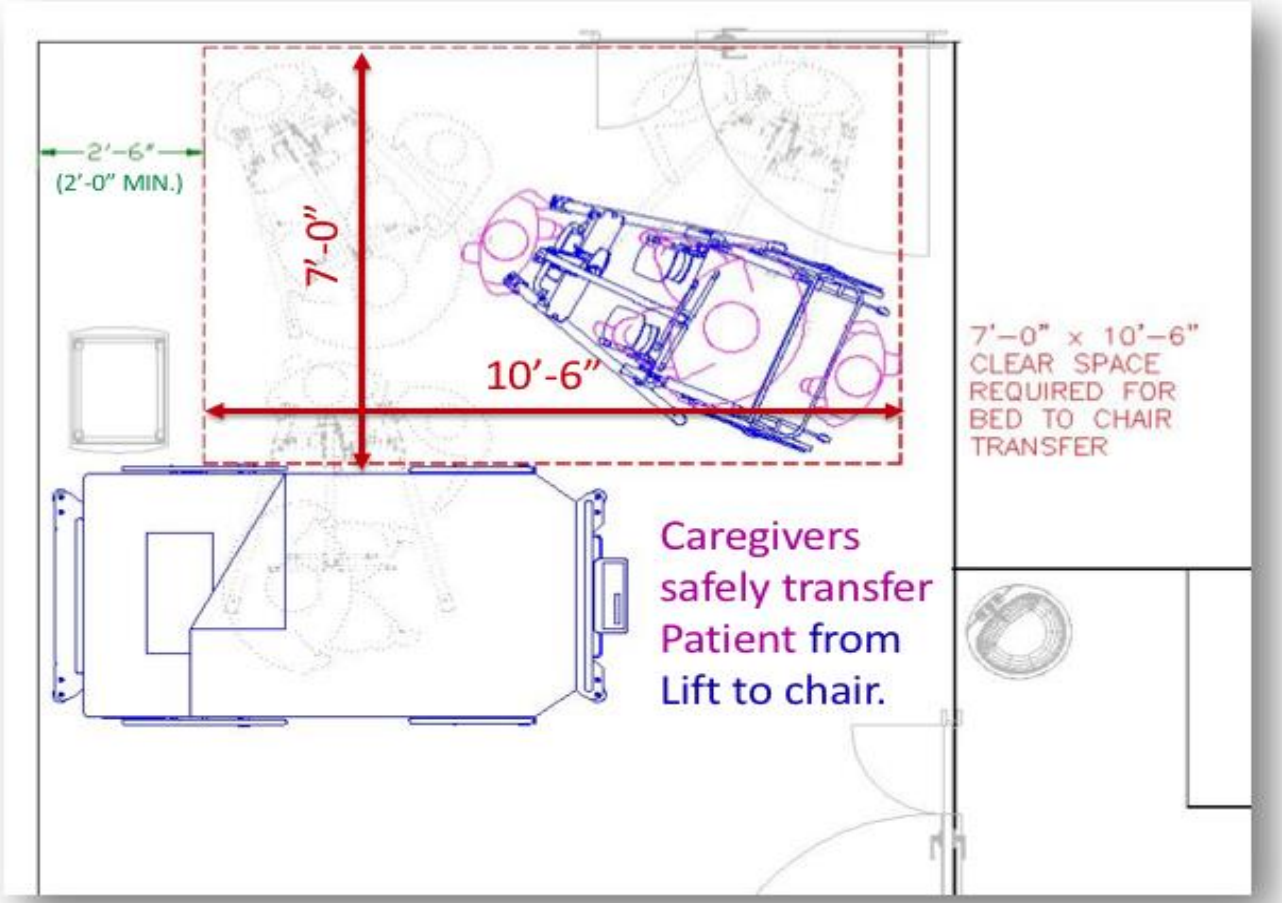
- Determining “patient of size”:
  - Patient’s weight
  - Distribution of the patient’s weight throughout the body
  - Patient’s height

- In the Hospital document: Bariatric nursing unit removed from facility chapters and accommodations for patients of size added as a common element to address the need for serving patients of size throughout a health care facility

- Accommodations for patients of size also added to Outpatient and Residential documents

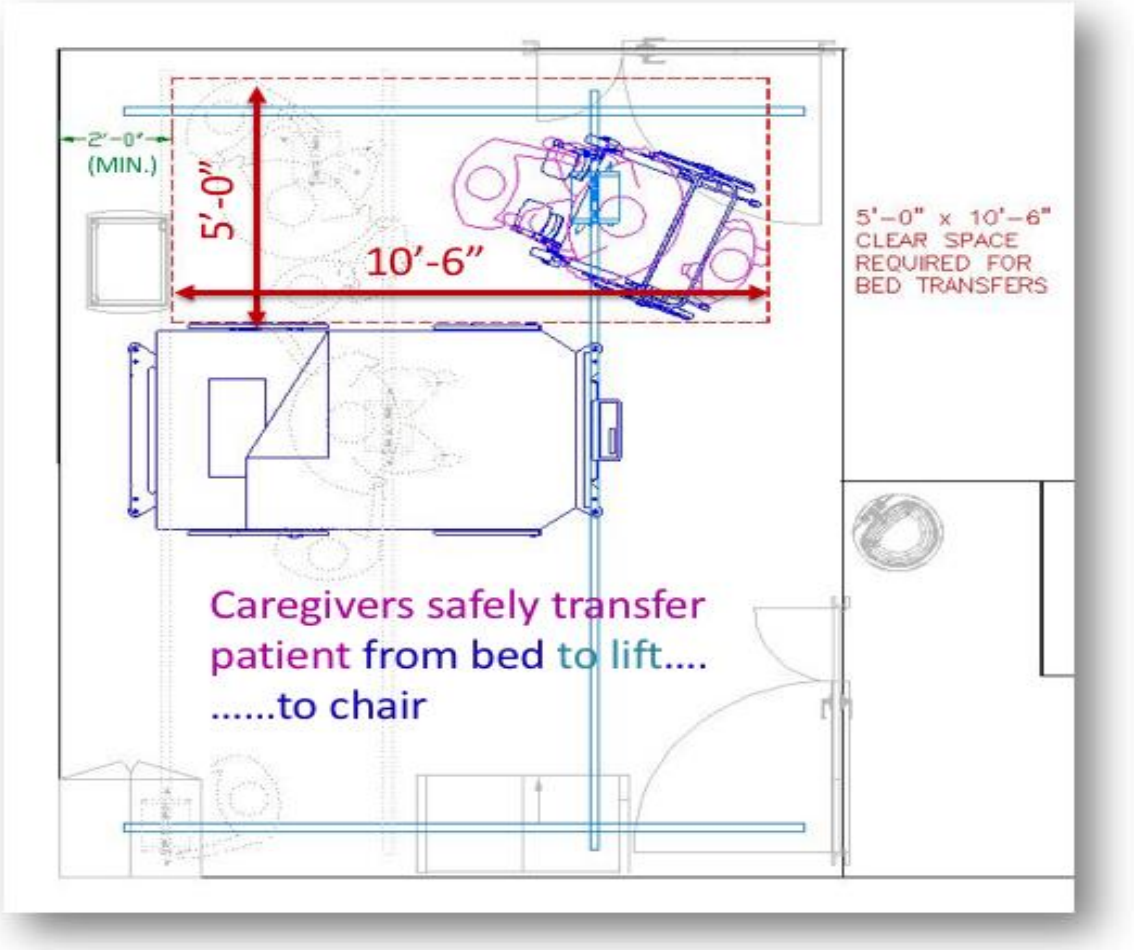
Bariatric patient environment

Minimum Clearances Required for Bed to Wheelchair Transfer Using Floor-based Full Body Sling



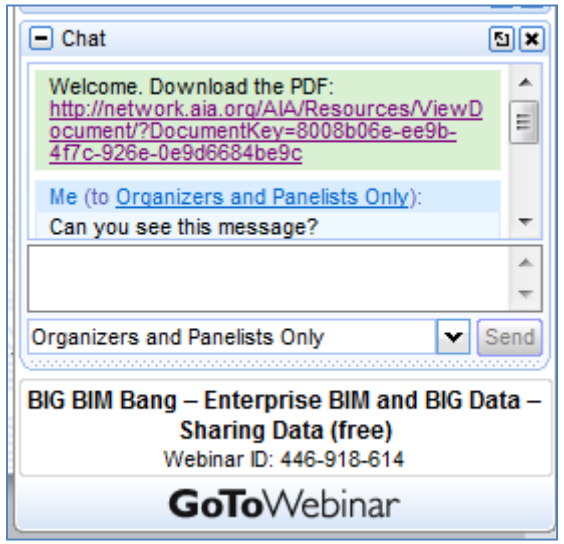
Bariatric patient environment

Minimum Clearances
Required for
Bed to Chair Transfer
Using Ceiling Lift



Upcoming Break for Questions and Comments

Submit a question to the moderator via the chat box.



Pre- and post-procedure patient care areas

- Direct access to the semi-restricted area without crossing unrestricted public corridors
- Ability to combine all patient care stations (pre-, Phase I, Phase II) in one area
- Must meet the most restrictive requirements
- Where combined into one area, at least two patient care stations per procedure, operating, or Class 2 or Class 3 imaging room

Pre- and post-procedure patient care areas

Stations can be bays, cubicles, or single-patient rooms.

Clearances

- Bays (5 feet between gurneys, 3 feet between sides and adjacent walls, and 2 feet from foot of bed to the cubicle curtain)
- Cubicles (3 feet between sides and adjacent walls, 2 feet from foot of bed to the cubicle curtain
- Where bays/cubicles face each other, need 8-foot aisle
- Room (3 feet between sides and foot to the wall)

Pre- and post-procedure patient care areas

If separate pre-procedure room:

- Minimum of one patient care station per imaging, procedure, or operating room

Phase I PACU:

- One per operating room (was 1.5)

Phase II recovery room:

- Minimum of one per imaging, procedure, or operating room

Invasive procedure definition

A procedure that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body. May fall into one or more of the following categories:

- Requires entry into or opening a sterile body cavity
- Involves insertion of an indwelling foreign body
- Includes excision and grafting of burns that cover more than 20 percent of total body area
- Does not begin as an open procedure but has a risk, as determined by the physician, of requiring conversion to an open procedure

Why does it matter?

De Definition of Invasive Procedure

Invasive –
Operating room

Patient care that may require sterile instruments but does not require OR environmental controls –
Procedure room

Non-invasive -
Exam room
Treatment room

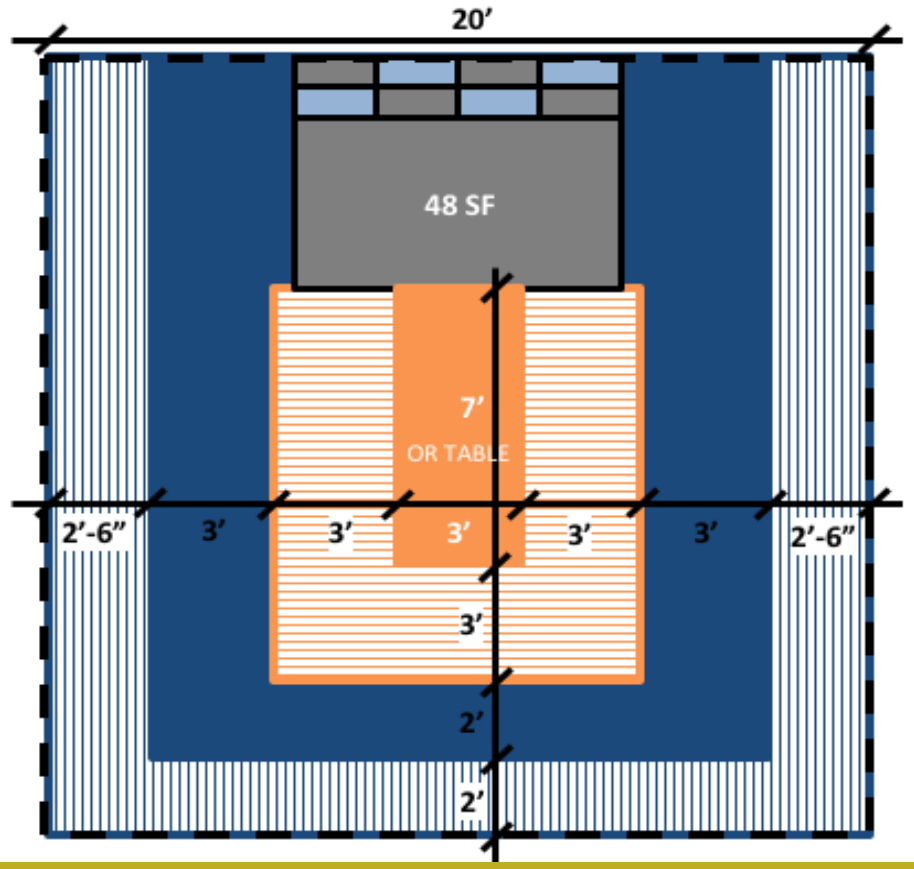
Operating rooms

Minimum clear floor area in an operating room:

- Hospitals: Still 400 sq. ft. or 600 sq. ft. for special procedures
- Outpatient: 255 sq. ft. unless general anesthesia administered, then 270 sq. ft.

Outpatient operating rooms

CLEARANCE ZONE DIAGRAM
OPERATING ROOM – OUTPATIENT – PROPOSED FOR COMMENT



OUTPATIENT OPERATING ROOM

- Patient area
- Sterile field where scrub and physician work
- Circulation pathway where the circulator walks to perform duties. Cannot walk into sterile field.
- Movable equipment zone where the required movable equipment is stored and provides for door swing and opening of fixed drawers or opening of door and drawers on carts
- Anesthesia 6’ x 8’ work zone
- Gray and White area is 2’ area shared between anesthesia and circulator.
- CFA Clear Floor Area - 400 SF

3’ X 7’ Gurney for planning purposes
3’ at Sides & Foot – Sterile Field
3’ at Sides, 2’ at Foot – Circulation
2’-6” at Sides, 2’ at Foot – Equipment
20’ Minimum Width, 400 SF Minimum CFA

Operating rooms

Clearances for 400-square-foot operating rooms:

- 8 feet 6 inches on each side
- 6 feet at the head
- 7 feet at the foot

Monolithic ceilings still **are required**

Endoscopy

Endoscopy procedure rooms shall meet the requirements for procedure rooms…except as follows:

- Minimum clear floor area of 180 sq. ft. (reduced from 200)
- Clearance of 5 feet at each side
- Clearance of 3 feet 6 inches at head and foot

Endoscope processing room is a semi-restricted area

- Both decontamination and clean work areas with one-way traffic flow
- Entrance and exit permitted to be from the procedure room

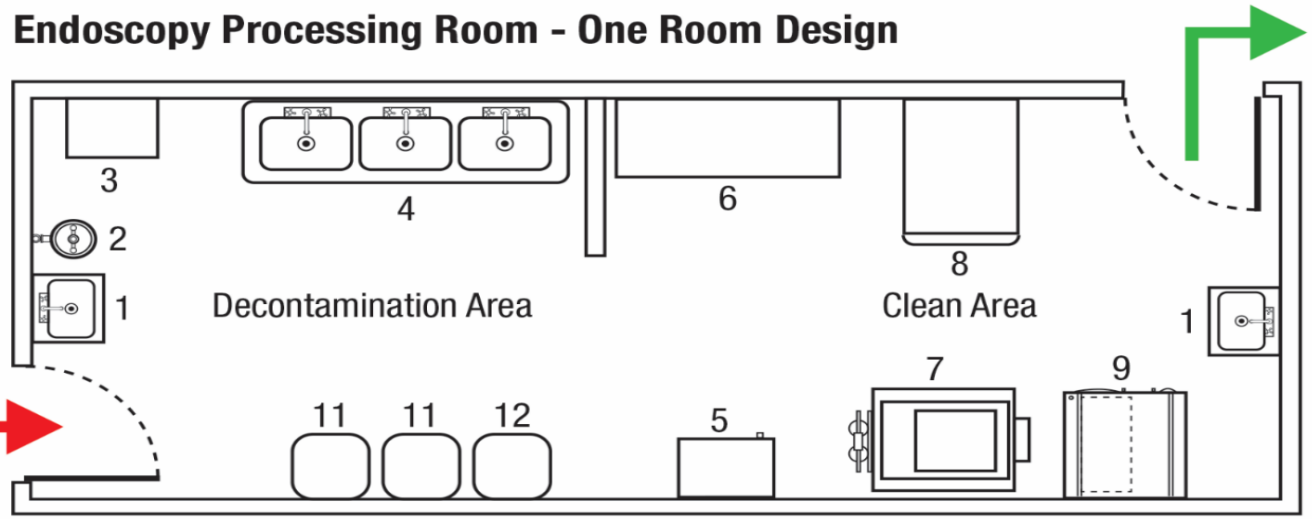
Endoscope Processing Room Design

FGI Guidelines

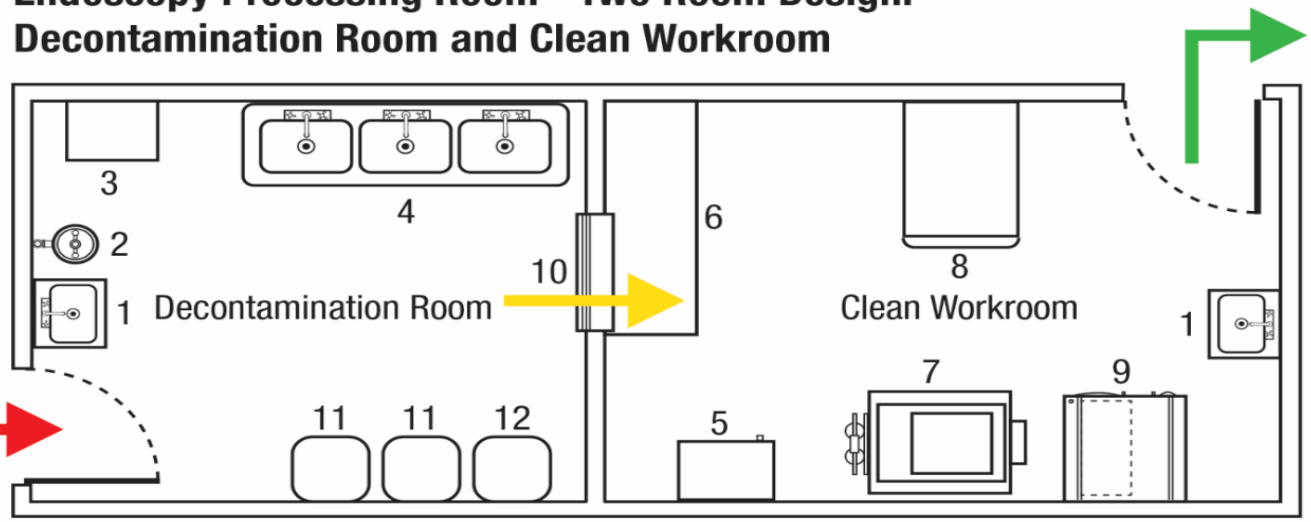
Designed to provide a **one-way traffic** of **contaminated** materials/instruments **to cleaned** materials/instruments to the sterilizer or mechanical processor.

Minimum clearance of 3 feet (91.44 cm) provided between the decontamination area and the clean work area.

Endoscopy Processing Room - One Room Design



Endoscopy Processing Room - Two Room Design: Decontamination Room and Clean Workroom



Classification of imaging room types

Class 1 imaging room

- Diagnostic in nature (CT, MRI, fluoroscopy)
- Services that utilize natural orifice entry
- Accessed from an unrestricted area
- Basic environmental controls (ventilation, surfaces)

Class 2 Imaging room

Procedures:

- Diagnostic and therapeutic
- Electrophysiology
- Endoscopic

Accessed from an unrestricted or semi-restricted area

Some environmental controls for procedures such as cardiac catheterization

Classification of imaging room types

Class 3 imaging room and operating room

- Invasive procedures
- Any Class 2 procedure the physician identifies with a risk of needing conversion to an open procedure
- Accessed from a semi-restricted area
- Environmental controls of an operating room

Time for Questions and Comments

Moderator
Gregg D. Ostrow, AIA

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