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Exam, Procedure, and Operating Rooms: Planning advice based on the FGI *Guidelines*

March 10, 2020

Bryan Langlands, AIA, FACHA, EDAC, LEED GA

David Shapiro, MD, CHC, CHCQM, CHPRM, LHRM, CASC





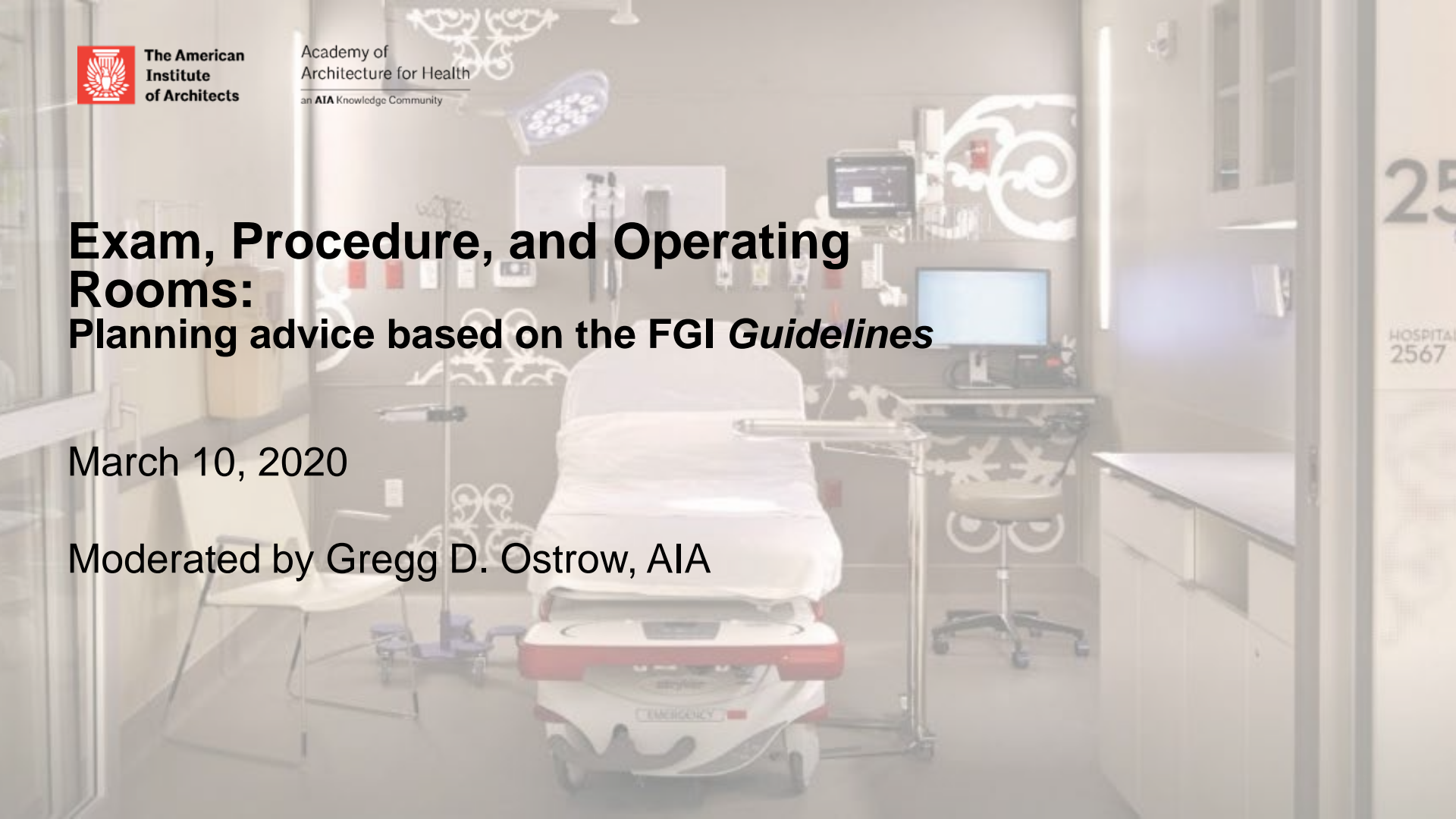
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Moderated by Gregg D. Ostrow, AIA





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Healthcare Essentials

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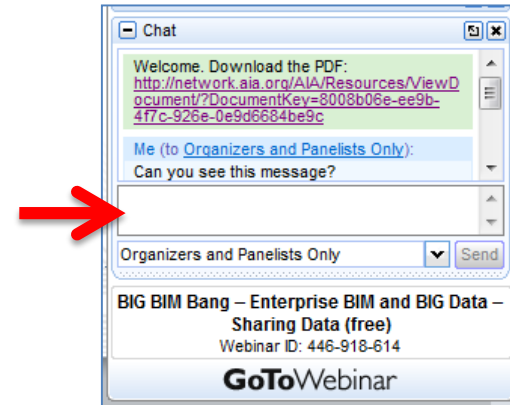
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Bryan Langlands, AIA, FACHA, EDAC, LEED GA

Member of the Steering Committee of the 2022 FGI Health
Guidelines Revision Committee (HGRC)



David Shapiro, MD, CHC, CHCQM, CHPRM, LHRM, CASC

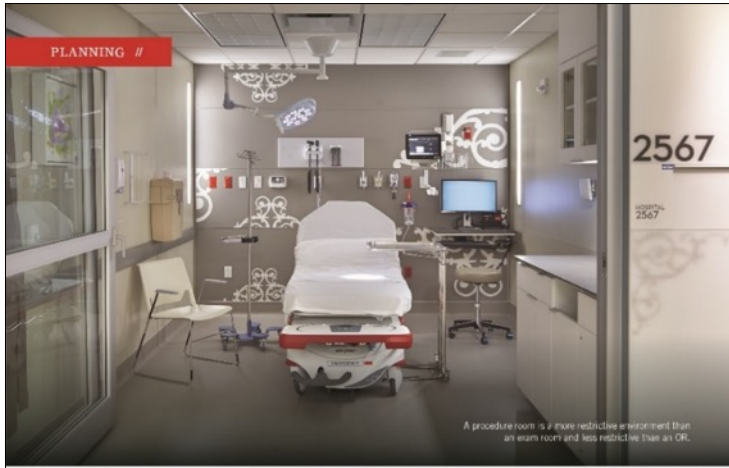
Member of the 2022 HGRC and FGI Board of Directors



Outline

1. Background
2. Anesthesia work zone
3. Basic room types
4. ASHRAE Standard 170-2017 'Addendum L'
5. Clinical risk assessment





Exam, procedure and operating rooms

Planning advice based on the FGI *Guidelines* requirements

BY BRYAN LANGLANDS, AIA, ACHA, EDAC

A question frequently asked by designers working on health care projects is, "Which procedures can be done in an examination, procedure and operating room (OR)?"

To help clarify this issue, the 2018 Health Guidelines Revision Committee (HGRC), the body responsible for development of the 2018 edition of the Facility Guidelines Institute's (FGI's) *Guidelines for Design and Construction*, worked to align the definitions and requirements for these basic room types.

An understanding of appropriate uses for these rooms can lead to spaces

designed and constructed for their intended use, reducing costly over-building of unneeded infrastructure and eliminating under-building of spaces that do not support their intended use.

Recognizing the importance of this understanding should encourage facility owners, planners and designers to initiate conversations with their contractors, clients and users early in the project planning process.

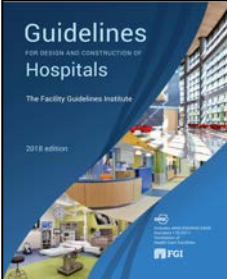
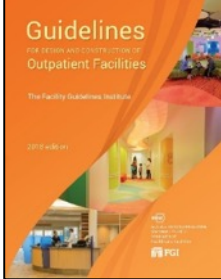
Procedure types

It is commonly understood in the health care field that the appropriate environment for diagnostic, treatment and noninvasive procedures is an exam or treatment room and that invasive procedures are to be performed in an OR.

PHOTO: © STEVE GRANITZ/SHUTTERSTOCK.COM

<https://www.hfmmagazine.com/articles/3764-design-distinctions-for-exam-procedure-and-operating-rooms>

Applicable Sections

| Space Type |  FGI 2018 Hospital Edition |  FGI 2018 Outpatient Edition |
|----------------|--|--|
| Exam room | | |
| Procedure room | | |
| Operating room | | |
| Summary table | | |
| | Section 2.1-2.3.7 | Section 2.1-3.2.1 |
| | Section 2.2-3.3.2 | Section 2.1-3.2.2 |
| | Section 2.2-3.3.3 | Section 2.1-3.2.3 |
| | Table 2.2-1 | Table 2.1-4 |

3 Basic Room Types

| Room Type | Use |
|-------------------------|---|
| Exam/ Treatment room | A room designated for the performance of patient care that may require high-level disinfected or sterile instruments but does not require the environmental controls of a procedure room |
| Procedure room | A room designated for the performance of patient care that requires high-level disinfected or sterile instruments and some environmental controls but does not require the environmental controls of an operating room |
| Operating room | A room that meets the requirements of a restricted area, is designated and equipped for performing surgical or other invasive procedures and has the environmental controls for an OR as indicated in ASHRAE 170 . An aseptic field is required for all procedures performed in an OR. |

When is it Appropriate to Use...

...an exam room rather than a procedure room?

...a procedure room rather than an operating room?



Exam or treatment room

Non-Invasive



Procedure room

> Non-Invasive < Invasive



Operating room

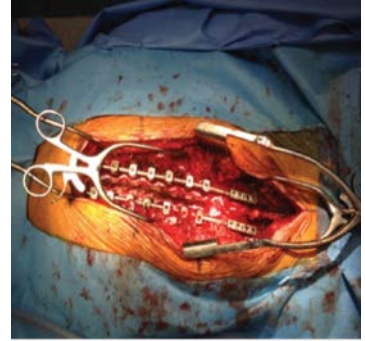
Invasive

FGI 2018 Glossary

Invasive Procedure

An **invasive procedure** is one that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea).

An **invasive procedure may** fall into one or more of the following categories:



- Requires entry into or opening a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces)
- 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 recognized measurable risk of requiring conversion to an open procedure

Anesthesia Work Zone

Anesthesia Work Zone

When inhalation anesthetic will be used in an exam, procedure, or operating room, space to accommodate use of that equipment must be planned into the design. A focus of the 2018 HGRC was to establish **minimum planning requirements** for an **anesthesia work zone**.

A multidisciplinary team of the HGRC, which included an anesthesiologist, a surgeon, an operating room nurse, and an architect, explored the **minimum space needed to safely set up** anesthesia equipment and administer inhalation anesthetic during a procedure, including simulation of a surgery case in a real operating room.

Anesthesia Work Zone

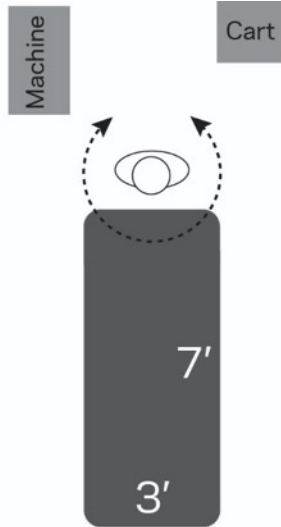
HGRC task group assigned to study anesthesia space needs prior to and during procedures

Key space determinants:

- Anesthesia machine and peripheral equipment
- Boom/supply connections
- Supply/medications cart
- Stool/chair
- Turning radius



Anesthesia Equipment



Anesthesia work zone
Equipment



Anesthesia Work Zone

Measurements taken during the simulation indicated the following spaces were needed:

- 8 feet in width by 6 feet in depth (48 square feet) at the head of the patient to safely set up anesthesia equipment pre-procedure
- 8 feet in width by 4 feet in depth (32 square feet) at the head of the patient to administer anesthesia during the procedure which allows for a 2' wide area where circulation can occur if needed

Width

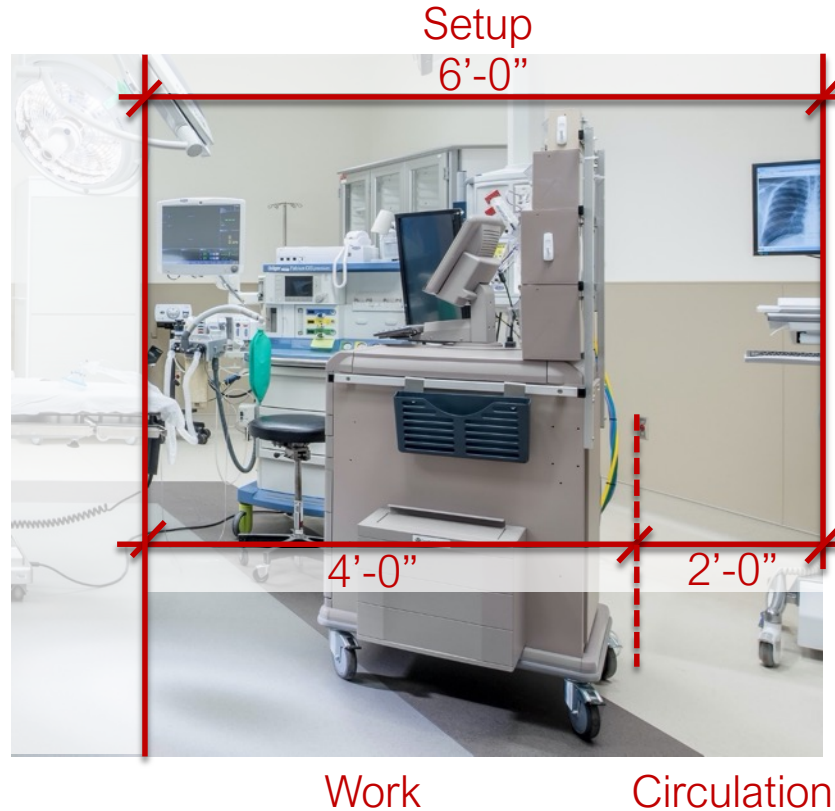
Anesthesia Work Zone

Setup and work

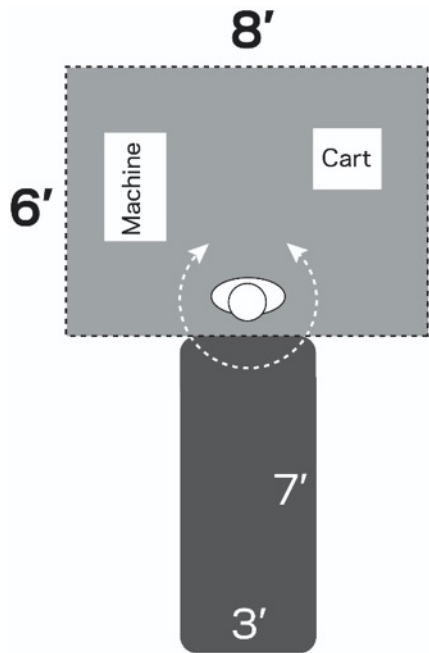


Depth

Anesthesia Work Zone



Setup Area





Anesthesia work zone
Setup area

Anesthesia Work Zone

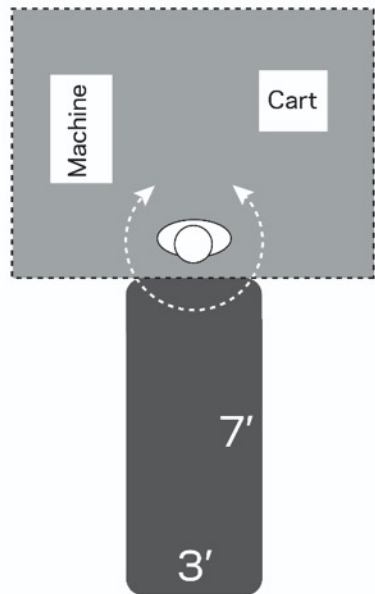
Any procedure or operating room where general anesthesia will be administered using an anesthesia machine and supply carts shall have 48 square feet at the head of the table, gurney, or chair for an anesthesia work zone.

Clearance zone diagram

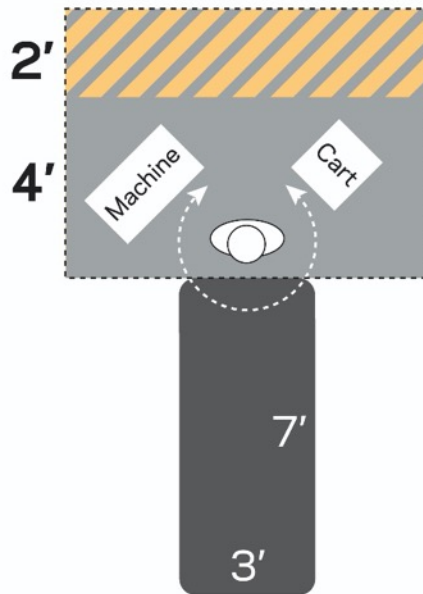
 Anesthesia
(6' x 8' work zone)

 Patient area
(3' x 7' for planning purposes)

Work & Circulation



Anesthesia work zone
Setup area






Anesthesia work zone
Work & circulation

Anesthesia Work Zone

The anesthesia work zone is a **6' x 8' space** at the head of the table, but when the anesthesia care provider(s) are not actively setting up sedation of the patient, **2' at the top of that zone can be used as part of the circulation pathway.**

Clearance zone diagram

-  Anesthesia (6' x 8' work zone)
-  Area shared between anesthesia staff and circulator (2' x 8' circulation zone)
-  Patient area (3' x 7' for planning purposes)

Myth Busting

Anesthetic Techniques

- Local / topical
- Regional
- Intravenous
- Inhalation

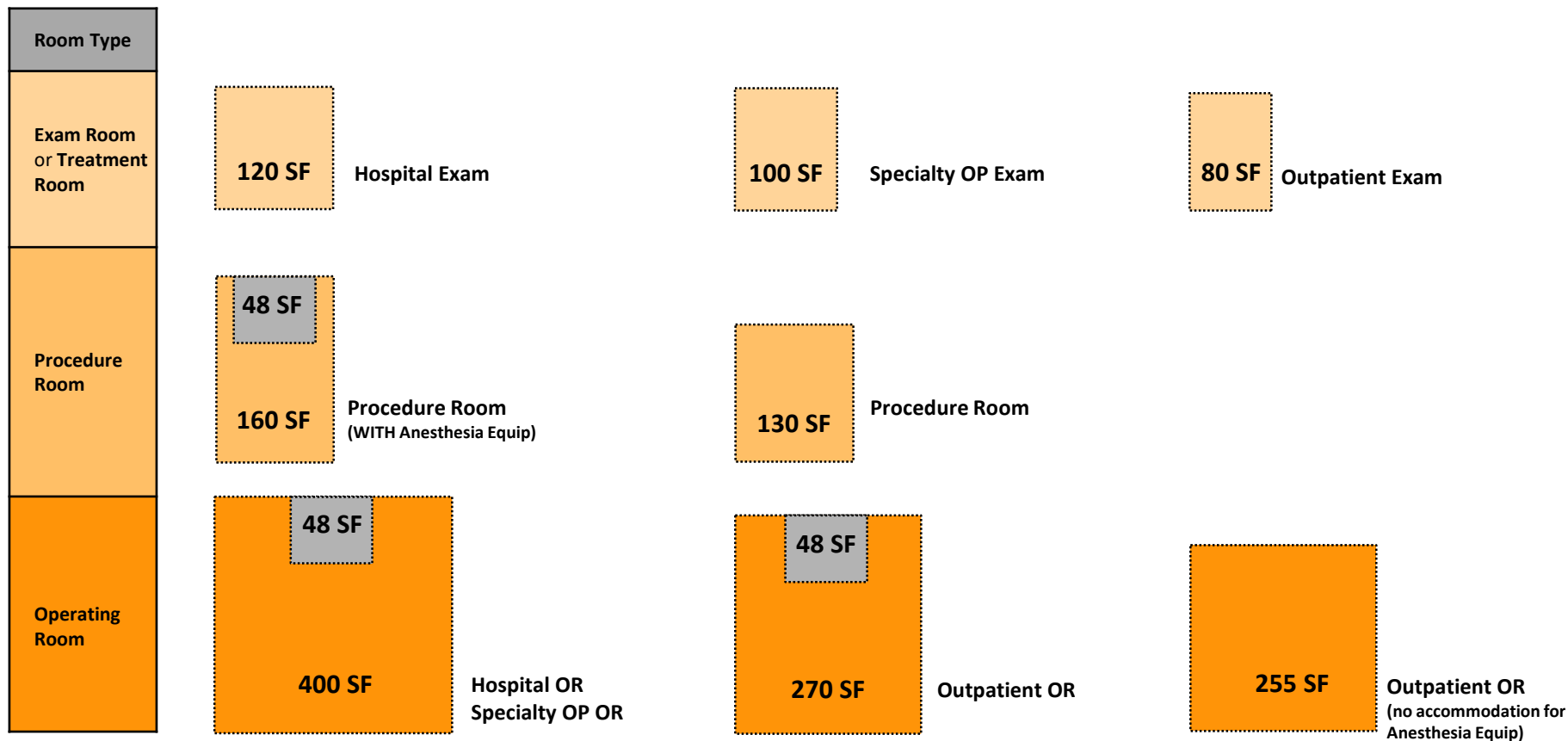
Levels of Anesthesia

- Sedation
 - Minimal sedation / anxiolysis
 - Moderate sedation / analgesia
 - Deep sedation / analgesia
- General

Neither anesthetic technique nor level of anesthesia achieved, by themselves, dictate either the **level of procedural invasiveness**, or the **appropriate setting**
(Exam, Procedure, or Operating Room)

Exam, Procedure, and Operating Rooms

2018 *Guidelines* Minimum Room Sizes



Room Location

2.2-3.3 Surgical Services

2.2-3.3.1.1 Location and Layout

- *(4) The surgical **department** shall be divided into **three** designated areas — unrestricted, semi-restricted, and restricted — defined by the physical activities performed in each area.

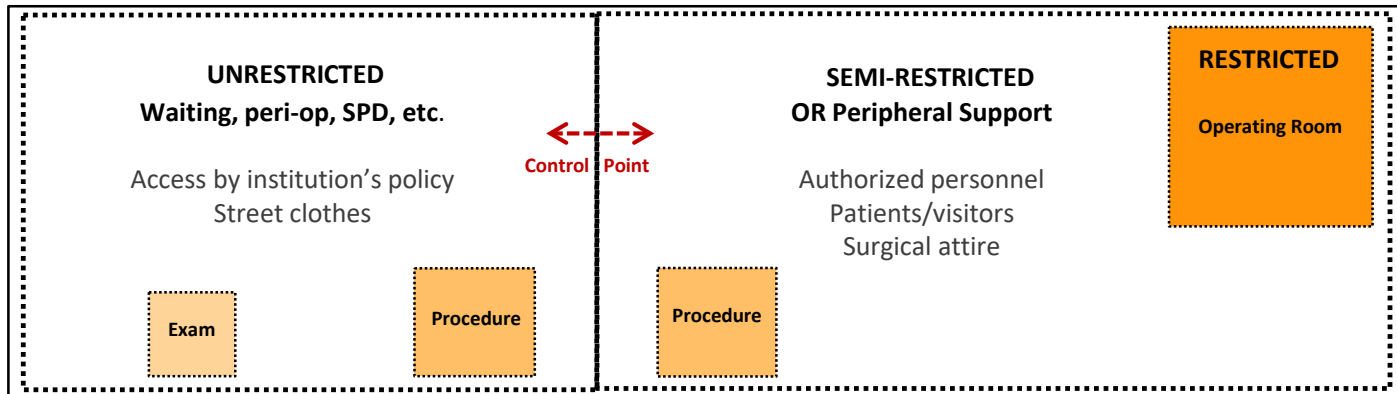


Table 2.2-1 (Hospital) & 2.1-4 (Outpatient)

| Room Type | Use | Environmental Controls | | |
|-----------------------------|--|---|---|------------------------------------|
| | | Location | Ventilation (excerpted from ASHRAE 170) | Surfaces |
| Exam Room or Treatment Room | Patient care that may require high-level disinfected or sterile instruments but does not require the environmental controls of a procedure room | Accessed from an unrestricted area | Air changes per hour Pressurization Temp & Humidity controls Diffuser requirements | Ceilings Floor Wall finishes |
| Procedure Room | Patient care that requires high-level disinfected or sterile instruments and some environmental controls but does not require the environmental controls of an operating room | Accessed from an unrestricted or a semi-restricted area | Air changes per hour Pressurization Temp & Humidity controls Diffuser requirements | Ceilings Floor Wall finishes |
| Operating Room | Invasive procedures* Any procedure during which the patient will require physiological monitoring and is anticipated to require active life support | Accessed from a semi-restricted area | Air changes per hour Pressurization Temp & Humidity controls Diffuser requirements | Ceilings Floor Wall finishes |

Examination Room

Definition

The simplest of the three basic types of rooms is the exam or treatment room.

The exam room is used for patient consultation, examination, and various non-invasive treatments and procedures. There is an expectation of physical contact, or “laying on of hands,” between the caregiver and patient.

FGI Glossary of Examination Room

A room with a bed, gurney, or examination table and capability for periodic monitoring (e.g., measurement of blood pressure or pulse oximetry) **in which procedures that do not require a specialized suite can be performed** (e.g., pelvic examinations).



Examination Room

Types of Cases

Some examples include:

- blood draws
- injections/shots
- minor cuts and sprains (including wound packing)
- stitches and casting
- minor dermatological procedures (including removal of skin tags)
- PICC (percutaneously inserted central catheter) line placement and removal
- needle biopsies

Examination Room

Room Classification

| Room Type | Use | Environmental Controls | | |
|-----------------------------------|--|---|--|---|
| | | Location | Ventilation (excerpted from ASHRAE 170) | Surfaces |
| Exam Room or Treatment Room | Patient care that may require high-level disinfected or sterile instruments but does not require the environmental controls of a procedure room | Accessed from an unrestricted area | 4 total ACH (2 OACH) for general exam room 6 total ACH (2 OACH) for exam rooms programmed for use by patients with undiagnosed gastrointestinal symptoms, respiratory symptoms, or skin symptoms Max 60% RH, 70-75 degrees F Standard diffuser and return array | Ceilings: Cleanable with routine housekeeping equipment Floor: Cleanable and wear-resistant for the location; stable, firm, and slip-resistant Wall finishes: Washable |

ACH = Air changes per hour
OACH = Outside air changes per hour
RH = Relative humidity
F = Fahrenheit



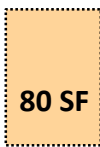
120 SF

Hospital Exam



100 SF

Specialty
Outpatient
Exam

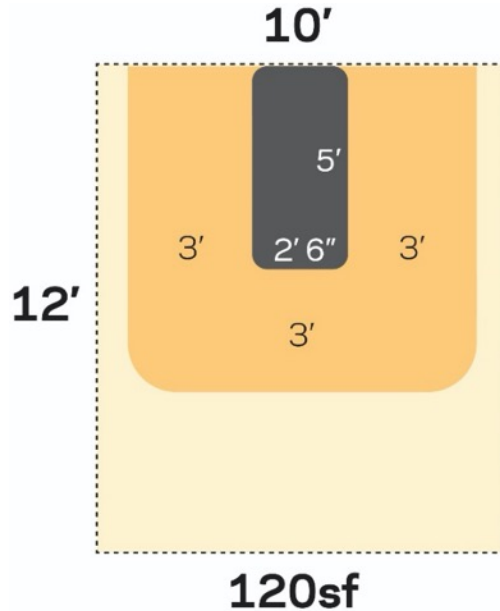


80 SF

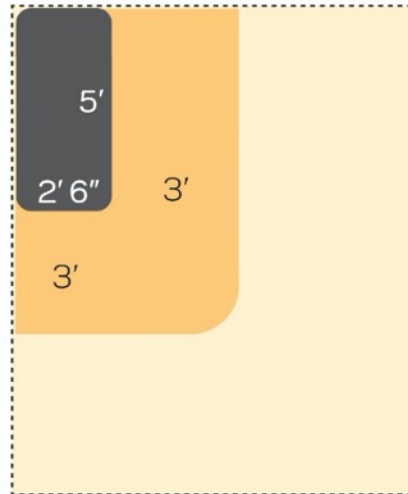
Outpatient
Exam

Exam Room (Hospital)

Diagram






Examination room (Hospital)
Single-patient exam room



Examination room (Hospital)
Alternate room arrangement

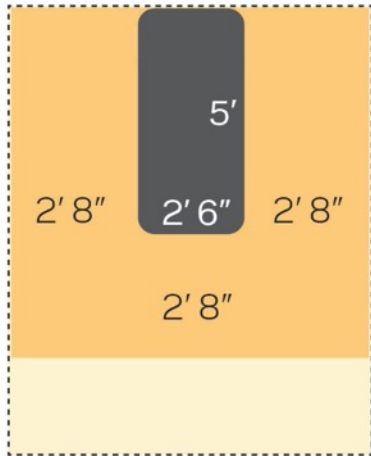
A room arrangement in which an examination table, recliner, or chair is placed at angle, closer to one wall than another, or against a wall to accommodate the type of patient being served shall be permitted.

Clearance zone diagram (minimum)

-  Patient area
(2' 6" x 5' for planning purposes)
-  Clearances
-  Clear floor area

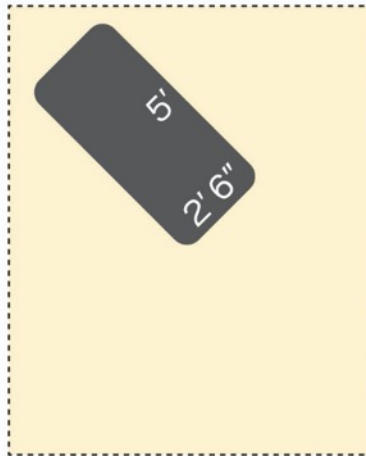
Exam Room (Outpatient)

Diagram



80sf




Examination room (Outpatient)
Single-patient exam room



Alternate room arrangement

A room arrangement in which an examination table, recliner, or chair is placed at angle, closer to one wall than another, or against a wall to accommodate the type of patient being served shall be permitted.

Clearance zone diagram (minimum)

-  Patient area
(2' 6" x 5' for planning purposes)
-  Clearances
-  Clear floor area

Procedure Room

Definition

The procedure room falls between the exam room and operating room in terms of requirements —more restrictive than the exam room and less restrictive than the operating room.

Where the exam room is accessed from an unrestricted area, the procedure room can be accessed from either an unrestricted or semi-restricted area.

This access is one of the operational and planning decisions that must be discussed with the multidisciplinary clinical risk analysis team as it has implications that reach beyond the walls of the room itself (e.g., staff attire, cleaning, infection prevention, etc.).

FGI Glossary Definition of Procedure Room

A room designated for the performance of patient care that requires high-level disinfected or sterile instruments and some environmental controls **but is not required to be performed with the environmental controls of an operating room**



Procedure Room

Types of Cases

Some examples include:

- Procedures that do not enter sterile body cavities and do not require an aseptic environment
- thyroidectomy, tonsillectomy, sinus procedures
- biopsies

Some procedure rooms are designed for specialized purposes and have their own specific requirements, such as rooms for bronchoscopy (negative pressure relationship) and endoscopy (clear floor area) procedures.

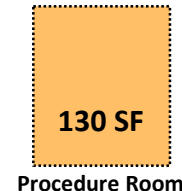
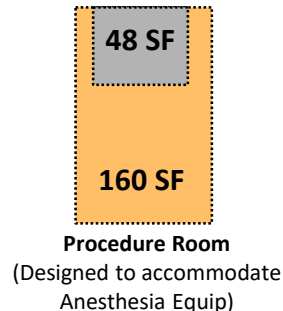
Procedure Room

Room Classification

| Room Type | Use | Environmental Controls | | |
|----------------|--|---|---|---|
| | | Location | Ventilation (excerpted from ASHRAE 170) | Surfaces |
| Procedure Room | Patient care that requires high-level disinfected* or sterile instruments and some environmental controls but does not require the environmental controls of an operating room | Accessed from an unrestricted or a semi-restricted area | 15 total ACH (3 OACH) Positive pressure 20-60% RH 70-75 degrees F Standard diffuser and return array | Ceilings: Smooth and without crevices, scrubable, non-absorptive, non-perforated; capable of withstanding cleaning chemicals; without crevices; lay-in ceiling permitted if gasketed or each ceiling tile weighs at least one pound per square foot and no perforated, tegular, serrated, or highly textured tiles Floor and wall base assemblies for cystoscopy, urology, and endoscopy procedure rooms: Monolithic with an integral coved wall base that is carried up the wall a minimum of 6 in. Wall finishes: Free of fissures, open joints, or crevices |

* Note:

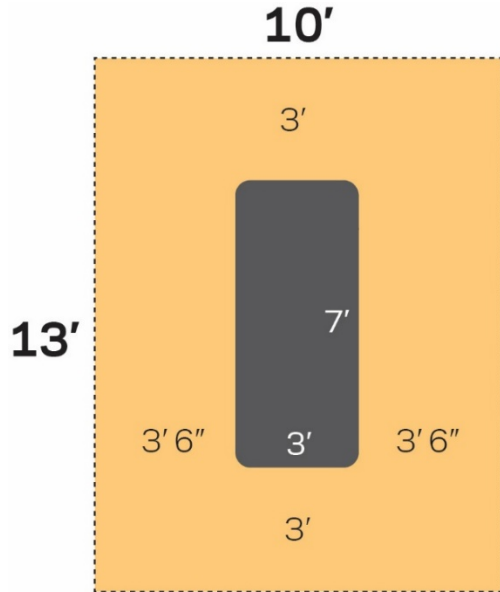
Addendum issued for FGI 2018 clarifying that definition is “**high-level disinfected**” not “high-level disinfection”



ACH = Air changes per hour
 OACH = Outside air changes per hour
 RH = Relative humidity
 F = Fahrenheit

Procedure Room (Hosp & OP) Typical

Diagram



Procedure room (Hosp & OP)
without anesthesia work zone

Procedure rooms shall have a minimum clear floor area of 130 square feet.

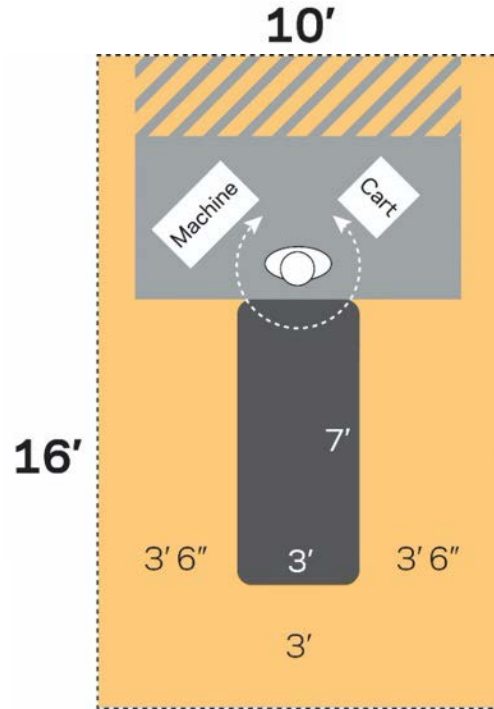
Clearance zone diagram (minimum)

■ Patient area
(3' x 7' for planning purposes)

■ Clear floor area & clearances

Procedure Room (Hosp & OP) & accommodation for Anesthesia Equipment

Diagram



Procedure rooms where anesthesia will be administered using an anesthesia machine and supply carts shall have a minimum clear floor area of 160 square feet.

Procedure room (Hosp & OP)
with anesthesia work zone

Operating Room

Types of Cases

The operating room has the most restrictive and robust minimum infrastructure requirements of the basic room types and can only be accessed from a semi-restricted area.

An aseptic field is required for all procedures, which results in the requirement for the unidirectional diffuser array.

FGI Glossary Definition - Operating Room

A room that meets the requirements of a restricted area, is designated and equipped for performing surgical or other invasive procedures, and has the **environmental controls for an OR as indicated in ASHRAE 170**.

An aseptic field is required for all procedures performed in an OR.



Operating Room

Types of Cases

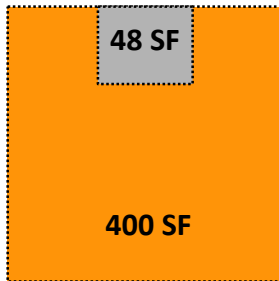
Examples of invasive procedures performed in an operating room include:

- general surgery
- cataract surgery
- burn excision
- mastectomy, hysterectomy, and appendectomy
- joint replacement surgery
- open heart surgery

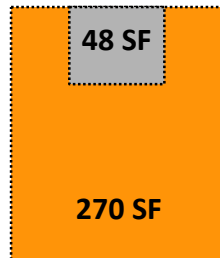
Operating Room

Room Classification

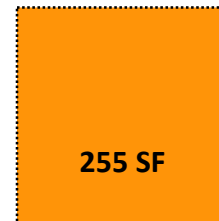
| Room Type | Use | Environmental Controls | | |
|----------------|---|---|--|--|
| | | Location | Ventilation (excerpted from ASHRAE 170) | Surfaces |
| Operating Room | Invasive procedures* Any procedure during which the patient will require physiological monitoring and is anticipated to require active life support | Accessed from a semi-restricted area | 20 total ACH (4 OACH) positive pressure Max 60% RH, 68-75 degrees F Primary supply diffuser array extends a minimum of 12 in. beyond the footprint of the surgical table on each side At least two low sidewall return or exhaust grilles spaced at opposite corners or as far apart as possible | Ceilings: Monolithic, scrubbable, capable of withstanding cleaning and/or disinfecting chemicals, gasketed access openings Floor and wall base assemblies: Monolithic with an integral covered wall base that is carried up the wall a minimum of 6 in. Wall finishes: Free of fissures, open joints, or crevices |



Hospital OR
(ALWAYS PLANNED for
WITH Anesthesia Equip)



Outpatient OR
(WITH full Anesthesia Equip)

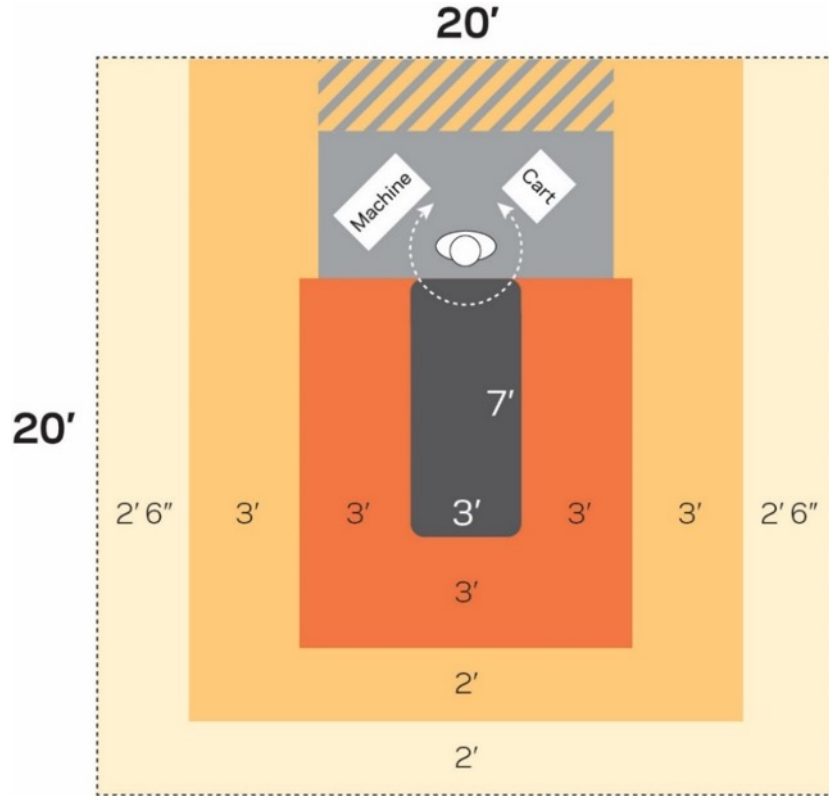


Outpatient OR

ACH = Air changes per hour
 OACH = Outside air changes per hour
 RH = Relative humidity
 F = Fahrenheit

Operating Room (Hospital)

Diagram



Each operating room shall have a minimum clear floor area of 400 square feet.

Operating room...that requires additional personnel and/or large equipment shall...have a minimum clear floor area of 600 square feet with a minimum clear dimension of 20 feet.

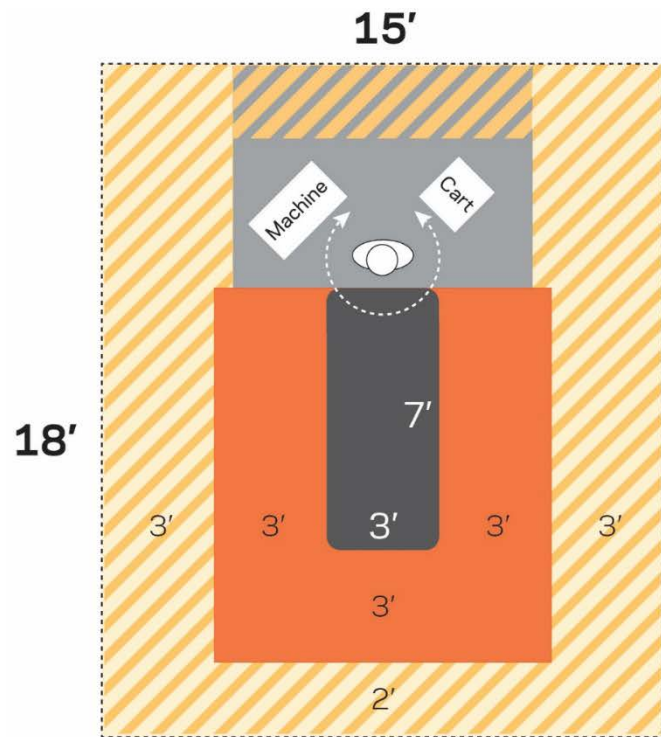
Clearance zone diagram (minimum)

- Anesthesia
(6' x 8' work zone)
- 2' area shared between anesthesia
staff and circulator
- Patient area
(3' x 7' for planning purposes)
- Sterile field where staff and physician work
- Circulation pathway where the circulator walks
to perform duties. Cannot walk into sterile field.
- Movable equipment zone

Operating room (Hospital)






Operating Room (Outpatient)

Diagram



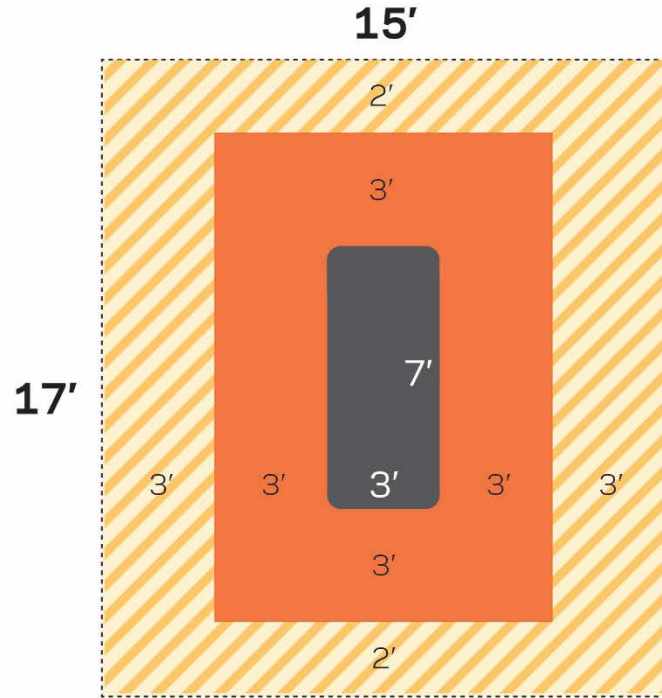
An operating room where anesthetics will be administered using an anesthesia machine and supply cart shall have a minimum clear floor area of 270 square feet.

Clearance zone diagram (minimum)

-  Anesthesia (6' x 8' work zone)
-  2' area shared between anesthesia staff and circulator
-  Patient area (3' x 7' for planning purposes)
-  Sterile field where staff and physician work
-  Combined circulation pathway and movable equipment zone




Operating Room (Outpatient) & no accommodation for anesthesia equipment

Diagram



An operating room shall have a minimum clear floor area of 255 square feet.

Clearance zone diagram (minimum)

-  Patient area
(3' x 7' for planning purposes)
-  Sterile field where staff and physician work
-  Combined circulation pathway and movable equipment zone

Standard 170-2017

Addendum L

Standard 170 – 2017

Addendum L



BSR/ASHRAE/ASHE Addendum L
to ANSI/ASHRAE/ASHE Standard 170-2017

Public Review Draft

**Proposed Addendum L to
Standard 170-2017, Ventilation of
Health Care Facilities**

First Public Review (October 2019)
(Draft shows Proposed Changes to Current Standard)

No objections, voted to approve at Feb. 2020 meeting.

Received 1 comment, will be posted again for public review early April 2020, and close early May 2020.

Likely to be posted as official Addendum to Standard 170 May-June 2020.

Standard 170 - 2017

Addendum L

3. DEFINITIONS

invasive procedure*: a procedure that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). An invasive procedure may fall into one or more of the following categories:

- a. ~~e. generally requires~~ Requires entry into or opening of a sterile body cavity; and (i.e., cranium, chest, abdomen, pelvis, joint spaces). ~~penetrates the protective surfaces of a patient's body (e.g., skin, mucous membranes, cornea);~~
- b. ~~d. may involve~~ Involves insertion of an indwelling foreign body. ~~is performed in an aseptic surgical field (i.e., a procedure site);~~
- c. Includes excision and grafting of burns that cover more than 20 percent of total body area.
- d. Does not begin as an open procedure but has a recognized measurable risk of requiring conversion to an open procedure.



~~**invasive imaging procedure room:** a room in which radio graphic imaging is used and in which instruments or devices are inserted into patients through the skin or body orifice under sterile conditions for diagnosis and/or treatment.~~

invasive fluoroscopy: therapeutic or diagnostic invasive procedures that require fluoroscopic imaging (e.g., cardiac catheterization, interventional angiography, cardiac stenting, or implantation of devices). **Note:** These procedures are typically performed in a restricted or semi-restricted area, based on the classification of the imaging procedure being performed. Refer also to Class 2 Imaging Room for cardiac catheterization, interventional angiography and Class 3 for cardiac stenting, or implantation of devices.

Standard 170 - 2017

Addendum L

operating room (OR): a room in the surgical suite that meets the requirements of a restricted area and is designated and equipped for performing invasive procedures.

procedure room*: a room designated for the performance of patient care that requires high-level disinfection or sterile instruments and some environmental controls but is not required to be performed with the environmental controls of an operating room. ~~procedures that do not meet the definition of “invasive procedure” and may be performed outside the restricted area of a surgical suite and may require the use of sterile instruments or supplies. Local anesthesia and minimal and moderate sedation may be administered in a procedure room as long as special ventilation or waste anesthesia gas disposal systems are not required for anesthetic agents used in these rooms.~~

Class 1 Imaging Room: diagnostic radiography, fluoroscopy, mammography, computed tomography (CT), ultrasound, magnetic resonance imaging (MRI), nuclear medicine and other imaging modalities including services that use natural orifice entry and do not pierce or penetrate natural protective membranes.

Class 2 Imaging Room: diagnostic and therapeutic procedures such as coronary, neurological, or peripheral angiography including electrophysiology, cardiac catheterization and interventional angiography and similar procedures.

Class 3 Imaging Room: invasive procedures including cardiac stenting, implantation of devices in an Invasive Fluoroscopy and any other Class 2 procedure during which the patient will require physiological monitoring and is anticipated to require active life support.

Standard 170 - 2017

Addendum L

Revise Section 7.1 as shown. The remainder of Section 7.1 is unchanged.

7.1 General Requirements. The following general requirements shall apply for space ventilation:

a. Spaces shall be ventilated according to Table 7.1.

7. Unless a higher ventilation rate is stipulated in Table 7.1 or elsewhere in this standard, wherever anesthetic gases are administered outside of an Operating Room, Procedure Room, Class 2 & Class 3 Imaging Rooms, ventilation shall be provided at a minimum rate of 2 Outdoor ach and 6 Total ach.

Informative Note: refer to NFPA 99 for WAGD piping and gas scavenging requirements. Note: anesthetic gasses commonly refers to nitrous oxide and xenon, however, may also include halogenated volatile anesthetic agents such as desflurane, sevoflurane, and isoflurane.

Standard 170 - 2017

Addendum L

Revise Table 7.1 and Normative Notes for Table 7.1 as shown below. The remainder of Table 7.1 is unchanged.

Table 7.1 Design Parameters – Hospital Spaces

| Function of Space (dd) | Pressure Relationship to Adjacent Areas (n) | Minimum Outdoor ach | Minimum Total ach | All Room Air Exhausted Directly to Outdoors (j) | Air Recirculated by Means of Room Units (a) | Unoccupied Turndown | Minimum Filter Efficiencies (bb) | Design Relative Humidity (k), % | Design Temperature (l), °F/°C |
|--|---|---------------------|-------------------|---|---|---------------------|----------------------------------|---------------------------------|-------------------------------|
| DIAGNOSTIC AND TREATMENT | | | | | | | | | |
| Imaging (diagnostic and treatment) Class 1 imaging room (FGI 2.2-3.4.2.4(1)(b)(i)) | NR (yy) | 2 | 6 | NR | NR | Yes | MERV-A-8 / MERV-A-14 | max 60 | 72–78/22–26 |
| Interventional imaging procedure room (2.2.3.5.2) Class 2 imaging room (d), (p) (FGI 2.2-3.4.2.4(1)(b)(ii)) | Positive | 3 | 15 | NR | No | Yes | MERV-A-8 / MERV-A-14 | max 60 | 70–75/21–24 |
| Class 3 imaging room (m), (o) (FGI 2.2-3.4.2.4(1)(b)(iii)) | Positive | 4 | 20 | NR | No | Yes | MERV-A-8 / MERV-A-16 (xx) | max 60 | 68–75/20–24 |
| Interventional and intraoperative MRI procedure room (2.2.3.5.2) | Positive | 4 | 15 | NR | No | Yes | 8/14 | max 60 | 70–75/21–24 |
| Nuclear medicine treatment procedure room (2.2.3.6.1) | Negative | 2 | 6 | Yes | NR | Yes | 8/14 | NR | 70–75/21–24 |

Normative Notes for Table 7.1:

1. Systems shall be capable of maintaining the rooms within the range during normal operations. Lower or higher temperatures shall be permitted when occupants' ~~patients'~~ comfort and/or medical conditions require those conditions.

xx. See Section 7.4.1.c.

yy. Negative pressure is required if open mixing of isotopes or gaseous studies are performed as a part of nuclear treatment procedures within the imaging room. **Informative Note:** open mixing of isotopes is typically performed in the hot lab.

Standard 170 - 2017


Addendum L

Revise Section 7.4.1 as shown below. The remainder of Section 7.4.1 is unchanged.

7.4.1 Operating Rooms, Operating/Surgical Cystoscopic Rooms, ~~and~~ Caesarean Delivery Rooms, and Class 3 Imaging Rooms. These rooms shall be maintained at a positive pressure with respect to all adjoining spaces at all times. A pressure differential shall be maintained at a value of at least +0.01 in. wc (2.5 Pa). Each room shall have individual temperature control. These rooms shall be provided with a primary supply diffuser array that is designed as follows:

- c. In operating rooms or class 3 imaging rooms designated for orthopedic procedures, transplants, neurosurgery, or dedicated burn unit procedures, HEPA filters shall be provided and located in the air terminal device.

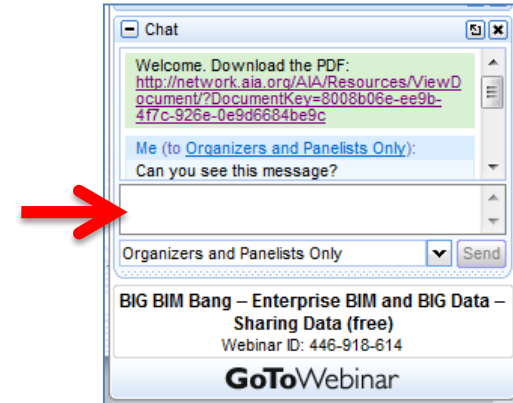
Delete Section 7.4.3 as shown below.



~~**7.4.3 Imaging Procedure Rooms.** If invasive procedures occur in this type of room, ventilation shall be provided in accordance with the ventilation requirements for procedure rooms. If anesthetic gases are administered, ventilation shall be provided in accordance with the ventilation requirements for operating rooms.~~

Question Reminder

Submit your questions and comments
via the chat box.



Clinical Risk Assessment

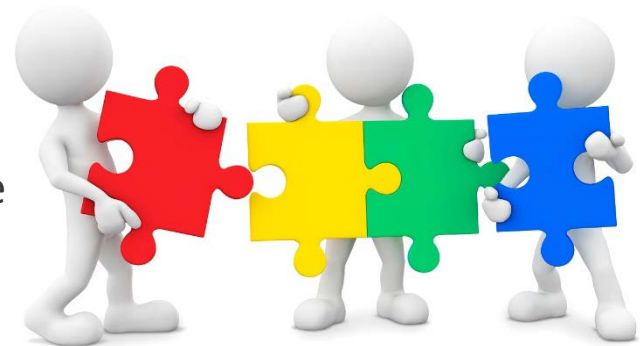
Clinical Risk Assessment

At the start of a project, a clinical risk assessment should be undertaken.

Advancements in technology, increased complexity of cases, and clinical scope creep place responsibility on the planner and designer to ask questions up front.

A robust multidisciplinary team includes representatives from the clinical staff including surgery, nursing, anesthesiology, infection prevention, regulatory officer, administration, facility management, and design teams.

A greater obligation falls on the planner and designer to understand the procedures and intended uses of the rooms in order to determine the proper program and requirements.



Questionnaire

CONSTRUCTION NEEDS ASSESSMENT QUESTIONNAIRE PRELIMINARY EVALUATION FOR NEW CONSTRUCTION OR CHANGE OF USE

This questionnaire is intended for use as a preliminary tool in determining the needs of a new or change-of-use space that will be constructed, renovated, retrofitted and/or receive new equipment.

This questionnaire has been created as a tool for use by the industry and is not the official position of the FGI (Facilities Guidelines Institute), HGRC (Healthcare Guidelines Review Committee, AIA AAH (AIA Academy of Architecture and Health, or NBBJ).

INSTRUCTIONS:

Please use this form to describe the anticipated space (i.e., a new space, changes to an existing space, an expansion, or reductions and/or

A Individual Information

| | | | |
|----------------|----------------------|-----------|----------------------|
| Contact Person | <input type="text"/> | Telephone | <input type="text"/> |
| Title | <input type="text"/> | Email | <input type="text"/> |
| Department | <input type="text"/> | | |

B Background. Describe the need or request for the new or changed space use, briefly. If the space is existing (e.g., designated for temporary use, change of use, change of equipment), identify the space here (location, department, floor, room number).

Select all that apply.

- | | |
|--|---|
| <input type="checkbox"/> Temporary space | <input type="checkbox"/> Equipment new |
| <input type="checkbox"/> Existing space, same use | <input type="checkbox"/> Equipment upgrade/replacement |
| <input type="checkbox"/> Existing space, change of use | <input type="checkbox"/> Clinical/patient contact |
| <input type="checkbox"/> New space, new use | <input type="checkbox"/> Highly-specialized suite (e.g., OR, shielding, secured area) |

C Contemplated Activities. Briefly describe the types of examinations or procedures expected to be performed in this space. List separately procedures or technology advancements the health care organization may want to consider in the future (e.g., cases of increasing complexity, possibility of acquiring new equipment, known or predicted advancements in technology, new types of procedures based on intended recruitment).

D Level of risk. If patient care will be delivered in the space, please identify as best you can the perceived level of risk to the patient as indicated by...

- ☐ Non-invasive (e.g., exam, consult, diagnostic, needle/bloodwork, IV contrast, low to no risk of infection)
- ☐ > Non-invasive < Invasive (i.e., percutaneous or minimally invasive procedures)
- ☐ Invasive (e.g., open surgical case; see FGI definition of "invasive procedure" below)

Invasive Procedure (definition per FGI Guidelines glossary, 2018 edition):

A procedure that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). An invasive procedure may fall into one or more of the following categories:

- Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces)
- 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 recognized measurable risk of requiring conversion to an open procedure

Clinical Risk Assessment

List other information on patient population (e.g., general characteristics [age, gender], physical limitations and considerations, co-morbidities).

E Anesthetic. If patient sedation is involved, please identify as best you can the need for sedation and type of sedation.

- | | |
|--|--|
| <input type="checkbox"/> No sedation is required. | <input type="checkbox"/> Sedation other than anesthetic gas or inhalation anesthetic |
| <input type="checkbox"/> Sedation required in order to perform procedure | <input type="checkbox"/> Sedation by anesthetic gas/inhalation anesthetic |
| <input type="checkbox"/> Sedation required by type of patient (e.g., pediatric, anxious) | <input type="checkbox"/> Patient will require physiological monitoring. |
| | <input type="checkbox"/> Patient is anticipated to require active life support. |

F Type of setting. Identify all that apply.

- | | |
|---|--|
| <input type="checkbox"/> Hospital/inpatient | <input type="checkbox"/> Examination, treatment, consultation, or Class 1 imaging room |
| <input type="checkbox"/> Freestanding/ambulatory/outpatient | <input type="checkbox"/> Procedure or Class 2 imaging room |
| <input type="checkbox"/> Emergency room | <input type="checkbox"/> Operating or Class 3 imaging room |
| <input type="checkbox"/> | <input type="checkbox"/> |

Does the new space have special requirements (e.g., infrastructure [structural/ventilation/plumbing/electrical], shielding, medical gas outlets, acoustical, flooring, pressurization, location, visibility, access, adjacencies, relationships to other programs, number of staff required, limited access etc.)?

G Location Information. If multiple locations are involved, please fill out a separate form for each location.

| | | | | | |
|------|--------------------|----------|----------------------|-------|----------------------|
| from | Current location | Building | <input type="text"/> | Floor | <input type="text"/> |
| to | Preferred location | Building | <input type="text"/> | Floor | <input type="text"/> |

H Other Information. For renovation, expansion, and backfill projects, briefly describe why your existing space is inadequate.

If space will be vacated, please indicate if current space will be released by the department or describe the space backfill proposal.

Additional comments

I Requested by:

Name:

Title:

Date:

Signature:

Background Info

Clinical Risk Assessment

CONSTRUCTION NEEDS ASSESSMENT QUESTIONNAIRE
PRELIMINARY EVALUATION FOR NEW CONSTRUCTION OR CHANGE OF USE

This questionnaire is intended for use as a preliminary tool in determining the needs of a new or change-of-use space that will be constructed, renovated, retrofitted and/or receive new equipment.
This questionnaire has been created as a tool for use by the industry and is not the official position of the FGI (Facilities Guidelines Institute), HGRC (Healthcare Guidelines Review Committee, AIA AHA (AIA Academy of Architecture and Health), or NBBI.

Instructions:
Please use this form to describe the anticipated space (i.e., a new space, changes to an existing space, an expansion, or reductions and/or

A Individual Information

Contact Person: Telephone:
Title:
Department:

B Background. Describe the need or request for the new or changed space use, briefly. If the space is existing (e.g., designated for temporary use, change of use, change of equipment), identify the space here (location, department, floor, room number).

☐ Temporary space
☐ Existing space, same use
☐ Existing space, change of use
☐ New space, new use
☐ Equipment new
☐ Equipment upgrade/replacement
☐ Clinical/patient contact
☐ Highly-specialized suite (e.g., OR, shielding, secured area)

C Completed Activities. Briefly describe the types of renovations or procedures expected to be performed in the space. List separate procedures or technology, abbreviate the health care organization may want to consider. If the future (e.g., room of monitoring, monitoring, possibly. (If acquiring new equipment, know or predict advancement in technology, new type of procedure based on available technology).

D Level of risk. If patient care will be delivered in the space, please identify at least you can the perceived level of risk to the patient as indicated by the following (e.g., none, minor, moderate, significant, moderate/high, or critical). Use the risk level of the following categories:

☐ Non-invasive (e.g., exam, consult, diagnostic, medical/dental, IV center, etc.)
☐ Non-invasive + invasive (e.g., percutaneous or minimally invasive procedures)
☐ Invasive (e.g., open surgical case, use FGI definition of "invasive procedure" below)

Invasive Procedures (definition per FGI Guidelines glossary, 2018 edition):
A procedure that is performed in an aseptic surgical field and penetrates the protective surface of a patient's body (e.g., intubation, incision, incision, incision, etc.).
Requires entry into or opening of a sterile body cavity (e.g., cranium, chest, abdomen, pelvis, joint space)
Requires incision and grafting of tissue that cover more than 20 percent of total body area
Requires incision and grafting of tissue that cover more than 20 percent of total body area
Does not include in an open procedure but has a recognized measurable risk of requiring conversion to an open procedure

Use other information on patient population (e.g., general characteristics (age, gender), physical limitations and considerations, or comorbidities).

E Anesthesia. If patient sedation is involved, please identify at least you can the need for sedation and type of sedation.

☐ No sedation is required
☐ Sedation required to enter to perform procedure
☐ Sedation required by type of patient (e.g., pediatric, elderly)
☐ Sedation other than anesthetic gas or inhalation anesthetic
☐ Sedation by anesthetic gas/inhalation anesthetic
☐ Patient will require physiological monitoring.

F Type of setting. Identify all that apply.

☐ Intensive/urgent
☐ Trauma/emergency department
☐ Emergency room
☐ Examination, treatment, consultation, or Class 1 imaging room
☐ Precision or Class 1 imaging room
☐ Operating or Class 1 imaging room

Does the new space have special requirements (e.g., infrastructure (structural/ventilation/shielding/ventilating, shielding, medical gas outlets, electrical, heating, air conditioning, water, utility, alarm, etc.), relationship to other programs, number of staff required, limited access etc.)?

G Location information. If multiple locations are involved, please provide a separate form for each location.

From Current location Building: Floor:
to Preferred location Building: Floor:

H Other information. For renovation, expansion, and backfit projects, briefly describe why your existing space is inadequate.

If space will be vacant, please indicate if current space will be returned to the department or describe the space backfit project.

Additional comments

I Requested by:
Name:
Title:
Date:
Signature:

CONSTRUCTION NEEDS ASSESSMENT QUESTIONNAIRE

PRELIMINARY EVALUATION FOR NEW CONSTRUCTION OR CHANGE OF USE

This questionnaire is intended for use as a preliminary tool in determining the needs of a new or change-of-use space that will be constructed, renovated, retrofitted and/or receive new equipment.

This questionnaire has been created as a tool for use by the industry and is not the official position of the FGI (Facilities Guidelines Institute), HGRC (Healthcare Guidelines Review Committee, AIA AHA (AIA Academy of Architecture and Health), or NBBI.

INSTRUCTIONS:

Please use this form to describe the anticipated space (i.e., a new space, changes to an existing space, an expansion, or reductions and/or

A Individual Information

Contact Person

Telephone

Title

Email

Department

B Background. Describe the need or request for the new or changed space use, briefly. If the space is existing (e.g., designated for temporary use, change of use, change of equipment), identify the space here (location, department, floor, room number).

Select all that apply.

☐

Temporary space

☐

Existing space, same use

☐

Existing space, change of use

☐

New space, new use

☐

Equipment new

☐

Equipment upgrade/replacement

☐

Clinical/patient contact

☐

Highly-specialized suite (e.g., OR, shielding, secured area)

Activities & Risk

Clinical Risk Assessment

CONSTRUCTION NEEDS ASSESSMENT QUESTIONNAIRE
PRELIMINARY EVALUATION FOR NEW CONSTRUCTION OR CHANGE OF USE

This questionnaire is intended for use as a preliminary tool in determining the need for a new or changed space that will be constructed, renovated, reconfigured and/or involve new equipment.

This questionnaire has been created for use by the Indiana state and the office location of the FGI (Facilities Guidelines Institute), HAIAC (Healthcare Accreditation Review Committee), AIAA (Joint Academy of Architecture and Health), or HAIAC.

Instructions:
 Please use this form to describe the anticipated space (i.e., a new space, changes to an existing space, an expansion, or reduction and/or

A. Individual Information

Contact Person: Title:

Department:

B. Background. Describe the need or request for the new or changed space use. Briefly, if the space is existing (e.g., designated for emergency use, change of use, change of equipment), identify the space (room/location, department, floor, room number).

Identify all that apply:

☐ Temporary space ☐ Equipment move ☐ Equipment upgrade/replacement

☐ Existing space, same use ☐ Other department convert ☐ New space, new use

☐ Existing space, change of use ☐ Highly specialized suite (e.g., OR, imaging, secured area)

C. Contemplated Activities. Briefly describe the types of examinations or procedures expected to be performed in this space. List separately procedures or technology advancements the health care organization may want to consider in the future (e.g., cases of increasing complexity, possibility of acquiring new equipment, known or predicted advancements in technology, new types of procedures based on intended recruitment).

D. Level of risk. If patient care will be delivered in the space, please identify at least you can the perceived level of risk to the patient as indicated by...

☐ Non-invasive (e.g., exam, consult, diagnostic, needle/bloodwork, IV contrast, low to no risk of infection)

☐ > Non-invasive < Invasive (i.e., percutaneous or minimally invasive procedures)

☐ Invasive (e.g., open surgical case; see FGI definition of "invasive procedure" below)

Instructions: (definition per FGI Guidelines glossary, 2018 edition)
 A procedure that is performed in an aseptic surgical field and penetrates the protective surface of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). An invasive procedure may fall into one or more of the following categories:
 - Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces)
 - 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 recognized measurable risk of requiring conversion to an open procedure

Use other information on patient population (e.g., general characteristics [age, gender], physical limitations and considerations, co-morbidities)

A. Activities. If patient infection is involved, please identify at least you can the need for infection and type of infection.

☐ Infection is required ☐ Isolation other than aseptic gas or isolation aseptic

☐ Isolation required to enter to perform procedure ☐ Isolation by ambient gas/chemical agents

☐ Isolation required by type of patient ☐ Patient will require physiological monitoring

(e.g., patients, devices)

☐ Patient is anticipated to require active the support

F. Type of setting. Identify all that apply:

☐ Inpatient/outpatient ☐ Examination, treatment, consultation, or Class 1 imaging room

☐ Imaging/outpatient ☐ Procedure or Class 2 imaging room

☐ Emergency room ☐ Outpatient or Class 1 imaging room

Does the new space have special requirements (e.g., infrastructure [structure/infrastructure], shielding, medical gas outlets, ventilation, lighting, power/ventilation, isolation, security, access, adjustments, relationships to other projects, number of staff required, limited access etc.)?

G. Location information. If multiple locations are involved, please provide a separate form for each location.

From Current location Building: Floor:

To Preferred location Building: Floor:

H. Other information. For renovation, expansion, and backfit projects, briefly describe why your existing space is inadequate.

If space will be vacated, please indicate if current space will be returned to the department or describe the space backfit project.

Additional comments:

I. Requested by:

Name:

Title:

Date:

Signature:

C Contemplated Activities. Briefly describe the types of examinations or procedures expected to be performed in this space. List separately procedures or technology advancements the health care organization may want to consider in the future (e.g., cases of increasing complexity, possibility of acquiring new equipment, known or predicted advancements in technology, new types of procedures based on intended recruitment).

D Level of risk. If patient care will be delivered in the space, please identify as best you can the perceived level of risk to the patient as indicated by...

- ☐ Non-invasive (e.g., exam, consult, diagnostic, needle/bloodwork, IV contrast, low to no risk of infection)
- ☐ > Non-invasive < Invasive (i.e., percutaneous or minimally invasive procedures)
- ☐ Invasive (e.g., open surgical case; see FGI definition of "invasive procedure" below)

Invasive Procedure (definition per FGI Guidelines glossary, 2018 edition):

A procedure that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). An invasive procedure may fall into one or more of the following categories:

- Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces)
- 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 recognized measurable risk of requiring conversion to an open procedure

List other information on patient population (e.g., general characteristics [age, gender], physical limitations and considerations, co-morbidities).

Anesthetic & Setting

Clinical Risk Assessment

CONSTRUCTION NEEDS ASSESSMENT QUESTIONNAIRE
PRELIMINARY EVALUATION FOR NEW CONSTRUCTION OR CHANGE OF USE

This questionnaire is intended for use as a preliminary tool in identifying the needs of a new change of use or space that will be constructed, renovated, modified and/or involve new equipment.

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Instructions:
Please use this form to describe the anticipated space (i.e., a new space, changes to an existing space, an expansion, or reduction and/or).

A. Individual Information
Contact Person: _____ Telephone: _____
Title: _____ Email: _____
Department: _____

B. Background. Describe the need or request for the new or changed space use. Briefly, if the space is existing (e.g., designated for emergency use, change of use, change of equipment), identify the space (location, department, floor, room number).

Identify all that apply:
☐ Temporary space ☐ Equipment new
☐ Existing space, same use ☐ Equipment upgrade/replacement
☐ Existing space, change of use ☐ Clinic expansion contract
☐ New space, new use ☐ Highly specialized suite (e.g., OR, imaging, secured area)

C. Contemplated Activities. Briefly describe the types of examinations or procedures expected to be performed in this space. List separately procedures or technology, acknowledge the health care organization may want to consider in the future (e.g., type of imaging, minimally, possibly, if acquiring new equipment, known or potential advancements in technology, new type of procedure based on available technology).

D. Level of risk. If patient care will be delivered in the space, please identify in brief you can the perceived level of risk to the patient as indicated by:
☐ Non-invasive (e.g., exam, consult, diagnosis, medical/surgical, IV central, low to no risk of infection)
☐ Non-invasive + invasive (i.e., percutaneous or minimally invasive procedures)
☐ Invasive (e.g., open surgical case, use of definition of "invasive procedure" below)

Invasive procedure (definition per JFGI Guidelines document, 2018 edition):
A procedure that is performed in an aseptic surgical field and penetrates the protective surface of a patient's body (e.g., subcutaneous tissue, muscle, tendons, cartilage). An invasive procedure may fall into one or more of the following categories:
Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint space)
Requires insertion of or handling foreign body
Requires excision and grafting of tissue that covers more than 20 percent of total body area
Does not begin as an open procedure but has a recognized measurable risk of requiring conversion to a surgical procedure

List other information on patient population (e.g., general characteristics [age, gender], physical limitations and considerations, co-morbidities)

E. Anesthetic. If patient sedation is involved, please identify in brief you can the need for sedation and type of sedation.
☐ No sedation is required.
☐ Sedation required in order to perform procedure
☐ Sedation required by type of patient (e.g., pediatric, anxious)

F. Type of setting. Identify all that apply.
☐ Hospital/inpatient
☐ Freestanding/ambulatory/outpatient
☐ Emergency room
☐ Sedation other than anesthetic gas or inhalation anesthetic
☐ Sedation by anesthetic gas/inhalation anesthetic
☐ Patient will require physiological monitoring.
☐ Patient is anticipated to require active life support.

G. Does the new space have special requirements (e.g., infrastructure [structural/ventilation/plumbing/electrical], shielding, medical gas outlets, acoustical, flooring, pressurization, location, visibility, access, adjacencies, relationships to other programs, number of staff required, limited access etc.)?

H. Location/Relocation. If a proposed relocation or renovation project, identify the current location and the proposed location.
From: Current location Building: _____ Floor: _____
to: Preferred location Building: _____ Floor: _____

I. Other Information. For renovation, expansion, and backfit projects, briefly describe why your existing space is inadequate.
If space will be vacant, please indicate if current space will be returned to the department or describe the space backfit project.

Additional comments:

J. Requested by:
Name: _____
Title: _____
Date: _____
Signature: _____

E Anesthetic. *If patient sedation is involved, please identify as best you can the need for sedation and type of sedation.*

- ☐ No sedation is required.
- ☐ Sedation required in order to perform procedure
- ☐ Sedation required by type of patient (e.g., pediatric, anxious)
- ☐ Sedation other than anesthetic gas or inhalation anesthetic
- ☐ Sedation by anesthetic gas/inhalation anesthetic
- ☐ Patient will require physiological monitoring.
- ☐ Patient is anticipated to require active life support.

F Type of setting. *Identify all that apply.*

- ☐ Hospital/inpatient
- ☐ Freestanding/ambulatory/outpatient
- ☐ Emergency room
- ☐ Examination, treatment, consultation, or Class 1 imaging room
- ☐ Procedure or Class 2 imaging room
- ☐ Operating or Class 3 imaging room

Does the new space have special requirements (e.g., infrastructure [structural/ventilation/plumbing/electrical], shielding, medical gas outlets, acoustical, flooring, pressurization, location, visibility, access, adjacencies, relationships to other programs, number of staff required, limited access etc.)?

Clinical Risk Assessment

6. Location information: If multiple locations are involved, please fill out a separate form for each location.

| Zone | Current location | Building | Floor |
|------|------------------|----------|-------|
| | | | |
| | | | |

7. Other information: For renovations, expansion, and backfill projects, briefly describe why your existing space is inadequate.

| |
|--|
| |
|--|

If space will be recently added, please indicate if current space will be returned to the department or describe the space backfill project.

| |
|--|
| |
|--|

Additional comments

| |
|--|
| |
|--|

8. Requester by:

| |
|-----------|
| Name |
| Title |
| Division |
| Signature |

from Current location Building Floor

| | | | | | |
|----|--------------------|----------|--|-------|--|
| to | Preferred location | Building | | Floor | |
|----|--------------------|----------|--|-------|--|

| |
|--|
| |
|--|

If space will be vacated, please indicate if current space will be released by the department or describe the space backfill proposal.

Additional comments

I Requested by:

Name:

Title:

Date:

Signature:



**The American
Institute
of Architects**

Academy of
Architecture for Health

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Time for Questions and Comments





The American
Institute
of Architects

Academy of
Architecture for Health

an AIA Knowledge Community

CES Reminder

The URL to the webinar survey <https://www.research.net/r/AAH2002> will be emailed to the individual who registered your site.

The survey closes **Friday, March 13, 2020** at midnight ET.

For questions, please email knowledgecommunities@aia.org.



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Announcements

U40 List: Healthcare Design's Best Under 40  

The U40 List is nomination oriented recognition to celebrate individuals making a significant contribution to the advancement of health facilities design. Each year up to two individuals will be selected to have their names added to the distinguished U40 List. The individuals will receive a formal document to affirm the Academy's recognition.



**The American
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Academy of
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Upcoming Webinars

| Date | Series | Topic |
|------|-----------------------|--|
| 4/14 | Healthcare Essentials | The Big 5: Healthcare Design Strategies for an Adaptable Future |
| 5/12 | Beyond the Basics | Psychiatric Crisis Centers and ED's: Trends, Drivers, and Examples |
| 6/9 | Beyond the Basics | Net-Zero Hospitals: A Path Forward |

Dates & topics are subject to change