Guidelines
FOR DESIGN AND CONSTRUCTION OF
Hospitals

2018 edition

The Facility Guidelines Institute


[FGI logo]

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Preface

The Facility Guidelines Institute (FGI) owes much to the 100+ members of the 2018 Health Guidelines Revision Committee who served on the Hospital, Outpatient, and Residential document groups and associated task groups. FGI is also indebted to the additional subject matter experts who served on the Residential Document Group and 2018 topic groups as well as individuals who reviewed material in their areas of expertise (see the acknowledgments for lists of groups and individuals). These talented individuals volunteered their time and considerable expertise to develop the content of the 2018 edition of the FGI Guidelines for Design and Construction documents. We thank you all for your dedication and contributions of knowledge and experience!

The 2018 edition of the Guidelines is being published as three separate documents to clearly differentiate the needs of hospitals, outpatient facilities, and residential care facilities and to support greater flexibility in the design of outpatient facilities as health care expands into a greater variety of outpatient spaces.

The three documents are the Guidelines for Design and Construction of Hospitals, the Guidelines for Design and Construction of Outpatient Facilities, and the Guidelines for Design and Construction of Residential Health, Care, and Support Facilities, which addresses nursing homes and other long-term care facilities.

The 2018 edition is the latest in the 71-year history of the Guidelines document and the eighth to be revised through a multidisciplinary consensus process supported by public input and review. It is the fifth edition developed under the guidance of FGI. FGI remains committed to revising and updating these publications on a four-year revision cycle using the multidisciplinary public process that has been the cornerstone of Guidelines development for more than three decades.

There is a certain logic behind the four-year cycle for development of each Guidelines edition, but health care changes rapidly and certainly not on a static cycle. Beginning with the 2018 documents, FGI is planning a series of publications in addition to its Guidelines for Design and Construction documents. Termed “beyond fundamentals,” these publications are intended to support and expand the minimum design requirements published in the Guidelines. Possible topics include detailed discussion of Guidelines requirements and how to apply them, research supporting Guidelines requirements, draft minimum requirements supported with research or other evidence, best practices, and trends in practice that are changing health care facility design. In the form of white papers, articles, case studies, advisory opinions, checklists, and so on, this material will help facility managers and designers learn about advancements in health care design that can make facilities safer for patients and staff and improve clinical outcomes. Please follow the FGI website (www.fgiguide.com) for updates on the “beyond fundamentals” as well as future educational programs.

We encourage all users of the Guidelines to get involved in the public proposal and comment process FGI undertakes cyclically to revise the Guidelines standards. Keep notes as you use the documents and let us know what needs to be improved. The Guidelines must stay in step with changes in the industry, and we count on all who use it to help us keep the documents current.

Kurt Rockstroh, FAIA, FACHA
President
Facility Guidelines Institute
About This Document

The Guidelines for Design and Construction documents are updated every four years to keep pace with evolving care models, facility types, and requests for up-to-date guidance from care providers, designers, and regulators. For the 2018 edition, the Facility Guidelines Institute (FGI) published three Guidelines for Design and Construction (Guidelines) standards, separating the requirements for hospitals and outpatient facilities for the first time and maintaining a separate document for long-term residential care facilities—nursing homes and hospice facilities, assisted living facilities and independent living settings, and non-residential support facilities (adult day care facilities, wellness centers, and outpatient rehabilitation centers).

The goal for development of a separate outpatient document was to provide a framework for physical environments that support the unique needs of outpatients and outpatient facility staff and can support flexible development as outpatient facility services change to meet market demands. In recent years, services provided in outpatient facilities have rapidly evolved and expanded so that many procedures and operations formerly performed only in hospitals now routinely take place in outpatient settings. In inpatient settings, changes in the insurance market and the size of the aging population in the United States have pushed the numbers of patients served to all-time highs. These changes will continue to have significant implications for the design and construction of health care facilities and the communities where those services are delivered, and the Guidelines must change to support how care is provided.

The Revision Process

The Guidelines and the methodology for revising its content have been, and still are, evolving. When first published, the document was a set of regulations developed by a single department of the federal government as a condition for receiving a federal hospital construction grant under the Hill-Burton Act. Today, FGI develops the Guidelines using a consensus process similar to that approved by the American National Standards Institute.

This process brings together the members of the Health Guidelines Revision Committee (HGRC), a balanced group of stakeholders in health care facility planning, design, construction, and operations and clinical services who volunteer their time to the development of the Guidelines. The committee considers proposals for change received from the public; achieves consensus on facility issues; and develops proposed revisions to the previous edition. The proposed revisions are then posted for public comment and revised by the HGRC, as needed, in response to those comments. The product of this revision process is compiled and published as a new edition of the Guidelines.

When possible, the Guidelines standards are performance-oriented for desired results. Prescriptive measurements, when given, have been carefully considered relative to generally recognized standards and research. For example, at the beginning of the 2018 revision cycle, members of the HGRC engaged in a workshop to determine baseline clearances needed to accommodate equipment and caregivers when caring for patients of size. This information was used to write proposals for new requirements for accommodations for care of patients of size in hospitals and outpatient facilities. Such revisions to the Guidelines are not made for the sake of change, but rather are submitted for public review and comment and thoroughly reviewed and evaluated by the approximately 100 professionals in health care delivery and design who make up the HGRC.

For the 2018 edition of the Guidelines, the HGRC was broken into three document groups—Hospital, Outpatient, and Residential—to streamline development of the three Guidelines documents. The Hospital and Residential document groups focused on refining the content of those documents, while the Outpatient Document Group worked to develop the inaugural edition of the Guidelines for Design and
Construction of Outpatient Facilities. As well, the Hospital and Outpatient document groups worked together to correlate the content of the Guidelines sections that would appear in both the hospital and outpatient documents, identifying instances where the requirements needed to be different but always striving to support safe environments for patients and staff wherever services are provided.

Basic Organization of the Guidelines

Main body. The main body of this document is composed of three parts:

- Part 1 contains chapters that address considerations applicable to all hospitals, except as modified in specific facility chapters in Part 2.
- Part 2 addresses facilities where inpatient care is provided, with chapters devoted to common elements, general hospitals, critical access hospitals, psychiatric hospitals, rehabilitation hospitals, and children’s hospitals. Chapters on freestanding emergency departments and mobile/transportable medical units are also included.
- Part 3 contains the full text of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 170-2017: Ventilation of Health Care Facilities. This ANSI/ASHRAE/ASHE standard—including all addenda issued by ASHRAE—has been incorporated directly into the Guidelines as minimum requirements for ventilation systems.

Appendix. An appendix is associated with the main body of the Guidelines text.

- An asterisk (*) preceding a section or paragraph number indicates that explanatory or educational material can be found in an appendix item located at the bottom of the page.
- Appendix items are identified by the letter “A” preceding the section or paragraph number in the main text to which they relate.

Cross-references. Cross-references are used throughout the Guidelines to include language from another chapter in the text where the cross-reference is located. These references include both the section number and the section name in parentheses. For example: See Section 2.2-2.1.3 (Accommodations for Care of Patients of Size).

Front and back matter. Informative introductory sections, including the table of contents, acknowledgments, an essay on major additions and revisions, and a glossary, precede the main body of the document. A detailed index appears at the end of the book.

The glossary generally includes only terms that require a specific definition to clarify their use in the Guidelines. If a term as it is used in the Guidelines is clearly defined in the Merriam-Webster Collegiate Dictionary, a definition is not included in the glossary.

Uses of This Document

The Guidelines documents are made available for a wide variety of public and private uses. These include adoption by states for regulatory purposes and other reference in laws, codes, rules, and regulations as well as use in private self-regulation and standardization of space and equipment requirements and the promotion of safe practices and methods in planning, design, and construction for various types of health care facilities.

Regulatory use. Use of the Guidelines or any portion thereof for regulatory purposes should be accomplished through adoption by reference. The term “adoption by reference” means citing title, edition, and publishing information only.
• Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument.

• To help FGI follow the uses made of this document, adopting authorities are requested to notify FGI at info@fgiguidelines.org when they adopt an edition of the Guidelines or use the documents in any other regulatory fashion.

Authorities adopting the Guidelines should encourage design innovation and grant exceptions where the intent of the standards is met. These standards assume that appropriate architectural and engineering practice and compliance with applicable codes will be observed as part of normal professional service.

It is recognized that many health care services may be provided in facilities not subject to licensure or regulation, and the Guidelines is intended to be suitable for use by all care and service providers. It is further intended that when used as regulation, some latitude be granted in complying with the Guidelines requirements as long as the health and safety of the facility’s occupants are not compromised.

**Code language in the Guidelines.** For brevity and convenience, these standards are presented in “code language.”

Use of words such as “shall” indicates mandatory language only where the text is applied by an adopting authority having jurisdiction (AHJ). However, when adopted by an AHJ, design and construction must conform to the requirements of the Guidelines.

The word “Reserved” is used to help standardize numbering of the text and is not intended as a placeholder for specific requirements.

**Use with other codes.** The Guidelines documents address certain details of construction and engineering that are important for facility design and construction, but they are not intended to be all-inclusive nor used to the exclusion of other guidance or codes.

- **Local codes.** For aspects of design and construction not included in the Guidelines, local governing building and licensing codes shall apply.

- **Model codes.** Where there is no local governing building code, the prevailing model code used in the relevant geographic area is hereby specified for all requirements not otherwise specified in the Guidelines.

**AHJ verification.** Some projects may be subject to the regulations of several different jurisdictions, including local, state, and federal authorities. While coordination efforts have been made, the Guidelines may not always be consistent with all applicable codes, rules, and regulations. Therefore, it is essential that individual project requirements be verified for compliance with all authorities having jurisdiction over a project. Where requirements appear to be conflicting or contradictory, the AHJ with primary responsibility for resolution should be consulted.

**Errata.** From time to time, FGI issues errata to correct an error in its published Guidelines documents. This information is posted on the FGI website and announced in the FGI Bulletin, a quarterly newsletter of the Facility Guidelines Institute. All errata are considered to be corrections to errors in the Guidelines text and should be applied as such.

**Formal interpretations of requirements.** Users of the Guidelines can request formal interpretations of the language in the documents. Interpretations, which are provided by members of the Health Guidelines Revision Committee, are intended to provide clarification; a summary of any background and previous discussion, if appropriate and available; and a rationale for the interpretation rendered.
It is understood that any such interpretation is advisory in nature and is intended to assist the designer, care or service provider, and adopting AHJ to maximize the value of the Guidelines. When an inquiry does not require a formal interpretation, an advisory opinion may be provided.

Requests for interpretation should be submitted through the FGI website; see www.fgiguidelines.org/guidelines/interpretations-2 for information.

Disclaimers

While FGI administers the revision process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments or advice contained in the Guidelines.

FGI endeavors to develop performance-oriented and evidence-based minimum requirements as guidance for design of U.S. health care facilities without prescribing design solutions. FGI disclaims liability for any personal injury or property or other damages of any nature, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document. FGI also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

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Publication of the 2018 Documents

With the release of the 2018 edition, the Guidelines for Design and Construction documents are offered as a subscription-based service in addition to the soft-cover version of the Guidelines. FGI is pleased to provide our users with a digital seat/site-based version of our documents that delivers enhanced functionality and searchability and unparalleled access from the field.

Note: For a history of the Guidelines documents, please visit the FGI website at www.fgiguidelines.org.
Major Additions and Revisions

Without a doubt, the most significant change to the 2018 edition of the Guidelines is that these important design standards are now presented as three independent documents: Guidelines for Design and Construction of Hospitals; Guidelines for Design and Construction of Outpatient Facilities; and Guidelines for Design and Construction of Residential Health, Care, and Support Facilities.

In 2014 the Guidelines was expanded from one comprehensive document that addressed hospitals, outpatient facilities, and long-term care facilities to two documents, with the requirements for residential care facilities moving into a standalone document. This change allowed the Residential Guidelines to emphasize the residential nature of the facilities included, where provision of resident-centered care is becoming the industry standard. The 2018 Health Guidelines Revision Committee (HGRC) has further separated the Guidelines content to address hospitals and outpatient facilities independently. The primary goal of this change was to make the new outpatient facility document flexible enough to address the wide variety in outpatient project types, which is expected to evolve even more as the U.S. health care industry adjusts to changing needs over the next decade. The facility types included in the Outpatient Guidelines run the gamut from small clinics, doctor’s offices, and tenant improvements in a larger building to large medical office buildings housing multiple clinical services and large freestanding imaging or surgery facilities.

Changes to the Hospital Guidelines were made to clarify requirements and to allow flexibility in some designs to support development of facilities that will be functional over the long term. Major additions and changes are described below.

Part 1: General

Functional Program. In the previous edition, architectural space requirements were placed at the end of the functional program requirements section. In the current edition, revisions to the functional program were incorporated to clarify its intent and scope and the space program was removed to its own section as development of the space program is a separate process from functional programming.

Acoustic Design. The existing acoustic criteria in the Guidelines were reviewed by the Acoustics Proposal Review Committee (APRC). The APRC consists of a panel of highly qualified acousticians advised by clinicians. The APRC developed revisions for the acoustic requirements in the 2018 edition of the Guidelines that update, clarify, and provide consistent design criteria. They revised the language regarding exterior noise classification and expanded the exterior shell composite sound transmission ratings to provide both OITCc and STCc levels as well as appendix guidance to help users of the document determine under what conditions each measurement requirement should be applied. In addition, the APRC rounded out requirements for vibration control and isolation, including a new requirement to consider exterior sources of ground vibration (e.g., road and rail traffic) when selecting a site and during design of a facility. Further appendix guidance was added for noise levels in operating rooms and demising wall assemblies.

Sustainable Design. Significant changes were made to the sustainable design section, though much of the material appears in the appendix and is therefore advisory only. Key among the new requirements are those for waste minimization, in particular considerations for sourcing mercury-free and mercury-reduced products and creation of a waste management plan to divert building materials from landfills. Guidance also has been introduced for creating a measurement and verification plan to address long-term continuous use of potable water and to track consumption of gas, electricity, and thermal energy by source.
Design Considerations for Patients of Size. The term “bariatric” has been replaced in this edition of the Guidelines, except when in reference to patients undergoing bariatric surgery, to better reflect the needs of patients who do not fit the clinical definition of obese but may still require expanded clearances and/or expanded-capacity lift equipment (e.g., professional football players). Determining the need for accommodations for patients of size is now required during the planning phase, when the health care organization must project the number of spaces needed to accommodate patients of size and the number of expanded-capacity lifts that will be required to serve its patient population.

Emergency Preparedness and Management. New appendix information provides guidance for preparing an emergency preparedness assessment, planning for resiliency, and projecting space needs in the event of an emergency.

Part 2: Facility Chapters

Accommodations for Care of Patients of Size. Whereas in the 2014 edition the bariatric nursing unit section contained requirements pertaining to treatment of patients clinically diagnosed as obese, in the 2018 edition a section on accommodations for care of patients of size has been located in the Common Elements for Hospitals chapter. The Bariatric Accommodations Topic Group developed minimum requirements for spaces where care will be provided to patients of size. Their efforts were based on a workshop hosted by Hill-Rom in which mock-ups of spaces were used to determine clearances needed for delivery of care that is safe for both patients and caregivers. Placing these requirements in the common elements chapter supports consideration of provisions to accommodate patients of size throughout the hospital instead of only in a dedicated nursing unit. Requirements in this section include a patient handling and movement assessment, clearances for rooms with and without overhead or floor-based lifts, and door openings along the path of travel for these patients.

Airborne Infection Isolation Room. All room doors and doors to the anteroom, if provided, are now permitted to have either a self-closing device or an audible alarm that can be activated when the AI room is in use as an isolation room. This revision also applies to the airborne infection isolation/protective environment room.

Sexual Assault Forensic Examination (SAFE) Room. Although provision of a sexual assault forensic examination room is not a requirement for hospitals, the Guidelines now detail design requirements should a health care organization choose to provide one. Provisions for the space include lockable storage areas for forensic collection kits and lab supplies, a private toilet and shower, and a consultation room for family, support services, and law enforcement.

Accommodations for Telemedicine Services. The use of telemedicine is rapidly expanding in the United States, particularly in rural areas where medical services can be hundreds of miles away. In the 2014 edition, telemedicine services were addressed in one paragraph in the chapter on critical access hospitals. The 2018 edition provides minimal requirements and considerable appendix guidance on considerations for designing clinical telemedicine spaces. In an effort to keep the requirements flexible for the many different types of telemedicine services offered, the requirement is only for spaces where clinical telemedicine services are provided. Use of bays, cubicles, or rooms is permitted, and space requirements are dependent on the equipment and persons to be accommodated. Provisions for privacy, lighting, surfaces, acoustics, and facility identification are considered.

Pre- and Post-Procedure Patient Care. The requirements for pre- and post-procedure patient care areas now allow health care organizations to either provide separate pre-procedure and recovery patient care areas or to combine them, including Phase I (PACU) and Phase II recovery areas, into one space; the goal is to facilitate provision of spaces that support the way patient care is provided in the facility. When a
combination area is provided, it must meet the most restrictive design requirements for the spaces that are combined. In addition, a minimum of two patient care stations per procedure, operating, or Class 2 or Class 3 imaging room is required when a combined pre- and post-procedure patient care area is provided. Facilities may still choose to separate services into two or three areas, but the change allows facilities greater flexibility in the provision of care.

Sterile Processing. In the 2014 Guidelines, the satellite sterile processing facility requirements made a one-room sterile processing facility the minimum requirement. Considering the importance of maintaining a dirty-to-clean workflow in sterile processing areas, the infection preventionists on the HGRC and other subject matter experts determined that the minimum requirement for these spaces is a two-room sterile processing facility, consisting of a decontamination room and a clean workroom. For spaces where small countertop sterilizers are used for a limited workflow, a one-room sterile processing facility is permitted as an exception. However, whether a project has a two-room or one-room sterile processing facility, the facility must be designed to support a one-way traffic flow from contaminated to clean. Requirements for storage of clean instruments are also provided. The 2018 edition of both the Hospital Guidelines and the Outpatient Guidelines provides expanded guidance for designing sterile processing facilities that support and encourage clinical personnel to comply with professional practice guidelines for cleaning, decontaminating, and sterilizing surgical instruments.

Technology Distribution Room. TDR space requirements have been revised to provide a minimum three-foot clearance on all sides of equipment racks. In the 2014 edition, the requirement was to provide a minimum of 12 feet by 14 feet for the TDR.

Critical Care Unit Patient Rooms. In new construction, all patient rooms in critical care units except NICUs will be single-patient rooms. An exception is provided for renovation of patient rooms or cubicles for single-patient use provided they have a minimum clear floor area of 150 square feet.

Procedure and Operating Rooms. The 2018 HGRC made a concerted effort to align the definition and application of requirements for the various room types where procedures take place. This realignment was based on the level of invasiveness of the procedure and the perceived level of risk to the patient, but the revised requirements also address the spaces needed to support care for these patients. A new table helps designers and owners quickly determine which procedures should be performed in each room type. The Guidelines has updated the clearances required for operating rooms (ORs), allowing for multiple layers to support different activities in the OR. The appendix includes expanded guidance on determining OR size and layout and a list of equipment often used in operating rooms. In addition, the appendix has been expanded to describe clearly how clearances were determined and why it is important to provide them.

Imaging Rooms. A complete overhaul of the imaging requirements was undertaken. As part of this effort, interventional imaging was removed from the text and nuclear medicine was incorporated into the imaging services requirements. The HGRC created a classification system (summarized in a new imaging classification table) for imaging rooms, which outlines basic imaging room requirements and provides additional details for specific modalities. This approach allows imaging room design to adapt more easily to new technologies and changes in equipment as they arise.

Mobile/Transportable Medical Units. A guiding principle of the HGRC is that physical design requirements for specific medical services should be the same regardless of where those services are provided. To support that principle, the chapter on mobile/transportable medical unit design was completely revised for the 2018 edition based on the imaging classification system and clarified requirements for examination/treatment, procedure, and operating rooms mentioned above.

Part 3: Ventilation of Health Care Facilities
Beginning with the 2010 Guidelines edition, ANSI/ASHRAE/ASHE Standard 170-2017: Ventilation of Health Care Facilities has been incorporated into the Guidelines to provide ventilation requirements for health care facilities. FGI continues to work with ASHRAE and ASHE to revise and update this standard. ASHRAE 170 is under a continuous maintenance process, which permits official changes to be made over the life cycle of the document. The 2017 edition of ASHRAE 170, with all addenda approved through November 2017, has been incorporated as Part 3 of this edition of the FGI Guidelines.