

DoD Space Planning Criteria for Health Facilities General

1.1.1 PURPOSE

The Office of the Assistant Secretary of Defense Health Affairs (OASD(HA)) has primary responsibility for establishing functional space criteria and standards for medical facility programs necessary to fulfill the Secretary of Defense's responsibilities. The purpose of this document is to present criteria for planning, programming, and budgeting for DoD Medical Facilities for all services. The criteria prepared are guidelines, which are subject to alteration by OASD (HA), on a case-by-case basis.

1.1.2 ORGANIZATION / OVERVIEW

Chapter 1.0, General, is divided into four sections:

- 1.1 Introduction,
- 1.2 Occupancy Rates
- 1.3 Net to Gross Conversion Ratios
- 1.4 Medical Mobilization Requirements

Chapter 1.0, General, is a brief summary of the contents and acts as a guide to the document's purpose and use. The DoD occupancy rates, net to gross conversion ratios, and medical mobilization requirements, within this introduction, contain information that apply to overall facility sizing and are applied to each of the functional areas that are contained in this document.

The functional areas in the following chapters, represent criteria in specific areas of a facility used to design and program DoD's health facilities. The areas are arranged, by function, in the following five chapters:

- 2.0 Administration
- 3.0 Outpatient Services
- 4.0 Inpatient Services
- 5.0 Support/Ancillary Services
- 6.0 Toilets, Lounges, and Locker Facilities

As requirements change, it is expected that these criteria will be updated. Requests for changes to the criteria should be forwarded through the chain of command (with endorsement by the appropriate specialty consultants) to:

HFSC Space and Equipment Planning Subcommittee
Defense Medical Facilities Office
Suite 810
5111 Leesburg Pike
Falls Church, VA 22041-3258

The Defense Medical Facilities Office is responsible for the maintenance of this document and will coordinate changes to this document, between the services and other offices within the Office of the Secretary of Defense. All requests for changes will identify the deficiency, and describe the recommended change. Provide references to changes in health care standards when applicable.

1.1.3 STANDARD CHARACTERISTICS

In the analysis and criteria, several operating characteristics were standardized. A 250-day work year per full time equivalent (FTE) is assumed. This allows for leave due to federal holidays. Also, an eight-hour workday is assumed unless otherwise noted.

DoD Space Planning Criteria for Health Facilities

General

1.1.4 SPACE PLANNING FRAMEWORK

To guide and ensure consistent evaluation, a framework for space planning is proposed. The framework consists of the information listed throughout this document, and has been inserted into the Space & Equipment Planning System program of The Defense Medical Facilities Office. These guidelines, along with equipment requirements, help determine square footage listed in the Program for Design (PFD) through the use of the SEPS program.

There are two stages to the proposed framework (there may be multiple levels of determination in each stage):

Stage 1: Develop specific functional area space programs based on environmental inputs.

Stage 2: Perform a readiness review of the resulting first stage space programs.

This section presents this framework and considerations for each stage.

Functional areas of planning are driven from a set of environmental inputs, through a set of space criteria leading to a functional area Program for Design.

Within this framework, the environmental inputs are defined to indicate demand for space (e.g., program obligations, service requirements, staffing, activity, and equipment).

The four major categories of space criteria are: patient care, support of patient care, administration, and support of administration.

To determine the Program for Design, the environmental inputs are translated via a set of specific space criteria.

Some of the issues undertaken during a readiness review (second stage) include:

*** Does the program provide appropriate space for mission accomplishment and for all personnel who will be working in the facility?**

One of the most common mistakes in the creation of a space program for a facility is to overlook one or more functions, which will be accomplished in the proposed facility. All too often reviewers of space planning documents focus on what is stated in the document and fail to look for that which was omitted. Insure that all services are included. Additionally, insure that space is provided for all workers in the facility. This includes assigned personnel (military and civilians), volunteers, contractors and borrowed labor.

*** Are there differences in the space criteria assumptions or operating characteristics that impact the numbers and sizes of units?**

For example, use of quick chill food preparation allows for more even distribution of work load which can lead to almost complete elimination of food preparation areas, reduction in the cook's line space, and reduction of storage space, but increase space requirements for remote food preparation alcoves.

For example, the development and implementation of digital radiology imaging equipment will require additional space for the digital radiology equipment and computer control staff areas, while reducing film storage requirements.

*** Are environmental factors present that necessitate the support of a program not justified within the criteria?**

For example, obstetrical services are not justified where volumes are less than 250 deliveries per year.

DoD Space Planning Criteria for Health Facilities

General

Remote facilities, which have an obstetrical requirement or where local community obstetrical standards are not up to US standards, may require that this service be provided.

*** Are environmental factors present that necessitate the support of a program not covered by the criteria?**

For example, teaching and research activities may currently warrant programming for interventional radiography. Location and access to this modality may prevent the use of local facilities.

*** Could services more appropriately be provided through alternative methods?**

For example, obstetrical requirements of less than 10 Average Daily Patient Load (ADPL) may be more economically met through other community providers

*** Is this an addition/alteration project? If so, then what allowance, if any, should be made in computing final area gross square feet?**

*** Are there physical constraints on exterior walls that make the net to gross conversion factors unrealistic?**

For example, facilities in severe climates may be designed with thicker walls (for a larger amount of insulation) than in average climates. The additional wall thickness may be justified in order to lead to lower operating energy costs. Another example is small facilities that often have a proportionately smaller amount of space contained within the exterior walls, than larger facilities.

*** Is there potential for consolidation of staff support areas (e.g., lockers, waiting rooms, lounge or conference areas)?**

For example, operating practices may warrant certain groupings of activities that lead to consolidation and coordination of space.

For example, medical staff in several clinical specialties operate through a group practice. Physical design can support this leading to configuration and sizing different than the results of the first stage of the proposed space planning framework discussed above.

Facility programming is a dynamic process. The two stage space planning framework presented is designed to assure a sound rational defense for the scope of a facility design project as it moves through the budgeting, programming, design, and approval process.

DoD Space Planning Criteria for Health Facilities
Occupancy Rates

1.2.1 BED SIZING CONFIDENCE CRITERIA

The following occupancy rates shall be used in planning numbers of beds in DoD hospitals:

(1) MEDICAL, SURGICAL, PEDIATRICS, AND PSYCHIATRIC

ADPL	ADPL Occupancy Rates
less than 26	70%
26-50	80%
51-100	85%
101-250	90%
greater than 250	95%

(2) OBSTETRICAL UNITS

Occupancy Rate
70%

(3) ICU AND CCU UNITS

Intensive Care and Coronary Care Units (ICU and CCU): The number of ICU and CCU beds will be supported by a specific justification. The justification will address factors such as hospital mission, expected mission change, projected work load, and geographical location. If space is requested for a laboratory to support these special care functions, it will be supported by a similar justification. The following guidelines serve as a baseline for programming these units when an ICU or CCU capability is justified:

ADPL	Occupancy Rates
less than 11	55%
11-20	65%
21-35	70%
greater than 35	75%

- minimum of four ICU beds
- minimum of two CCU beds unless not collocated with ICU in which case the minimum is four

If the ADPL data for the ICU or CCU is not available, the following criteria may be used to estimate the ICU/CCU requirements.

- a. The recommended baseline for ICU bed computation is four percent of the total programmed bed capacity. The minimum number of ICU beds is four.
- b. The recommended baseline for CCU bed computation is two percent of the total programmed bed capacity. The minimum number of CCU beds is two CCU beds when collocated with an ICU or four beds when located in a separate unit.
- c. Baseline recommendations for ICU & CCU beds:

DoD Space Planning Criteria for Health Facilities

Occupancy Rates

The acuity of inpatient has increased and this does not provide adequate beds. This section is currently under revision by others.

Total Bed Capacity	ICU Beds	CCU Beds
99 OR LESS	4	2
100 - 199	4 - 8	2 - 4
200 - 299	8 -12	2 - 4
300 - 399	12 -16	4 - 6
400+	AS JUSTIFIED	AS JUSTIFIED

(4) PLANNING EXAMPLE

a. Total bed computation using ADPL to size all beds, including ICU and CCU.

Suppose ADPL is projected to be as follows:

Med/Surg/Pediatrics/ Psych/Light Care	= 200
ICU	= 10
CCU	= 5

Then the criteria dictate:

Med/Surg/Pediatrics/ Psych/Light Care beds	= 200/0.90	= 223 beds
Obstetrical beds	= 30/0.70	= 40
ICU beds	= 10/0.55	= 19
CCU beds	= 5/0.55	= 10

b. Total bed computation using ADPL to size all except the ICU and CCU.

Suppose ADPL is projected to be as follows:

Med/Surg/Pediatrics/Psych/Light Care	= 200 (Projected ADPL)
Obstetrical	= 30 (Projected ADPL)

Then the criteria dictate:

Med/Surg/Pediatrics/Psych.	= 200/0.90	= 223 beds
ICU and CCU calculated as a percentage:		

ICU BEDS = 230 (Projected M/S/P ADPL) x 0.04 = 9.2 = 9 beds

CCU BEDS = 230 (Projected M/S/P ADPL) x 0.02 = 4.6 = 5 beds

c. Uniformed Facility Accessibility Standards (UFAS) and ADA.

Facilities will be constructed within UFAS and ADA compliance standards: See Section 6.

DoD Space Planning Criteria for Health Facilities

Net to Gross Conversion Ratios

1.3.1 NET TO GROSS CALCULATIONS – DEPARTMENT TYPE METHODOLOGY

A net to gross conversion ratio for each department shall be used in programming all DoD Health Facilities. Each department shall be calculated separately. It is felt that this approach is more beneficial in accurately identifying overall building size.

The following steps are required:

1. Determine net area for each department.
2. Apply the specific net/gross ratio specific for each department.
3. Add all the department gross areas together.
4. Add the additional net/gross conversion factors to determine the overall building gross area.

Listed below are the department net/gross conversion ratios:

DEPARTMENT	NET/GROSS RATIO
1.0 General	NA
2.0 Administration	-
2.1 General Administration	1.40
2.2 Medical and Patient Libraries	1.35
2.3 Education & Training	1.35
2.4 Information Management	1.35
2.5 Patient Administration	1.35
3.0 Outpatient Services	-
3.1 Primary Care/Family Practice	1.35
3.2 Clinic of the Future	1.40
3.3 Pediatrics	1.35
3.4 Flight/Undersea Medicine & Soldier Readiness	1.35
3.5 Emergency Services	1.35
3.6 Women's Health	1.35
3.7 Wellness Clinic	1.25
3.8 Occupational Therapy	1.30
3.9 Physical Therapy	1.30
3.10 Audiology/Speech	1.35
3.11 Specialty Surgical Clinics	1.35
3.12 Orthopedics/Podiatry	1.35
3.13 Ophthalmology/Optomety	1.35
3.14 Urology	1.35
3.15 Specialty Medical Clinics	1.35
3.16 Cardiology/Pulmonary Services	1.35
3.17 Allergy/Immunization	1.35
3.18 Mental health	1.35
3.19 Preventive/Occupational Med.	1.35
3.20 Dental Clinics	1.35

DoD Space Planning Criteria for Health Facilities

Net to Gross Conversion Ratios

4.0 Inpatient Services	-
4.1 Nursing Units	1.50
4.2 Labor & Delivery/OB Unit	1.50
4.3 Nursery	1.45
4.4 Surgery	1.60
5.0 Support Ancillary Service	-
5.1 Food Service	1.35
5.2 Logistics	1.25
5.3 Pathology	1.25
5.4 Radiology/Nuclear Medicine	1.50
5.5 Pharmacy	1.25
5.6 Vet Services	1.35
5.7 Chapel	1.20
5.8 Patient Services	1.35
5.9 Clinical Investigation	1.35

After all the department totals are calculated and totaled, the additional net/gross ratios need to be added. Listed below are the building net/gross conversion ratios, based on building type:

ALLOWANCES/ CATEGORIES	MEDICAL/ DENTAL CLINICS	AMBULATORY/ HEALTH CARE FACILITY	STATION/ COMMUNITY HOSPITALS	REGIONAL/ MEDICAL CENTERS
MECH. SPACE	13.5%	14.5%	15.0%	16.0%
ELECTR. SPACE	2.0%	2.0%	3.0%	3.0%
BUILDING CIRCULATION	14%	15%	15.5%	16%
HALF AREAS	1.5%	1.5%	1.5%	1.5%

NOTES:

1. For addition/alteration projects, up to 15% of the total altered net space may be added to the flexibility allowance to offset physical constraints in the existing facility. This increased allowance must be validated during design.
2. Buildings with multiple floors may need additional circulation ratios for stairs, elevators, etc.
3. For facilities with emergency power systems, other than Hospitals and Regional Medical Centers, increase electrical from 2.0% to 3.0%. Hospitals and Regional Medical Centers have a percentage that already assumes that emergency power systems are required.
4. Communication/network server spaces shall be programmed in Section 2.4: Information Management and throughout all departments.
5. Add 25% to mechanical areas for projects in Germany (requires all floor mounted equipment).
6. Add 8% to circulation areas for projects in Germany (natural daylighting requirements).

DoD Space Planning Criteria for Health Facilities

Net to Gross Conversion Ratios

Three examples of recent projects (one for each service) are included below to illustrate how this net to gross conversion factor worked on actual designs.

REPLACEMENT MEDICAL/DENTAL CLINIC HUNTER ARMY AIRFIELD FORT STEWART, GA

Department	Program Net SF	Actual Dept. Gross	Actual Dept Net/Gross
Command Suite	1,950	2,560	1.31
Logistics	1,000	1,205	1.21
Clinic Administration	1,340	2,240	1.67
Primary Care Clinic	10,621	13,261	1.25
ENT/Audiology	500	660	1.32
Ophth/Opt.	2,760	3,680	1.33
Immunization	280	286	1.02
Psychiatry	2,393	2,836	1.19
PT/OT	2,890	3,240	1.12
Pharmacy	2,105	2,230	1.06
Radiology	1,730	2,250	1.30
Pathology	1,765	2,165	1.23
Dentistry	4,954	7,480	1.51
Total	34,288	44,093	1.29

Area	Bldg. Gross	Net/Gross
Total Dept. Gross	44,093	-
Mechanical	4,248	9.6%
Electrical	850	1.9%
Building Circulation	7,324	16.6%
Half Areas	671	1.5%
Total Gross (GSF)	57,186	-
Net/Gross Ratio		1.668

NOTE:

Original Program Size:	57,775 GSF
Original Program Net/Gross Ratio:	1.685

DoD Space Planning Criteria for Health Facilities
Net to Gross Conversion Ratios

OUTPATIENT CLINIC REPLACEMENT
EDWARDS A.F.B., CALIFORNIA

Department	Program Net SF	Actual Dept. Gross	Actual Dept Net/Gross
Command Suite	3,030	4,108	1.36
RMO	580	1,074	1.85
Info. Systems	1,952	2,625	1.34
TRICARE Admin.	1,120	1,870	1.67
Logistics	5,081	5,802	1.14
Primary Care Clinic	10,722	14,860	1.39
Allergy/ Immun.	300	306	1.02
Pharmacy	1,750	1,776	1.01
Radiology	1,785	2,906	1.63
Pathology	1,540	1,755	1.14
Total	27,860	37,082	1.33

Area	Bldg. Gross	Net/Gross
Total Dept. Gross	37,082	-
Mechanical	4,454	12.0%
Electrical	688	1.9%
Building Circulation	4,285	11.6%
Half Areas	401	1.1%
Total Gross (GSF)	46,910	-
Net/Gross Ratio		1.684

NOTE:

Original Program Size:

46,941 GSF

Original Program Net/Gross Ratio:

1.685

DoD Space Planning Criteria for Health Facilities
Net to Gross Conversion Ratios

MEDICAL/DENTAL CLINIC**NAVAL STATION****MAYPORT, FLORIDA**

<u>Department</u>	Program Net SF	Actual Dept. Gross	Actual Dept Net/Gross
Command Suite	1,960	2,683	1.36
Nursing Admin.	1,250	1,678	1.34
Info. Management	980	1,235	1.26
Patient Administration	1,320	2,048	1.55
Logistics	2,060	3,231	1.57
Clinic Administration	4,550	6,188	1.36
Primary Care Clinic	13,220	16,783	1.27
Aviation/Undersea	2,410	2,965	1.23
Allergy/Immun.	780	895	1.15
Pediatrics	3,980	5,682	1.43
Ophth/Opt.	2,145	2,758	1.29
Preventive Medicine	2,300	3,107	1.35
Psychiatry	3,020	4,760	15.8
PT/OT	3,200	4,218	1.32
Pharmacy	2,940	3,209	1.09
Radiology	2,840	3,609	1.27
Pathology	2,320	3,053	1.32
Dentistry	10,421	12,240	1.17
Total	61,696	78,192	1.27

<u>Area</u>	<u>Bldg. Gross</u>	<u>Net/Gross</u>
Total Dept. Gross	78,192	-
Mechanical	8,897	11%
Electrical	880	1%
Building Circulation	13,775	18%
Half Areas	1,244	7%
Total Gross (GSF)	106,163	-
Net/Gross Ratio		1.721

NOTE:

Original Program Size: 103,994 GSF
Original Program Net/Gross Ratio: 1.685

DoD Space Planning Criteria for Health Facilities
Medical Mobilization Requirements

1.4.1 POLICY

DoD Medical Centers, hospitals and clinics which are programmed for inclusion in the Military Construction Program and which have an essential medical mobilization mission, will be considered for additional space for mobilization expansion as set forth below.

Contact the following offices to determine which DoD Medical Centers, hospitals and clinics are programmed for inclusion in the Military Construction Program:

For the Air Force, contact the Medical Logistics Division (SGML), Office of the Surgeon General.

For the Army, contact the Mobilization Planner at the U.S. Medical Commander Healthcare Operations, Plans Division, San Antonio, Texas. Phone: 210 221-6425.

For the Navy, contact the Bureau of Medicine (BUMED), Code 031, Washington, D.C.

1.4.2 SUBMITTAL OF REQUESTS FOR MOBILIZATION SPACE

Request from the Military Departments to program space for mobilization will be included with specific Project Proposal submissions (as set forth in DoD (6015.17) to OASD(TMA). These requests will provide at least the following information:

- A. A description of the specific mobilization mission assigned to the proposed hospitals.
- B. An estimate of the peak work load anticipated during periods of mobilization.
- C. The source and strength of staffing during mobilization periods.
- D. Additional space requested to support mobilization expansion.
- E. The estimated total additional cost for the additional mobilization capability.

1.4.3 PLANNING CRITERIA

Patient Bedrooms:

Type of Bedroom	Percent of Beds*	Bed Expansion Capability	Minimum Headwall	N.S.F. Per Bedroom**
One Patient	70	1	13'-6"	170
Two Patient	30	1	19'-6"	250

* The above room mix does not apply to isolation, seclusion or ICU/CCU bedrooms.

** Expansion capability may be programmed for light care bedrooms when light care facilities are integral to acute care inpatient facilities.

DoD Space Planning Criteria for Health Facilities

Medical Mobilization Requirements

Logistical Support Areas:

- a. Medical Material Storage is authorized an additional 20 net square feet per each planned expansion bed.
- b. Central Sterile Supply is authorized an additional five net square feet per each planned expansion bed.

1.4.4 ADDITIONAL DESIGN CONSIDERATIONS:

Medical gas systems (as defined in MIL HDBK-1191) and mechanical/electrical and ventilation systems should be designed to support planned patient loads during periods of mobilization expansion.

Hospital transportation systems (elevators, lifts, etc.) should be analyzed to insure adequate capacities during expanded operations.

To assure that appropriate accommodations for mobilization expansion have been made, careful consideration should be given to the following:

- a. Patient bedroom equipment and furnishings.
- b. Food Service; and
- c. Triage location and access to facility.