

CHAPTER 226: ELECTROENCEPHALOGRAPHY (EEG) LABORATORY

1	PURPOSE AND SCOPE.....	226-2
2	DEFINITIONS.....	226-2
3	OPERATING RATIONALE AND BASIS OF CRITERIA.....	226-3
4	INPUT DATA STATEMENTS.....	226-5
5	SPACE CRITERIA.....	226-6
6	PLANNING AND DESIGN CONSIDERATIONS.....	226-9
7	FUNCTIONAL RELATIONSHIPS.....	226-11
8	FUNCTIONAL DIAGRAM.....	226-12

1 PURPOSE AND SCOPE

This document outlines Space Planning Criteria for Chapter 226: Electroencephalography (EEG) Laboratory. It applies to all medical facilities in Department of Veterans Affairs (VA).

2 DEFINITIONS

Accessible: A site, building, facility, or portion thereof that complies with provisions outlined in the Architectural Barriers Act of 1968 (ABA).

Architectural Barriers Act (ABA): A set of standards developed to insure that all buildings financed with federal funds are designed and constructed to be fully accessible to everyone. This law requires all construction, renovation, or leasing of sites, facilities, buildings, and other elements, financed with federal funds, to comply with the Architectural Barriers Act Accessibility Standards (ABAAS). The ABAAS replaces the Uniform Federal Accessibility Standards (UFAS).

Clinic Stop: A clinic stop is one encounter of a patient with a healthcare provider. Per these criteria, the clinic stop is the workload unit of measure for space planning. One individual patient can have multiple Clinic Stops in a single visit or in one day.

Electroencephalography (EEG): A neurophysiologic measurement method which graphically records the electrical activities of the brain along the cerebral cortex from electrodes applied to the scalp. Electrical currents are not measured, but rather voltage differences are measured among different parts of the brain. The resulting traces are known as an electroencephalogram (also EEG) and represent the postsynaptic potentials (electrical signals) from a large number of neurons. The EEG is a brain function test, and in clinical use it is a correlate of brain activity, recordings of which are used in the diagnosis of epilepsy, trauma, tumor, and other brain diseases.

Electromyogram (EMG): A test used to record the electrical activity of muscles. When muscles are active, they produce an electrical current that is usually proportional to the level of muscle activity. An electromyogram (EMG) is also called a myogram.

Full-Time Equivalent (FTE): A staffing parameter equal to the amount of time assigned to one full time employee. It may be composed of several part-time employees whose total time commitment equals that of a full-time employee. One FTE equals 40 hours per week.

Functional Area: The grouping of rooms and spaces based on their function within a clinical service. Typical Functional Areas within VA Space Criteria are: Reception Area, Patient Area, Support Area, Staff and Administrative Area, and Education Area.

Healthcare Planning Module: Methodology used to create a VISN Strategic Plan which defines how and where high-cost services should be delivered in each market.

Input Data Statements: A set of questions designed to elicit information about the healthcare project in order to create a Program For Design (PFD) based on the criteria parameters set forth in this document. Input Data Statements could be Mission, Workload, or Staffing related, based on projections and data provided by the VHA or the VISN about the estimated model of operation for the facility. This information is processed through mathematical and logical operations in VA-SEPS.

Neurophysiology: The part of physiology as a science which is concerned with the study of functioning of the nervous system.

Picture Archiving and Communication System (PACS): The digital capture, transfer, and storage of diagnostic images. A PACS system consists of: workstations for interpretation,

image / data producing modalities, a web server for distribution, printers for file records, image servers for information transfer and holding, and an archive of off-line information. A computer network is needed to support digital imaging devices.

Program For Design (PFD): A space program generated either manually or by VA-SEPS based on criteria set forth in this document and specific information entered about mission, workload projections, and staffing levels authorized.

Provider: An individual who examines, diagnoses, treats, prescribes medication and manages the care of patients within his or her scope of practice as established by the governing body of a healthcare organization.

Room Efficiency Factor: A factor that provides flexibility in the utilization of a room to account for patient delays, scheduling conflicts, and equipment maintenance. Common factors are in the 75% to 85% range. A room with 80% room efficiency provides a buffer to assume that this room would be available 20% of the time beyond the planned operational practices for this room. This factor may be adjusted based on the actual and/or anticipated operations and processes of the room/department at any particular facility.

SEPS (VA-SEPS): Acronym for Space and Equipment Planning System, a digital tool developed by the Department of Defense (DOD) and the Department of Veterans Affairs to generate a Program For Design (PFD) and an Equipment List for a VA healthcare project based on specific information entered in response to Input Data Questions. VA-SEPS incorporates the propositions set forth in all VA space planning criteria chapters. VA-SEPS has been designed to aid healthcare planners in creating a space plan based on a standardized set of criteria parameters.

Workload: Workload is the anticipated number of clinic stops that is processed through a department/service area. The total workload applied to departmental operational assumptions will determine overall room requirements by modality.

3 OPERATING RATIONALE AND BASIS OF CRITERIA

- A. Workload projections or planned services/modalities for a specific VA project are provided by the VA Office of Policy and Planning and the VISN Support Services Center (VSSC). These utilization projections are generated by a methodology based upon the expected veteran population in the respective market/service area. Healthcare planners working on VA projects will utilize and apply the workload based criteria set forth herein for identified services and modalities to determine room requirements for each facility.
- B. Space planning criteria have been developed on the basis of an understanding of the activities involved in the functional areas of the Electroencephalography Laboratory and its relationship with other services of a medical facility. These criteria are predicated on established and/or anticipated best practice standards, as adapted, to provide environments supporting the highest quality health care for veterans.
- C. These criteria are subject to modification relative to development in equipment, medical practice, vendor requirements, and planning and design. The selection of the size and type of Electroencephalography Laboratory equipment is determined by anticipated medical needs.

D. Room Capacity should be based on:

Formula 1:

$$\frac{\text{Operating days per year X Hours of operation per day}}{\text{Minutes per clinic stop / 60 minutes}} = \text{Number of annual clinic stops}$$

The general planning model for VA facilities assumes 250 Operating Days per Year and 8 Hours of Operation per Day. Room capacity will fluctuate as operating days per year and/or hours of operation are modified. For example, additional capacity may be generated by extending the hours of operation per day within the same physical setting.

The Room Efficiency Factor applied to Electroencephalography Laboratory is 75%.

Example: Annual Clinic Stops for EEG (Stop Code 106) based upon an average 60 minutes per clinic stop, including set-up, testing time, and clean-up:

$$\frac{250 \text{ operating days per year} \times 8 \text{ hours per day}}{60 \text{ minutes per clinic stop} / 60 \text{ minutes}} = 2,000 \text{ annual clinic stops}$$

At 100% utilization, this results in a maximum capacity of 2,000 clinic stops per year. However, 100% utilization is not realistic to achieve and is not a design standard. Apply the Room Efficiency Factor:

$$2,000 \times 75\% = 1,500 \text{ annual clinic stops.}$$

TABLE 1: WORKLOAD PARAMETER CALCULATION

CLINIC STOP CODE DESIGNATION	AVERAGE LENGTH OF CLINIC STOP (minutes)	ROOM EFFICIENCY FACTOR	ANNUAL WORKLOAD CAPACITY OF ONE ROOM**	MINIMUM ANNUAL WORKLOAD TO GENERATE A ROOM***
Stop Code 106 EEG	60	75%	1,500	450
Stop Code 126 Evoked Potential	120	75%	750	225
Stop Code 128 Prolonged Video EEG	120	75%	750	225
Averaged Workload			1,000	300
Stop Code 212 EMG	60	75%	1,500	450

* Note: space requirements for Neurology (Stop Code 315) and PADRECC (Stop Code 335) are not included within the scope of this document.

** Based on Operating Criteria assumed in Item D above.

*** Minimum annual workload to generate a room is equal to 30% of the annual workload capacity of one room.

The number of annual clinic stops per room will be used as a criterion parameter to calculate the number of Exam Rooms required, rounded up to the nearest whole number, as follows:

Formula 2:

Total Number of Multipurpose Exam Room Calculation

$$\frac{\text{Projected Annual Workload}}{\text{Average Workload Capacity One Room}} = \text{Number of Exam Rooms}$$

Example: Multipurpose Exam Rooms based upon a workload of 3,000 annual EEG clinic stops, Evoked Potential clinic stops, and Prolonged Video EEG clinic stops.

$$\frac{3,000 \text{ Projected Annual clinic stops}}{1,083 \text{ (Min Workload to Generate One Room)}} = 1.8 \text{ Exam Rooms}$$

Two Multipurpose Exams Rooms are required to satisfy the workload.

4 INPUT DATA STATEMENTS

A. Mission Input Data Statements

1. Is a Patient Education / Resource Room authorized? (M)
2. Is a Conference / Classroom in the EEG Education Area authorized? (M)
3. Is an EEG Director FTE position authorized? (M)

B. Workload Input Data Statements

1. How many EEG clinic stops (Stop Code 106) are projected? (W)
2. How many Evoked Potential clinic stops (Stop Code 126) are projected? (W)
3. How many Prolonged Video EEG clinic stops (Stop Code 128) are projected? (W)
4. How many EMG clinic stops (Stop Code 212) are projected? (W)

C. Staffing Input Data Statements

1. How many Physician FTE positions are authorized? (S)
2. How many Nurse Manager FTE positions are authorized? (S)
3. How many Chief Technician FTE positions are authorized? (S)
4. How many Technician FTE positions are authorized? (S)

D. Miscellaneous Input Data Statements

1. How many FTEs will work on peak shift? (Misc)
2. How many FTE positions are not authorized to have an office or work space? (Misc)

5 SPACE CRITERIA

For functional descriptions of key spaces refer to the Design Guide for Electroencephalography Laboratory.

A. FA 1: Reception Area:

1. **Waiting (WTG04)..... 100 NSF (9.3 NSM)**

Provide one if the projected number of EEG Exam Rooms and EMG Exam Rooms is two; provide WTG06 if the projected number of EEG Exam Rooms and EMG Exam Rooms is three; provide WTG08 if the projected number of EEG Exam Rooms and EMG Exam Rooms is four; provide WTG10 if the projected number of EEG Exam Rooms and EMG Exam Rooms is five; provide WTG12 if the projected number of EEG Exam Rooms and EMG Exam Rooms is six; provide WTG14 if the projected number of EEG Exam Rooms and EMG Exam Rooms is seven; provide WTG16 if the projected number of EEG Exam Rooms and EMG Exam Rooms is eight; provide WTG18 if the projected number of EEG Exam Rooms and EMG Exam Rooms is nine; provide WTG20 if the projected number of EEG Exam Rooms and EMG Exam Rooms is ten.

WTG04: Allocated space accommodates two standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total four people.

WTG06: Allocated space accommodates four standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total six people.

WTG08: Allocated space accommodates six standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total eight people.

WTG10: Allocated space accommodates eight standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total ten people.

WTG12: Allocated space accommodates ten standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total twelve people.

WTG14: Allocated space accommodates twelve standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total fourteen people.

WTG16: Allocated space accommodates twelve standard chairs @ 9 NSF each, two bariatric chairs @ 14 NSF each, two accessible spaces @ 10 NSF each, and circulation; total sixteen people.

WTG18: Allocated space accommodates fourteen standard chairs @ 9 NSF each, two bariatric chairs @ 14 NSF each, two accessible spaces @ 10 NSF each, and circulation; total eighteen people.

WTG20: Allocated space accommodates sixteen standard chairs @ 9 NSF each, two bariatric chairs @ 14 NSF each, two accessible spaces @ 10 NSF each, and circulation; total twenty people.

2. **Reception / Check-in (RCP02) 260 NSF (24.2 NSM)**
Provide one for the Electroencephalography Laboratory.

Allocated NSF accommodates two Receptionist FTEs, patient privacy area, and

circulation.

3. **Kiosk, Patient Check-In (RCHK2)**..... **105 NSF (9.8 NSM)**
Provide one for the Electroencephalography Laboratory.

Allocated NSF accommodates two Display Kiosks, patient privacy area, and circulation.
4. **Patient Education / Resource Kiosk (CLSC1)**..... **30 NSF (2.8 NSM)**
Provide one if a Patient Education / Resource Room is not authorized.

Provides medical information for patients and visitors. Locate accessible to waiting.
5. **Patient Education, Resource Room (CLSC3)**..... **120 NSF (11.2 NSM)**
Provide one if a Patient Education / Resource Room is authorized.

Patient Education / Resource Room to be used for private patient education needs and also as a medical information resource, which may include electronic and hard copy material, for patients and visitors. Locate accessible to waiting.
6. **Toilet, Family (TNPFM)**..... **80 NSF (7.5 NSM)**
Provide one for the Electroencephalography Laboratory.

Allocated NSF accommodates one accessible toilet @ 25 NSF, one wall-hung lavatory @ 12 NSF, ABA clearances, and circulation. The Family Toilet may be shared with other services / departments depending on adjacencies.
7. **Toilet, Public (TNP1)**..... **60 NSF (5.6 NSM)**
Provide one if the total number of EEG and EMG Exam Rooms is greater than four.

Allocated NSF accommodates one accessible toilet @ 25 NSF, one wall-hung lavatory @ 12 NSF, ABA clearances, and circulation.

B. FA 2: Patient Area:

1. **Exam Room, EEG (OPEE1)**..... **170 NSF (15.8 NSM)**
Minimum one; provide an additional one for every increment of 1,000 projected annual EEG clinic stops (Stop Code 106), Evoked Potential clinic stops (Stop Code 126), and Prolonged Video EEG clinic stops (Stop Code 128) greater than 1,000; minimum projected annual combined workload to provide an additional room is 300 clinic stops.
2. **Exam Room, EMG (EXRE2)** **170 NSF (15.8 NSM)**
Minimum one; provide an additional one for every increment of 1,500 projected annual EMG clinic stops (Stop Code 212) greater than 1,500; minimum projected annual combined workload to provide a room is 450 clinic stops.
3. **Patient Prep Room (OPPF8)** **120 NSF (11.2 NSM)**
Minimum one; provide an additional one for every increment of four EEG and EMG Exam Rooms greater than four.

The testing electrodes are applied and removed in this room.
4. **Toilet, Patient (TPG01)** **60 NSF (5.6 NSM)**
Minimum one; provide an additional one for every increment of four EEG and EMG Exam Rooms greater than four.

Allocated NSF accommodates one accessible toilet @ 25 NSF, one accessible wall-hung lavatory @ 13 NSF, ABA clearances, and circulation.

C. FA 3: Support Area:

1. **Reading Room (XVC01) 120 NSF (11.2 NSM)**
Minimum NSF; provide an additional 60 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

This is a multi-purpose room to accommodate: monitoring, reading, interpreting EEG tapes, dictation and reporting, resident, intern, and staff training, and evaluation of related Electroencephalography and Electromyography studies.

2. **EEG / EMG Work Room (OPEE2) 180 NSF (16.8 NSM)**
Minimum NSF; provide an additional 40 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

This work room provides space for the EEG / EMG technicians.

3. **Utility Room, Clean (UCCL1) 80 NSF (7.5 NSM)**
Minimum NSF; provide an additional 40 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

4. **Utility Room, Soiled (USCL1) 80 NSF (7.5 NSM)**
Minimum NSF; provide an additional 40 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

This room provides an area for cleanup and holding of medical equipment, instruments, and for disposal of waste material.

5. **Storage, Equipment (SRE01) 100 NSF (9.3 NSM)**
Minimum NSF; provide an additional 40 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

6. **Alcove, Clean Linen (LCCL3) 40 NSF (3.8 NSM)**
Minimum NSF; provide an additional 40 NSF if the total number of EEG and EMG Exam Rooms is greater than four.

7. **Alcove, Crash Cart (RCA01) 20 NSF (1.9 NSM)**
Provide one for the Electroencephalography Laboratory.

8. **Alcove, Wheelchair / Stretcher (SRLW1) 60 NSF (5.6 NSM)**
Minimum one; provide an additional one if the total number of EEG and EMG Exam Rooms is greater than six.

9. **Housekeeping Aides Closet (HAC) (JANC1) 60 NSF (5.6 NSM)**
Provide one for the Electroencephalography Laboratory.

Depending on location in the Hospital / Medical Center this space may be shared with adjacent clinics / departments.

D. FA 4: Staff and Administrative Area:

1. **Office, EEG Director (OFA09) 100 NSF (9.3 NSM)**
Provide one if an Electroencephalography Laboratory Director FTE position is authorized.

2. **Workstation, Physician (OFA07) 56 NSF (5.3 NSM)**
Provide one per each Physician FTE position authorized.

3. **Office, Nurse Manager (OFA09) 100 NSF (9.3 NSM)**
Provide one per each Nurse Manager FTE position authorized.

4. **Workstation, Chief Technician (OFA07)** **56 NSF (5.3 NSM)**
Provide one per each Chief Technician FTE position authorized.
 5. **Workstation, Technician (OFA07)** **56 NSF (5.3 NSM)**
Provide one per each Technician FTE position authorized.
 6. **Lounge, Staff (SL001)**..... **80 NSF (7.5 NSM)**
Minimum NSF; provide an additional 15 NSF per each Electroencephalography Laboratory FTE position working on peak shift greater than five; maximum 210 NSF.
 7. **Locker Room, Staff (LR001)**..... **80 NSF (7.5 NSM)**
Minimum NSF if total number of Electroencephalography Laboratory FTE positions not authorized to have office or work space is between five and thirteen; provide an additional 6 NSF per each Electroencephalography Laboratory FTE position not authorized to have office or work space is greater than thirteen.
- Provide locker space only for those FTEs without assigned office or work space. For less than five FTE combine Locker Room facilities with adjacent department or sum in chapter 410.
8. **Toilet, Staff (TNP01)**..... **60 NSF (5.6 NSM)**
Minimum one; provide an additional one for every increment of fifteen Electroencephalography Laboratory FTE positions working on peak shift greater than fifteen.

Allocated NSF accommodates one accessible toilet @ 25 NSF, one wall-hung lavatory @ 12 NSF, ABA clearances, and circulation.

E. FA 5: Education Area:

The spaces below provide programming of educational spaces at department / service level.

1. **Training Room, Staff (CFR01)**..... **240 NSF (22.3 NSM)**
Provide one if a Staff Training Room for the EEG Education Area is authorized.

Allocated NSF accommodates six conference chairs @ 7.5 NSF each, two 5'-0" x 2'-0" tables at 10 NSF each, one credenza @ 8 NSF, and circulation; total six people. This space will be used by EEG Administration for conferences and for staff education.

6 PLANNING AND DESIGN CONSIDERATIONS

- A. Net-to-Department Gross factor (NTDG) for Electroencephalography (EEG) Laboratory is **1.50**. This number, when multiplied by the programmed Net Square Feet (NSF) area, determines the Departmental Gross Square Feet (DGSF).
- B. This chapter applies specifically to equipment and facilities in a fixed location visited by patients. It does not include space programming information for portable services commonly associated with EEG Laboratories. Consider areas for portable EEG services when planning relates to other services, such as neurological surgery.
- C. As the EMG Exam Room may be utilized by other services such as Neurology, Rheumatology, and Rehabilitation Services, consider locating the EEG Laboratory adjacent to them for efficient utilization of staff and patient convenience.
- D. Consider grouping EEG and EMG Exam rooms together to reduce Provider travel distances.

- E. Standardization of rooms and modular design should be considered to allow flexibility to adapt to new technologies and respond to changes in patient volumes.
- F. Stable environmental conditions must be maintained as changes may be perceptible to patients and can create physical responses which impact readings. Temperature and relative humidity must be balanced to prohibit static electrical charges at all times.
- G. Acoustically isolate EEG and EMG Exam rooms to inhibit distracting stimuli which will alter the readings.
- H. Isolate EEG and EMG Exam from elevators, transformers, motors, and wiring carrying large amounts of current. Voltage, particularly, will impact the readings.
- I. Provide electronic grounding in the exam rooms and workrooms to prevent interference with the accuracy of the procedure.
- J. Connection to ancillary services, such as lab and pharmacy, should be considered.
- K. The waiting room should be connected to the patient entrance corridor to the department and be under the visual control of Reception / Check-in. This space can be shared between adjacent services where appropriate.
- L. Plan for locating the Patient Prep room adjacent to patient waiting to reduce patient travel time/distance and increase staff responsiveness.
- M. Design should accommodate patient privacy and confidentiality in all areas, and in reception and patient care areas in particular. This includes visual and auditory considerations.
- N. Where possible, the department should be configured to limit the mix of patient and service functions, and to maintain clear separation of clean and dirty functions to avoid cross contamination. For example, Clean and Soiled Utility rooms can be located at alternate ends of a department.
- O. Corridors should be designed to a minimum of 8 feet clear width to accommodate passage of equipment or beds and two stretchers and/or wheelchairs. In non-patient areas and outpatient clinical spaces, corridors may be a minimum of 5 feet in clear width.
- P. Administration and support areas should be located and designed to maximize staff and space efficiency, and reduce staff travel distances.
- Q. Sharing of patient and staff support areas among adjacent services should be considered for efficient utilization of staff. For example, centralized check-in/check-out can reduce the total number of FTEs required to provide this function over multiple service lines.
- R. During design, NSF for Staff Lounge and Lockers may be combined with an adjacent department(s).
- S. Verify room sizes and equipment layouts with equipment vendors prior to finalizing room layouts.
- T. Refer to Department of Veterans Affairs (VA) Office of Construction and Facilities Management Technical Information Library (www.cfm.va.gov/til/) for additional technical criteria.
- U. Refer to Design Guide for Electroencephalography Laboratory for a detailed discussion of functional and design considerations.

7 FUNCTIONAL RELATIONSHIPS

Relationship of Electroencephalography Laboratory to services listed below:

TABLE 2: FUNCTIONAL RELATIONSHIP MATRIX

SERVICES	RELATIONSHIP	REASON
ICU	3	C, G
MS&N Patient Care Units	3	C, G
Patient Prep and Recovery	N	
Emergency Department	3	C, G
Main Entrance	3	H
Cardiovascular Labs	X	K
Endoscopy	X	K
Ambulatory Surgery / Minor Procedure	X	K
Radiology	X	K
Diagnostic Testing	2	H
Pulmonary Clinic / Testing	4	H
Cardiology Clinic / Testing	4	H
Digestive Disease Clinic / Testing	N	
Neurology Clinic / Testing	1	A, G, H
Ventilator Storage	N	
Respiratory Therapy	N	
Pharmacy	5	B
Laboratory	5	B
Social Work / Case Management	4	H
PT/OT	1	H
Food Service / Kitchen	N	
Sterile Processing Department (SPD)	N	
Staff On-Call Rooms	N	
Linen Storage	5	B
Waste Management	5, X	B, E, F
Loading Dock	5, X	B, D
Elevator Machine Room	X	L

Legend:

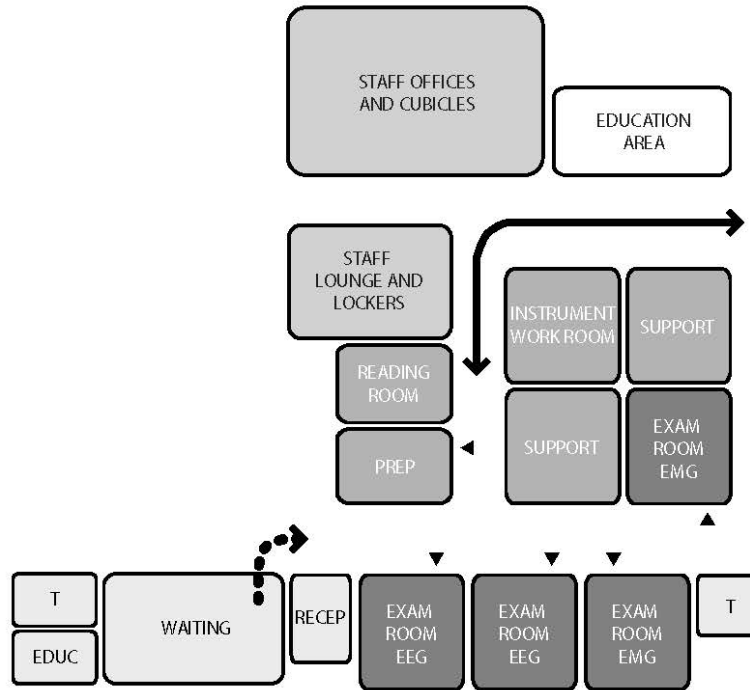
Relationship:

- 1. Adjacent
- 2. Close / Same Floor
- 3. Close / Different Floor Acceptable
- 4. Limited Traffic
- 5. Connection Needed
- X. Not Applicable
- Y. Separation Desirable









Reasons:

- A. Common use of resources
- B. Accessibility of supplies
- C. Urgency of contact
- D. Noise or vibration
- E. Presence of odors or fumes
- F. Contamination hazard
- G. Sequence of work
- H. Patient convenience
- I. Frequent contact
- J. Need for security
- K. Closeness inappropriate
- L. Interference

8 FUNCTIONAL DIAGRAM



LEGEND

	EXAM/ TESTING/ PROCEDURE		STAFF/ SERVICE
	PREP/ RECOVERY/ SUPPORT		OUTPATIENT
	STAFF AND ADMINISTRATIVE AREA		GENERAL ENTRY
	RECEPTION AREA		
	EDUCATION AREA		