A7.1.D.

A formal parking/traffic study should be conducted to ensure that adequate parking and traffic flow is provided to accommodate inpatients, outpatients, staff, and visitors.

A7.1.E.
Facility design for swing beds often requires additional corridor doors and provisions for switching nurse call operations from one nurse station to another depending on use.

~~**A7.2.A1.** Unless the functional program demonstrates the therapeutic and social value of a multi-bedded arrangement, the maximum number of beds per room should be one.~~

A7.2.A2. Patient rooms. In new construction, single patient rooms should be at least 12 feet (3.65 meters) wide by 13 feet (3.96 meters) deep (or approximately 160 square feet, or 14.86 square meters) exclusive of toilet rooms, closets, lockers, wardrobes, alcoves, or vestibules. These spaces should accommodate comfortable furniture for family members (one or two) without blocking access of staff members to patients. Efforts should be made to provide the patient with some control of the room environment.

A7.2A3. Where a facility contemplates patient/family-centered care rooms, the rooms shall be single-bed rooms, shall be constructed to meet the needs of the functional program, and shall have a minimum of 250 square feet (76.2 square meters) of clear floor area exclusive of family alcoves, toilet rooms, closets, lockers, wardrobes, vestibules, staff charting areas, or staff handwashing stations, and a minimum clear dimension of 15 feet (4.57 meters). Additional areas shall be provided at a minimum clear area of 30 square feet (9.14 square meters) per family member (permitted by the facility). Consideration for a homelike atmosphere, furniture arrangements, and orientation to the patient bed and room windows shall reflect the functional needs of the facility's program.

A7.2.A~~3~~4. Windows are important for the psychological well-being of many patients, as well as for meeting fire safety code requirements. They are also essential for continued use of the area in the event of mechanical ventilation system failure.

A7.2.A~~4~~5. Where renovation work is undertaken, every effort should be made to meet this standard. Where space does not permit the installation of an additional handwashing station in the patient room, or where it is technically infeasible, the authority having jurisdiction may grant approval of alternative forms of hand cleansing.

A7.2.B1. The station should permit visual observation of all traffic into the unit.

A7.2.B9. Multipurpose rooms are used primarily for staff purposes and generally are not available for family or visitors. A waiting room convenient to the unit should be provided.

A7.2.B18. A storage or bin space should be included for recyclable materials: white paper, mixed paper, cans, bottles, and cardboard.

A7.2.C. In general, the reliance on a substantial pressure differential (> 0.01"wg) will maintain the appropriate directional airflow with or without the anteroom. The anteroom concept should remain as an option (i.e., not required). Anterooms, in general, should be designed to meet local fire safety code as well as to prevent air from the patient room from escaping to the corridor or other common areas. In addition to the concept of containment of airborne microorganisms, anterooms may appropiately be used for

storage of personal protective equipment (PPE) (e.g., respirators, gowns, gloves), clean equipment, and hand hygiene. In ganged anterooms (two patient rooms with a common anteroom) it may be difficult to maintain directional airflow and pressure differential in order to avoid contamination from one room to the other through the anteroom. The design, installation, and monitoring of ventilation systems in such configurations is of utmost importance. Having a protective environment is not a minimum requirement. (See A7.2.D). Facilities with a PE should include at least one AII/PE room. Use of an anteroom in the immune-compromised patient condition for simultaneous airborne infection isolation and protective environment is critical to protect both the patient from the environment and the environment from the patient.

A7.2.D.
Immunosuppressed Host Airborne Infection Isolation (Protective Environment/Airborne Infection Isolation). An anteroom is required for the special case in which an immunosuppressed patient requires airborne infection isolation. Immunosuppression is defined in 7.2.D. There is no prescribed method for anteroom ventilation--the room can be ventilated with either of the following airflow patterns: (a) airflows from the anteroom, to the patient room and the corridor, or (b) airflows from the patient room and the corridor, into the anteroom. The advantage of pattern (a) is the provision for a clean anteroom in which health care workers need not mask before entering the anteroom.

A7.2.D.7. General space and staffing requirements are critical for bone marrow transplant facilities. Patients in these units may be acutely aware of the surrounding environment, which is their life support system during the many weeks when they will be confined in an immunosuppressed condition. Means of controlling unnecessary noise are important. At times, each patient may require individual privacy, although each is required to be under close staff supervision.

Bone marrow transplant rooms should be located ~~so as~~ to have access within the hospital to out-of-unit diagnostic and treatment equipment, particularly radiation therapy equipment. All bone marrow transplant-designated beds should be in exceptionally clean environments, which should consist of protective environment rooms equipped with HEPA filtration, preferably located ~~in~~ close ~~proximity~~ to each other. A countertop with scrub sink and space for high-level disinfection procedures should be available outside the entrance to each patient room when located within the nursing unit or at each entrance to a dedicated bone marrow transplant room. A handwashing station should be accessible near the entrance to each patient room within a dedicated bone marrow transplant unit.

Each bone marrow transplant patient room should have a private toilet room, which contains a water closet and a bathing facility, for the exclusive use of the patient. The patient should be able to enter the room directly without leaving the patient room or passing through the vestibule. The patient should also have a lavatory for the patient's exclusive use, located in the patient room or the private toilet room.

Patients should be housed in single-bedded rooms with full-height partitions, sealed airtight to the structure to prevent cross-infections. All surfaces, floors, walls, ceilings, doors, windows, and curtains should be scrubbable.

Windows should be provided so that each patient may be cognizant of the outdoor environment. Windowsill height should not exceed 3 feet (0.91 meter) above the floor and should be above grade. All windows in the unit should be fixed sash and sealed to eliminate infiltration.

Viewing panels should be provided in doors or walls for nursing staff observation. Flame-retardant curtains or other means should be provided to cover windows and viewing panels when a patient requires

visual privacy. Glazing should be safety glass, wire glass, or tempered clear plastic to reduce hazards from accidental breakage.

Each patient room should be provided with a nurses calling system accessible at the bed, sitting area, and patient toilet room. An emergency call system should also be provided at each patient bed and toilet room to summon additional personnel from on-call rooms, consultation rooms, and staff lounges. Facilities for administration of suction, compressed air, and oxygen should be provided at the bed.

Each geographically distinct unit should provide appropriate space to support nurses' administrative activities, report/conference room activities, doctors' consultation, drug preparation and distribution, emergency equipment storage, and closed accessible waiting for family members.

A7.2.F. The purpose of this section is to lend guidance in the design of units that by their very nature require a protected environment for the treatment and care of their patients. The following units fall within this intended guidance, although this list is not inclusive: transplant units, burn units, nurseries, units for immunosuppressed populations, and neonatal intensive care units. Portions of emergency departments where the initial triage occurs may be incorporated as part of the triage service while an assessment of potential infection and contamination is made prior to processing the suspected patient. Consideration for appropriate pressurization and air exchange rates to control contamination should be addressed.

A7.~~3~~4.A2. Transportation of patients to and from the critical care unit should ideally be separated from public corridors and visitor waiting areas. In new construction, where elevator transport is required for critically ill patients, the size of the cab and mechanisms and controls should meet the specialized needs.

A7.~~3~~4.A3. In critical care units, the size of the patient care space should be dependent upon the intended functional use. The patient space in critical care units, especially those caring for surgical patients following major trauma or cardiovascular, transplant, or orthopedic procedures, or medical patients simultaneously requiring ventilation, dialysis, and/or other large equipment (e.g., intra-aortic balloon pump) may be overwhelmed if designed to the absolute minimum clear floor area.

A staff emergency assistance system should be provided on the most accessible side of the bed. The system should annunciate at the nurse station with backup from another staffed area from which assistance can be summoned.

Provision should be made for rapid and easily accessible information exchange and communication within the unit and the hospital.

The unit should provide the ability to continuously monitor the physiological parameters appropriate for the types of patients the unit is expected to care for.

A7.~~3~~4.A9. Patients should be visually observed at all times. This can be achieved in a variety of ways.

If a central station is chosen, it should be ~~geographically~~ located to allow for complete visual control of all patient beds in the critical care unit. It should be designed to maximize efficiency in traffic patterns. Patients should be oriented so that they can see the nurse but cannot see the other patients. There should be an ability to communicate with the clerical staff without having to enter the central station.

If a central station is not chosen, the unit should be designed to provide visual contact between patient beds so that there can be constant visual contact between the nurse and patient.

A7.~~3~~4.A12. To minimize distraction of those preparing medications, the area should be enclosed. A glass wall or walls may be advisable to permit ~~visualization~~ observation of patients and unit activities. A self-contained medicine ~~-~~-dispensing unit may be located at the nurse~~s~~ station, in the clean workroom, in an alcove, or in another area directly under visual control of nursing or pharmacy staff.

A7.~~3~~4.A15. The recording, storage of bedside records (flowsheets, etc.), and review of clinical information is a vital function of a critical care unit. Space ~~near the bedside~~ for these functions should be provided near the bedside. Suitable space ergonomically designed is especially germane where computers are used for the clinical record.

A7.~~3~~4.A15.g. Equipment storage room or alcove. Appropriate room(s) or alcove(s) should be provided for storage of large items of equipment necessary for patient care and as required by the functional program. ~~Its~~ The location should not interfere with the flow of traffic. Work areas and storage of critical care supplies should be ~~in locations such that they are~~ readily accessible to nursing and physician staff. Shelving, file cabinets, and drawers should be ~~located so that they are~~ accessible to all requiring use. Separate areas need to be designed for the unit secretary and staff charting. Planning should consider the potential volume of staff (both medical and nursing) that could be present at any one time and translate that to adequate charting surfaces. The secretarial area should be accessible to all. However, the charting areas may be somewhat isolated to facilitate concentration. Storage for chart forms and supplies should be readily accessible. Space for computer terminals and printer and conduit for computer hook~~-~~up should be provided when automated information systems are in use or planned for the future. Patient records should be readily accessible to clerical, nursing, and physician staff. Alcoves should be provided for the storage and rapid retrieval of crash carts and portable monitor/defibrillator units. ~~Grounded e~~Electrical outlets should be provided in sufficient numbers to permit recharging stored battery-operated equipment.

A7.4.A15.i. Documentation space. The countertop area should be a minimum of 8 square feet (2.44 square meters). If a documentation space is to serve two patient beds, it should be a minimum of 10 square feet (3.05 square meters.

Information review space. There should be a minimum of 8 square feet (2.44 square meters) of countertop and seating to accommodate two people for every five patient beds it serves.

A7.4.A16.b. The offices should be large enough to permit consulting with members of the critical care team and visitors.

A7.~~3~~4.D2. ~~There should be~~ Parent sleeping accommodations should be provided at ~~each child's~~ the patient's bedside.

A7.4.D4. Formula storage may be outside the unit but should be available for use at all times. The functional program should determine the location and size of formula storage.

A7.4.D6. Space allowances for pediatric beds and cribs are greater than those for adult beds because of the variation in bed/crib sizes and the potential for change. The functional program may determine that general storage be provided in the pediatric critical care unit above the minimum required under 7.4.A15g.

~~**A7.3.D7.** Space allowances for pediatric beds and cribs are greater than those required for adult beds, because of the variations in sizes and the potential for change. Adequate storage is needed to accommodate the range of supplies and equipment needed to care for children of all ages.~~

A7.4.D.7. The number and location of examination/treatment rooms should be based on the functional program.

A7.4.E1. There should be efficient access to the unit from the labor and delivery area and emergency department or other referral entry points.

~~**A7.3.E6.** Infant bed areas and the spaces opening onto them should be designed to produce minimal background noise and to contain and absorb much of the transient noise that arises within the NICU. The combination of continuous background sound and transient sound in any patient care area should not exceed an hourly L_{eq} of 50 dB and an hourly L_{10} of 55 dB, both A-weighted slow response. The L_{max} (transient sounds) should not exceed 70 dB, A-weighted slow response.~~

~~**A7.3.E7.** Natural light should be provided in the NICU.~~

~~**A7.3.E15.** At least one transition room should be provided within or immediately adjacent to the NICU that allows parents and infants extended private time together. This room should have direct, private access to sink and toilet facilities, a bed for parents, communication linkage with NICU staff, and appropriate electric and medical gas outlets. The room(s) can be used for other family educational, counseling, parent sleeping, or demonstration purposes when not needed as a transition room.~~

A7.~~3~~4.E~~19~~18. Whenever possible, supplies should flow through special supply entrances from external corridors so that penetration of the semisterile zone by non-nursery personnel is unnecessary. Soiled materials should be sealed and stored in a soiled holding area until removed. This holding area should be located where there will be no need to pass back through the semisterile zone to remove the soiled materials.

~~**A7.4**~~

~~There should be a breastfeeding/pumping room readily available for mothers of NICU babies to pump breastmilk.~~

A7.~~4~~5.A7

When the functional program includes a mother-baby couplet approach to nursing care, the workroom functions described above may be incorporated into the nurse station that serves the postpartum patient rooms.

A7.5.B. When facilities use a rooming-in program in which all infants are returned to the nursery at night, a reduction in nursery size may not be practical.

A7.~~5~~6.

~~Recognizing~~ In view of their unique physical and developmental needs, pediatric and adolescent patients, to the extent their condition permits, should be grouped together in distinct units or distinct areas of general units separate from adults.

A7.~~5~~6.A

Family-support spaces, including family sleep rooms, pantry, toilets, showers, washers and dryers, and

access to computers, phones, and copy machines, should be provided.

A7.~~7~~9 ~~Surgical Suites~~Surgery

The size and location of the surgical procedure rooms shall be dependent on the level of care to be provided. The levels of care as defined by the American College of Surgeons are as follows:

Class A: Provides for minor surgical procedures performed under topical, local, or regional anesthesia without pre-operative sedation. Excluded are intravenous, spinal, and epidural routes; these methods are appropriate for Class B and Class C facilities.

Class B: Provides for minor or major surgical procedures performed in conjunction with oral, parenteral, or intravenous sedation or under analgesic or dissociative drugs.

Class C: Provides for major surgical procedures that require general or regional block anesthesia and support of vital bodily functions.

When bronchoscopy is performed on persons who are known or suspected to have pulmonary tuberculosis, the procedure room shall meet the airborne infection isolation room ventilation requirements.

When invasive procedures are known or suspected to have pulmonary tuberculosis, these procedures should not be performed in the operating suite. They should be performed in a room meeting airborne infection isolation room ventilation requirements or in a space using local exhaust ventilation. If the procedure must be performed in the operating suite, see the "CDC Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health Care Facilities."

A7.~~7~~9.B~~2~~. Separate and additional recovery space may be necessary to accommodate outpatients. If children receive care, recovery space should be provided for pediatric patients and the layout of the surgical suite should facilitate the presence of parents in the PACU.

A7.9.B1. The functional program may require additional clear space, plumbing, and mechanical facilities to accommodate special functions in one or more of these rooms. When existing functioning operating rooms are modified, and it is impractical to increase the square foot area because of walls or structural members, the operating room may continue in use when requested by the hospital.

A7.~~7~~9.~~B~~C2. Separate and additional recovery space may be necessary to accommodate patients. If children receive care, recovery space should be provided for pediatric patients and the layout of the surgical suite should facilitate the presence of parents in the PACU.

A7.~~7~~9.~~C~~D10. Equipment storage room(s) for equipment and supplies used in the surgical suite should be strategically located and sized for convenient access and utilization. In larger surgical suites, storage spaces should be located for ready access to specialty rooms.

A7.~~8~~10.
Obstetrical program models vary widely in their delivery methodologies. The models are essentially of three types. The following narrative describes the organizational framework of each model.

Traditional Model

Under the traditional model, labor, delivery, recovery, and postpartum occur in separate areas. The birthing woman is treated as the moving part. She is moved through these functional areas depending on the status of the birth process.

The functional areas are separate rooms consisting of the labor room, delivery room, recovery room, postpartum bedroom, and infant nurseries (levels determined by acuity).

Labor-Delivery-Recovery Model

All labor-delivery-recovery rooms (LDRs) are designed to accommodate the birthing process from labor through delivery and recovery of mother and baby. They are equipped to handle most complications, with the exception of cesarean sections.

The birthing woman moves only as a postpartum patient to her bedroom or to a cesarean section delivery room (surgical operative room) if delivery complications occur.

After the mother and baby are recovered in the LDR, they are transferred to a mother-baby care unit for postpartum stay.

Labor-Delivery-Recovery-Postpartum Model

Single--room maternity care in labor-delivery-recovery-postpartum rooms (LDRPs) adds a "P" to the LDR model. Room design and capability to handle most emergencies remain the same as the LDRs. However, the LDRP model eliminates a move to postpartum after delivery. LDRP uses one private room for labor, delivery, recovery, and postpartum stay.

Equipment is moved into the room as needed, rather than moving the patient to the equipped room. Certain deliveries are handled in a cesarean section delivery room (surgical operative room) should delivery complications occur.

A7.~~8~~10.A2.a(3). Unless the functional program demonstrates the therapeutic and social value of a multiple-bed~~ded~~ arrangement, the maximum number of beds per room should be one.

A7.10.A3.f(3)(c). High-speed autoclaves should only be used in an emergency situation (e.g., a dropped instrument and no sterile replacement readily available).

A7.10.A4. A minimum dimension of 15 feet (4.57 meters) is preferable to accommodate the equipment and staff needed for complex deliveries.

A7.~~9~~11.A. Classification of emergency departments/services/trauma centers

Basic aspects of previous Level I-IV emergency department/services classifications are still recognizable in current criteria statements but have evolved substantially to address changes in practice, needs, and technologies. The following publications are especially useful references for understanding and listing current refined and expanded requirements:

American College of Surgeons. "Trauma Center Descriptions and Their Roles in a Trauma System," chapter 2 in *Resources for Optimal Care of the Injured Patient* (ACS, 1999). This reference provides

detailed descriptions of Level I- Level IV trauma centers. (www.facs.org)

Riggs, Leonard M., Jr., ed. *Emergency Department Design* (American College of Emergency Physicians, 1993). The author discusses planning for various levels of treatment acuity. (www.acep.org)

A7.11.D. When advanced imaging technologies such as CT are available, the ED should have convenient access.

A7.11.D3. The design of the department is critical, particularly at the main public access point, to ensure that emergency medical staff and hospital security personnel maintain control of access at all times. In the event of a disaster, terrorist event, or infectious disease outbreak, the emergency service must remain under the control of the hospital and limit contamination to ensure its continued availability as a resource. Efforts will be made to separate patients waiting for triage in a secure area clearly visible from triage with appropriate ventilation. This area will be separate from the post-triage waiting area to limit the spread of contamination and/or contagion. While the triage station must have unobstructed visability of the waiting area to observe patients waiting for treatment, a reception and control or security function must be provided to monitor the main entrance to the department and all public areas. Public access points to the treatment area shall be minimal in number, and under direct observation by the reception and control or security function.

A7.~~9~~11.D8
Access needs to be convenient to ambulance entrance.

A7.~~9~~11.D16a
Disposal space for regulated medical waste~~,~~ (e.g., gauzes/linens soaked with body fluids)~~,~~ should be separate from routine disposal space.

A7.~~9~~11.D21
A security station and/or system should be located to maximize visibility of the treatment areas, waiting areas, and key entrance sites. The system should include visual monitoring devices installed both internally in the emergency department as well as externally at entrance sites and parking lots. Special requirements for a security station should include accommodation for hospital security staff, local police officers, and monitoring equipment. Design consideration should include installation of silent alarms, panic buttons, and intercom systems, and physical barriers such as doors to patient entry areas.

The security monitoring system should be included on the hospital's emergency power backup system.

In preparation for the emergence of highly infectious patients, hospitals should have the capacity to handle a surge of up to ten or a fourfold increase above the current emergency department capacity for such patients. This preparation should include the provision of adjacent space for triage and management of infectious patients. Utility upgrades for these areas (oxygen, water, electrical) should be considered. The area should provide for depressurization to help control aerosolized infectious particles with 100 percent exhaust capability. If 100 percent exhaust cannot be achieved, appropriate proven technology should be utilized to reduce airborne particles by > 95 percent. If patient care areas are to be utilized in the hospital to house these patients, the route to the patient care unit should minimize the potential for cross-contamination. Existing smoke control areas could be utilized to meet the ventilation requirements. If negative pressure machines are used, they shall be designed for specific applications for depressurizing rooms or areas. Written protocols must be developed to ensure proper performance of the means to accomplish the intended goals. DHHS, the Office of Emergency Preparedness, will have more up-to-date

information.

A7.~~9~~11.D23. At least one bereavement room should be provided. This room should be accessible from both the emergency treatment corridor and the emergency waiting area. This room should be comfortable enough to provide respite to the bereaved family and should be equipped with a sound transmission coefficient equivalent to 65 for the walls and 45 for the floors and ceiling.

A7.11.D24. The room should be designed to prevent injury to patients. All finishes, light fixtures, vents and diffusers, and sprinklers should be completely tamper resistant. There should not be any electrical outlets, medical gas outlets, or similar devices. There should be no sharp corners, edges, or protrusions, and the walls should be free of objects or accessories of any kind. Patient room doors should swing out and should have hardware on the exterior side only, and doors should have an electric strike that is tied into the fire alarm.

A7.~~9~~11.D25. Decontamination area on the exterior perimeter.

(1) Ideally 50 yards (45.72 meters) from the ambulance entrance (if required by the constraints of the structures involved, this may be no less than 10 yards (9.14 meters) from the ambulance entrance).

(2) At a location where no windows or doors abut the defined area or where all doors are securable from the outside and all windows are capable of being shuttered.

(3) Boundaries shall be defined on the paved ground surface with a yellow paint line and the word "DECON" painted within these boundaries.

(4) At least two shower heads, temperature-controlled and separated by at least 6 feet (1.83 meters); a separate spigot for attachment of a hose.

(5) Semipermanent or portable/collapsible structures (curtains, tents, etc.) that will provide ~~both~~ shelter from the environment, privacy, and some containment of the contaminant/infectious agent.

(6) Secured access to the hospital telephone system and a duplex electrical outlet for each two shower heads and no closer than 4 feet (1.22 meters) to any shower.

(7) Exterior lighting to maximize visibility; appropriate for wet/shower facilities.

(8) Negative airflow and ventilation system on the hospital perimeter wall but drawing air within the confines of the decontamination structure; exhausted directly to the outdoors, no less than 50 feet (15.24 meters) away from the decontamination site with no recirculation of air. This system shall be defunctionalized when the decontamination structure is not in use.

(9) Water runoff shall be contained and disposed of safely to ensure that it does not enter community drainage systems. This shall be accomplished either by graded floor structures leading to a drain with a collection system separate from that of the hospital or by the use of plastic pools or specialized decontamination stretchers.

Decontamination room within the facility

(1) Separate, independent, secured external entrance adjacent to the ambulance entrance, but no less than

10 yards (9.14 meters) distant; lighted and protected from the environment in the same way as the ambulance entrance; a yellow painted boundary line 3 feet (0.91 meter) from each side of the door and extending 6 feet (1.83 meters) from the hospital wall; the word "DECON" painted within these boundaries.

(2) Internal entrance to a corridor within the emergency area.

(3) It shall have spatial requirements and the medical support services of a standard emergency area airborne infection isolation room, with air externally exhausted separate from the hospital system. It shall contain a work counter, handwashing station with hands-free controls, an area for personnel gowning, and a storage area for supplies, as well as equipment for the decontamination process.

(4) Ceiling, wall, and floor finishes shall be smooth, nonporous, scrubbable, nonadsorptive, nonperforated, capable of withstanding cleaning with and exposure to harsh chemicals, nonslip, and without crevices or seams. Floors shall be self-coving to a height of 6 inches (152.4 millimeters). The surface of the floor shall be self-finished and require no protective coating for maintenance.

(5) Two hospital telephones; two duplex electrical outlets, secured appropriately for a wet environment.

(6) At least two hand-held shower heads, temperature-controlled; curtains or other devices to allow patient privacy, to the extent possible.

(7) Appropriately heated and air-cooled for a room with an external door and very high ~~Rh~~relative humidity.

(8) Water drainage must be contained and disposed of safely to ensure that it does not enter the hospital or community drainage systems. There should be a "saddle" at the floor of the door buck to prevent efflux.

(9) A certified physicist or other qualified expert representing the owner or the state agency shall specify the type, location, and amount of radiation protection to be installed in accordance with final approved department layout and the functional program. These specifications shall be incorporated into the plans.

(10) The decontamination area may function as an isolation room or a patient hygiene room under routine departmental function.

A7.11.D26. Provisions for the treatment of pediatric cases in dedicated pediatric rooms within the unit should be provided. The quantity of dedicated rooms should depend on the census of the particular institution. Pediatric designated rooms should be adjacent to a family waiting area and toilet. Particular attention should be paid to the soundproofing of these rooms. Where possible, rooms should be sized larger than 120 square feet (11.15 square meters) of clear area (exclusive of casework) to accommodate the additional equipment and escorts that accompany pediatric cases.

A7.~~9~~11.E. A decontamination room for both chemical and radiation exposure. This room should have a separate entrance to the emergency department~~,~~ and an independent, closed drainage system. A negative airflow and ventilation system separate and distinct from the hospital system should be provided. Spatial requirements should allow for at least one stretcher, several hospital staff, two shower heads, and an adjacent locked storage area for medical supplies and equipment. When provided, solid lead-lined walls and doors should meet the requirements of a certified physicist or other qualified expert representing the owner or state agency.

A separate pediatric emergency area. This area should include space for registration, discharge, triage, waiting, and a playroom. An area for the nurse station and physician station, storage for supplies and medication, and one to two isolation rooms should also be included. Each examination/treatment room should be 100 square feet (9.29 square meters) of clear floor space, with a separate procedure/trauma room of 120 square feet (11.15 square meters) of clear floor space; each of these rooms should have handwashing stations;~~,~~ vacuum, oxygen, and air outlets;~~,~~ examination lights;~~,~~ and wall/column mounted ophthalmoscopes/otoscopes. At least one room for pelvic examinations should be included. X-ray illuminators should be available.

Observation/holding units for patients requiring observation up to 23 hours or admission to an inpatient unit. This area should be located separately but near the main emergency department. The size will depend upon the function (observation and/or holding), patient acuity mix, and projected utilization. As defined by the functional plan, this area should consist of a centralized nurse station; 100 square feet (9.29 square meters) of clear floor space for each cubicle, with vacuum, oxygen, and air outlets, monitoring space, and nurse call buttons. A patient bathroom should be provided. Storage space for medical and dietary supplies should be included. X-ray illuminators should be available.

A separate fast-~~-~~track area when annual emergency department visits exceed 20-30,000 visits should be considered. This area should include space for registration, discharge, triage, and waiting, as well as a physician/nurse work station. Storage areas for supplies and medication should be included. A separate treatment/procedure room of 120 square feet (11.15 square meters) of clear floor space should be provided. Examination/treatment areas should be 100 square feet (9.29 square meters) of clear floor space, with handwashing stations, vacuum, oxygen, and air outlets, and examination lights. At least one treatment/examination room should be designated for pelvic examinations.

A patient hygiene room with shower and toilet facilities.

A7.~~10~~12.A1. Layouts should be developed in compliance with manufacturer's recommendations because area requirements may vary from machine to machine. Since technology changes frequently and from manufacturer to manufacturer, rooms can be sized larger to allow upgrading of equipment over ~~a period of~~ time.

A7.~~10~~12.A3. Particular attention should be paid to the management of outpatients for preparation, holding, and observation. The emergency, surgery, cystoscopy, and outpatient clinics should be accessible to the imaging suite. Imaging should be located on the ground floor, if practical, because of equipment ceiling height requirements, close proximity to electrical services, and expansion considerations.

A7.~~10~~12.B1. The procedure room should be a minimum of 400 square feet (37.16 square meters).

A7.~~10~~12.B3. Viewing areas should be a minimum of 10 feet (3.05 meters) in length.

A7.~~10~~12.B5. A patient holding area should be provided to accommodate two stretchers with additional spaces for additional procedure rooms.

A7.~~10~~12.D1. Radiography rooms should be a minimum of 180 square feet (7.43 square meters). (Dedicated chest X-ray may be smaller.)

A7.~~10~~12.D2. Tomography and ~~R~~radiography/~~F~~fluoroscopy (R&F) rooms should be a minimum of 250

square feet (23.23 square meters).

A7.~~10~~12.D3. Mammography rooms should be a minimum of 100 square feet (9.29 square meters).

A7.~~10~~12.E2. Control rooms should be a minimum of 100 square feet (9.29 square meters), but may be larger depending on the vendor and magnet size.

A7.~~10~~12.E3. A computer room may range from 150 square feet (13.94 square meters) to 380 square feet (35.30 square meters) depending on the vendor and magnet strength. Self-contained air conditioning supplement is normally required.

A7.~~10~~12.E4. Cryogen storage may be required in areas where service to replenish supplies is not readily available. When provided, space should be a minimum of 50 square feet (4.65 square meters) to accommodate two large dewars of cryogen.

A7.~~10~~12.E5. A darkroom may be required for loading cassettes and shall be located near the control room. This darkroom shall be outside the 10-gauss field.

A7.~~10~~12.E7. Power conditioning and voltage regulation equipment as well as direct current (DC) may be required.

A7.~~10~~12.E8. Magnetic shielding may be required to restrict the magnetic field plot. Radio frequency shielding may be required to attenuate stray radio frequencies. The area around, above and below the MRI suite shall be reviewed and evaluated for the following:

- Possible occupancy by person(s) who could have pacemakers or other metal implants.
- Equipment that can be disrupted by a magnetic field. Examples include but are not limited to personal computers, monitors, CT scanners, and nuclear cameras.

After reviewing and evaluating the surrounding space, appropriate magnetic shielding should be provided based upon the type of MRI scanner to be installed.

A7.~~10~~12.E9. When patient holding areas are provided, they should be located near the MRI unit and should be large enough to accommodate stretcher(s).

A7.14.A. Nuclear medicine may include positron emission tomography, which is not common to most facilities. It requires specialized planning for equipment.

A7.~~11~~14.F. Space should be provided as necessary to accommodate the functional program. PET scanning is generally used in experimental settings and requires space for a scanner and for a cyclotron. The scanner room should be a minimum of 300 square feet (27 square meters).

Where a cyclotron room is required, it should be a minimum of 225 square feet (20.90 square meters) with a 16 square foot (4.88 square meter) space safe for storage of parts which may need to cool down for a year or more.

Both a hot (radioactive) lab and a cold (nonradioactive) lab may be required, each a minimum of 250 square feet (23.23 square meters).

A blood lab of a minimum of 80 square feet (7.43 square meters) should be provided.

A patient holding area to accommodate two stretchers should be provided.

A gas storage area large enough to accommodate bottles of gas should be provided. Each gas will be piped individually and may go to the cyclotron or to the lab. Ventilation adequate for the occupancy is required. Compressed air may be required to pressurize a water circulation system.

Significant radiation protection may be required, since the cyclotron may generate high radiation.

Special ventilation systems together with monitors, sensors, and alarm systems may be required to vent gases and chemicals.

The heating, ventilating, and air conditioning system will require particular attention; highest pressures should be in coldest (radiation) areas and exhaust should be in hottest (radiation) areas. Redundancy may be important.

The cyclotron is water cooled with de-ionized water. A heat exchanger and connection to a compressor or connection to chilled water may be required. A redundant plumbing system connected to a holding tank may be required to prevent accidental leakage of contaminated water into the regular plumbing system.

A7.14.G2. The darkroom should contain protective storage facilities for unexposed film that guard the film against exposure or damage.

A7.14.G10. Thought should be given to entertainment and reading materials.

A7.14.H1. Equipment manufacturers' recommendations should be sought and followed, since space requirements may vary from one machine to another and one manufacturer to another. The radiotherapy suite may contain electron beam therapy or radiation therapy, or both. Although not recommended, a simulation room may be omitted in small linear accelerator facilities where other positioning geometry is provided.

A7.~~11~~14.H4. Minimum size should be 260 square feet (24.15 square meters) for the simulator room. Minimum size, including the maze, should be 680 square feet (63.17 square meters) for accelerator rooms and 450 square feet (41.81 square meters) for cobalt rooms.