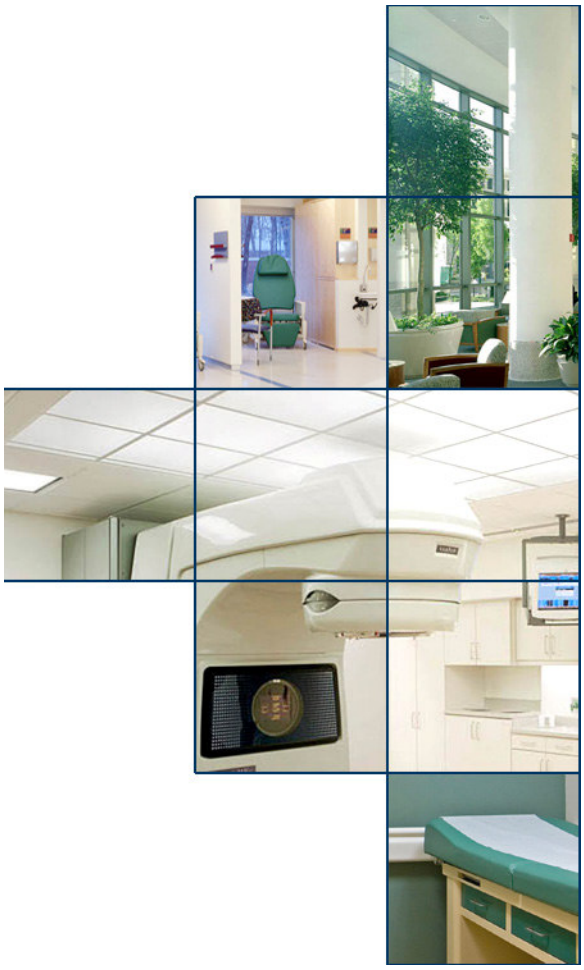

Section 2: Narrative

General Considerations

Overview

What is Radiation Therapy?

Radiation Therapy is a clinical specialty that employs radiation to treat cancer and other medical conditions. Two types of Radiation Therapy are available; External Radiation Therapy and Internal Radiation Therapy. External Radiation Therapy utilizes high-energy penetrating wave or particle beams that are used to damage or destroy cancerous cells. External Radiation Therapy may also be used as a form of treatment for some non-cancerous diseases, and is frequently delivered on a recurring outpatient basis. High-energy beams do not leave the patient 'radioactive' and there are no concerns about exposure of the patient to other persons post-treatment.

Internal Radiation Therapy employs the use of low-level radioactive implants or 'seeds' to deliver radiation to local tissue structures. Frequently implanted in tumors, the radioactive decay damages or destroys the immediately surrounding tissue. Implants are specifically chosen to match the proscribed radiation dose necessary to damage the tumor while protecting the surrounding healthy tissues. Radioactive implants are placed surgically. Depending upon the implant's intensity, patients may be 'radioactive' for a period of time post-implantation and may need to remain in hospital, segregated from others until the radioactive decay reduces the strength of the implant.

Current Trends

Radiation Therapy has been used as a cancer treatment for more than 100 years. Advances in technology during the 1970's have set the stage for today's treatment methods and equipment. Current methods of Radiation Therapy include the use of 3 dimensional data collection, the use of computer aided treatment planning, and the use of highly accurate radiation delivery equipment. This methodology attempts to identify where cancer is located, determine the best method of treatment, and deliver controlled radiation that targets the cancer while maintaining healthy surrounding body tissue.

Stereotactic Radiosurgery is currently being performed to treat tumors with a precise delivery of a single, high dose of radiation. This one-session treatment has such a dramatic effect in the target areas that the resulting changes are considered "surgical." This may be performed using a specially configured Linear Accelerator or a Gamma Knife. Radiosurgery performed with a Gamma Knife is limited to treating disorders of the head and neck while treatments using a Linear Accelerator may address the whole body. Cyber Knives have been developed as another method of treating disorders located in areas other than the head and neck. Currently this technology is limited to a few centers of excellence, but it is anticipated that more facilities will provide this treatment as the cost of the equipment is reduced.

Picture Archiving and Communications Systems (PACS) has become the VA standard for the capture, transfer, storage, and manipulation of diagnostic images. These systems consist of workstations for image interpretation, a web server for distribution, printers for file records, image servers for information transfer and handling, and archive systems for off-line information storage.

Future Trends

Advances in technology will continue to improve methods of Radiation Therapy. It is anticipated that imaging modalities, such as CT, PET, and MR, will merge to provide more precise delineation of tumors and improve treatment planning. This will allow for more intense and focused treatment of tumors without affecting surrounding tissue; a major goal in Radiation Therapy. Technology advances in precision and resolution of images will continue with the PACS systems deployment at Radiation Therapy areas. Improvements in equipment positioning systems accuracy and automation will provide greater targeting performance. In the future, Radiation therapists will be able to more accurately target, deliver, and verify treatment.

Functional Considerations

Operations

Radiation Therapy is a referral-based treatment service. Treatments include external beam therapies and internal implant therapies. These may be in conjunction with other treatments such as chemotherapy, surgery, and hormone therapy that are not performed in the Radiation Therapy service areas. Support functions for may be shared between Radiation Therapy Services and Nuclear Medicine Services.

Treatment Process

The patient is referred for Radiation Therapy.

Upon arrival, the patient is received, their records are verified, and the patient is directed to either outpatient or inpatient waiting.

Prior to treatment, patients may gown and be taken for simulation imaging in anticipation of treatment planning. Following simulation, a treatment plan is devised.

Once a treatment plan is developed, a schedule of therapy is outlined.

For external radiation therapy, a series of treatments are scheduled; typically on an outpatient basis. The patient arrives for their treatment, may be gowned, receive the treatment, and leave.

Periodically, new scans may be performed to determine the effectiveness of the current treatment. Based on the results of these scans, the treatment plan may be revised to accommodate changing conditions.

Patient Care Concept

Effective diagnosis and care of cancer patients require an interdisciplinary approach to clinical programs and involves multiple screening, diagnostic, and treatment modalities. Family participation is common during the treatment planning process and should also be accommodated in the treatment process itself. This includes assistance in driving, parking, and help with dressing and mobility.

Providing convenient access to treatment in a non-institutional, non-threatening environment is an objective of the Radiation Therapy Service. Ease of access is particularly important due to the frequency of treatment commonly prescribed by the treatment plan. The provision

of a healing environment is critical to cancer patients who are dealing with the stress of a potentially life-threatening condition. Patient education and family consultation may be used to further aid in a positive patient outcome.

Patient Base

VA Radiation Therapy facilities are focused upon serving the Veteran and may include sharing agreements, joint ventures, and referrals. The aging veteran patient population with comorbidities and increased severity of illness necessitate design features that emphasize safety and prevention of risks.

Medical Records

Diagnostic evaluations and treatment records generated within the department become part of the Veteran's Consolidated Health Record. Evaluations are communicated to the ordering physician in electronic form. Image manipulation, interpretation, archiving, retrieval, and distribution procedures may occur within Radiation Therapy or remotely.

Patient Protocol

Initial patient appointments are established through a referral network. Multiple scheduled visits are planned over the therapy period. Scheduled visits are included for assessment, counseling, treatment planning, therapy sessions, examination, and follow-up.

Special Requirements

Teaching facilities may require more technical support space including space to accommodate small groups in control rooms, treatment planning, and consultation areas. PACS viewing spaces and remote viewing screens need to be factored into these spaces.

Space Planning Issues

Radiation Therapy is typically a stand-alone unit to maximize privacy for patients and families. However, in new facilities, options should be explored to share space and staff with other diagnostic imaging modalities.

Appropriate staff and support spaces and their proper functional adjacencies must be clearly defined and understood early in the planning and design process in order to achieve operational efficiency. Flexibility and adaptability should be anticipated within the design of the facility to accommodate evolutions in technology. Way-finding should be clear, and easy access provided to outpatients who are stressed and often weakened due to their illness. Patient privacy and dignity is a prime consideration in the design of Radiation Therapy.

Shared staff support facilities including staff lockers, lounges, inpatient holding, and registration should be considered. Shared patient support facilities are not recommended due to the nature of the patient's illness.

Flexibility

The physical mass requirements to accommodate the radiation shielding often restrict the location of Radiation Therapy Facilities to lower floor locations. Shielding requirements also

place demands on space. If an entrance maze is required it should be designed to minimize shielding while providing convenient access of a stretcher and equipment to the treatment room. Radiation Therapy Facilities need to be placed where they will not impede expansion of the surrounding services. Due to the permanent nature of these facilities, flexibility in design is important to provide for advances in technology. Increased space allocation and shielding in excess of vendor minimums outlined at the initial design will help to provide this flexibility for the future. Close coordination between the equipment vendor, the designers, and the Radiation Therapy Physicists is critical during the design process.

Human Factors

The VA is committed to providing a healthcare facility that includes components that create a healing environment. It is important that the design of Radiation Therapy reinforces this concept. Patient's vulnerability to stress from noise, lack of privacy, poor lighting, and other causes, and the harmful effects it can have on the healing process is well known and documented. Patient dignity and self-determination should be accommodated while considering operational efficiencies. Security is addressed by planning, design, and detail considerations. Handicap accessibility is accommodated by the application of ABA and ADA design guidelines to space and fixed equipment layouts.

De-emphasizing the institutional image of traditional health care facilities and surrounding the patient and family members with architectural finishes and furnishings that are familiar and non-threatening should be a prime objective. It is important to remember, however, that this is a healthcare environment and ease of maintenance, durability, and sanitation should be primary considerations when selecting materials and finishes. An inherent opportunity exists in the design of Radiation Therapy to address these issues and put forth creative solutions that enhance patient comfort and contribute to positive outcomes.

Treatment

Radiation Therapy commonly maintains two patient care areas; treatment planning and radiation treatment. Treatment planning with assessment and evaluation generally occurs during the patient's initial visit. After a treatment approach is determined, the patient generally accesses the treatment area repeatedly during the course of treatment.

Patient Access / Way-finding

Travel distance from parking and main patient entrance to Radiation Therapy Service waiting should be minimized due to the frequency of patient access. Consideration should be given to co-location of Radiation Therapy with other diagnostic facilities which may assist in way-finding and coordination of patient service.

Organizational Concepts

The spatial organization of Radiation Therapy is predicated on four functional areas. These areas are Reception, Patient Care / Treatment Planning, Support, and Staff and Administration.

The reception area controls access to the patient areas and prevents unauthorized access to the department.

Outpatient waiting areas should be separate from inpatient waiting areas. Outpatients are typically accompanied by at least one family member or visitor who will also require waiting space.

High volume services within the patient service areas should be located near the Waiting Areas to facilitate ease of patient access.

Patient areas should be consolidated to control patient access and to maintain patient privacy, security, and dignity.

Referral, treatment planning, consultation and interpretation areas should not accessible to patients and should be private staff work areas to maintain patient confidentiality.

Patient and Staff circulation should be separated. Staff functions may be located within the service or in a convenient location that is shared with another service.

Locate clean and soiled utility functions close to the patient areas they support.

Infrastructure Support areas (e.g., electrical and telecommunications rooms) should be located in proximity to the Radiation Therapy Suite.

Functional Adjacencies

Radiation Therapy should be located close and on the same floor as the Radiology Service.

Close but a different floor location is acceptable for the following services:

Ambulatory Care

Audiology and Speech Pathology

Intensive Care Nursing Units

Medical Research and Development Service

Surgical Service

Technical Considerations

General

Seismic

Where required, install all components and equipment with seismic provisions as outlined in the various discipline specific VA Design manuals for healthcare projects. Refer to VA Construction Standard Handbook PG-18-03 (CD-54), “Natural Disaster Resistive Design Nonstructural” for additional information.

Mycobacterium Tuberculosis

Current Center for Disease Control (CDC) requirements for design of public areas within the building to accommodate Mycobacterium Tuberculosis patients must be addressed by architectural and mechanical disciplines. Check current requirements with the VA task force on transmission of Mycobacterium Tuberculosis, TB criteria in HVAC Design Manual for Hospi-

tal Projects, and the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings, 2005.

Sustainability

In 2006, the Department of Veterans Affairs joined other Federal agencies who are participating in principles outlined in the Memorandum of Understanding for the Federal Leadership in High Performance and Sustainable Buildings. The purpose of these guidelines is to encourage the use of life cycle concepts, consensus-based standards, and performance measurement and verification methods that utilize good science and lead to sustainable buildings. The goals of the members of this initiative are to establish and follow a common set of sustainable Guiding Principles for integrated design, energy performance, water conservation, indoor environmental quality, and materials aimed at helping Federal agencies and organizations:

Reduce the total ownership cost of facilities.

Improve energy efficiency and water conservation

Provide safe, healthy, and productive built environments

Promote sustainable environmental stewardship

These principles should be addressed in the design of all VA facilities.

Architectural

Interior Materials and Finishes

Partitions

Interior partitions should be primarily painted gypsum wallboard on metal studs. Partitions enclosing physician offices, and exam rooms should be provided with sound attenuation batts between the studs in accordance with H-18-03, VA construction standard CD 34-1, Noise Transmission Control.

Partitions for CT Simulator areas will likely require shielding. Partitions around Linear Accelerator equipment will require significant quantities of shielding. Partitions may be constructed of high-density concrete (or other materials) and finished with furred gypsum wallboard.

Floors

Floors in offices, conference rooms and waiting areas should be carpet with a 4 inch high resilient base. Floors in toilet rooms should be ceramic tile with a ceramic tile base. Floors in exam rooms, treatment rooms, and most other spaces should be vinyl composition tile with a 4-inch high resilient base. Floor trenching and special floor boxes may be required for Radiation Therapy equipment. Identify area where floor trenching is required to receive equipment infrastructure.

Ceilings

Ceilings should be primarily lay-in acoustic ceiling tile. Certain areas, such as procedure rooms and treatment rooms, should have lay-in acoustic ceiling tile with a washable sprayed plastic finish. Coordinate the ceiling height requirements with the equipment manufacturer.

Wall Protection

Wall and corner guards should be used in corridors and all other areas where damage from cart and stretcher traffic is anticipated.

Interior Doors and Hardware

Interior doors should be 1 ¾ inch thick solid core flush panel wood doors or hollow metal doors in hollow metal frames.

Doorjambs, except in rooms with radiation shielding, should have hospital type sanitary stops that stop 8 inches from the floor to facilitate mopping. Hollow metal doors should be used where high impact is a concern and where fire rated doors are required. Kick / mop plates should generally be applied to both sides of the doors. Handicapped accessible hardware should be used throughout. Door interlocks are provided and coordinated with the hardware. Refer to VA Handbook PG-18-14, Room Finishes, Door and Hardware Schedule, for additional information.

Radiation Therapy Treatment

The treatment unit is commonly housed in a reinforced concrete, radiation shielded vault with an entry maze. Direct entry is also an option. The vault is entered through a special electro-pneumatic operated neutron shielded door. The configuration of the maze and vault, and the types and thicknesses of shielding materials shall be as prescribed by a registered radiological physicist approved by the American Board of Radiology in accordance with the National Council of Radiation Protection standards and regulations.

Floor materials should be a seamless sheet product with an integral cove base. Wall and ceiling finish materials should be selected for durability and ease of maintenance.

Due to the nature of treatment in this area with the potential for increased patient anxiety, effort should be made to provide a calming environment. This may be achieved through the use of innovative design features. One example is the inclusion of a backlit photo mural as part of the ceiling assembly to create a diversion during treatment. Another is the use of color to provide a calming and non-institutional environment.

Radiation Therapy Space Allocation

Radiation Therapy space requirements are outlined in the VA Handbook 7610 Chapter 277 – Radiation Therapy Service.

Film Processing

It is the goal of the VA to implement Picture Archiving and Communications Systems (PACS) in all VA healthcare facilities. As this conversion to PACS is implemented, some existing fa-

cilities are currently utilizing conventional film processing. It is anticipated that any significant renovation will include conversion to PACS as a basis for design.

Structural

General

Obtain equipment data sheets for each type of equipment under consideration. Proportion structural elements to meet strength and serviceability requirements established by equipment manufacturers.

Shielding

Shielding associated with this equipment is very massive. Protecting adjacent occupancies typically requires several feet of reinforced concrete. Placing this occupancy on grade and isolating its mass and stiffness from the overall building lateral system is recommended. Proportion structural elements to meet shielding requirements prescribed by the radiological physicist.

Equipment

Casework

Casework may be millwork or modular. Casework systems should be chosen that provide flexibility for planning and utilization purposes. Casework systems should incorporate components dimensioned for ease of multiple re-use installation applications. Casework used for the storage of molds and immobilizers should be designed to accommodate the wide variety of shapes and sizes and their unique storage needs. Casework systems should provide for cable management and ergonomic placement of workstations and flat screen monitors.

Information Management Systems

Information Management Systems shall include elements of image retrieval, processing, storage, treatment planning, electronic patient records including patient registration, patient charges, physician order entry, and patient / staff movement. Additional shielding may be required to prevent interference with the electronic signals. These systems elements will require access to the main facility information system as well as the departmental local area network. A standardized structured cable system and pathway system are provided to facilitate current and future network access. All components should be planned for compatibility.

HVAC

When HVAC services must penetrate a shielded enclosure, coordination is required between HVAC design and the health physicist certifying the construction documents.

Operation

Air conditioning systems should be provided to heat, cool and ventilate the individual spaces, as required to satisfy the VA design criteria.

Capacities

The number of people and the air conditioning load noted on the room design standard sheet is for the purpose of establishing the basis of design guide and its use in planning. Verify the actual number of people and the air conditioning load to agree with the project requirements.

Verify equipment AC loads based on the actual equipment furnished on the project.

Air Quality and Distribution

All simulation, treatment and equipment rooms not required to be under negative pressure shall have positive air pressure with respect to the adjoining areas. This is to help maintain a reduced dust environment with respect to the electronic equipment.

The transferred air should be no more than 150 cfm (71.0 Liters/second) per undercut door.

Design of air distribution system shall be in accordance with criteria given in the HVAC Deign Manual. Provide linear diffusers for the spaces qualified to receive linear diffusers.

Mycobacterium Tuberculosis – Refer to General Comments

Seismic – Refer to General Comments

Noise Level

Select HVAC equipment, ductwork and air distribution devices to achieve noise levels listed in the VA HVAC Design Manual.

Plumbing

Water and Waste Systems

The plumbing systems should be provided to satisfy the departmental plumbing needs. The department domestic cold water should be piped to all plumbing fixtures and equipment requiring this utility.

The department domestic hot water should be piped to all plumbing fixtures and equipment requiring this utility. A hot water return system should be provided to ensure the design temperature at the farthest outlet. The department plumbing fixtures and drains should be drained by gravity through soil, waste and vent stacks. In addition, the department special waste should be drained through corrosion resistance flame retardant piping into either a local or centralized acid dilution tank.

Medical Gas Systems

The department medical gases outlets are shown to establish the basis of design guide and its use in planning. The engineers/designers shall verify the medical gases location and quantities for individual projects.

Electrical

Illumination

Illumination is typically provided utilizing recessed fluorescent luminaries with acrylic prismatic lenses. The fixtures typically use F32T8 lamps in compliance with the National Energy Policy Act of 1992, with subsequent revisions in 1998 and 2005. Lamps have a minimum color rendering index (CRI) of 85 and a color temperature of 4100 degrees Kelvin (K), which is close to the “cool white” color temperature of 4150 degrees K. Dimmable fixtures are normally used for setup lighting, allowing adjustment of the illumination intensity by the therapist while alignment of the patient to the laser positioning location is facilitated. Lighting intensities conform to the VA design criteria, the IES Lighting Handbook, and ANSI/IESNA RP-29-06, the Recommended Practice: Lighting for Hospitals and Healthcare Facilities.

Lighting is typically controlled by wall mounted switches located at the entrance to the room. Dimmer switches are utilized for variable lighting levels in control and treatment areas. Larger spaces may utilize multiple switching by separate switches for lighting of individual zones or areas. Rooms utilized for viewing will typically have direct / indirect lighting systems for visual comfort, reduced glare, reading accuracy, and critical determinations. Dimmer switches are utilized for the variable illumination level.

For Radiation Therapy rooms, fixed or mobile procedure lighting may also be required. Lighting fixtures utilized in rooms which require special shielding should have proper shielding provisions per the specific radiation shielding requirements.

Power load densities for lighting are listed by use for the mechanical HVAC load calculation purposes. Load densities should be verified for the actual design, as they may vary depending on the room configuration, fixture types, lamps and ballasts used.

Power

Each Hospital determines which specific equipment needs to function during a power outage and be connected to emergency power. Radiation Therapy power requirements have to be specifically coordinated with the equipment manufacturer. Separate power feeds may be required for Radiation Therapy computer equipment, power conditioners, and air conditioning systems. General purpose duplex receptacles are typically provided on each wall of a room or space. Workstations with personal computers (PC’s) are typically provided with quadraplex receptacles for the PC, monitor, printer, or PACS workstations.

Duplex receptacles on the critical branch of the emergency power system are provided for selected pieces of equipment (such as refrigerators and PCs) to allow for limited operation during a power outage. All receptacles essential to the specific procedure should be on the critical branch, while the selected Radiation Therapy equipment is on the equipment branch. If the modality is used for interventional or emergent imaging, provide emergency power receptacles as required to support critical equipment and patient care.

Junction boxes are provided for equipment requiring a hardwire connection. Provide shielding behind all boxes and other penetrations in shielded scanning room surfaces. Certain modular casework units are provided with a utility access module with surface mounted electrical pre-manufactured raceways, which provides a chase for wiring. Conduits and junctions boxes are provided to connect to the utility access module for power wiring.

Power conditioning and uninterruptible power supplies equipment may be required for Radiation Therapy equipment, computers, or PACS workstations, where an interruption of power would not be acceptable during a specific procedure. Power conditioning and UPS equipment require physical space, working clearances, maintenance access, cooling / ventilation access, and coordination with casework.

Power and grounding of modern medical electronic equipment, computers, and displays requires careful consideration of power quality principles. The basic need for proper voltage and frequency is supplemented by other power quality concerns including:

- Source and load compatibility.
- Distortion of voltage and current wave forms by harmonics present in the power systems.
- Sensitivity and susceptibility of electronic equipment loads to interruptions, surges, harmonic wave form distortions, and noise (RF, EMI, etc.).

Power systems and equipment characteristics need to be evaluated to determine effective solutions to reduce the potential sources of interference, reduce the susceptibility of the load equipment, or to apply power conditioning equipment (IEEE Std. 1100-1999, the IEEE Recommended Practice for Powering and Grounding Electronic Equipment).

Security and Access Control

Security and access control requirements may apply to selected areas of the Radiation Therapy Suite. Specific Patient Privacy and HIPPA requirements may affect IT system components location, separation from non-secure components, and local staff screen or display orientation. Radiation Materials storage rooms and cabinets, and PACS server rooms and other critical IT infrastructure areas may require access control systems. Radiation detectors and alarms may be required at selected areas of Radiation Therapy.

Life Safety

Purpose

The life safety program should be developed to provide a reliable system to protect the building occupants, firefighting personnel, building contents, building structure, and building function. This can be accomplished by limiting the development and spread of a fire emergency to the area of origin and thereby reduce the need for total occupant evacuation.

The design aspects of the facility which relate to the fire and life safety include:

Structural Fire Resistance

Building Compartmentalization

Fire Detection, Alarm and Suppression

Smoke Control and Exhaust

Firefighter Access and Facilities

Emergency Power;

Emergency Egress Lighting

Exit Lighting

New hospital construction and renovated areas of existing facilities are required to be fully protected by an automatic fire suppression system.

The minimum width of corridors and passageways in Radiation Therapy areas is 5'-0" in areas used by staff. The minimum width of corridors in areas used by inpatients is 8'-0"

Provide handrails on both sides of the corridors in patient areas.

Nurse control areas are permitted to be open to the corridors.

Waiting areas are also permitted to be open to the corridors.

Refer to the latest editions of NFPA 101 "Life Safety Code", International Building Code and additional standards published by the National Fire Protection Association (NFPA).

Energy Conservation

The HVAC, Plumbing, Power and Lighting Systems should be designed for overall energy efficiency and lowest life-cycle cost. This should include the use of high efficiency equipment and fixtures and a programmable control system. The minimum energy standard shall be the latest edition of ASHRAE/IESNA Standard 90.1.

Communications

Telephone

Telephone outlets are typically provided at each workstation or in each room. Desk outlets are 18" AFF and wall phone outlets are 48" AFF. Desk outlets may be combined with modular data ports into a single-gang outlet. Certain modular casework units are provided with a utility access module that houses communication outlets and provides a chase for cabling. Infrastructure will be extended to local telecommunications room via available pathways utilizing cable tray, sleeves through fire / smoke partitions, and conduit stubs / backboxes to work area. Conduits and junction boxes are provided to connect to the utility access module for telephone service. Current technologies such as "voice over internet protocol", or VoIP, and IP wireless systems require coordination with the ADP/LAN telecommunications infrastructure.

Automatic Data Processing (ADP)

ADP, or computer outlets, are typically provided at each workstation with a personal computer (PC) and/or printer. ADP includes local area networks (LAN's), PACS applications, and wireless LAN's (WLAN). Desk outlets are 18" AFF. Multi-port telecommunications outlets are provided in accordance with BICSI and ANSI-EIA/TIA standards for telecommunications. Infrastructure will be extended to local telecommunications room via available pathways utilizing cable tray, sleeves through fire / smoke partitions, and conduit stubs / back-

boxes to work area. Certain modular casework units are provided with a utility access module that houses communication outlets and provides a chase for cabling. Conduits and junction boxes are provided to connect the utility access module for ADP service. Cable and jack identification and color coding are essential to proper administration of the ADP systems.

Public Address

The Radiation Therapy department will not have an independent public address (PA) system. The department will be included as part of the hospital-wife PA system. Speakers are typically located in corridors and public spaces. The actual system configuration will depend on the overall design layout and the functional requirements.

Miscellaneous Systems

A local sound system may be provided for selected Radiation Therapy rooms to provide background music during the procedure. Nurse call and/or intercom systems may be provided for communications between the control room and the Radiation Therapy room. A closed circuit TV system may be provided for direct observation of the patient during the procedure. Other systems, such as MATV, CATV, or local digital video monitoring may be provided.

Waste Management

Medical Waste

Medical waste is generated in exam and treatment spaces where it is bagged, collected and transported to the soiled utility rooms. Then it is held in separate containers pending transport to the medical waste handling facility.

General Waste

General waste is generated in all spaces and is held in containers for collection and sorting into carts or bagged and placed in a waste chute and transported to the waste handling facility.

Recycling

Methods for sorting, collecting, transporting and disposing of recyclable products must be specifically analyzed for each facility and location.

The optional use of disposable and reusable products should be considered.

Soiled Linen

Soiled reusable linens are generated in exam rooms, treatment spaces, and patient and staff gowning areas. They are collected in carts or hampers in the soiled utility room; or bagged and transported to (a) central collection area(s) via soiled linen chutes or carts.

Disposable linens are included with either general recyclable waste or medical waste as appropriate.

Utensils

Reusable utensils include bedpans, urinals, emesis basins and other stainless steel items, which are used in exam and treatment areas. They are transported to the soiled utility room where they are processed (if steam washers are available) or collected for reprocessing and transported to the Sterile Processing Department.

Space Requirements

Space requirements will vary with the selection of waste collection and recycling methods / systems. Space requirements need to be analyzed for each optional method or system considered for new and existing facilities.

Transportation

Records

Radiation Therapy utilizes digital imaging and retrieval techniques. Viewing, interpretation and video image manipulation areas should have data communication access.

Specimens

Specimens may be collected locally in procedure rooms and transported to the pathology lab as required.

Pharmaceuticals

Pharmaceuticals, including narcotics, are transported by pharmacy personnel in locked carts or by a robotic system to the department. Narcotics are delivered to a narcotics locker which is located in a clean supply or patient prep area and is remotely alarmed to the nearest nursing control station.

Materials

Clean supplies are transported by exchange carts which are stored in the Clean Supply Room. Supplies are transported by Service Elevator and through hospital corridors separated from patient traffic where possible. Deliveries are scheduled during hours when patient visits are not schedules

Linen

Disposable linens are delivered as part of clean supplies.

Sterile Supplies

The use of sterile supplies is minimal as is accommodated by prepackaged or disposable items delivered with clean supplies.

Food

Meal and nourishment deliveries to Radiation Therapy are not required.

Waste

Waste is collected by housekeeping staff and transported to the Soiled Utility Room, from where it is disposed.