



Regulation for Oncology Services 2016

Table of Contents

Acknowledgment	3
I. Scope.....	4
II. Purpose.....	4
III. Definitions.....	4
IV. Acronyms.....	7
1. Introduction.....	9
2. General Design Considerations.....	12
3. Oncology Service Requirement:	14
4. Reception and Waiting Areas	15
5. Consultation and Examination Rooms.....	16
6. Diagnostic Imaging services	16
7. Radiation Oncology Services.....	18
8. Chemotherapy Unit.....	31
9. Surgical Care.....	37
10. Pediatric Oncology Care	37
11. Support areas for Oncology Patient care	38
12. Healthcare Professionals requirement.....	40
13. Patient Assessment.....	46
14. Patient care.....	47
15. Patients and family members	48
16. Psychosocial Services	48
17. Rehabilitation Services	48
18. Nutrition Services	49
19. Palliative care services.....	49
20. Critical Care Services	50
21. Emergency Services.....	50
22. Safety	52
23. Death of Patient/ Care of Deceased Patients.....	52
24. Ethical Considerations	53
References.....	54

Acknowledgment

Dubai Health Authority (DHA) is pleased to present the DHA “Regulation for Oncology Services”, which represents a milestone towards fulfilling the DHA strategic objective to “Improve quality standards in healthcare facilities”.

This regulation places an emphasis on facility design and services criteria with a focus on quality of services and safety of patients and healthcare professionals based on the international standards of best practices in this domain, while taking into consideration the local and federal laws. Therefore, this document provides a base for the Health Regulation Department (HRD) to assess the oncology services provided in the Emirate of Dubai and to ensure a safe and competent delivery of services.

It will also assist oncology service providers in developing their quality management systems and in assessing their own competence to ensure compliance with DHA regulatory requirements and the United Arab Emirates (UAE) federal laws.

HRD developed this document in collaboration with Subject Matter Experts (SMEs) whose contributions have been invaluable. HRD would like to gratefully acknowledge these professionals and thank them for their dedication to quality in health and their commitment in undertaking such a complex task.

Health Regulation Department
Dubai Health Authority

I. Scope

This document applies to oncology services provided in Dubai Health Authority (DHA) licensed health facilities, under the DHA establishment law, which includes semi-governmental and private health facilities operating in the Emirate of Dubai and in free zone areas. DHA may amend this document as and when there may be a need to do so. The latest edition of this document will be available on the DHA website www.dha.gov.ae.

II. Purpose

DHA through the development and establishment of the regulation for oncology services shall ensure the provision of the highest level of safety and quality of patient care at all times.

III. Definitions

Cancer shall be defined as a term for diseases in which abnormal cells divide without control and can invade nearby tissues.

Chemotherapy shall be defined as the use of any drug (such as aspirin or penicillin) to treat any disease, but to most people chemotherapy refers to drugs used for cancer treatment. It's often shortened to "chemo." Two other medical terms used to describe cancer chemotherapy are antineoplastic (meaning anti-cancer) therapy and cytotoxic (cell-killing) therapy.

CT Simulation shall be defined as a CT procedure in which the specific pathology is localized within the patient, who is placed in a precise and reproducible position, for use in treatment planning for radiation therapies. CT Simulation utilizes conventional a CT scanner outfitted with specific simulation hardware and software.

Disabled People (also known as special needs) shall be defined as a personal condition or situation that can make it difficult for a patient to participate fully in their health care, which include disability (physical, intellectual or sensory disability), age affected (either elderly or very young), affected by trauma or affected by medications/drugs.

External Radiation Therapy shall be defined as the use of high-energy penetrating wave or particle beams 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. See Linear Accelerator.

Healthcare professional shall be defined as healthcare personal working in healthcare facilities and required to be licensed as per the applicable laws in United Arab Emirates.

Hospice shall be defined as a facility or program designed to provide a caring environment for meeting the physical and emotional needs of the terminally ill.

Intensity Modulated Radiation Therapy (IMRT) shall be defined as an advanced external beam radiation therapy, which utilizes computer images to match radiation to the size and shape of a tumor. Using multiple smaller beams from different angles and of varying intensities, IMRT varies the shape of the radiation delivered to the treatment area, minimizing damage to surrounding healthy tissue. See Stereotactic Radiosurgery.

Internal Radiation Therapy shall be defined as 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 prescribed 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.

Licensure shall be defined as issuing an official permission to operate a health facility to an individual, government, corporation, partnership, Limited Liability Company (LLC), or other form of business operation that is legally responsible for the facility’s operation.

Linear Accelerator (Linac) shall be defined as a device, which produces and delivers high-energy beams, which, in the hospital setting, is used to damage or destroy targeted tissues or structures, frequently cancerous tumors, within the patient’s body. See Stereotactic Radiosurgery.

Oncology shall be defined as a branch of medicine that specializes in the diagnosis and treatment of cancer. It includes medical oncology (the use of chemotherapy, hormone therapy, and other drugs to treat cancer), radiation oncology (the use of radiation therapy to treat cancer), and surgical oncology (the use of surgery and other procedures to treat cancer).

Palliative shall mean an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relieving of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.

Patient shall be defined as any individual who receives medical attention, care or treatment by any healthcare professional or admitted in a health facility.

Picture Archiving and Communication System (PACS) shall be defined as 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 each of these devices.

Radiation Therapy shall be defined as use of high-energy radiation to shrink tumors and kill cancer cells. X-rays, gamma rays, and charged particles are types of radiation used for cancer treatment. The radiation may be delivered by a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy, also called brachytherapy).

Stereotactic Radiosurgery shall be defined as the process by which radiation beams are projected to the tumor or target area from multiple points of origin. This allows relatively high radiation doses to the target area while exposing the surrounding tissues to significantly lower levels of radiation energy. Stereotactic Radiosurgery equipment is available in both frame-based systems for treatment of head and neck, and frameless systems, which can treat any anatomic area.

Supervised area shall be defined as any area not already designated as a controlled area but where occupational exposure conditions need to be kept under review even although specific protection measures and safety provisions are not normally needed.

Surgical oncology shall be defined as a specialized area of oncology that engages surgeons in the cure and management of cancer.

Treatment Planning shall be defined as following precise identification of the position, size and shape of a tumor or target area, typically through MR, PET/CT, SPECT/CT or CT based simulation,

the optimal means of radiation therapy is planned in which the precise radiation doses are delivered to target areas while minimizing the radiation exposure to adjacent and surrounding tissues. This plan is typically mapped out three dimensionally and computer plotted to guide radiation therapy / radiosurgery.

IV. Acronyms

AAMI :	Association for the Advancement of Medical Instrumentation
ACLS :	Advanced Cardiac Life Support
AC/HR:	Air Changes per Hour
ANSI :	American National Standards Institute
ASRAE:	American Society of Heating Refrigerating & Air-Conditioning Engineers
AV :	Arteriovenous
AII :	Airborne Infection Isolation
BLS :	Basic Life Support
CSSD :	Central Sterile Supply Department
DED :	Dubai Economic Department
DHA :	Dubai Health Authority
DM :	Dubai Municipality
ECG :	Electrocardiography
EMT :	Emergency Medical Technician
FANR :	Federal Authority Nuclear Regulation
HBV :	Hepatitis B virus
HCV :	Hepatitis C virus
HIV :	Human Immunodeficiency Virus
HRD :	Health Regulation Department
ICU :	Intensive Care Unit
IPPV :	Intermittent positive pressure ventilation
LLC :	Limited Liability Company
MOH :	Ministry of Health
NFPA :	National Fire Protection Association
PALS :	Pediatric Advanced Life Support
PPE :	Personal Protection Equipment

QAP	:	Quality Assurance Program
RN	:	Registered Nurse
RTA	:	Road Traffic Authority
SME	:	Subject Matter Expert
Sq. m	:	Square Meters
UAE	:	United Arab Emirates
UPS	:	Uninterrupted Power Supply

1. Introduction

- 1.1. The oncology services are classified as:
 - 1.1.1. Medical oncology
 - 1.1.2. Radiation oncology
 - 1.1.3. Surgical oncology
- 1.2. Oncology services can be provided in one of the following facility categories:
 - 1.2.1. A hospital or in a unit attached to a hospital.
 - 1.2.2. Day surgical center.
 - 1.2.3. Cancer Treatment Center (*New Category*).
- 1.3. All health facilities providing oncology services shall ensure that patients have access to services required to diagnose, treat, rehabilitate and support patients with cancer and their families.
- 1.4. As a part of comprehensive treatment, palliative care should be part of the care plan provided by the health facility.
- 1.5. Application procedure
 - 1.5.1. Preliminary approval

To provide oncology services in the Emirate of Dubai the applicant shall submit a proposal to the Health Regulation Department (HRD) with the following:

 - 1.5.1.1. Comprehensive study of the intended service and category of diseases that the oncology treatment is proposed for.
 - 1.5.1.2. List of diagnostic and radiotherapy equipment (if applicable) with manufacturers' specifications/ installation manuals. Facility Schematic design drawings is not required at this stage.
 - 1.5.1.3. Detailed feasibility study of the proposed project including the cost of the equipment and the financial resources of the project.
 - 1.5.1.4. Resumes, qualifications and experience of all healthcare professionals who are involved in providing the oncology service in the facility.
 - 1.5.1.5. Employ or contract with an accredited radiation physics firm or a radiation physicist to design the facility layout or a contract with an internationally accredited body to design the oncology facility.

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- 1.5.2. Based on the documents submitted, HRD will review the submitted material to determine compliance and suitability for further processing and issue a Preliminary Approval. In case the application is rejected, a detailed report of rejection reasons will be provided.
- 1.5.3. The applicant shall submit a detailed facility schematic design drawings in AutoCAD format within three (3) months of the Preliminary Approval.
- 1.5.4. Official Initial Approval
The applicant must submit an application through *SHERYAN* the online licensing system to the HRD along with all necessary documents, which are as follows:
- 1.5.4.1. If the oncology service is provided in a stand-alone facility, the applicant must submit a copy of the Land Registration Certificate showing the land plot number issued by Dubai Municipality (DM). In addition, permission of using the land for the proposed activity from either DM or the free-zone licensing authority (if applicable). For existing licensed health facilities these documents are not required.
- 1.5.4.2. Schematic design drawings in AutoCAD format showing the proposed floor layout with measurement for each room/area and labelled as per services provided with detailed shielding precautions wherever applicable.
- 1.5.4.3. The detailed feasibility study/ list of equipment, etc.
- 1.5.4.4. Passport photocopy with residency visa for non-locals.
- 1.5.4.5. UAE identity card.
- 1.5.5. Once the application is approved, an initial approval letter with defined activities will be issued. This letter will be required to obtain licensing by the Dubai Economic Department (DED) or equivalent licensing bodies if the facility is a stand-alone facility.
- 1.5.6. Final inspection (Pre-operation assessment):
- 1.5.6.1. The applicant shall submit an online request for final inspection, upon which HRD shall conduct an onsite pre-operational assessment.
- 1.5.6.2. To obtain the DHA license, the applicant must meet the following:
- 1.5.6.2.1. Appoint a Medical Director (in case of a stand-alone oncology facility) or a Physician in-charge for oncology services in a Hospital or Day Surgical Center with other services and specialities.
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- 1.5.6.2.2. Employ and license the qualified healthcare professionals as per the Preliminary Approval submission to satisfy the facilities proposed functional program and to meet patient needs for all services/ procedures provided.
 - 1.5.6.2.3. Install and operate equipment required for provision of the proposed services in accordance with manufacturer specifications.
 - 1.5.6.2.4. Develop policy and procedure documents for the following:
 - 1.5.6.2.4.1. Infection control measures and hazardous waste management
 - 1.5.6.2.4.2. Medication management
 - 1.5.6.2.4.3. Patient health record
 - 1.5.6.2.4.4. Medical emergency action plan
 - 1.5.6.2.4.5. Patient discharge/ transfer plan
 - 1.5.6.2.4.6. Radiation safety policies
 - 1.5.6.2.4.7. Patient transfer and emergency action plan
 - 1.5.6.2.4.8. Staff documentation and job description
 - 1.5.6.2.4.9. Incident Reporting
 - 1.5.6.2.4.10. Disaster Management/ Emergency preparedness plan.
 - 1.5.6.2.4.11. Informed Consent
 - 1.5.6.2.4.12. Safety measures against biohazards and radioactive medical waste
 - 1.5.6.2.4.13. Full disclosure of information to patients about Confidentiality and release of information
 - 1.5.6.2.4.14. Safe administration of systemic therapy
 - 1.5.6.2.4.15. Timely referral to palliative and hospice care
 - 1.5.6.2.5. Maintain Charter of Patients' rights and responsibilities noticeably posted on the facility premises at least in two languages (Arabic and English).
 - 1.5.6.2.6. Provide evidence of FANR license to use the Ionizing Radiology equipment in the facility.
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- 1.5.6.2.7. Maintain adequate lighting and utilities, including temperature controls, water taps, sinks and drains, electrical outlets and telecommunication systems.
- 1.5.6.2.8. Keep floors, work surfaces, and other areas clean and neat.
- 1.5.6.2.9. Clearly, display signage and direction for different services provided in at least in two languages (Arabic and English).
- 1.5.6.2.10. Clearly displayed hazardous signs aimed to restrict access for the safety of patients, visitors and staff.
- 1.5.6.2.11. Designate secured areas for the collection of medical waste, radioactive waste, general storage facilities for supplies and equipment and storing area for hazardous materials.
- 1.5.6.2.12. Ensure accessibility for handicapped and disabled individuals.
- 1.5.6.2.13. The facility safety plan, design and equipment shall comply with the fire safety requirements by the Dubai Civil Defence Department.
- 1.5.6.3. Based on the result of the onsite pre-operational assessment and after meeting the DHA requirements, the facility management shall transfer/add the Medical Director and other healthcare professionals to the facility. Upon which the DHA license will be issued by the HRD.
- 1.5.6.4. However, in case of non-compliance or any modification recommendations an online report will be issued (within five (5) working days). The facility management is required to act accordingly and schedule another pre-operational assessment visit.
- 1.5.6.5. HRD shall issue a license for the stand-alone facility or approve the addition of oncology service(s) for an existing licensed health facility.
- 1.5.6.6. For the stand-alone facility, the license shall state the name and address, the DED license number, the period of licensure validity, the specific service(s) that the facility is licensed to deliver.

2. General Design Considerations

- 2.1. The facility shall be located in an area, which is accessible and convenient to population using either public transportation or vehicles.

- 2.2. Radiation oncology services shall not be located in a commercial buildings or malls.
- 2.3. Provide parking area in the facility premises to satisfy the needs of patients, which shall be acceptable to the local authorities having jurisdiction e.g. Road and Traffic Authority (RTA) and DM.
- 2.4. In case the oncology services are part of a hospital, preferably a discreet entry shall be provided for patients.
- 2.5. The facility shall be accessible by ambulance.
- 2.6. Each facility design shall ensure appropriate levels of patient acoustical and visual privacy and dignity throughout the care process, consistent with needs established in the functional program.
- 2.7. Natural light shall be provided as much as possible in public spaces, waiting areas and those treatment areas that patients and staff occupy for long periods.
- 2.8. The facility shall be air-conditioned and with special emphasis on shielding the HVAC ducts in radioactive areas from the rest of the facility, and ensuring that negative air pressure is provided in isolation rooms.
- 2.9. Public corridors shall have a minimum width of 1.5 meters.
- 2.10. Items such as provisions for drinking water, vending machines, etc., shall not restrict corridor traffic or reduce the corridor width below the required minimum.
- 2.11. The minimum door opening width for patient use shall be 0.85 meters. In areas where the facility serves patients confined to wheelchairs, the minimum width of door openings shall be one (1) meter.
- 2.12. Door swings shall be oriented to provide patient privacy.
- 2.13. The minimum distance from the floor to the structural ceiling height shall be three (3) meters.
- 2.14. Colour contrast between walls, floors and doors shall be considered as it may reduce falling risk of blurred vision patients.
- 2.15. Selected flooring surfaces shall be easy to maintain, easy to disinfect, readily cleanable, impervious and appropriately wear-resistant for the location.
- 2.16. Slip-resistant flooring products shall be considered for flooring surfaces in wet areas (e.g. ramps, shower and bath areas) and areas that include water for patient services as well as stairways.
- 2.17. Highly polished flooring, walling or finishes that create glare shall be avoided.

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- 2.18. Carpet or wooden flooring shall not be used in examination and treatment rooms. But can be used in waiting areas and corridors. Carpet if used shall be glued or stretched tight and free of loose edges or wrinkles.
 - 2.19. Wall finishes shall be easy to disinfect, washable, moisture-resistant and smooth.
 - 2.20. Wall finish treatments shall not create ledges or crevices that can harbor dust and dirt.
 - 2.21. Joints for floor openings for pipes and ducts shall be tightly sealed.
 - 2.22. Equipment, furniture, fittings and the facility itself shall be designed and constructed to ensure that users are not exposed to avoidable risks or injury.
 - 2.23. Ensure emergency exits in the facility with proper signs directing towards them.
 - 2.24. Nurse call and emergency call facilities shall be provided in all patient areas (e.g. bed/chair spaces, toilets and bathrooms) and clinical areas in order for patients and staff to request for urgent assistance.
 - 2.25. Maintain an Uninterrupted Power Supply (UPS) for backup, the power supply of, which shall be able to support all functions of the equipment in the oncology center during treatment.
 - 2.26. The facility should provide the below effective technology/ communications services for efficient operation of the oncology service:
 - 2.26.1. Bar coding for supplies, x-rays and records
 - 2.26.2. Access to picture archiving communications systems (PACS)
 - 2.26.3. Paging systems
 - 2.26.4. Electronic medical records and medical record storage systems
 - 2.26.5. Point of clinical care
 - 2.26.6. Patient Administration System (PAS)
 - 2.26.7. Building management system (BMS)
 - 2.26.8. Videoconferencing/ teleconferencing
 - 2.26.9. Wireless technology considerations duress alarm systems fixed and mobile units
 - 2.26.10. Communications room and server requirements.

3. Oncology Service Requirement:

A comprehensive Oncology service shall consist of the following:

- 3.1. Reception and Waiting Areas
- 3.2. Consultation and Examination Rooms
- 3.3. Diagnostic Imaging Services

- 3.4. Radiotherapy Services
- 3.5. Consultation/Exam Rooms.
- 3.6. Mould room.
- 3.7. Treatment planning room.
- 3.8. Chemotherapy Services
- 3.9. Surgical care
- 3.10. Intensive Care Unit (ICU)
- 3.11. Inpatient rooms
- 3.12. Outpatient holding area
- 3.13. Clinical Laboratory and Blood services
- 3.14. Support areas for Oncology care
- 3.15. Staff areas including staff station, staff change areas, etc.
- 3.16. Meeting room where the multidisciplinary team gets together to discuss cases.

Note: In case, the applicant provides a single oncology service, then only the relevant requirements from the above list should be considered.

4. Reception and Waiting Areas

- 4.1. A reception/ information counter shall be located at the entrance to provide visual control of patient/ visitors.
- 4.2. The information counter shall provide access to patient files and records.
- 4.3. The waiting area shall accommodate enough seating and provide wheelchairs accessibility to fulfil the functional requirement of the services.
- 4.4. Drinking water may be provided in a waiting area.
- 4.5. Alcohol-based hand rub/ sanitizer dispensers shall be available.
- 4.6. In case the oncology services is part of a hospital, male and female waiting areas should be provided or shared with other adjacent departments.
- 4.7. In case pediatric oncology services are provided in the facility, a separate controlled area for pediatric patients should be designated.
- 4.8. Provide a sufficient number of toilets for patients, their families, and staff with a hand-washing station.
- 4.9. Provide at least one (1) dedicated toilet for disabled individuals in the oncology service area.

4.10. Public toilet(s) shall be conveniently accessible from the waiting area without passing through patient care or staff working areas.

5. Consultation and Examination Rooms

Room space requirements shall depend on the services provided, but at least shall meet the following:

- 5.1. Consultation and examination room(s) shall have a minimum floor area of twelve (12) square meters.
- 5.2. Room arrangement shall permit a minimum clearance of 0.8 meters on both sides and at one end of the examination table, bed, or chair.
- 5.3. The exam table should be designed to accommodate the diagnostic position of all oncology ailments.
- 5.4. A counter or shelf space for writing, documentation or placing a computer/ laptop shall be provided.
- 5.5. A hand-washing station with a hands-free operating tap and disposable liquid or foam soap dispensers shall be provided in all examination room(s).
- 5.6. Sinks shall be designed with deep basins, made of porcelain, stainless steel, or solid surface materials.
- 5.7. Hand sanitation dispensers shall be provided in addition to hand-washing stations.
- 5.8. Provisions for hand drying shall be available at all hand-washing stations.
- 5.9. The area below the hand washing station shall be free of clutter at all times.

6. Diagnostic Imaging services

Imaging is a major component of the diagnosis and staging (determining the extent of progression) of cancer. To ensure continuity of patient care Oncology services shall have an access to diagnostic imaging services in the facility premises or outsourced.

- 6.1. The diagnostic imaging services may include the following:
 - 6.1.1. Conventional Radiography (X ray unit)
 - 6.1.2. Ultrasound
 - 6.1.3. MRI
 - 6.1.4. Digital Mammography
 - 6.1.5. Sonography
 - 6.1.6. CT
 - 6.1.7. PET CT imaging

6.1.8. SPECT/CT

6.2. PET CT imaging

6.2.1. The major considerations are space, power, floor loading concerns and radiation shielding.

6.2.2. The PET CT imaging area shall have the following areas:

6.2.2.1. Patient preparation/ Injection room

6.2.2.2. Uptake room/holding area

6.2.2.3. Hot laboratory designed for 511KeV energy level.

6.2.2.4. Imaging room or PET CT bays with control areas

6.2.2.5. Waiting area

6.2.2.6. Dedicated toilet for patients

6.2.2.7. Administrative areas

6.2.2.8. Decay room/ waste room

6.2.3. Injection/Holding room(s), hot laboratory, and PET/ CT bays are areas that shall need shielding for 511KeV emission.

6.2.4. Special consideration shall be given to indirect lighting, curtains and noise control.

6.2.5. There shall be a dedicated adjacent hot toilet for patients to use after uptake period.

6.2.6. Additional shielding is recommended for the nursing stations and the PET/CT control room.

6.2.7. Uncontrolled areas with high occupancy should be located as far from the PET uptake and imaging rooms as possible.

6.2.8. If uncontrolled areas are located above or below the PET uptake and scanner rooms, the spacing between floors may need to be greater than normal or additional shielding added. The floors need to be able to support the additional weight associated with additional shielding.

6.2.9. Portable lead shields can be used effectively to shield patients in uptake rooms.

6.2.10. Provide at least one (1) designated area for preparing patients for the PET CT scan. The PET CT facility shall have an uptake room for holding patients before the scan.

6.2.11. Engage a medical physics consultation firm, a Medical Physicist or other qualified professionals to survey the facility, recommend the required shielding, based on the selected radiology equipment, and oversee the equipment-related quality assurance

practices of the facility, and provide the facility with quality reports on radiology equipment.

- 6.3. For detailed information, please refer to Diagnostic Imaging Services Regulation on the DHA website www.dha.gov.ae .
- 6.4. Diagnostic imaging services must comply with the FANR laws and regulations regarding the use of ionizing radiation and radioactive materials. For further information regarding FANR, law and regulations please visit FANR website www.fanr.gov.ae.

7. Radiation Oncology Services

- 7.1. The radiation therapy services shall consists of equipment for treatment of patients using radioactive rays. Careful attention must be focused on the flow of patients in the treatment facility.
- 7.2. Patient privacy and dignity is a prime consideration in the design of radiation therapy unit.
- 7.3. The layout of the facility shall be planned taking into consideration equipment requirements, water and electrical utilities needed, room shielding requirements, (including the need of dosimetry ports with indirect wall penetration) and climate control.
- 7.4. The facility layout shall be planned in accordance with the local radiation safety regulations and internationally accepted radiation safety standards and in consultation with the radiation oncologist, physicist and equipment manufacturer.
- 7.5. The room design, construction and shielding shall be as per FANR and the manufacturers recommendation.
- 7.6. The radiation therapy unit shall:
 - 7.6.1. Be located on the ground floor or lower floors of the oncology center to accommodate the weight of the equipment and ease of installation and replacement.
 - 7.6.2. Ensure properly designed rigid support structures located above the finished ceiling for ceiling mounted equipment.
 - 7.6.3. Provide equipment and infrastructure for treatment of patients using radioactive rays.
- 7.7. Consideration shall be given to co-location of radiation therapy with other diagnostic facilities for patient convenience.
- 7.8. The radiation unit may have an inpatient facility for frail patients, patients travelling long distances and the occasional patient who has severe reactions to any of the treatments administered in the facility (a bed for every 10 patients).

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- 7.9. The radiotherapy unit should include the following functional areas, but not limited to :
- 7.9.1. CT Simulation room with an adjacent control area and changing room
 - 7.9.2. Treatment planning room for physicist/ dosimetrists
 - 7.9.3. Film processing and storage area.
 - 7.9.4. Physics laboratory/ Dosimetry equipment area (if thermoluminescent dosimetry (TLD) and film dosimetry are available, an area shall be designed for these activities)
 - 7.9.5. Film processing room, storage areas
 - 7.9.6. Radiotherapy Room/ Bunkers to house the equipment to deliver treatment with an adjacent computer control area and changing rooms
 - 7.9.7. Holding area/ Recovery area
 - 7.9.8. Hypothermia room (may be combined with an examination room)
 - 7.9.9. Mould room (optional)
 - 7.9.10. Exam Room
- 7.10. If intra-operative therapy is proposed, the radiation oncology unit shall be only hospital based and located close to the operating unit or with a direct link.
- 7.11. Areas requiring specific protection measures (controlled areas) include:
- 7.11.1. Irradiation rooms for external beam
 - 7.11.2. Therapy and remote afterloading brachytherapy
 - 7.11.3. Brachytherapy rooms
 - 7.11.4. Simulator room
 - 7.11.5. Radioactive source storage and handling areas
- 7.12. These areas shall maintain define controlled areas by physical boundaries such as walls or other physical barriers marked or identified with 'radiation area' signs.
- 7.13. The area of the control panel shall be considered as a controlled area, to prevent accidental exposure of patients by restriction of access to non-related persons, and distraction to the operator of a radiotherapy machine.
- 7.14. Supervised areas may involve areas surrounding brachytherapy patients' rooms or around radioactive source storage and handling areas.

CLASSIFICATION OF RADIATION AREAS, INTERLOCKS AND CONTROLS

Area	Controlled or Supervised	Interlocks		Signs	
		Door interrupt	On/off light	Radiation area	Radioactive materials
External beam treatment room	Controlled	Yes	Yes	Yes	Yes
External beam control console	Controlled	No	At Console	On Door	On Door
LDR source storage room	Controlled	No, but door always locked		No	Yes
Manual LDR patient treatment room	Controlled	No	No	No	Yes
Remote controlled LDR patient treatment room	Controlled	Yes	No	Yes	Yes
HDR treatment room	Controlled	Yes	Yes	Yes	Yes

7.15. Certain staff members need to be monitored with individual dosimeters. Individual external doses can be assessed by using individual monitoring devices such as thermoluminescent dosimeters or film badges, which are usually worn on the front of the upper torso. These shall include:

7.15.1. Radiation oncologists

7.15.2. Radiotherapy physicists

7.15.3. Radiation protection officer

7.15.4. Radiotherapy technologists

7.15.5. Source handlers

7.15.6. Maintenance staff

7.15.7. Nursing or other staff who must spend time with patients under treatment with brachytherapy.

7.16. EXTERNAL BEAM THERAPY

7.16.1. May contain an examination rooms, a simulator room, a treatment planning room, a mould room (optional), a treatment room (bunker) and waiting areas.

7.16.2. External beam therapy equipment

7.16.2.1. A photon-energy teletherapy unit

7.16.2.2. An orthovoltage unit

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- 7.16.2.3. Beam measurement and quality assurance and radiation protection physics equipment
 - 7.16.2.4. A simulator, preferably a computed tomography (CT) simulator
 - 7.16.2.5. A computerized treatment planning system (TPS)
 - 7.16.2.6. Picture archiving and storage system
 - 7.16.2.7. Patient immobilization devices and mould room equipment
 - 7.16.3. The examination rooms shall
 - 7.16.3.1. Be in close proximity to the treatment room.
 - 7.16.3.2. Include standard and gynecological examination tables, a head and neck examination chair, appropriate examination instrument and medical supplies.
 - 7.16.4. The simulator room shall:
 - 7.16.4.1. Be large enough to accommodate the simulator, allowing the full range of motion of the treatment table.
 - 7.16.4.2. Have provision for dimming of room lights.
 - 7.16.4.3. Have adequate space for cabinetry to store treatment devices and daily used equipment that measure quality assurance.
 - 7.16.4.4. Have cabinet space to store supplies for their fabrication, if the immobilization devices are to be fabricated in the simulator room.
 - 7.16.4.5. Have hand-washing provision.
 - 7.16.4.6. Have a viewing window for the control room.
 - 7.16.4.7. Have light boxes.
 - 7.16.5. The treatment planning room shall:
 - 7.16.5.1. Be located in close proximity to the simulator room, although the two areas do not have to be adjacent.
 - 7.16.5.2. Be large enough to house the treatment-planning computer with its video monitor, a printer and plotter, a digitizer tablet and other required computer equipment.
 - 7.16.6. The Mould Room shall:
 - 7.16.6.1. Have exhaust hood, hand basin, and block room with storage (if applicable).
 - 7.16.6.2. Be located away from busy areas of the facility.
 - 7.16.6.3. Space for tools, a block cutter and counter-top workspace for pouring and mounting the blocks is required.
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- 7.16.6.4. Storage space for supplies of Styrofoam, trays and shielding material for custom blocking.
- 7.16.6.5. Adequate ventilation if shielding materials are melted in this area.
- 7.16.6.6. A sink with a refuse trap, as plaster of Paris is frequently utilized.
- 7.16.7. The treatment rooms shall be as far as possible from highly occupied areas. The treatment room shall have:
- 7.16.7.1. Wall thickness and shielding requirements shall be specified by a radiation physicist or a radiation physics-consulting firm and in accordance with the manufacturer's specifications.
- 7.16.7.2. Large enough rooms to accommodate the treatment machine, allowing the full range of motion of the treatment table.
- 7.16.7.3. A door interlock or other suitable means to prevent unauthorized access.
- 7.16.7.4. A door with a fail-safe interlock to switch off the radiation beam (i.e. return the source to the shielded position) if the door is opened during a treatment. Restarting irradiation shall require both closing of the door and activation of a switch at the control console. This is intended as a reminder to record the irradiation time given prior to opening the door.
- 7.16.7.5. A sign on the door to indicate that the room contains radiation sources or radioactive materials.
- 7.16.7.6. Visible light at the door that shows if the source is on or off (the light will be red when the source is on and green when it is off).
- 7.16.7.7. Battery operated detector of scattered radiation inside the room that shows when the source is on.
- 7.16.7.8. Emergency buttons located inside the room to shut off the radiation, and these shall be reachable without passing through the radiation beam.
- 7.16.7.9. Audio intercommunication to communicate with patients.
- 7.16.7.10. An area radiation monitor safe against a power failure visible on entering the room for a high dose rate machines.
- 7.16.7.11. Provision for dimming of room lights.
- 7.16.7.12. Adequate space for cabinetry to store treatment devices, immobilization devices, blocks and daily used quality assurance equipment.
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- 7.16.7.13. Provide secure mounting of patient positioning lasers to the wall at points appropriate for projection of lines through the iso-centre.
- 7.16.7.14. Have a specially designed electrically operated door at the entrance to the room. However, an alternative to this is an appropriately designed extended corridor /maze leading into the room.
- 7.16.7.15. Ensure space for a console immediately outside the treatment area monitoring the treatment room door large enough to accommodate not only the control console for the unit but also a workspace for the Radiotherapy technologist, in addition to space for an intercom and closed circuit television system. It shall also accommodate any computer equipment associated with the treatment machine. This may include the record and verify (R&V) computer system, an information management system, and electronic imaging or treatment time, calculation systems. (A modern linac may involve up to six monitors and their associated computers).
- 7.16.8. An indirect penetration access (dosimetry) port from the control area through the concrete is required to allow the measurement of beam characteristics using an ion chamber in the field while the electrometer and physicist are in the control room, thereby avoiding excessively long extension cables.
- 7.16.9. For orthovoltage treatments, the room requirements are considerably simpler, although an external console area is still required.
- 7.16.10. It is desirable to have separate waiting areas for patients attending clinics and those awaiting treatment. The waiting area shall be adjacent to the treatment room, with space for seating patients receiving the therapy.
- 7.16.11. There shall be provision for patient holding area for patients on stretchers adjacent to the treatment area, preferably separated from ambulatory patients.
- 7.16.12. The provision of appropriate changing facilities close to the entrance of the treatment room, and shielded from the view of other patients and visitors.
- 7.17. LOW DOSE RATE BRACHYTHERAPY**
- 7.17.1. A common hospital room without special shielding can be used as LDR brachytherapy.
- 7.17.2. The room may be large enough to accommodate afterloader carts, portable bedside shields, and positioning visitor's chair far from the patient.
- 7.17.3. Rooms adjacent to the treatment room may be low occupancy.
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- 7.17.4. May have either manual or remote afterloading equipment except for some situations (e.g. permanent implants and eye implants).
- 7.17.5. Either modality will require a source storage and preparation room, operating room, treatment-planning room and patient room.
- 7.17.6. These facilities shall not be too widely separated, in order to reduce distances over which patients and sources have to be transported as the relative proximity of these facilities can significantly influence procedure flow and efficiency.
- 7.17.7. Facility design shall incorporate features to avoid transport in elevators of patients containing radioactive sources.
- 7.17.8. There shall be sterilization facilities for applicators.
- 7.17.9. Source storage and preparation room shall:
- 7.17.9.1. Be designed in accordance to the FANR specifications and recommendations and be provided with a locked door to control access to the radioactive material.
 - 7.17.9.2. Provide a sign posted on the door warning of the radiation hazard.
 - 7.17.9.3. Contain shielded storage for all sources and have facilities for receiving, preparing, calibrating and returning sources.
 - 7.17.9.4. Have a visible radiation monitoring area on entering the room and while preparing the sources.
 - 7.17.9.5. Maintain space for a workbench.
 - 7.17.9.6. Provide a cabinet for the necessary instruments, equipment, treatment aid and the required documents.
 - 7.17.9.7. Provide space for source transportation trolleys.
 - 7.17.9.8. Provide storage to allow decay of sources to safe levels.
- 7.17.10. The operating room shall
- 7.17.10.1. Preferably, have an X ray unit, with fluoroscopic capabilities to enable the position of the applicator or catheters to be checked, and if necessary repositioned, before the patient leaves the operating suite.
 - 7.17.10.2. Availability of localization X rays (orthogonal or stereo-shifted X rays) required for dose calculation purposes. If no X ray unit is in the operating room, these functions must be available elsewhere.
- 7.17.11. Patient Treatment Room
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7.17.11.1. Treatment planning for LDR brachytherapy is usually performed on a general TPS for teletherapy and brachytherapy using brachytherapy-planning software.

7.17.12. Patient Room

- 7.17.12.1. House each LDR brachytherapy patient in a separate room.
- 7.17.12.2. Ensure that shielded according to FANR must comply with the FANR laws and regulations regarding the use of ionizing radiation and radioactive materials. For further information regarding FANR regulations and requirements please visit FANR website www.fanr.gov.ae.
- 7.17.12.3. A sign shall be posted on the door warning of the radiation hazard.
- 7.17.12.4. A list with the maximum duration of daily visits by members of the public shall be posted on the door.
- 7.17.12.5. If several rooms are required, they shall be adjacent to each other.
- 7.17.12.6. The patient shall be attended by nurses with special training in the care of radiation therapy patients.
- 7.17.12.7. Each patient room shall have an attached toilet for patient convenience.
- 7.17.12.8. Storage for a bedside shield and emergency source container shall also be provided.
- 7.17.12.9. The patient rooms used to house the LDR brachytherapy patients until they are ready to be discharged may not need to have shielding in their walls if mobile lead shields around the patient's bed are made available.

7.17.13. Additional requirements for LDR remote afterloading

- 7.17.13.1. The shielding requirements for uncontrolled areas surrounding the treatment area are unchanged.
- 7.17.13.2. Additional requirements for remote afterloading include:
 - 7.17.13.2.1. Additional floor space and required utilities (dedicated compressed air and power sources);
 - 7.17.13.2.2. A door interlock or other suitable means to prevent unauthorized access to the patient rooms;
 - 7.17.13.2.3. An area radiation monitor that is safe against a power failure in the patient rooms.

7.17.14. Procedures that are unique to LDR sources are:

- 7.17.14.1. The sources shall be inspected visually for possible damage after each use, by means of magnifying viewers and a leaded viewing window in a shielded work area.
- 7.17.14.2. There shall be a diagram at the source storage safe that shows the exact location of each source within the safe, thus reducing the time taken to locate and identify a source. Sources shall only be handled with long forceps or tongs.
- 7.17.14.3. When transporting sources, a mobile shielded container is needed and the shortest route possible shall be used.
- 7.17.14.4. Sources that come into direct contact with body tissues will require cleaning and possible sterilization after each use. This can subject the sources to possible damage from heat, abrasion, chemicals and mechanical stresses. Therefore, these sources must be inspected after every use.
- 7.17.14.5. Work surfaces shall be easy to clean and brightly lit to make it easy to find any sources that have been dropped.
- 7.17.14.6. If the source storage and preparation room is also the applicator loading room, there shall be a sink for cleaning the applicators. However, a sink can also lead to a loss of sources to the sewage system when a source is left in the applicator or a patient removes a source and puts it in the sink, situations that are preventable by placing a filter in its drain.

7.18. **HIGH DOSE RATE (HDR) BRACHYTHERAPY**

- 7.18.1. Requires an ambience identical to operating theatre; a radiographic imaging system; a treatment room; a treatment planning area.
- 7.18.2. All these areas must be in close proximity to one another for effective procedure flow and efficiency.
- 7.18.3. The operation theatre and anaesthesia shall be required for the insertion of brachytherapy applicators.
- 7.18.4. An HDR brachytherapy facility can have:
 - 7.18.4.1. A treatment room for the HDR unit, together with shared use of existing operating or procedure rooms and imaging systems, such as a simulator.
 - 7.18.4.2. An integrated brachytherapy suite with a dedicated imaging system, requiring no transport of the patient between the different steps.

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- 7.18.5. Based on room dimensions and design. The HDR treatment room/ bunker radiation suppression should be designed and decided by the Radiation Physicist.
- 7.18.6. Each of the walls, the ceiling and the floor of an HDR room is a primary barrier and shall be of adequate thickness to protect the staff and public, outside the treatment room.
- 7.18.7. The HDR unit shall be located within a defined area of the room and a chain or electrical interlock is used to ensure that it cannot be turned on (i.e. the source driven outside its protective housing) unless the HDR unit is in that prescribed area.
- 7.18.8. The room shall be designed so as to:
- 7.18.8.1. Ensure an interlock on the door that will cause the source to be retracted into its shielded housing if the door is opened during the time the source is on.
 - 7.18.8.2. Ensure an indicator at the door of the HDR treatment room as well as at the treatment console indicating the treatment is on or off.
 - 7.18.8.3. Maintain a battery-operated detector of scattered radiation inside the room that shows when the source is on.
 - 7.18.8.4. Ensure that there are emergency procedures for safely removing the source from the patient and quickly storing it in a safe location in the event that it does not retract all the way into its source housing when expected. This requires that a wire cutter sufficient to cut the source cable and a shielded storage container be located inside the treatment room.
 - 7.18.8.5. Ensure that the door to the room shall be marked to indicate the radioactive materials that are within, and there shall be an indication of how to contact the person responsible for radiation safety in the event of an emergency.
- 7.18.9. Procedures for brachytherapy
- 7.18.9.1. Treatment rooms shall be locked.
 - 7.18.9.2. Only qualified persons shall do source transfer.
 - 7.18.9.3. Great care must be taken when disposing the source - it MUST be returned to an authorized person or company.
 - 7.18.9.4. Source inventories shall be maintained that show the location and current activity of each source at the facility with a unique identifier for each source. This may either be a colour coded or letter/number identifier.
 - 7.18.9.5. Sources shall never be left on preparation surfaces.
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- 7.18.9.6. Leak tests (using moist wipes) must be performed and documented on a periodic basis, and these must have a sensitivity sufficient to detect a very low increase above the background radiation level. For the HDR unit, the wipe tests are only performed on the afterloading drive assembly and transport containers, since the source itself has too high dose rate to allow this type of test.
- 7.18.10. Area surveys shall be performed periodically around the source storage facilities for HDR sources.
- 7.18.11. The storage facilities must be marked to indicate that they contain radioactive materials as well as a way to contact the individual responsible for radiation safety in the event of an emergency.
- 7.18.12. The storage facilities must be kept locked at all times with sufficient shielding and must be resistant to fire.
- 7.18.13. Every item in the source storage shall be labelled and be well organized in compartments with easy access when required.
- 7.18.14. After every brachytherapy treatment, the patient shall be monitored with a radiation detection (GM type) survey meter to ensure that no radioactive source remains in the patient.
- 7.18.15. Identified qualified persons who receive and sign for the sources must do all source transfers according to the requirements of the regulatory authority.
- 7.18.16. Maintain a logbook to update every source movement.
- 7.18.17. Develop an emergency plan to retrieve a lost source
- 7.18.18. Responsibility for sources only ends after they have been safely disposed and disposal has been documented.
- 7.18.19. A hospital is NOT a suitable place for long-term storage of high activity sources.
- 7.18.20. Procedures that are unique to HDR sources are:
- 7.18.20.1. The HDR afterloader needs to undergo routine quality assurance tests at the beginning of each treatment day.
- 7.18.20.2. The couplings and transfer tubes need to be checked before each HDR treatment, to ensure that there are no obstacles to prevent motion of the source.

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- 7.18.20.3. Maintain an emergency container for emergency safety, precautions in the treatment room, as well as an emergency kit containing surgical clamps and long handled forceps for manipulation of the source guide tubes and applicators.
- 7.18.20.4. The emergency container shall be placed close to the patient and shall be sufficiently large that it can accept the entire applicator assembly containing the source removed from any patient.
- 7.18.21. Interlocks and signs
- 7.18.21.1. The doors to the source storage rooms need to be locked and have a sign indicating that there are radioactive materials stored within.
- 7.18.21.2. There shall also be an indication of the responsible person to contact in the event that entry is needed, for example, for fire safety purposes.
- 7.18.22. Equipment
- 7.18.22.1. Only authorized persons shall operate the equipment.
- 7.18.22.2. Un-authorized persons shall not access the unit.
- 7.18.22.3. All radiation equipment shall be locked when not in use.
- 7.18.22.4. A plan for acquisition and commissioning of equipment shall be developed consistent with the training of staff and the pace at which new technology can be integrated into patient care.
- 7.18.22.5. The need for external training of the radiation oncology professional staff (physicians, physicists and technologists) shall be described, as well as the need for on-site technical experts for training and helping to manage program implementation and monitoring its progress.
- 7.18.22.6. External training of personnel shall be identified.
- 7.18.22.7. Equipment consisting of radiation generators or containing sealed sources needed for medical exposures shall:
- 7.18.22.7.1. Conform to the applicable standards of the International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO) or equivalent standards.
- 7.18.22.7.2. Conform to performance specifications, operating and maintenance instructions, including protection and safety instructions, provided in a major world language
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understandable to the users and in compliance with the relevant IEC or ISO standards with regard to accompanying documents, and translated into the local language where appropriate;

7.18.22.7.3. When equipment manufactured in one country is to be exported into another country with the IAEA's assistance, documentary evidence (i.e. a copy) of the national standards of the exporter has to be provided with the quotation (bid) to assess whether the national standards are actually equivalent to the IEC and ISO standards.

7.18.23. Quality assurance (QA) of the radiotherapy program and radiation protection of the patient

7.18.23.1. Ensure a consistent and safe fulfilment of the dose prescription to the target volume with minimal dose to normal tissues and minimal exposure to personnel and the public.

7.18.23.2. The main areas shall include:

7.18.23.2.1. A documented quality assurance program consists of policy statements, written management procedures, work instructions, data sets and reference documents, prescription sheets, request forms, records, etc.

7.18.23.2.2. Clinical Policies

7.18.23.2.3. Treatment plan and delivery

7.18.23.2.4. Quality control program for machine and equipment performance maintenance programs

7.18.23.2.5. Investigative procedures for accidental medical exposures

7.18.24. Patient-specific QA practices include, but are not limited to, the following:

7.18.24.1. Patient identity is verified by two (2) independent methods at the beginning of each encounter.

7.18.24.2. Patient-specific QA is done before initiation of intensity-modulated radiation therapy.

7.18.24.3. Independent check of dose calculation is done for every new or changed treatment before treatment is started.

7.18.25. Machine-Specific QA Practices:

7.18.25.1. These include, but are not limited to, daily, monthly, and annual radiation treatment machine QA procedures.

7.19. Healthcare professional for a Radiation therapy Unit

REQUIREMENTS FOR CLINICAL RADIATION THERAPY	
Consultant Radiation oncologist-in-chief	1 per Radiation therapy unit
Staff radiation oncologist/ Physician	1:200/250 patients treated annually. No more than 25–30 patients under treatment by a single physician at any one time.
Radiation physicist	1:400 patients annually.
Treatment planning staff:	
Dosimetrists or physics assistant	1: 300 patients treated annually
RTT (Radio Therapy Technologist)	2:25 patients treated daily
RTT-Simulator	2: 500 patients simulated annually
RTT-Brachytherapy	As needed
Registered Nurses	1: 300 patients treated annually
Social worker	As needed to provide service
Dietician	As needed to provide service
Physiotherapist	As needed to provide service
Biomedical Engineer	If equipment serviced ‘in-house’
Note: If advanced or special techniques are to be undertaken, staff additional to the above will be required.	

8. Chemotherapy Unit

- 8.1. A chemotherapy unit provides the clinical treatment and management of patients undergoing chemotherapy treatment for cancer using specific cytotoxic agents or drugs that are destructive to malignant cells and tissues.
- 8.2. The chemotherapy unit can be
- 8.2.1. A part of a hospital
 - 8.2.2. A satellite unit- on a hospital campus; but not in the hospital.

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- 8.2.3. Freestanding unit – positioned in a community setting for e.g. a villa (except in a commercial building or a mall).
 - 8.2.4. Integrated Cancer Care – a part of an oncology center that provides diagnostic services, radiation therapy and/ or surgical facility.
 - 8.3. The chemotherapy unit shall be designed to provide:
 - 8.3.1. Ease of public access for patients who may arrive by public transport or vehicles, with families and children or those who arrive on a wheel chair, ambulance stretcher or patient trolley.
 - 8.3.2. Discreet access or exit with special consideration to privacy of patient.
 - 8.4. Chemotherapy can be provided in an outpatient service except in the case of acute leukemia patients where the patients shall be treated in a multispecialty health facility with inpatient, outpatient & ICU services.
 - 8.5. The chemotherapy unit can have inpatient services only with an Internal Medicine Consultant / Specialist present at the facility at all times and provide a minimum of 5- 6 inpatient beds.
 - 8.6. In case a chemotherapy unit is a freestanding facility it shall:
 - 8.6.1. Maintain a contract with the closest hospital with inpatient services to manage emergencies or complications.
 - 8.6.2. Provide an in-house ambulance service.
 - 8.7. The Chemotherapy Unit shall have the following functional areas:
 - 8.7.1. Reception/ Waiting area
 - 8.7.2. Consultation room
 - 8.7.3. Sterile preparation room/ Buffer area
 - 8.7.4. Anteroom/ pharmacy
 - 8.7.5. Patient treatment areas/ procedure room with treatment chairs or beds
 - 8.7.6. Isolation room(s)
 - 8.7.7. Clean utility/ Dirty utility
 - 8.7.8. Medication preparation room with a 100% exhaust Class II B2 safety cabinet
 - 8.7.9. Staff areas
 - 8.7.10. Support areas
 - 8.7.11. Storage areas for clinical, non-clinical and bulk items storage e.g. fluids, equipment including infusion/syringe pump storage
 - 8.7.12. Waste Disposal Room
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- 8.8. The chemotherapy unit shall maximize the use of natural light.
- 8.9. All treatment areas (bays/cubicles/bedrooms) shall be provided with windows to enable unobstructed outdoor view.
- 8.10. Sterile Preparation Room (SPR) / Buffer area and Anteroom / pharmacy
- 8.10.1. The SPR shall preferably be on the same floor as the patient treatment area.
- 8.10.2. All cytotoxic/ hazardous admixtures shall be prepared in a minimum Class II Type B Biological Safety Cabinet (BSC) located in the SPR.
- 8.10.3. The SPR shall maintain with negative pressure
- 8.10.4. The BSC shall be located away from doorways, traffic corridors and air conditioning and heating vents.
- 8.10.5. The SPR shall have minimal microbial and particulate contamination.
- 8.10.6. There shall be provision of an adjacent anteroom, to minimize the particulate contamination.
- 8.10.7. A differential of at least 0.01 inch water column (negative pressure) shall be maintained between SPR and anteroom.
- 8.10.8. A pressure indicator shall be installed that can readily monitor room pressurization.
- 8.10.9. Water sources shall be kept to a minimum within the SPR.
- 8.10.10. Drains should be avoided. If present, they should be designed to minimize the risks of microbial or foreign material contamination.
- 8.10.11. Floors, walls, ceilings and all exposed surfaces shall be nonporous and washable.
- 8.10.12. Essential furniture in buffer rooms and clean rooms shall be nonporous, smooth, nonshedding, impermeable, cleanable, and resistant to disinfectants.
- 8.10.13. Cleaning in the SPR shall take place at a time when no aseptic operations are in progress.
- 8.10.14. Shelves and supplies shall be kept to a minimum in the SPR to decrease the number of airborne particulates.
- 8.10.15. A warning sign shall clearly identify that access to the SPR is controlled and limited to authorized personnel only.
- 8.10.16. Doors shall not be left open.
- 8.10.17. The door opening into the SPR and the door leading to the anteroom shall not be opened at the same time in order to maintain pressure differential between the two rooms.
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- 8.10.18. Provision of a public address (PA) speaker to alert workers in case of an emergency.
- 8.10.19. Telephones and hands-free devices shall be used to communicate with staff in the SPR.
- 8.10.20. All staff shall wear appropriate personal protective equipment (PPE), prior to entering the SPR.
- 8.10.21. Lab coats shall not be worn in the SPR in place of chemotherapy gowns.
- 8.10.22. No shipping or other external cartons shall be taken into the SPE or compounding area.
- 8.10.23. The anteroom shall be used for switching of supplies, loading and unloading of cartons, donning of PPE and preparation and set up of orders.
- 8.10.24. Supplies for the SPR shall be removed from all the cardboard boxes in the anteroom.
- 8.10.25. Cardboard boxes shall not be stored in the anteroom.
- 8.10.26. Hazardous drugs shall be stored separately from other inventory to prevent contamination and personnel exposure.
- 8.10.27. Hazardous drugs that are volatile at room temperature shall be stored with in a contained negative pressure room with at least 12 air exchanges per hour.
- 8.10.28. Cytotoxic spill kits should be available near the storage area.
- 8.10.29. Special precautionary measures shall be taken to prevent breakage, minimize exposure and contain spills when transporting cytotoxic drugs.
- 8.10.30. Routine cleaning of the anteroom, SPR, BSC shall be documented e.g. Daily- cleaning interiors of BSC, Hazardous drug garbage disposal, etc. Weekly- Clean IV admixture dispensing trays, clean transfer carts. Monthly- Clean refrigerator shelves, clean storage shelves, clean non-transfer carts, clean hazardous drugs and supply bins.
- 8.10.31. Trained and supervised housekeeping staff shall be employed to safely carry out housekeeping responsibilities in the anteroom, with in the SPR and in vicinity of the BSC in order to minimize hazardous drug exposure to themselves and the environment in accordance with written protocols.
- 8.10.32. They shall clean sinks, furniture and floors daily and walls, ceilings and window blinds monthly.
- 8.10.33. Strict hygiene procedures are developed and followed in the SPR. There will be no eating, drinking, chewing gum, applying cosmetics or storing food in or near the chemotherapy preparation area.
- 8.10.34. Cytotoxic drugs shall be packed in sealable plastic bags.
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- 8.10.35. The bagged contents shall be transported inside a closed container with and disposable absorbent pad to contain spillage and cushion contents.
- 8.10.36. All individuals involved in transportation of cytotoxic agents shall have quick access to spill kits.
- 8.10.37. All staff in the SPR shall have easy access to eye wash.
- 8.11. Patient treatment areas shall consist of treatment bays to provide chemotherapy to patients.
- 8.12. The treatment bays size shall be a minimum of nine (9) sq. meters with a clear width of three (3) meters along the back of the bay to ensure appropriate service placement, infusion equipment and curtain track placement for treatment chairs.
- 8.13. Spaces shall be twelve (12) sq. meters where patients receive chemotherapy infusions in beds rather than chairs.
- 8.14. The size of the clean utility shall be twenty (20) sq. meters if drug fridges are required to store chemotherapy intravenous fluid bags in this area.
- 8.15. Staff workstation shall preferably have an unobtrusive view of all patient treatment areas. The inclusion of decentralized staff areas may be considered in larger units that have multiple rooms or treatment spaces.
- 8.16. There shall be provision of working spaces for visiting multidiscipline team members.
- 8.17. Confidentiality and privacy for persons receiving treatment is a critical element hence the unit shall be designed to:
- 8.17.1. Ensure confidentiality of personal discussions and medical records.
- 8.17.2. Acoustic privacy shall be considered during the facility design.
- 8.17.3. Provide an adequate number of rooms for discreet discussions and treatments to occur when required.
- 8.17.4. Enable sufficient space within each treatment space to permit curtains to be easily closed whenever required.
- 8.17.5. Appropriately locate windows and doors to enhance visual and acoustic privacy.
- 8.17.6. Special consideration shall be given to selection of sound absorbing materials and finishes and use of sound isolation construction.
- 8.17.7. Special considerations also given to planning to separate quiet areas from noisy areas.
- 8.18. Consideration to the type of floor finishes as staff movement to/from and between patients during chemotherapy treatments and review is constant e.g. cushioned vinyl.
- 8.19. Special consideration given to patients with special needs.
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- 8.20. Nurse call and emergency call facilities shall be provided in all patient areas (e.g. bed/chair spaces, toilets etc.) and clinical areas in order for patients and staff to request for urgent assistance. The alert to staff members shall be done in a discreet manner.
- 8.21. Provision of duress alarm system shall be provided for the safety of staff members who may at times face threats imposed by clients / visitors. Call buttons shall be placed at all reception / staff station areas and consultation / treatment areas where a staff may have to spend time with a client in isolation or alone. The combination of fixed and mobile duress units shall be considered as part of the safety review during planning for the unit.
- 8.22. Inclusion of medical gases (oxygen and suction) units of one (1) per two (2) chairs shall be provided.
- 8.23. Infectious patients and immune-suppressed patients may be sharing the same treatment space at the different times of the same day. The design of all aspects for the unit shall take into consideration the need to ensure a high level of infection control in all aspects of clinical and nonclinical practice.
- 8.24. Isolation room(s) numbers shall be reviewed as part of the planning aspects of the project relevant to the proposed service needs.
- 8.25. Hand washing facilities with liquid soap dispenser, disposable paper towels and personal protection equipment (PPE) shall be readily available for staff within the unit.
- 8.26. Storeroom for general storage, fluids and equipment shall be located in the perimeter of the unit and accessible by a pallette lifter if required for delivery of bulk fluids and clinical stores.
- 8.27. Shelving shall have a minimum of hundred-(100) kg weight capacity and shelves need to be at least four hundred (400) mm apart and adjustable.
- 8.28. The chemotherapy unit shall maintain an easily accessible chemotherapy work flowchart for high quality and standardised care.
- 8.29. The chemotherapy unit shall maintain a crash cart to deal with emergencies.
- 8.30. Annually quality measures shall be audited and this information shall be shared with HRD.
- 8.31. Services that support and are linked with chemotherapy may include:
- 8.31.1. Physiotherapy (Lymph oedema management)
 - 8.31.2. Occupational therapy
 - 8.31.3. Dietetic / Nutrition services
 - 8.31.4. Clinical Psychology
 - 8.31.5. Social work services
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- 8.31.6. Community and outreach cancer services
- 8.31.7. Palliative Care and hospice
- 8.31.8. Complementary therapies (e.g. relaxation, stress management and massage)
- 8.31.9. Wig and prosthesis services.
- 8.32. Cytotoxic waste:
- 8.32.1. Breakable contaminated needles, syringes, ampoules, broken glass, vials, intravenous sets and tubing, intravenous and intravesical catheters etc. shall be placed into designated leak-proof; puncture proof sharps containers that clearly and visibly displays the cytotoxic hazard symbol.
- 8.32.2. Non-breakable contaminated materials including disposable gowns, gloves, gauzes, masks, intravenous bags, etc. shall be placed in thick sealed plastic bags, hard plastic or cytotoxic containers that clearly and visibly display the cytotoxic hazard symbol. When full, the bags and containers shall be placed in the oncology waste container.
- 8.32.3. Clearly marked chemotherapy waste receptacles shall be kept in all areas where cytotoxic drugs are prepared or administered.
- 8.32.4. All cytotoxic drug waste shall be separated from general waste.
- 8.32.5. Cytotoxic waste shall be destroyed in an incinerator approved for the destruction of cytotoxic drugs.
- 8.32.6. If access to an appropriately licensed incinerator is not available, the acceptable alternative shall be transportation to and burial in a licensed hazardous waste dump.
- 8.32.7. Special written protocol shall be maintained for:
- 8.32.7.1. Management of an incident in case a patient/family member is contaminated with a cytotoxic agent.
- 8.32.7.2. Management of cytotoxic spill in or outside the BSC.
- 8.32.7.3. Safe transportation of cytotoxic agents.

9. Surgical Care

- 9.1. For detailed information on operating theatre, critical care, airborne infection isolation, emergency area and inpatient, services refer to the “Hospital Regulation” on www.dha.gov.ae .

10. Pediatric Oncology Care

- 10.1. The pediatric facility shall:
- 10.1.1. Be a part of a multidisciplinary hospital.

- 10.1.2. Have accessible and fully staffed, onsite pediatric intensive care unit (PICU).
- 10.1.3. Have access to an up-to-dated diagnostic imaging facilities to perform radiography, computed tomography, magnetic resonance imaging, ultrasonography, radionuclide imaging, and angiography; positron-emission tomography (PET CT) scanning and other emerging technologies are desirable.
- 10.1.4. Have an up-to-date radiation-therapy equipment with facilities for treating pediatric patients shall be available.
- 10.1.5. Have an access to hematopathology laboratory capable of performing cell-phenotype analysis using flow cytometry, immunohistochemistry, molecular diagnosis, and cytogenetic and access to blast colony assays and polymerase chain reaction-based methodology shall be available.
- 10.1.6. Have access to hemodialysis and/or hemofiltration and apheresis for collection and storage of hematopoietic progenitor cells.
- 10.1.7. Have a clinical chemistry laboratory with the capability to monitor antibiotic and antineoplastic drug levels.
- 10.1.8. Have an access to blood bank capable of providing a full range of products including irradiated, cytomegalovirus negative, and leuco-depleted blood components.
- 10.1.9. The facility shall have a pharmacy capable of accurate, well-monitored preparation and dispensing of antineoplastic agents and investigational agents.
- 10.1.10. Have the capability of providing sufficient isolation of patients from airborne pathogens, which can include high-efficiency particulate air (HEPA) filtration, or laminar flow and positive/negative pressure rooms.

11. Support areas for Oncology Patient care

- 11.1. The support areas for an oncology center can be clerical space or rooms for typing and clerical work.
 - 11.1.1. Multiuse rooms for meetings, and health education.
 - 11.1.2. Medication station/ medication preparation area
 - 11.1.3. Medicine Storage Area
 - 11.1.4. Equipment and supply storage

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- 11.2. Medication station/ medication preparation area- there shall be a medication dispensing station or a medication preparation area. Provisions shall be made for the controlled storage, preparation, distribution, and refrigeration of medications
- 11.3. Medicine Storage Area- An enclosed area close to the medication station or medication preparation area.
- 11.4. Health records filing cabinets and storage shall be provided for the safe and secure storage of patient's health records with provisions for easy retrieval. Provisions shall be made for proper securing of the health records.
- 11.5. Nourishment area- a nourishment station is provided.
- 11.6. Clean Supply room- This room is used for preparing patient care items, it shall contain the following:
- 11.6.1. Work counter
 - 11.6.2. Hand-washing station
 - 11.6.3. Storage facilities for clean and sterile supplies. This room is used only for storage and holding as part of a system for distribution of clean and sterile materials.
- 11.7. Soiled workroom -A soiled workroom shall be provided with in close proximity to the and shall contain the following:
- 11.7.1. A flushing-rim sink
 - 11.7.2. A hand-washing station
 - 11.7.3. A work counter
 - 11.7.4. Storage cabinets
 - 11.7.5. Waste receptacles
 - 11.7.6. A soiled linen receptacle
- 11.8. Equipment and supply storage- The oncology center shall make provisions for the following requirements:
- 11.8.1. General storage area for supplies and equipment.
 - 11.8.2. Special storage for staff personal belongings with lockable drawers or cabinets.
 - 11.8.3. Storage areas for non-clinical records, documents, and office supplies.
- 11.9. The storage area shall have easy access.
- 11.10. The storage area shall be temperature controlled.
- 11.11. All material shall be clearly marked with expiration dates.

- 11.12. Clean linen storage- if blankets or other linens are used, a clean linen storage area shall be provided.
- 11.13. Location of the clean linen storage area within the clean workroom, a separate closet, or an approved distribution system shall be permitted. If a closed cart system is used, storage in an alcove shall be permitted. It must be out of the path of normal traffic and under staff control.
- 11.14. Wheel chair storage place shall be provided out of the direct line of traffic for at least one (1) facility-owned wheelchair.

12. Healthcare Professionals requirement

- 12.1. Cancer care involves sophisticated multidisciplinary approach that includes a multidisciplinary team including diagnosticians and pathologists, surgeons, radiation oncologists, and medical oncologists to achieve high levels of quality care to manage the disease.
- 12.2. The multi-disciplinary team is responsible for goal setting, planning, initiating, implementing, evaluating, and improving all cancer-related activities in the program.
- 12.3. The multi-disciplinary team may include physicians ranging from primary care providers to specialists in all oncology disciplines. In addition, care requires input from many other clinical and allied-health professionals including nursing, social work, genetics, nutrition, rehabilitation, and others.
- 12.4. For the Diagnostic Imaging Unit
- 12.4.1. Diagnostic Radiologist
 - 12.4.2. Radiologist
 - 12.4.3. Radiographer
 - 12.4.4. Magnetic Resonance Imaging (MRI) Technologist
 - 12.4.5. Sonographer
- 12.5. For radiation therapy unit; the clinical use of ionizing radiation is a complex process involving highly trained personnel in a variety of interrelated activities that include:
- 12.5.1. Radiation Oncologist
 - 12.5.1.1. There will be one (1) radiation oncologist for each 35-45 patients under treatment at the facility.
 - 12.5.2. Physicist
 - 12.5.2.1. There will be one physicist present for each center.

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- 12.5.2.2. A therapist with specialized training in dosimetry, a “Dosimetrist”, may render additional support.
- 12.5.3. Radiotherapy Technologist
- 12.5.3.1. Two technologist are required for the operation of each treatment machine.
- 12.5.3.2. An additional technologist will also be present with special training in simulation techniques.
- 12.5.4. Mould Room Technician
- 12.5.5. Nuclear Medicine Technologist
- 12.5.6. Specialty Nurse- Oncology
- 12.5.6.1. A nurse with special competence and skills required for the management of oncology patients.
- 12.5.7. Support personnel
- 12.5.7.1. Personnel will be present to attend to the needs of the patients and the facility in the general categories of administration, compiling of documentation, scheduling, etc.
- 12.5.7.2. Additional staff may be required for transcription, mold fabrication and other tasks as identified by the facility.
- 12.6. Chemotherapy Unit
- 12.6.1. Medical Oncologist
- 12.6.2. Clinical Pharmacist
- 12.6.3. Specialty Nurse- Oncology
- 12.6.4. Palliative care physician
- 12.7. Surgical Oncology Unit
- 12.7.1. Anaesthesiologist
- 12.7.2. Surgical Oncologist
- 12.7.3. Specialty Nurse – Oncology
- 12.7.4. Anaesthesia Technologist
- 12.7.5. Anaesthesia Technician
- 12.8. Pediatric Oncology Unit
- 12.8.1. Pediatric Oncologist
- 12.8.2. Pediatric Hematologist
- 12.8.3. Pediatric Surgeon/ Surgical oncologist (as per 12.8.12)
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- 12.8.4. Pediatric Transfusion Medicine
- 12.8.5. Registered Nurse
- 12.8.6. Pediatric Nurse
- 12.8.7. The medical staff at such a facility is composed of a multidisciplinary team of a primary care pediatrician, pediatric medical subspecialists and pediatric surgical specialist like hematologists/ oncologists, surgeons, urologists, neurologists, neurosurgeons, orthopedic surgeons, radiation oncologists, pathologists, child life specialists, and diagnostic radiologists. These physicians and nurse practitioners, pediatric nurses, social workers, pharmacists, nutritionists, and other allied health professionals shall care for the child or adolescent with cancer.
- 12.8.8. Pediatric hematologist/oncologist is the coordinator for the diagnosis and treatment of most children and adolescents with cancer. He/ she must be assisted by a competent team to provide effective treatment that can comprise of:
- 12.8.8.1. Pediatric oncology nurses who are certified in chemotherapy, knowledgeable about pediatric protocols, and experienced in the management of complications of therapy.
- 12.8.8.2. Rehabilitation Pediatric physical and mental rehabilitation services including pediatric psychiatrists.
- 12.8.8.3. Social Workers and access to support groups.
- 12.8.8.4. Pediatric Nutrition Expert
- 12.8.9. Radiologists with specific expertise in the diagnostic imaging of infants, children, and adolescents.
- 12.8.10. Radiation oncologist trained and experienced in the treatment of infants, children and adolescents.
- 12.8.11. Pediatric Surgeons/ Urologist; Surgical specialists with pediatric expertise (i.e., training and certification, if available) in neurosurgery, orthopedics, ophthalmology, otolaryngology, etc.
- 12.8.12. Pediatric Subspecialists available to participate actively in all areas of the care of the child with cancer, including anaesthesiology, intensive care, infectious diseases, cardiology, neurology, endocrinology and metabolism, genetics, gastroenterology, child and adolescent psychiatry, nephrology, and pulmonology.
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12.8.13. A pathologist experienced in pediatric oncology is an essential member of the multidisciplinary team at the pediatric oncology center.

12.9. Clinical Laboratory

12.9.1. Anatomic and clinical pathologist

12.9.2. Cytopathologist

12.9.3. Hematopathology

12.9.4. Pediatric Pathologist

12.10. Support staff that the facility may have are:

12.10.1. Nursing staff

12.10.2. Biomedical Engineer

12.10.3. Quality Assurance officer

12.10.4. IT support staff

12.10.5. Pharmacist

12.10.6. Therapist (Physiotherapist, Occupational Therapist, Speech Therapist)

12.10.7. Social Workers

12.10.8. Clinical Psychologist

12.10.9. Dieticians

12.10.10. Wig fitters

12.10.11. Emergency Medical Technician Advances (Paramedic)

12.11. **Physicians**

12.11.1. A DHA licensed consultant oncologist shall be nominated as the medical director of the oncology center who shall be responsible for overall management of the facility.

12.11.2. A DHA licensed consultant paediatric oncologist must be associated with the facility in case Paediatric oncology services are provided (children from birth to eighteen (18) years of age, this age could be extended to twenty-one (21) years of age as per the American Cancer Society).

12.11.3. The paediatric oncologist must be present when paediatric oncology services are provided.

12.11.4. The oncologist must ensure adequate monitoring of patients during treatment, and subsequent aftercare.

12.11.5. The oncologist shall be contactable at all times to render emergency care.

- 12.11.6. In the event that the oncologist on duty is unable to fulfil his/ her full responsibility to the patients of the oncology center, he/ she must arrange for a similarly qualified physician to be responsible for the total care of the patients in the facility.
- 12.11.7. The medical director is ultimately responsible in ensuring that the monitoring and safety devices and resuscitation equipment are in proper working condition at all times.
- 12.11.8. The need for treatment and choice of modality shall be based on sound clinical principles and a thorough clinical evaluation of medical condition and co-morbid by the attending oncologist.
- 12.11.9. The attending oncologist may recommend to the end stage cancer patient the modality that is best suited to him/ her. This shall be based on the patient's, other co-morbid conditions, ability to comply with treatment, available family support and other social factors.
- 12.11.10. The patient shall be allowed to make a fully-informed choice of modality, after receiving adequate counselling from his/ her oncologist on the different modalities available and the modality that is most appropriate for the patient's need.
- 12.11.11. There shall be a documented Quality Assurance Program (QAP) to ensure quality patient care through objective and systematic monitoring, evaluation, identification of problems and action to improve the level and appropriateness of care. The QAP shall include:
 - 12.11.11.1. Documented policies and procedures related to the safety while conducting all patient care activities.
 - 12.11.11.2. Documented regular biannual reviews of the policies and procedures.
 - 12.11.11.3. Documented reviews of deaths, accidents, complications and injuries arising from treatment.

12.12. Nursing Staff

- 12.12.1. Nurses with specialized knowledge and skills shall provide oncology-nursing care.
- 12.12.2. The nurse in-charge must be a qualified DHA licensed Registered Nurse (RN), with at least two (2) years of experience in oncology.
- 12.12.3. The ratio of trained RNs/ patients shall be 1: 3 at a given time.
- 12.12.4. All the nurses shall have an Oncology Nursing Society (ONS) certification and maintain Continuous Professional Development (CPD) by attending ONS programs.

12.12.5. There shall be at least one (1) nurse with a minimum of six (6) months of training or experience/ training to be physically present at the oncology center at all times to monitor the patients throughout the treatment/ procedure, to be available to deal with any emergencies that may arise and to alert the oncologist when necessary.

12.12.6. The attending RN is responsible for the general checkup of the patient including vital statistics and recording the initial assessment in the medical records.

12.12.7. All RNs shall hold current BLS and ACLS certifications.

12.13. **Biomedical Engineer**

12.13.1. Employ a biomedical engineer or have contracts with the manufacturers of the equipment for regular monitoring and maintaining equipment.

12.14. **Radiation Safety Officer**

1.1.1. Uses ionizing radiations for medical use may be required to have a Radiation Protection Program (RPP).

12.15. **Quality Assurance officer**

12.15.1. The Quality assurance officer will monitor the quality improvement program activity and report the findings to the cancer committee at least annually and recommend corrective action if activity falls below the annual goal or requirement.

12.16. **Pharmacist**

12.16.1. A DHA licensed pharmacist shall be in charge of maintaining the medicines and solutions that will be administered to patients with a minimum of one (1) year experience in Chemotherapy preparation.

12.17. **Therapist (Physiotherapist, Occupational Therapist, Speech Therapist)**

12.17.1. DHA licenses healthcare professionals to support the cancer treatment offered at the facility.

12.18. **Clinical Psychologist**

12.18.1. At least one (1) DHA licensed clinical psychologist to help people who are having difficulty coping with cancer or cancer treatment.

12.19. **Dietician**

12.19.1. At least one (1) dietician shall maintain progress notes of all patients treated in the facility.

12.20. **Medical Social Worker**

12.20.1. There shall ideally be some medical social workers associated with oncology center. The medical social workers shall be involved in psychosocial evaluation, case work counselling of patients and families, group work, evaluate and facilitate rehabilitation, team care planning and collaboration, facilitating community agency referral, improve communication with treating team. The social workers are required to maintain notes of the patients.

12.21. Infection Control Nurse

12.21.1. To perform regular audits, conducts surveillance of cultures and insures best practice for patient access.

13. Patient Assessment

13.1. An effective patient assessment process aims to be comprehensive, includes multidisciplinary teams and is based on clinical and priority needs of each individual patient. Such assessment shall result in identification and decisions regarding the patient's condition and continuation of treatment as the need arise. The oncology center shall have policies and procedures on patient assessment:

13.1.1. On admission

13.1.2. Following a change of health status

13.1.3. After a fall

13.1.4. When patient is transferred from one level of care to another.

13.2. The patient assessment shall include, but not limited to, medical history, physical, social and psychological assessment and identification of patients at risk.

13.3. Patients conveying personal health information during any assessment shall be accommodated in an area where privacy is assured.

13.4. Discharge preparation starts at admission and includes various persons, information and resources like:

13.4.1. The pickup person after treatment.

13.4.2. Travel distance to the patient's house.

13.4.3. Post discharge transport.

13.4.4. The carer's contact details and their awareness of possible issues and requirements following discharge.

13.4.5. Contact numbers after discharge in case of an emergency.

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- 13.4.6. Discharge arrangements regarding home care where it is identified.
- 13.5. Healthcare professionals shall use a formal risk assessment process to assess skin integrity and risk of falls of patients.
- 13.6. A comfortable care environment shall be provided in the facility with focus on patient privacy. The plan of care must be determined and delivered in partnership with the patient and when relevant, patient's family/patient representative/legal guardian, to achieve the best possible outcomes.
- 13.7. The patient has the right to refuse the plan of care but this has to be documented and signed by the patient.
- 13.8. Patient's participation may include:
- 13.8.1. Procedure date and admission/discharge time
 - 13.8.2. Physician selection
 - 13.8.3. Treatment preparation
- 13.9. Care shall be delivered by DHA-licensed and competent healthcare professionals and competent multidisciplinary teams and based on the best available evidence.
- 13.10. A comfortable treatment environment is provided in the facility with focus on patient privacy.

14. Patient care

Types of materials provided to the patients

- 14.1. Provide for educational and training programs for healthcare professionals including the primary care physician.
- 14.2. Provide educational programs for parents, caregivers, and patients.
- 14.3. Coordinate services including home health pain management, palliative, end-of-life care and information about community resources such as support groups.
- 14.4. Ensure that a multidisciplinary tumor board meets regularly to discuss the treatment plan of the patients.
- 14.5. Have an established program designed to provide long-term, multidisciplinary follow-up of successfully treated patients at the original treatment center or by a team of health care professionals who are familiar with the potential adverse effects of treatment for cancer.
- 14.6. Have a policy and procedure of systems such as ways of providing patients reminders and follow-up calls from members of the care team.

- 14.7. Provide full-time access to translation services to ensure accurate translation and effective communication among all healthcare professionals and the patient and family.
- 14.8. Provide for a formal program for cancer education for the family and instruction on self-management.
- 14.9. Education about ongoing follow-up with the cancer care team after treatment is concluded

15. Patients and family members

- 15.1. The facility shall provide ongoing opportunities for the patient to provide all the information to the health care team that is relevant to care and treatment decisions.
- 15.2. The facility shall provide ongoing opportunities for the patient to communicate concerns and worries that might affect cancer treatment.
- 15.3. The facility shall provide ongoing opportunities for the patient to improve their understanding of their cancer.
- 15.4. The facility shall provide ongoing opportunities for the patient to keep follow up appointments to ensure continuity of care.
- 15.5. The facility shall provide ongoing opportunities for the patient to include a friend or family member in the care process.

16. Psychosocial Services

- 16.1. Ensure patient access to psychosocial services either on-site or by referral.
- 16.2. These services address physical, psychological, social, spiritual, and financial support needs that result from a cancer diagnosis and help ensure the best possible outcome.
- 16.3. A policy or procedure is in place to ensure patient access to psychosocial services.

17. Rehabilitation Services

- 17.1. Ensures access to rehabilitation services and identifies the rehabilitative services that are provided either on-site or by referral.
- 17.2. Rehabilitation services help patients cope with activities of daily living affected by the cancer experience and enable them to resume normal activities.
- 17.3. A policy or procedure is followed to access rehabilitation services.

18. Nutrition Services

- 18.1. Nutrition services are essential components of comprehensive cancer care and patient rehabilitation. These services provide safe and effective nutrition care across the cancer continuum (prevention, treatment, and survivorship) and are essential to promoting quality of life.
- 18.2. An adequate spectrum of services shall be available (screening and referral for nutrition-related problems, comprehensive nutrition assessment, nutrition counseling, and education) either on-site or by referral, with a procedure in place to ensure patient awareness of and access to services.
- 18.3. A policy or procedure in place to access nutrition services.

19. Palliative care services

- 19.1. Palliative care refers to patient- and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering.
- 19.2. The availability of palliative care services is an essential component of cancer care, beginning at the time of diagnosis and being “continuously available” throughout treatment, surveillance, and when applicable.
- 19.3. Palliative care services shall be available to patients either on-site or by referral.
- 19.4. An interdisciplinary team of medical and mental health professionals, social workers, and spiritual counselors shall be available or accessible to provides palliative care services.
- 19.5. Palliative care services on-site will vary depending on the scope of the program, staff expertise, and patients treated.
- 19.6. The palliative service team consists of :
 - 19.6.1. Physician: Hospice and palliative medicine physician is strongly encouraged.
 - 19.6.2. Nurse: trained in hospice and palliative care is strongly encouraged.
 - 19.6.3. Pharmacist
 - 19.6.4. Social worker
 - 19.6.5. Chaplain or spiritual care counselor
 - 19.6.6. Trained volunteer
- 19.7. Palliative care services include, but are not limited to, the following:
 - 19.7.1. Team-based care planning that involves the patient and family
 - 19.7.2. Pain and other symptom management

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- 19.7.3. Communication among patients, families, and healthcare team
 - 19.7.4. Continuity of care across a range of clinical settings and services
 - 19.7.5. Attention to spiritual comfort
 - 19.7.6. Psychosocial support for patients and families
 - 19.7.7. Bereavement support for families of patients who die and team members who provided care to the person who died
 - 19.7.8. Hospice care: Hospice care is one aspect of palliative care and is a service delivery system that provides palliative care for patients who have a limited life expectancy. Hospice is presented as an option to patients and families when the prognosis is limited and death will not be surprising

20. Critical Care Services

- 20.1. In case of a freestanding oncology center, it must have an contract/ agreement with a hospital with an Intensive Care Unit (ICU), which must be accessible within a maximum of 10 minutes' drive from it to receive patients in case of emergency.
- 20.2. There must be a competent and DHA licensed RN with suitable training and experience in critical care on duty to provide the critical care services if required. The evidence of competency and training shall include, but not limited to the following:
 - 20.2.1. Recognizing arrhythmias
 - 20.2.2. Infection control principles
 - 20.2.3. Training in using defibrillator
- 20.3. Critical care equipment must be immediately available at the oncology center for immediate and safe provision of care if required.

21. Emergency Services

The oncologist in charge shall ensure that there are facilities for emergency resuscitation, as well as documented protocols/procedures to deal with cardiopulmonary collapse and urgent medical treatment as patients may develop hypotension, fits or collapse during treatment.

In addition, the oncologist in charge must:

- 21.1. Ensure that there are prior arrangements made for patients receiving treatment to be admitted in a nearby hospital in case of a freestanding facility, shall the need arise, within 10 minutes' driving time.

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- 21.2. Ensure that there are standing arrangements with other healthcare professionals to provide immediate medical care in the event that the physician in charge is not available.
- 21.3. Ensure there is an ambulance available at any given time to transfer the patient to a hospital in case of any medical emergency.
- 21.4. Ensure that the ambulance service is accessible and at close proximity.
- 21.5. In case the oncology center has its own ambulance service the ambulance services shall be ready with licensed, trained and qualified Emergency Medical Technicians (EMT) for patient transportation if required, this service can be outsourced with a written contract with an emergency services provider licensed in Dubai. Clear patient transport protocol shall be maintained.
- 21.6. The ambulance shall maintain the following, but not limited to:
- 21.6.1. Sets of instruments, which shall include suturing set, dressing set, foreign body removal set or minor set and cut down set.
- 21.6.2. Disposable supplies which shall include suction tubes (all sizes), tracheostomy tube (all sizes), intravenous cannula (different sizes), IV sets, syringes (different sizes), dressings (gauze, sofratulle, etc.), crepe bandages (all sizes), splints (Thomas splints, cervical collars, finger splints).
- 21.6.3. Portable vital signs monitor (ECG, Pulse-Oximetry, Temperature, NIBP, and EtCO₂).
- 21.6.4. Portable transport ventilator with different ventilation mode (IPPV, SIMV, spontaneous, PS).
- 21.6.5. Suction apparatus.
- 21.7. Emergency drugs, devices, equipment and supplies must be available for immediate use in the emergency area for treating life-threatening conditions.
- 21.8. Storage areas for general medical or surgical emergency supplies, medication and equipment shall be under staff control and out of path of normal traffic.
- 21.9. A record must be kept for each patient receiving emergency services and must be integrated into the patient's health records, the record shall patient name, date, time and method of arrival, physical findings, care and treatment provided, name of treating doctor and discharging/transferring time.
- 21.10. Transfer Planning
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- 21.10.1. The oncology center shall maintain policies and procedures concerning patient transfer which reflect acceptable standards of practice and compliance with applicable regulations in Dubai.
- 21.10.2. If patient is transferred to another health facility and in order to ensure continuity of patient care, the other facility shall be informed about the case and approval for transfer shall be documented in the patient file.
- 21.10.3. The physician present at the oncology center is responsible for the coordination of the timely transfer of appropriate information and discharge notice from the oncology center to a hospital or another health facility.
- 21.10.4. A transfer sheet shall be prepared for all patients being transferred requiring further treatment.
- 21.10.5. A referral letter shall be given to the patient or family/patient representative. Patient shall not be sent under any circumstances to another facility without prior approval.
- 21.10.6. Mode of transport shall be decided based on the condition of the patient, the treating physician and the ambulance team shall decide who shall accompany the patient e.g. physician present or trained nurse.

22. Safety

- 22.1. There must be provision for emergency electric power supply for equipment in case of power failure.
- 22.2. Fire safety equipment shall be accessibly placed with visibly displayed directions to use the equipment.
- 22.3. Fire escapes shall be clearly visible.

23. Death of Patient/ Care of Deceased Patients

- 23.1. Death in a facility providing oncology services shall be considered a sentinel event. A policy for mortuary management covering this rare and tragic event shall be available in the facility.
- 23.2. In case of patient death, the oncology facility shall be responsible for overseeing the transportation of deceased patients to a mortuary.
- 23.3. The oncology facility shall maintain a policy in handling dead bodies to assure respect and dignity of the deceased.

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- 23.4. All dead bodies shall be considered infectious, strict infection control measures shall be considered during cleaning the body. Body shall be cleaned and wrapped/placed in a mortuary bag.
- 23.5. A record of such sentinel events shall be maintained by the oncology facility.
- 23.6. All deaths occurring whilst on in the oncology facility or because of treatment or any procedure related to oncology services must be reported immediately to the Clinical Governance office (CGO) of HRD.

24. Ethical Considerations

Healthcare professionals working in the facility shall be aware of their ethical responsibilities and comply with the HRD Code of Ethics and Professional Conduct that can be found on the website at www.dha.gov.ae .

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