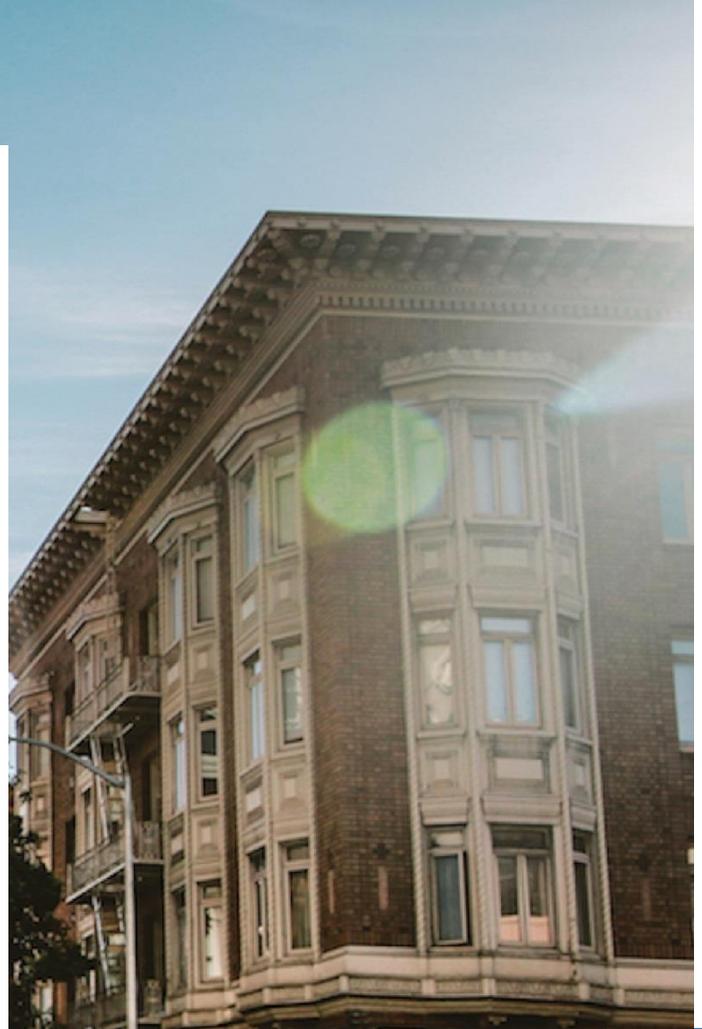


Guide for Centers of Excellence in Cancer Care



2021

**National Cancer Control Programme
Ministry of Health**



Best Cancer Care for All



Center of Excellence
in
Cancer Care

Guide for Centers of Excellence in Cancer Care

Introduction

The incidence of cancer is increasing over the years globally as well as in Sri Lanka. In 2019, according to the National Cancer Registry, a total of 33216 new cancer cases were diagnosed in Sri Lanka. The common cancers among women were breast, thyroid, colo-rectum and cancer cervix. Among men, cancer of the oral cavity, lung, colo-rectum and the oesophagus were common. Cancer is ranked as the second leading cause of hospital deaths after ischemic heart disease in Sri Lanka.

Cancer Control Capacity and Needs Assessment (imPACT Review) was conducted in Sri Lanka in year 2019 by the World Health Organization (WHO) and International Agency for Research on Cancer. Based on the imPACT recommendations, the National Advisory Committee on prevention and control of cancer in Sri Lanka decided to upgrade all the provincial level cancer treatment centers to Centers of Excellence (CoE). The main objective of a CoE at provincial level is to provide continuum of cancer care for all those who need it closer to their homes. In order to establish CoEs in each province, a situational analysis (2020) of cancer treatment hospitals was carried out with detailed discussions with the respective hospital directors, consultants and members of the Diagnostic & Treatment Technical Advisory Committee.

The observed gaps in each of the CoE to be identified and addressed by the institutional head to provide optimal services. Adequately trained multi-disciplinary human resources (HR) and infrastructure facilities should be made available for smooth functioning of the center. Proposed CoE should have advance diagnostic and treatment facilities, in addition to basic facilities to provide expected services in each province. Each CoE should be able to increase accessibility and availability of medical/surgical/ gynecologic oncology services for both adults and children supported by laboratory & pathology, medical imaging, nuclear medicine facilities. In order to improve quality of care, staff should be regularly trained and have access to up-dated diagnostic and treatment and care guidelines and standard operation procedures (SOP). Ideally patients should be referred to CoE adhering to the Reference System that has been introduced. All provincial CoEs will be linked to Apeksha Hospital – the National Cancer Center to form the first level network.



Each CoE will serve as the premier center for cancer care in the province and will extend its expertise in diagnostics and treatment and care by networking with other cancer care providing hospitals and practitioners in the province forming the second level network. Networks will help sharing of expertise in all aspects of cancer diagnostics, treatment and care for the best interest of cancer patients, caregivers and families.

Vision

To be the best choice for continuum of cancer treatment, care and support in the province .

Mission

To provide updated, evidence based care for each adult and child presenting with cancer

The core values of cancer treatment centers in provincial hospital

The principles that guide our practice are patient centred, and encompass three spheres:

Patient Care

1. To provide compassionate, individualized care for cancer patients.
2. To provide care that is equitable, comprehensive and coordinated close to cancer patients' home.
3. To attract and nurture the best health care providers
4. To recognize and support the central role of clinical research in advancing cancer care.
5. Provides leadership in efficient care delivery and improves all aspects of cancer care.

Culture

1. That engenders a collegial physician partnership.
2. That respects individuals and the collective work with people
3. That embraces openness and fairness.
4. Partnership with NGOs and CBOs for better patient care.



Services

1. Promotes convenient access to citizens in the province.
2. Promotes high quality, updated continuum of cancer care which networks with other cancer care facilities in the province
3. Provides leadership in efficient care delivery and improves all aspects of cancer care respecting patient Rights.
4. Improved linkages with supply management chains of healthcare products
5. Provides a financial structure to expand services to our patients.

Objectives of cancer care Centers of Excellence at Provincial level

1. To improve the quality & effective clinical and emotional outcomes of the disease and its treatment through navigation, early detection and prompt, appropriate up-to-date treatment modalities for people without any delay in an equitable manner.
2. To provide patient-focused care supported by educational resources and forums to educate and develop skills in health promotion for prevention of cancers as well as counselling for patients and loved ones.
3. Identify research needs and conduct research

National Cancer Institute (Apeksha Hospital), Maharagama

Apeksha Hospital at Maharagama will be the National Center of Excellence in cancer care for adults and children in Sri Lanka with upgraded state of the art diagnostics powered by technology and treatment modalities. Apeksha Hospital will also serve as the CoE for Western Province.

Center of Excellence Hospitals in each province

Following hospitals are identified to be upgraded as CoE from other Provinces.



Proposed CoE in each province

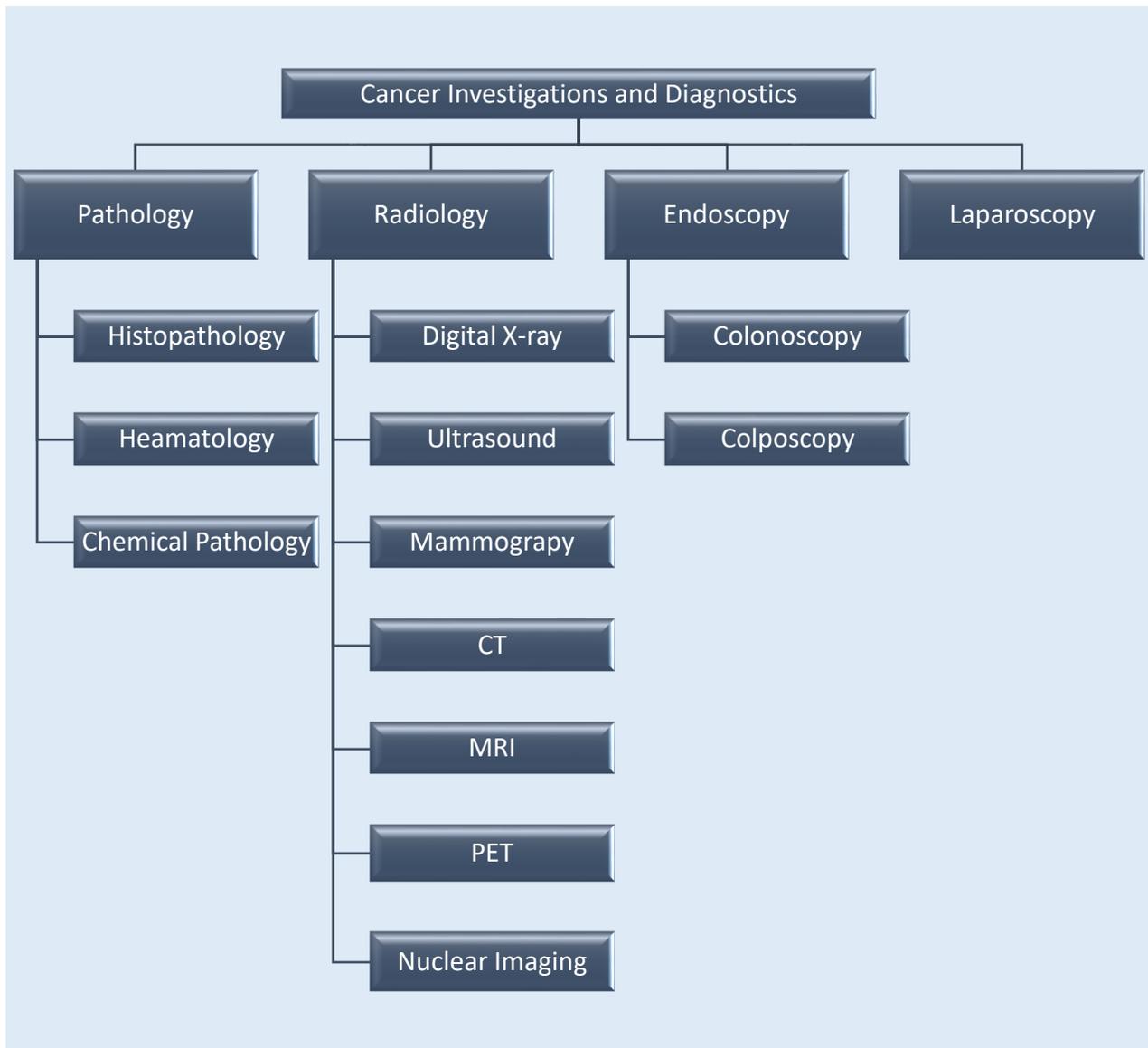
Central Province	National Hospital Kandy
North central province	Teaching Hospital (TH) Anuradhapura
North Western Province	TH Kurunagala
Sabragamuwa province	TH Ratnapura
Uva province	Provincial General Hospital (PGH) Badulla
Southern province	TH Karapitiya
Northern Province	TH Jaffna/Tellipalai
Eastern Province	TH Batticaloa

Each Center of excellence for cancer care should have followings

1 Diagnosis 1.1 Pathology and Laboratory services with molecular diagnosis 1.2 Diagnostic Imaging and Nuclear Medicine
2 Treatment 2.1 Medical oncology 2.2 Radiation Oncology 2.3 Surgical oncology 2.4 Gynea-oncology 2.5 Peadiatric oncology
3 Palliative care
4 Oncology-Pharmacy services with essential cancer drugs
5 Cancer Early Detection Centers
6 Human resources
7 Telemedicine Unit
8 Cancer surveillance

1. Cancer Diagnosis

CoE in each province will have pathology, radiology, endoscopy and laparoscopy services to facilitate timely diagnosis and treatment of cancer patients.



1.1 Diagnostic Pathology

Pathology services in a Center of Excellence require adequate human resources and infrastructure facilities to ensure timely testing, performing advanced tests/procedures, and timely reporting of results. The Laboratory services in CoE will supplement cancer services and serve as a main center for a cluster of other hospitals in the province for cancer diagnosis and treatment.

Diagnostic Pathology services at proposed facilities at CoE includes

- i. *General laboratory diagnosis of cancer at all CoEs including*
 - a. Complete Blood Count with differentials and other hematological tests
 - b. Routine biochemical tests, such as functioning tests
 - i. Liver function tests involves the measurement of serum bilirubin ALT, AST, alkaline phosphates to monitor the function of the liver
 - ii. Renal function tests involve the measurement of serum creatinine, blood urea, electrolytes, calcium, magnesium, uric acid and phosphates to monitor the function of the kidney.
 - iii. Urine tests to measure electrolytes, protein, ketone bodies etc
- ii. *Coagulation studies*
- iii. *Histopathology*
 - a. *Routine histopathology*
 - b. *Special histochemistry*
 - c. *Immunohistochemistry (IHC) and special staining tests: IHC is a special staining process performed on fresh or frozen breast cancer tissue removed during biopsy. Immunohistochemistry is used for the diagnosis and prognosis of cancer and for the assessment of response to treatment.*
- iv. *Bone Marrow Examinations*
 - a. Bone marrow and trephine biopsy
 - b. Bone marrow cytology
 - c. Cytochemistry: Establish flow cytometry facilities -can identify the type of cells in a blood or bone marrow sample, including the types of cancer cells. It detects types of cancer cells based on either the presence or the absence of certain protein markers (antigens) on a cell's surface.
- v. *Molecular genetic testing with DNA sequencing at Apeksha hospital and a Molecular Laboratory at other CoE-* three main type of genetic testing: chromosome studies, DNA studies and biochemical genetic studies.
- vi. *Tumour marker testing-*Tumour markers are chemicals made by tumor cells that can be detected in blood and common Tumour Markers : Cancer Antigen 125 (CA125), Prostate Specific Antigen (PSA) and other tumour markers should be available.

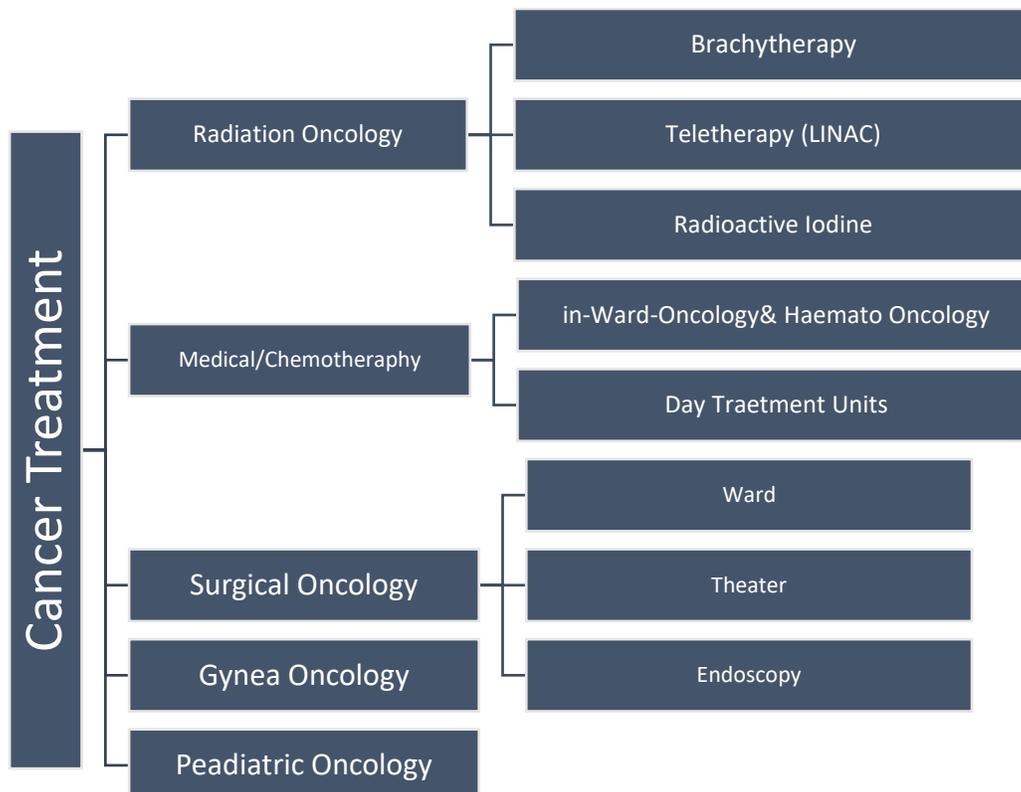
1.2. Diagnostic imaging and Nuclear Medicine

Following imaging facilities to be included in each center of excellence to provide up to date Radiology services in cancer care.

- Digital X-RAY
- Ultra sound scanning (USS)
- Computerized Tomography scanning (CT scanners)
- Magnetic Resonance Imaging (MRI scanners)
- Positron Imaging Tomography (PET scanners)
- Digital breast tomosynthesis (DBT) mammography,
- Contrast-Enhanced Mammography facility
- GAMA camera

2. Cancer Treatment Modalities.

Following treatment modalities should be available in all CoE



2.1. Radiation Oncology

The center of excellence is the premier treatment center for radiotherapy in the province. At least one Linear accelerator (LINAC) with CT simulators and one High- Dose-Rate (HDR) brachytherapy unit should be available in each province. Existing cobalt units will be replaced with LINAC machines.

- Radiotherapy treatment should be made available in a timely manner according to patient needs
- All cobalt machines should be replaced with LINAC machines according to a Plan.
- Teletherapy (LINAC) brachytherapy and radioactive iodine therapy should be available without a waiting list.

2.2. Medical oncology and chemotherapy (inclusive of haemato-Oncology)

The Hospital Director should ensure smooth functioning of a CoE with adequately trained staff and infrastructure facilities including In-Ward Beds and facilities, day care treatment centers, mobile clinics to other geographical locations and OPD clinic facilities.

Day care treatment centers: The day unit should provide chemotherapy treatment for outpatients. Outpatients include patients who may not require staying in the hospital, and are able to visit the hospital only when treatment is scheduled. Onco-consultants should develop Standard Operation Procedures for the respective CoE taking into consideration the patient load and the type of treatment modality. Infrastructure should include chemotherapy chairs, multipara monitors and infusion pumps.

Chemotherapy: The Drug Estimation Committee should ensure correct quantities of essential oncology drugs are estimated and orders are placed at the correct time through the Central Medical Supplies Division according to the MSD guidelines and ensure the procurement process takes place in a timely manner. A continuous supply should be maintained without shortages. Each CoE should network with the MSD procurement and supply chain to monitor the procurement process and supply chain.

2.3. Surgical Oncology

The hospital director should take steps to establish separate onco-surgical units with In-ward facilities and adequate theater time. The facilities should be upgraded with the support of onco-surgeons, general surgeons, OMF surgeons, other surgical specialties, anesthetists, staff of wards, theatres and intensive care units and other relevant staff members. Day surgical units should be conducted to make services available without a waiting list for patients. Endoscopy, colonoscopy and laparoscopy facilities should be established in all CoE centers.

2.4. Paediatric oncology

Paediatric cancer treatment centers should be established in all COE in a phased manner. Apeksha hospital should be the State of the art center for paediatric cancer management in Sri Lanka. Facilities should be made available for diagnosis, treatment and supportive care, including integration of pediatric cancer survivors to the society.

2.5 Other facilities and services at CoE

- Stem Cell Transplant: At Apeksha hospital
- Immunotherapy
- Targeted therapy
- Hormonal therapy
- Precision medicine
- Emergency treatment unit
- High dependency units
- Improve treatment and care for oral cancer and OPMD
- Specific treatment facilities for lymphedema and cervical spondylosis, etc
- Breast care clinics
- Blood Bank
- Kidney dialysis unit
- Pain management unit
- Physiotherapy unit
- Speech therapy unit

- Colposcopy clinics in CoE: Scale up colposcopy facilities to cover all CoEs and develop a service package (colposcopes, cryo-therapy including liquid nitrogen)
- Rehabilitation programmes
- Counselling services
- Especial ambulance service, health education unit, spiritual service.
- Multidisciplinary teams and multidisciplinary tumour review boards for diagnosis, treatment and rehabilitation: This will facilitate decision making by ensuring cost-effective treatment pathways are given to patients.
- A referral and a back referral system: will be introduced which will enhance patient compliance, reduce loss to follow up and minimize overcrowding. The NCCP will take steps to integrate continuum of cancer care into the primary healthcare strengthening “shared care cluster” system which would increase access to services for marginalized populations and socio economically backward populations and also reduce their household out of pocket expenses. This strategy will help people in underserved and geographically isolated areas to seek services at cancer treatment centers closer to their homes so that no one is left behind.
- CoE to develop links with private sector, support groups, hospices etc
- Waste management including cytotoxic and radioactive waste: This should be done according to the national guidelines.
- Cancer care services should be liase with all other units in the hospital such as quality management, information unit, public health etc...

3. Cancer Palliative Care

A center of excellence will be providing palliative care by a designated team. According to the National Strategic Framework for Palliative Care Development 2019-2023 (Ministry of Health 2019) a palliative care unit with palliative care consult services (PCCS) should have following functions and facilities

3.1. Function of the PCCS

- Outpatient clinic sessions
- Palliative care inpatient consult services
- Link with palliative care services at primary care and home based care by Public Health Nursing Officers (PHNOs)
- Develop close collaboration with government, non-government and private hospices for provision of coordinated care
- Coordinate with social service officers attached to the District /Divisional Secretariat Offices, Non-governmental organizations etc to coordinate extended holistic care.

3.2. Recommended PCCS at the CoE hospitals will have following facilities.

An interdisciplinary team within the hospital should provide the PCCS. Consultant Physician in Palliative Medicine will be the team leader of the palliative care service. Until such consultants are available, any other PGIM board certified specialist serving in the relevant hospital can be appointed as the team leader. When a cancer patient is referred to the PCCS, a consultant oncologist should always be included in the palliative care team for discussions and planning follow up care. Supporting staff including social services officer and counselor should be available.

In addition to above mentioned officers, physiotherapist, speech therapist, occupational therapist, nutritionist etc. are ideally needed for optimal service delivery (establishing extended palliative care).

Monitoring and evaluation of palliative care consult services are important for strengthening of palliative care services in the country. Therefore, each PCCS is supposed to send a quarterly return of PCCS to the National Cancer Control Programme for monitoring and evaluation of services at national level. (*Circular reference 10-34/2020*)

4. Oncology Pharmacy services

All CoE should have stocks and supplies of essential cancer medicines and medicine for treatment of cancer-related symptoms. The hospital should have a team of fully trained pharmacists to cater to the requirement.



5. Cancer Early Detection Centers (CEDC) in Provincial Hospitals

CEDC with the following services should be available in each provincial hospital and it should be a walk-in clinic for the public without any referral. A medical officer should be responsible for CEDCs and need to take steps to refer patients to relevant consultant without any delay for further management.

Services of Cancer Early Detection Centers (CEDC)

- **Cervical Cancer:** Screening for cervical cancer. Speculum examination and PAP smear/HPV test will be done at all the CEDCs.
- **Breast Cancer:** Provide clinical breast examination services, ultra sound scanning and digital mammogram services for early detection of breast cancer. Promote Self breast examination among all women who are at risk.
- **Oral Cancer:** Oral cancer early detection services with the help of dental unit. Arrange weekly or bi-weekly consultation with the dental surgeon.
- **Other Cancers:** Appropriate evaluation including detail history and examination for clients presenting with signs and symptoms related to other common cancers
- **Coordinate with other departments:** Coordinate all the examination and investigation process with laboratory and other units to minimize the delay.
- **Referral system:** Strengthen the referral-up and referral-back system of screened positive cases or early diagnosed cases. A referral system is expected to decrease the number of visits prior to final diagnosis for common cancers (oral, cervical and breast cancer) and link screening to diagnosis, treatment and care at a higher health care level.
- **Health Education and Counselling:** Health education and counselling services for clients to prevent unnecessary worry and meanwhile make sure that client's visit for further investigations and recommended treatments without default.

Monitoring and evaluation of CEDC services should be done at hospital, regional and national levels. Each CEDC is supposed to send a quarterly return to the National Cancer Control Programme for monitoring and evaluation of services at national level.



6. Human resources

Adequate human resource should be placed in all CoE for smooth functioning of all units to provide uninterrupted, updated services. New carders should be developed based on the requirements. According to the job categories and needs, in-service training programmes should be arranged by respective institutions.

7. Telemedicine

Telemedicine involves the use of electronic communications and software to provide clinical services to patients without an in-person visit. Introducing telemedicine services in certain aspects of cancer care will help to reduce the burden of unnecessary travel and waiting period for patients. All CoE will have a telemedicine unit with adequate video conferencing facilities to serve cancer patients.

8. Cancer Surveillance

All CoE should have facilities to provide necessary information to the National Cancer Registry and Hospital based Cancer Registry. The hospital director should appoint a team to be responsible for cancer surveillance.

Surveillance of cancers should be carried out within the hospital by collecting data from Oncology, Oncosurgery, Gynae oncology, Surgical, OMF and Gynaecology units. NCCP will provide necessary training to the staff of the Medical Record Room in data collection to the registries and reporting to NCCP. All CoEs should be linked to the e-MIS of NCCP.

Pathology – Laboratory based cancer surveillance should be done in consultation with Consultant Histopathologist/ Haematologist / Oral pathologist.

Each CoE is expected to generate Hospital based Cancer registry reports annually and disseminate surveillance data among hospital staff and provincial curative & preventive health staff, provincial and district cancer prevention and care committees.

Facilities at Center of Excellence

	Units	Facilities
DIAGNOSTICS	Pathology and Laboratory services with molecular diagnosis <ul style="list-style-type: none"> • Histopathology • Haematology • Chemical pathology • Molecular pathology 	<ul style="list-style-type: none"> • Histopathology <ul style="list-style-type: none"> ○ Routine histopathology ○ Frozen section diagnosis ○ Special histochemistry ○ Immunohistochemistry • Haematology <ul style="list-style-type: none"> ○ Bone marrow Biopsy ○ Flowcytometry • Chemical pathology-(CA125,PSA and other tumour markers) • Molecular Pathology- <ul style="list-style-type: none"> ○ FISH(A fragment of RNA is labeled with a florescent dye:EX-CML-Transloation of chromosome 9&22) ○ PCR ○ Karyotyping(MDS-A part of the long arm of chromosome-5 is missed) ○ Sequencing
	Diagnosis Imaging and Nuclear Medicine (including treatment)	Diagnostic Imaging <ul style="list-style-type: none"> • Digital X-RAY • USS • CT scanner • MRI scanner • PET scanner • Digital breast tomosynthesis (DBT) mammography, • Contrast-Enhanced Mammography facility • GAMA camera • C T Simulator
	Radiation oncology	1.Facilities for Radioiodine 131 Therapy 2.Brachytherapy 3.Linear accelerator (LINAC) (With cone beam CT) 4.Gallium 68 generator
TREATMENT	Medical Oncology	<ul style="list-style-type: none"> • Out- patient clinics • Wards (minimum of 50 beds each for male & female wards) • Day care chemo-therapy centers (include Multipara Monitors and Chemotherapy chairs to facilitate good patient care)
	Surgical oncology	<ul style="list-style-type: none"> • Clinics including exclusive Breast clinic • Ward (minimum of 25 beds each for male & female wards)

		<ul style="list-style-type: none"> • Endoscopy and colonoscopy • Surgical theater • Laparoscopy • Intensive care unit (shared with Onco-Gynecology and OMF)
	Onco -Gynecology	<ul style="list-style-type: none"> • Clinics with Colposcopy facilities • Operation theater facilities • In Ward beds shared with surgical wards
	Paediatric Oncology	<ul style="list-style-type: none"> • Clinics • Wards • Paediatric ICU
PALLIATIVE CARE	Palliative Clinics	<ul style="list-style-type: none"> • In patient care • Outpatient care • Hospice care • Home based care <ul style="list-style-type: none"> ○ Pain clinic ○ Counselling clinics
ONCOLOGY-PHARMACY	Hospital Pharmacies	<ul style="list-style-type: none"> • Essential Oncology Medicines
EARLY DETECTION	Cancer early detection centers	<ul style="list-style-type: none"> • Oral Cancer and Precancerous Lesions :Oral cavity examination • Cervical Cancer : Pap smear, HPV-DNA test & Colposcopy • Breast Cancer self & clinical breast examination, USS, Digital Mammogram. • Other Cancers
TELEMEDICINE SERVICES	Telemedicine unit	<ul style="list-style-type: none"> • Facilities to provide virtual care for cancer patients including <ul style="list-style-type: none"> ○ Video conferencing facility ○ Telemedicine room
CANCER SURVEILLANCE	Cancer registry Data analysis	<ul style="list-style-type: none"> • Cancer registry system overview • Hospital based Cancer registry reporting • Data for National Cancer Registry • Linked to e-MIS of NCCP