LIST OF ESSENTIAL CARE AND RESEARCH INFRASTRUCTURES IN COMPREHENSIVE CANCER CENTRES

WP6

EU net CCC
ONEFORALL

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STRENGTHENING CAPACITIES AND QUALITY IMPROVEMENT IN EUCCCS



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THE EUROPEAN COMPREHENSIVE CANCER CENTRE NETWORK

Introduction

The EUnetCCC Joint Action aims to implement a European Network of Comprehensive Cancer Centres (CCCs) to ensure equitable and high-quality cancer care for the entire European population. To achieve this objective, several capacity building activities and tools are planned to strengthen candidate centres' position in view of their future certification as CCC under the framework of Work Package 6: Strengthening Capacities and Quality in EUCCC.

As part of the readiness evaluation of aspiring CCC to the EUCCC certification, the ***List of essential care and research infrastructures in Comprehensive Cancer Centres*** is intended to clarify those research and care infrastructures that are considered essential to meet the EUnetCCC Set of Criteria of Standards. In this vein, the list specifies the units, facilities, technology and support systems that should be available to effectively provide a high quality of research and care under the framework of a CCC.

The CCC Coordinators of WP6, certified CCCs responsible for generating expert knowledge and coordinate the main capacity building programmes (i.e., Pairing and Teaming), endorsed this list. As a key information input, the list is included within the ***7-Domain Guideline***, the main source of information on how to implement the EUnetCCC Set of Criteria and Standards.

Purpose

Effective capacity building for certification requires a gap-analysis effort. Aspiring CCCs should be able to express the gaps and associated needs with the implementation of the standards but also highlight if some essential infrastructures are not in-house or not even available. It is a EUnetCCC ambition to make high-quality cancer care and research accessible to all European patients and, therefore, this type of gaps should be made explicit when approaching the reality of the different centres and European territories.

WP6 is committed to tailor capacity building to these realities, an ongoing effort that should start with properly partnering gap analysis with aspiring CCCs. The *List of essential care and research infrastructures in Comprehensive Cancer Centres* should enable the identification of gaps in terms of those **units**, **facilities**, **technology** and **support systems** for the areas of care and research.

The development of the list followed a two-step process. A first list was generated locally and then contrasted with the source "Guidance on Setting Up a Comprehensive Cancer Centre", jointly produced by the International Atomic Energy Agency (IAEA) and the World Health Organization (WHO).[1] A second step implied the circulation for amendments among WP6 Task Leaders and CCC Coordinators. A final version was approved in December 2025.

List of essential care and research infrastructures in Comprehensive Cancer Centres (CCCs)

a) Infrastructures of Essential Units for Oncological Care

0 Central Entry Portal for all cancer patients

1 Medical Oncology Unit

- Outpatient clinic area:
  - Consultation rooms: medical and nursing
- Oncology day hospital:
  - Chemotherapy/systemic therapy unit
  - Open ward and individual rooms (with chair or beds).

2 Haematology Unit (optional)

This unit shall be required only for centres that provide clinical management of haematological malignancies or conduct dedicated research programmes in haematology.

- Outpatient clinic area:
  - Consultation rooms: medical and nursing
- Haematology day hospital:
  - Chemotherapy/systemic therapy unit
  - Open ward and individual rooms (with chair or beds).
- Transplantation chamber
- Bone marrow/stem cell transplantation/cell therapies unit

3 Radiotherapy unit

- Consultation rooms
- Linear accelerator
- Simulator room (conventional or dedicated) and/or computed tomography (CT) and/or magnetic resonance imaging (MRI) and/or positron emission tomography (PET)-CT
- Radiophysics area
- Treatment area: treatment planning room, external BEAM therapy, brachytherapy and teletherapy
- Mould room
- Radiation safety office

4 Inpatient ward:

- Some rooms are isolation rooms for immunocompromised patients or patients with infectious agents

5 Diagnostic Imaging Unit

- Conventional X-ray
- CT scan
- MRI
- Ultrasound
- Mammography
- Fluoroscopy
- Endoscopy[2]

6 Nuclear Medicine Unit

- Metabolic therapy rooms
- Gamma cameras
- Dosimetry equipment
- PET-CT
- Single-photon emission computed tomography (SPECT)-CT
- MIBG (metayodobenzylguanidine) scan
- Hot laboratory
- Radio source storage rooms
- Decontamination rooms and facilities

7 Clinical Laboratory

- Biochemistry
- Haematology
- Cytology (including bone marrow aspirate)
- Microbiology
- Immunology
- In vitro NM (RIA)
- Flow cytometry/immunophenotyping
- Cytogenetics and molecular detection systems: NGS sequencers
- Sample storage systems: biobank

8 Pathology Unit

- Cytopathology
- Histopathology
- Immunohistochemistry
- *In situ* hybridization
- Molecular pathology (e.g., genomic sequencing, including NGS, real-time or digital droplet PCR)
- Digital and computational pathology
- Sample storage systems: biobank (paraffin blocks, frozen tissues, liquid biopsies)

9 Hospital Pharmacy Unit

- Dedicated area for the preparation of cytostatic drugs: either within the pharmacy unit or in the day hospital area
- Vented laminar flow air hood

10 Surgical Block: Oncological surgery or post-oncological surgery/supportive surgery (visceral/urological/ gynaecological/thoracic/lung/bone/neuro/oral-macillofacial/ pediatric surgery, plastic and reconstructive, vascular)

- Operating theatre (including robotic surgery)
- Pre operating holding
- Post-anaesthesia recovery unit (PACU)

11 Interventional Units

- Consultation rooms equipped for specific procedures:
  - Endoscopy
  - Catheterization
  - Bronchoscopy
  - Thoracoscopy
  - Thoracotomy
  - Mediastinoscopy
  - Cystoscopy
  - Colposcopy
  - Interventional radiology

12 Intensive/Critical Care Units

- Life support systems
- Intensive care beds, intermediate care units

13 Pain Management Unit

14 Emergency Department

- Examination/consultation room
- Minor operation theatre/procedure room
- Observation bay
- Nurse station

15 Blood Bank or Blood Storage Facility (Located on-site or in a nearby hospital)

- Area and supplies for blood donation
- Temperature-controlled storage and bar-coding system
- Equipment for blood component separation and storage

16 Supportive care unit

- Palliative care unit and palliative care consultation service for inpatient care
- Oncogenetics unit
- Consultation with experts and specific equipment for:
  - Nutrition
  - Dentistry (dental laboratory and orthopantomogram)
  - Gynaecology/urology: including fertility preservation systems (cryobank)
- Consultation with paediatric experts and equipment
- Consultation with experts and equipment:
  - Electrocardiogram, echocardiogram, tread mill test, pulmonary function test
  - Electroencephalogram, electromyography
  - Phlebotomy room
- Psychosocial support
- Physiotherapy and rehabilitation
- Group therapy room

17 **Research and clinical trials unit** (including early clinical trials area)

18 Mortuary

19 General Areas

- Multipurpose meeting rooms for tumour boards (including video conferencing for outreach partners, ICT systems and diagnostic and pathology imaging), training sessions and research teams
- Registries (tumour data, PROMs, etc.)

b) Infrastructures of Essential Units for Oncological Research*

*Preliminary note: some of the platforms indicated below (e.g., biobank) can apply to more than one section.

1 Basic/Translational research

A Laboratories:

- Wet laboratories. To perform bench experiments. Equipped with refrigerators and freezers, working hoods and small laboratory equipment (centrifuges, water baths, microscopes, deionized water source, etc)
- Technical rooms. Equipped with common standard devices and equipment.
- Biosafety laboratories. Common rooms designated to handle biological agents, such as cell lines, human samples or viral vectors. Equipped with controlled access points, biological safety cabinets, incubators and centrifuges.
- Dry laboratories. To perform computational and data-driven studies. Equipped with informatic infrastructure, high-performance computing servers, secure data-storage systems and workstations.

B Support platforms (in-house or available with use agreement):

- Animal facilities. Only for centres that perform research with animal models.
- Scientific equipment (Sequencing, Microscopy, Histology, Flow Cytometry, Proteomics)
- Biobank. To provide access to human biological samples.
- Biostatistics and bioinformatics analysis. To provide support to methodological and data analysis.
- Data infrastructure for data integration/transfer and traceability.

2 Clinical research/Clinical trials

A Laboratories:

Technical rooms. Equipped with common standard devices and equipment.

Biosafety laboratories. Common rooms designated to handle biological agents, such as cell lines, human samples or viral vectors. Equipped with controlled access points, biological safety cabinets, incubators and centrifuges.

Dry laboratories. To perform computational and data-driven studies. Equipped with informatic infrastructure, high-performance computing servers, secure data-storage systems and workstations.

B Support platforms (in-house or available with use agreement):

- Biobank. To provide access to human biological samples.
- Biostatistics and bioinformatics analysis. To provide support to methodological and data analysis.
- Scientific equipment (Sequencing, Microscopy, Histology, Flow Cytometry, Proteomics)
- Data infrastructure for data integration/transfer and traceability.

3 Outcomes research

A Laboratory:

- Dry laboratories. To perform computational and data-driven studies. Equipped with informatic infrastructure, high-performance computing servers, secure data-storage systems and workstations.

B Support platforms (in-house or available with use agreement):

- Biostatistics and bioinformatics analysis. To provide support to methodological and data analysis.
- Data infrastructure for data integration/transfer and traceability.

4 Scientific/other support

- Ethical Committee
- Ethical Committee for Animal Experimentation, if applicable
- Biosafety Committee
- Clinical Trials management
- Training unit
- Grant office
- Reporting tools
- Advisory board of patient representatives
- Advisory board of contracted outreach partners
- External scientific advisory board
- Executive board for clinical trials
- Public relations/ Press room
- Clinical trial office (management, controlling, study nurses, physicians, early clinical trial unit (ECTU), ...)
- Meeting rooms
- Technology Transfer Office

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Endnotes

1. Abdel-Wahab M, Ilbawi A, Varghese C. Guidance on Setting Up a Comprehensive Cancer Centre. Vienna: International Atomic Energy Agency, 2024.

2. It can serve different units or the institution as a whole.