European Inter-specialty Cancer Training Programme Curriculum

***The following document is a prefinal version of the European Inter-Specialty Cancer Training Programme curriculum, circulated to International, European and national level stakeholder organisations with an open invitation to endorsement. Confirmation of endorsements should be sent to silvia.romeo@europeancancer.org.**

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Abstract: INTERACT-EUROPE brings together 33 partners from 17 countries aiming to develop a European inter-specialty cancer training programme involving all main oncology disciplines and professions, cancer centres and patient groups, based on relevant needs assessments. The project will foster a patient-centric approach to quality cancer care through the promotion of multi-disciplinary and multi-professional teamwork.

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TABLE OF CONTENTS

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1. Introduction

Cancer is the second leading cause of premature mortality and morbidity in Europe with nearly 3 million new people diagnosed and more than 1.2 million deaths in the European Union (EU) every year [1]. Europe's Beating Cancer Plan [2] announced the launch of an "Inter-specialty cancer training programme" with the aim of delivering "a more skilled and mobile workforce through cross border training and information sharing," focusing on optimising "collaboration among cancer specialists" and improving "patients' quality of life and wellbeing, including mental, psychosocial and nutritional support, along with patient empowerment."

Cancer occurs at all ages and may affect any organ. The management is complex involving a wide range of modalities, disciplines and professions. Multidisciplinarity and multiprofessionalism i.e., close and deep collaboration between all disciplines and professions involved in cancer care, are therefore important in providing better outcomes for patients [3]. Training programmes for the disciplines involved in the care of cancer patients are supervised, arranged and controlled by separate institutions; as a result, there may be little interaction between specialists prior to accreditation. There is usually even less overlap between the training of oncology nurses and medical specialists.

A questionnaire study of National Societies of Medical and Surgical Oncology across Europe demonstrated a wide variation in training and practice regarding multidisciplinary care of cancer patients [4]. The European Commission Expert Group on Cancer Control established a European Union Implementation Group to develop inter-specialty competencies for surgical, medical and radiation oncology [5]. Each specialty was asked to identify the competencies in their area that they thought would be valuable for the other two specialties. These have influenced oncology Curricula of European specialty societies [6, 7] and the European Training Requirements of the UEMS [8]. The important insights provided by Nurse Oncologists and Radiologists were not included, however in the development of these inter-specialty competencies.

A survey of the presidents of national societies on implementation of the 4th edition of the ESTRO Core curriculum has shown high levels of agreement with the content and values espoused in the curriculum but identified barriers to implementation [9]. These included insufficient teaching faculty, lack of coordination and the need for influential leadership.

A recent survey, including cancer nursing data from 38 of the 53 WHO European countries, found that 17 (45%) countries do not provide university level specialist cancer nursing education that is nationally recognised [10]. In addition, only 13 of the 38 countries (34%) offer postgraduate courses and only 10 (29 %) have professors in cancer nursing. This highlights that a large proportion of cancer nurses have limited education and training which may impact the quality of patient care [10].

The development of, not only a curriculum that identifies valuable inter-specialty competencies across Surgical, Medical, Radiation, Nursing and Radiology Oncology, but a training programme that promotes the achievement of these competencies, is therefore important in improving the care of people affected by cancer across Europe.

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As a response to the European Commission's call for proposals for action grants for an inter-specialty cancer training programme under the EU4Health Programme [11], the European Cancer Organisation (ECO) developed the INTERACT-EUROPE Project (Wide-Ranging Cooperation and Cutting Edge Innovation As A Response To Cancer Training Needs) with the support of the European School of Oncology (ESO). INTERACT-EUROPE brought together 33 partners from 17 countries aiming to develop a European inter-specialty cancer training programme involving all main oncology disciplines and professions, cancer centres and patient groups, based on relevant needs assessments. The project fosters a patient-centric approach to quality cancer care through the promotion of multi-disciplinary and multi-professional team working. The overarching objective of the proposal is to transform the culture of multidisciplinary within the cancer workforce across Europe by underpinning a greater inter-specialty understanding. The purpose of this is to improve patient outcomes and the quality of their care. It will foster and hone a patient-centred culture across Europe, creating a new "European Cancer Patient Journey" that is inclusive and effective. It will encourage cross-border mobility and efforts to cooperate across disciplines and countries. An important part of this project is the development of an inter-specialty cancer training programme curriculum. This was developed by a wide range of stakeholders including representatives of the European specialist and nursing societies, representatives of the ECO Patient Advisory committees and representatives of trainee committees of the European Specialty Societies A definition of Inter-specialty training (IST) in oncology was developed: "Inter-specialty training occurs when two or more specialties within professions collaborate by learning and interacting with each other during training to provide high-quality cancer care. For this curriculum specialties may be in the same or different professions.

2. Methodology

2.1 Learning Needs Analysis

The learning needs analysis included:

- a scoping review of interprofessional education in oncology
- a survey exploring the value of possible enabling competencies (Appendix 1)
- a short survey looking at the perceived value of an inter-specialty curriculum in oncology (Appendix 1)
- a qualitative study investigating respondents' knowledge, experience and valuing of interprofessional education (Appendix 2)

In developing the curriculum, we were attempting to answer the question: what is it valuable for trainees to learn in order to work more effectively with different specialties and professions to deliver better care and to provide psychosocial and nutritional support for cancer patients? The curriculum thus does not attempt to cover all the oncology curricula in all of the specialties, rather it focuses on

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this question. Thus, for example, there is not a separate basic science section, as trainees are expected to cover this in their specialty training.
The aims of the scoping review of the literature were:

- To understand the extent and type of evidence about interprofessional education in oncology
- To identify how interprofessional education has been defined and the methodology underlying its implementation
- To identify the teaching and learning methods, including assessment, that have been used?

The scoping review showed that most of the studies/reviews are from North America (US 15/28, Canada 8/28). Oncology specialties and professions represented in the studies were medical oncologist, surgical oncologist, radiation oncologist, pediatric oncology, a specialist in palliative medicine/care, specialist in psycho-oncology (multiple professions) including psychologist), medical physics trainers, dosimetry trainers, radiographers/technicians, nurses, nurse practitioners, pharmacists, dietician, chaplain, respiratory therapist, social workers, primary care physicians and health care administrators. There was a lack of definitions of the main concepts around interprofessional collaboration in the identified studies.

The focus of the previous interprofessional education/training in studies and reviews was on communication, teamwork, leadership, workforce-related topics such as well-being at work, psychosocial support, symptom management and specific competencies needed in the care of different age groups.

The assessment methods mostly used in the evaluation of the impact of education interventions were knowledge tests, program satisfaction/ feedback surveys, behaviour change, confidence, comfort, intention to change practice, self-assessment of preparedness, observation and patient incidence reports.

The competencies were developed from:

- A review of relevant published curricula including:
    - Interdisciplinary training for cancer specialists [5]
    - ESSO core curriculum committee update on surgical oncology [6]
    - ESTRO core curriculum for radiation oncology/radiotherapy 4th edition [7}
    - Clinical oncology module for the ESTRO core curriculum [12]
    - European training curriculum for radiology [13]
    - EONS Cancer Nursing Education Framework (2018) [14]
    - European training requirements for the specialty of medical oncology [15]
    - Leader role curriculum for radiation oncology [16]
    - European Pain Federation core curriculum for the diploma in pain medicine [17]

Relevant competencies (N=222) were extracted from these. An expert panel, with representatives of all specialties, nursing, and a patient advocate, edited these to develop a questionnaire of 127 possible

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competencies. Respondents were requested to score each competence on a 7-point Likert scale as to their value in achieving the aims of the curriculum. Other elements of the questionnaire included:

- Determination of the value placed on an inter-specialty curriculum by including 3 additional questions regarding the perceived value of an inter-specialty curriculum scored on a 7-point Likert Scale
- A qualitative survey including 8 open questions. The aims of this were:
    - To gather the participants' experiences of inter-specialty training
    - To identify the challenges and barriers in the delivery of the training
    - To explore whether participants considered inter-specialty training necessary and their reasons for this

The questionnaire was designed and sent on SurveyMonkey to European Specialty Societies, who forwarded it to members of their Education Boards, Curriculum Committees and Trainee Committees, and to the ECO Patient Advisory Group.

These results were discussed at two meetings of stakeholders and discussion was continued via email. The first concentrated on developing the final competencies for the curriculum. The second concentrated mainly on the other elements of the curriculum but did recommend some further changes to the competencies. Of the 20 competencies scoring lowest in the survey, 7 were revised and 3 were omitted. Of the other 107 competencies, 4 were revised. Three further competencies were added following the discussion with all the stakeholders. These were in the areas of pain control, collaboration with patient organisations and factors influencing the adherence of patients with therapies and monitoring. The latter two competencies were proposed by patient advocates.

The competencies were divided into the seven roles of a physician identified in the CanMEDS 2015 physician competency framework [18]. In the view of the multiprofessional nature of the curriculum, however, ''Medical Expert'' was replaced by ''Clinical Expert''. An entrustable professional activity is a unit of professional practice that can be fully entrusted to a trainee, once he or she has demonstrated the necessary competence to execute this activity unsupervised [19]. The curriculum identifies 13 EPAs that are valuable for all health professionals caring for patients with cancer. 24 competencies, which function as sub-headings, were developed.

The short survey looking at the perceived value of an inter-specialty curriculum in oncology demonstrated that the community of cancer professionals and patient advocates thought that the concept was very valuable.

2.2 Early Assessment of Cancer Centre Needs

Early meetings of the INTERACT-EUROPE project took place between June and September 2022. This included a two-day-kick-off meeting, consensus meetings of the work package charged with the development of the curriculum and a series of monthly Steering Committees. The regular update meetings on the activities of the Curriculum Work Package in conducting a training needs assessment

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and associated survey and literature review actions, enabled a reasonable view to be formed by October 2022 of the key areas to investigate in the context of an early assessment of cancer centre needs.

An online meeting of Consultative Partners of the work package assessing cancer centre needs outlined the background and the key questions for the consultation. Thereafter, a formal consultation document was circulated to the consultative partners for a reply. This consultation document was also shared publicly online and additional cancer centre inputs were invited.

The 5 key question areas identified within the consultation were:

- Eligibility criteria for cancer centres to participate in the inter-specialty cancer training programme.
- Rotation requirements associated with the inter-specialty cancer training programme.
- Understanding the needs of tutors and mentors.
- Benefits that can be understood for cancer centres from participation.
- Learning from other programmes.

16 responses were received to the formal consultation among which were INTERACT-EUROPE Steering Committee members, the Consultative Partners of the Work Package assessing cancer centre needs, as well as other organisations responding to the open consultation available on the ECO website.

3. Aim

To enable trainees to learn to work more effectively with different specialties and professions to deliver better care and to provide psychosocial and nutritional support for cancer patients.

4. Infrastructure and Organisational Aspects

4.1 European Cancer Organisation and European School of Oncology

INTERACT-EUROPE brings together 33 partners from 17 countries aiming to develop a European inter-specialty cancer training programme involving all main oncology disciplines and professions, cancer centres and patient groups, based on relevant needs assessments. This consortium is led by ECO. The role of ESO is the development and delivery of the online and face-to-face programme for the pioneer cohort of trainees. The project is led by a multi-professional steering group and reviewed by an independent Advisory Board.

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4.2 Eligibility of Trainees

As a first phase of the INTERACT-EUROPE project, a pioneer cohort of trainees and cancer centres will be recruited to the inter-specialty cancer training programme. In view of the closure of the INTERACT-EUROPE project in November 2023, time and funding will not enable them to fully complete the inter-specialty cancer training programme. This is envisaged to take place in the successor project to INTERACT-EUROPE. With this in mind, the pioneer cohort is intended to be modest in size (circa 40) and be primarily drawn from cancer centres already within the INTERACT-EUROPE consortium (i.e., having already gained familiarity with the aims, objectives and general structure of the programme). The eligibility criteria for the pioneer cohort of trainees are that they must:

- Possess a recognised professional qualification in medicine or nursing
- Have practised in the professional role of oncology surgery, medical oncology, radiation oncology or cancer nursing for at least two years
- Possess fluency in English
- Be able to provide a copy of their CV; a signed letter of recommendation from their employing institution or training organisation, indicating:
    - The institution's support for the candidate's involvement in the training programme, including the provision of time for the candidate to participate in the pioneer programme's online and live training events.
    - The institution's assurance that the candidate meets the above-described criteria.
    - The named mentor within the centre who will support the applicant in the completion of the inter-specialty cancer training programme

To assist in the conduct of an assessment of automatic translation technology's use in the inter-speciality cancer training programme, applicants for participation in the pioneer cohort who possess fluency in one or more of the following languages are especially encouraged: French, German, Slovenian and Spanish.

4.3 Recruitment Strategy for the Pioneer Cohort

4.3.1 Invitation Process

An invitation letter was sent to a list of identified prospective centres in early February 2023. The selection of cancer centres was made with reference to:

a) A preference for centres already within the INTERACT-EUROPE consortium (i.e., having already gained familiarity with the aims, objectives and general structure of the programme)
b) An awareness of the need to seek geographical representativeness

The list was reviewed and approved by the INTERACT-EUROPE Steering Committee. Trainees and cancer centres were invited to register for the pioneer cohort stage of the inter-specialty cancer training programme. Application was made through the provision of the documentation described

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within the eligibility criteria section above via the website of the European School of Oncology, through a bespoke application webpage.

4.3.2 Communication Partners

Communication partners for the recruitment process included:

- All organisations represented within the INTERACT-EUROPE Steering Committee
- The INTERACT-EUROPE Consortium
- Signed up members of the INTERACT-EUROPE Stakeholder Consultative Mechanism
- Healthcare professional member societies of the European Cancer Organisation
- The Workforce Network of the European Cancer Organisation
- The Organisation of European Cancer Institutes (OECI)

4.3.3 Selection of Trainees and Cancer Centres

The monthly meetings of the INTERACT-EUROPE Steering Committee were provided with an update on the applications received and approvals provided upon advice from the leaders of the Work Package responsible for the preparation of trainees and cancer centres that is led by the European Cancer Organisation and supported by the European School of Oncology. The final list of cancer centres and trainees accepted by the programme was published in April 2023.

4.4 Recruitment Strategy for Future Cohorts

It is recognised that in future funded stages of the inter-specialty cancer training programme, the eligibility criteria and selection procedures described above may be modified depending on the experience gained from the pioneer cohort and levels of interest in participation achieved. A strong awareness will remain, however, of the need to ensure an open and accessible programme, actively contributing to the reduction of inequalities in cancer care in Europe.

5. Training Programme

5.1 Eligibility of Training Institutions

At the pioneer stage of the inter-specialty training programme (INTERACT-EUROPE, ending in November 2023) the obligations upon the supporting cancer centre will be largely limited to providing trainees from their centre with the time required to participate in the pioneer cohort training events (online event & live training event). Furthermore, the cancer centre should be available to provide feedback and liaison with the INTERACT-EUROPE project coordinators on an ongoing basis.

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There is an additional expectation that the cancer centre will continue to support the trainee's continued engagement in the programme under future funded projects to implement the inter-specialty cancer training programme.

Applications for involvement are welcomed from cancer centres, hospitals of general medical focus, university hospitals and organisations responsible for arranging and supervising training programmes. The applying centre must:

- Demonstrate commitment to developing multidisciplinary cancer care within the centre, and their associated network if relevant, including with the professions focussed on in the inter-specialty cancer training programme
- Demonstrate commitment to the provision of appropriate mentor/trainee participation, including assessing and recording the competencies acquired by the trainee
- Demonstrate commitment to provide trainees with the time and support required to complete the programme

The above demonstration can be provided within the supporting letters requested to accompany a prospective trainee's application following the admission of a trainee to the inter-specialty cancer training programme, the centre is expected to be readily contactable by the programme coordinators on such matters as an assurance of learning and requests/requirements related to the trainee's mentorship.

Centres participating in inter-specialty cancer are strongly encouraged to achieve a balanced representation of trainees from their centre, ideally composed of at least one cancer surgeon, one clinical oncologist and one cancer nurse. This will best support the ethos of conducting shared learning across the multidisciplinary cancer care team.

5.2 Faculty in Training Institutions

5.2.1 Recommendations for Pioneer Cohort Trainee Mentors

Each trainee participating in the inter-specialty cancer training programme should be supported in their learning journey by a mentor within their cancer centre.
A mentor for a trainee in the pioneer cohort is recommended to be:

- In a position of professional seniority to, and in regular working contact with, the trainee
- In possession of at least 5 years experience in the area of professional specialty of their mentee
- Able to commit time and energy to fulfilling a mentoring role for their mentee. The mentor should have previous experience in teaching and mentoring and be qualified in the trainee's professional speciality. The INTERACT-EUROPE program will provide support to mentors through the "train-the-trainer" approach.

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5.2.2 Recommendations for ongoing project

The final decisions will be made by the team leading the ongoing funded project. The recommendations from the INTERACT-EUROPE consortium are:

- A team should be identified in each institution to lead this project. This should include at least one nurse, one surgeon, and one clinical oncologist (or a radiation oncologist and medical oncologist) and a radiologist
- The qualifications of the members of this team should be the same as those of the mentors of the pioneer programme

They will be responsible for organising the delivery of the programme in their institution. This will include:

- Recruitment of trainees into the programme
- Recruitment of mentors
- Recruitment of tutors
- Organising the face-to-face component of the programme if delivered to their institution

The recommended model is that the trainee should have one tutor in a different specialty/profession to their own, who they meet on a regular basis to review progress.

The multidisciplinary education team should attend a face-to-face induction train -the trainers session prior to starting the training and an annual online refresher course that runs across all institutions. This will include information on the competencies, the design of the programme and their role in it. It will also provide guidance on the use of the learning management system and the recording of the acquisition of competencies. In addition, the annual refresher will include presentations from institutional teams on areas of good practice. Following the first year the meeting will be online. Teams in each country will be asked to decide on a national representative. Their role will include:

- To attend a face-to-face meeting with other national representatives to develop and discuss changes to the programme.
- To organise an annual national programme, preferably face-to-face, to share insights from the central meeting with tutors and mentors and to discuss their experiences and ideas for improvement.

5.3 Components of the educational programme

The programme has both online and face-to-face components. The competencies in the curriculum were analysed according to Bloom's taxonomy of educational objectives [20] to influence the nature of the design of the online learning technologies.

The pioneer cohort will take part in an online event with pre-recorded online sessions translated into

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four European languages (French, German, Slovenian and Spanish) which will be made available on e-ESO, the online platform of the European School of Oncology. The translation will use translation models developed at the Universitat Politècnica de València. The online event will take place in July 2023. In this way, the online introductory event for the pioneer cohort will serve as an early preview towards the INTERACT-EUROPE live educational event which is scheduled to take place in September 2023. Selected trainees and cancer centres will be offered free participation in both events. The online event will provide a trial of the feasibility of automatic translation for oncology education purposes.

The training programme for the pioneer cohort will address competencies in the communicator, collaborator and leader roles (Appendix 3).

To assist the development of the future programme covering all aspects of the curriculum, the enabling competencies have been divided into module headings to support programme design. An estimation of the number of sessions required to cover each module is indicated (Appendix 4). These elements of the training curriculum will be translated into technology-enhanced learning scenarios.

To maintain an accessible training programme, which does not entail high costs for trainees and cancer centres, initial considerations by the Steering Committee of the INTERACT-EUROPE programme envisage future rotations potentially taking place in 3 different ways:

- National level (within the centre) – ISCTP trainees will conduct elements of learning via rotation periods across departments of the same centres (e.g., to the surgery unit, the radiation oncology unit etc).
- National level (across centres) – Possibility/flexibility could be created for ISCTP trainees to exchange across centres at a national level.
- Cross-border level (across centres in Europe) – Trainees will exchange across centres at the European level (depending on linguistic ability).

It is envisaged that the majority of rotations will take place within a centre but when this is not possible or there is a desire and funding by the trainee's centre to visit another centre this will be possible.

5.4 Assessment

The aim of assessment in this programme is formative. The pilot study will include: MCQs questions at the end of each online session. An assessment plan will need to be developed for the future full programme. This may comprise:

- Workplace-based assessments during the face-to-face component. Examples of these include:
    - Case based discussions (CBDs)

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    - Mini-clinical evaluation exercise (mini-CEX)
    - 360-degree appraisal
- A reflection on the working of the MDTs they have observed will be discussed with their tutor
- Audits in their institution investigating the percentage of patients discussed at MDTs and an anonymised patient satisfaction survey investigating communication and psychosocial support (the forms for data collection will be provided by INTERACT2)
- Previously validated tools to evaluate readiness for interprofessional practice and teamwork

5.5 Certification of learning - pioneer cohort

All pioneer cohort trainees who complete *both* the online learning event *and* the live training event will be provided with formal certification of completion, as well as an invitation to continue their inter-specialty cancer training learning as part of future funded activities of the EU inter-specialty cancer training programme.

The online learning event and live training event will be submitted for accreditation with the Accreditation Council of Oncology in Europe (ACOE) to both assure the quality and independence of the education and training provided, as well as to provide the trainee with Continuing Medical Education (CME) credits. It is expected that future funded activities of the programme will last be submitted for accreditation by ACOE. The certificate for nurses from both the pioneer programme and the future funded complete programme will include a recommendation of ECTS (European Credit Transfer and Accumulation System) equivalent for the learning activities and completion of the training programme.

6. Evaluation of the Programme

The evaluation of the INTERACT-EUROPE programme was designed and will be undertaken by a separate work package group. To evaluate the success of the INTERACT project, key indicators of progress, performance, and impact with each work package were identified. The evaluation of the pilot programme will focus on the first two levels of the Kirkpatrick evaluation model, namely reaction and learning [21]. To measure the program's effectiveness, pre-and post-tests will be conducted and analysed. An evaluation survey for both participants and faculty involved in the program will be created. The survey will be designed to gather feedback on various aspects of the training program, including its content, delivery, and effectiveness. For participants, the evaluation survey will be distributed after the completion of the training program. It will ask questions about their experience with the program, including their level of satisfaction, what they found most helpful, and areas that could be improved. Participants will also be asked to rate their confidence in their skills before and after the training program. The evaluation survey for faculty will be distributed after the completion of the training program. It will ask faculty members to provide feedback on the program's content, delivery, and effectiveness. They will also be asked to provide suggestions for improvement and identify any areas that could be strengthened.

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The results of the evaluation survey will be used to identify the strengths and weaknesses of the program and make improvements for future programmes. The feedback gathered from the survey will help identification of areas where additional training and resources may be needed for both participants and faculty.

The training location will also be evaluated to identify the impact it had on the effectiveness of the program and to identify the criteria for future training locations. A survey will be conducted looking at factors such as the quality of the facilities, and the overall environment including its accessibility, comfort, and suitability for the program's needs. Participants and faculty members will also be asked to provide suggestions for improvements to the location or recommendations for future locations. The results of the survey will be analysed to identify the strengths and weaknesses of the training location and to identify the criteria for future locations.

Further information on evaluation including evaluation of curriculum development is available in Appendix 5.

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Entrustable Professional Activities, Competencies and Enabling Competencies

Clinical Expert

1) Work constructively with other professions and specialties to develop a management plan for patients with a cancer diagnosis
2) Work constructively with other professions and specialties to implement a treatment strategy
3) Work constructively with other professions and specialties to develop and implement a management plan for survivorship

Contribute effectively to tumour board discussions	Explain the value of pathological factors and biomarkers in determining treatment decisions
	Describe indications, contraindications and radiation burden of imaging modalities and the optimal imaging strategy for staging and response assessment based on the imaging anatomy and pathways of spread for the common cancer types
	Describe the role of imaging in treatment planning e.g., surgery, radiotherapy
	Describe the wide range of interventional techniques used in oncological radiology and their potential risks and complications
	Apply national or international guidelines and research evidence to the management of an individual patients
	Analyse clinical reasoning processes demonstrating an understanding of cognitive bias, human factors and diagnostic error
	Discuss the implications of hereditary gene mutations in guiding the care of patients and their families
	Discuss paraneoplastic syndromes and their management
	Describe the different types of radiotherapy, their mechanisms of action, dosing and administration
	Describe the role of radiotherapy and therapeutic isotopes in the treatment of cancer either offering a significant improvement in local recurrence thereby impacting disease-free survival and overall survival or improving symptoms
	Discuss the scheduling of systemic anti-cancer therapy, radiotherapy and surgery in patients whose cancers are treated with combined modality therapy

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	Discuss the role of surgery either as a primary modality in cure or palliation or in enabling other treatment modalities (e.g., placement of clips, spacers or omentum) to enable optimal radiation treatment, outline common operations for cancer and the role of adequate margins following surgery
	Outline the interpretation of pathological response found at surgery following neoadjuvant therapies and how this may impact the surgical outcome or the adjuvant treatment strategy
	Outline the mechanism of action of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies
	Discuss the role of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies in the neoadjuvant, adjuvant, curative and palliative settings
	Explain the criteria used to assess response to systemic therapy e.g., the RECIST criteria
	Discuss the management of a patient when there is therapeutic uncertainty, complexity and ambiguity
	Identify when a patient should be offered the opportunity to enter a research trial
	Justify a decision that radiotherapy, systemic therapy or surgery are not indicated due to cancer stage, performance status or comorbidities
	Discuss the role of palliative care in the management of the patient
Undertake the initial outpatient consultation	Structure the consultation effectively by taking a focused history, undertaking a careful clinical examination and ordering relevant investigations to accurately diagnose conditions that may require curative, adjuvant, neoadjuvant or palliative radiotherapy, chemotherapy or surgical intervention including emergency treatment
	Diagnose oncological emergencies, manage them effectively or recognise when referral to another specialty or the Intensive Care Unit is indicated
	Provide people affected by cancer with evidence-based written and verbal information about the development of cancer with a view to addressing their informational and supportive care needs

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	Support people affected by cancer through the diagnosis and staging process. Undertake initial and comprehensive assessments (using validated tools where appropriate) to identify people affected by cancers' informational, physical, emotional and social care needs (where relevant) during the diagnostic and staging process
	Evaluate and discuss with the patient the possible management strategies considering the factors related to cancer, the patient's goals, their comorbidities and frailty and the adverse effects of possible options
	Modify the approach to address pregnancy
	Explain the implications of hereditary genetic abnormalities and refer appropriately for genetic counselling
	Discuss the influence of pre-existent psychological/psychiatric illness and how to support and treat the patient
	Encourage people affected by cancer to utilise appropriate local, national and/or international cancer organisations for further information, psychosocial, spiritual and/or financial support
Support the patient prior to and during treatment	Understand the role of optimisation of nutrition before surgery, radiotherapy, chemotherapy and chemoradiotherapy and be aware of the importance of nutritional support if malnutrition is present in patients who may require these therapies
	Discuss assessment and management of pain throughout the cancer journey including in vulnerable populations such as the frail elderly, adults with learning disabilities and those at risk of substance abuse disorders
	Discuss the possible interactions between systemic anti-cancer therapies, radiotherapy and surgery in patients whose cancers are treated with combined modality therapy
	Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the acute side effects of systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies and tyrosine kinase inhibitors
	Discuss side effects of commonly used drugs including complementary therapies and their interactions with each other and with radiotherapy and systemic anti-cancer therapies
	Discuss interactions between food and systemic anti-cancer therapies
	Describe prophylactic strategies that can reduce and minimise the frequency and/or severity of complications/toxicities with systemic anti-cancer therapies

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	Outline appropriate treatment for patients experiencing toxicities from systemic anti-cancer therapies in the acute setting
	Describe the adverse events reporting system
	Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose acute toxicities from radiotherapy or chemoradiotherapy and outline an appropriate treatment
Manage survivorship	Develop a long-term strategy for follow-up of the patient following treatment for cancer including a plan for patient-specific rehabilitation and surveillance imaging
	Provide information to people affected by cancer to promote and support self-care including the role of exercise, diet, smoking cessation or alcohol as appropriate
	Know who to refer to for issues such as employment, rights/benefits; f financial matters such as insurance and mortgages, and challenges such as the logistics of international travel and holidays
	Recognise the importance of smooth transitions such as between acute health care settings and home care, from active treatment to survival programmes, or paediatric to adult cancer services
	Demonstrate knowledge and understanding of how cancer and therapies for this can affect teenagers and young adults including short- and long-term fertility, emotional implications, education and employment
	Educate people affected by cancer to monitor for and report signs of acute, chronic, and late toxicities of cancer treatments
	Demonstrate awareness of the range of services and professionals including statutory, voluntary and charitable organisations, available to support people affected by cancer and refer appropriately to meet the individual need of people affected by cancer
	Consider the needs of younger and older patients who may not have the capacity to make decisions for themselves
	Take a focused history to diagnose the common psychological sequelae following a cancer diagnosis and treatment for cancer, manage them or refer appropriately to other specialties
	Discuss Patient Related Outcome Measures (PROMS)
	Take a focused history, undertake a careful clinical examination, and order relevant investigations to accurately diagnose the late side effects of radiotherapy, systemic anti-cancer therapies, radiochemotherapy and surgery for cancer. Discuss options for

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	managing these and implement them or refer them appropriately to other specialties
	Discuss the factors that affect patients' adherence to therapies and compliance with monitoring"
Manage patients with relapsed disease	Describe the patterns of recurrence in common cancers
	Take a careful history, perform a careful clinical examination and request relevant investigations to diagnose relapsed disease
	Take a focused history, undertake a careful clinical examination and order relevant investigations to evaluate the possible management strategies taking into account the factors related to the cancer including whether there is a possibility of curative treatment, the patient's goals, their comorbidities and frailty and the adverse effects of the possible options
	Recognise when radiotherapy, systemic therapy and surgery are not indicated
	Discuss the role of palliative care in the management of the patient. Implement treatment to control symptoms or refer appropriately to other specialties
	Recognise the final phase of life
	Inform, support and educate people affected by cancer about palliative and end-of-life care where appropriate and elicit their preferences with respect to goals of care and the transition between care aimed at cure and end-of-life care including appropriate discussions regarding Do not resuscitate orders or DNR
	Demonstrate awareness of the legal importance of living wills and advance directives and how these may be arranged by patients
	Undertake a holistic assessment of the needs, concerns and symptoms commonly experienced by people affected by cancer receiving palliative and/or end-of-life care, recognising and supporting vulnerable patients e.g., the elderly, cognitively impaired and responding to different cultural and religious perspectives
	Support and counsel bereaved families and carers. Discuss the impact of loss, grief and bereavement including the long-term effects

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Communicator

4) Communicate appropriately and effectively with patients, their relatives and carers

Build a therapeutic relationship with patients and their relatives	Discuss the theory underpinning communication skills
	Effectively utilise verbal, written and digital modes of communication to provide information, education and support in an emphatic, clear, understandable and caring manner while maintaining confidentiality
	Assess for and address any patient-related, health care professional-related or environmental barriers to effective communication
Elicit and synthesise accurate and relevant information from patients	Select and adopt an appropriate communications approach, from a range of core communication and consultation skills, to effectively assess the informational, educational and supportive care needs of people affected by cancer throughout the cancer trajectory, reacting to body language and verbal cues with relevant observations and questions and demonstrating active listening
	Communicate clearly with patients respecting their social, political, cultural and religious standpoint and concerns regarding sexuality and gender
Develop management plans with patients and their families that reflect their healthcare needs and goals	Give clear objective information about standard treatments, clinical trials and experimental treatments including the process, side effects and risks
	Discuss the results of the investigations clearly and empathetically with the patient and their carers
	As certain if the patient and their families have understood the information and take effective measures if this is not the case and assist them to access reliable sources of information including trusted websites and patient organisations
	Explain to the patient that their care is being discussed by an MDT and the nature of the decision-making process
	Discuss the beliefs of people affected by cancer regarding alternative and complementary therapies
	Take informed consent from patients and know the legal position if the patient lacks capacity

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Manage emotionally charged conversations	Elicit the patient's wishes about the information they wish to receive at various stages of their journey and break bad news in an appropriate way including communicating proactively, sensitively, truthfully and without ambiguity about, for example, life with cancer, sexual issues and the dying process.
	Disclose errors and adverse safety events appropriately
Document accurately and share appropriate information about the consultation	The detail in a timely and accurate manner details of the consultation and management plan, either in a written or digital form, complying with national legislation and communicating this information clearly to the healthcare team
	Maintain patient confidentiality

Collaborator

5) Work effectively with other health care professionals to provide safe care and to optimise the quality of treatment

Work effectively across disciplinary and professional boundaries with other members of the healthcare professions	Contribute to effective discussions in multidisciplinary teams (MDT). Understand and value the roles of all health care professionals and encourage team working to optimise treatment. Willing to compromise to reach a consensus. Respect the views of others and the conclusions of the MDT
	Negotiate overlapping responsibilities for shared care of patients
Transfer care safely to another healthcare professional	Determine when care should be transferred to another physician or health care professional and facilitate continuity of care by timely, effective communication. This may include supporting the patient's request for further opinions.
Support colleagues	Identify when colleagues are under pressure and offer help
Work in partnership with patient organisations	Discuss the role of patient organisations locally in supporting patients and helping them to navigate the system and nationally as partners in research and health care systems.

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Leader

6) Discuss the context in which they work and apply the principles of change management including quality improvement methodology in this context
7) Use resources appropriately
8) Demonstrate the ability to work in, build and lead teams

Contribute to the improvement of cancer care delivery in teams and the wider health care system	Identify where quality improvements may be initiated in the work environment and demonstrate knowledge of the steps and tools that may be applied to quality improvement processes including the use of data to drive change
	Describe key quality indicators for monitoring service performance in oncology
	Assess risk and implement appropriate risk management strategies to promote patient well-being and safety in practice and participate in the development and implementation of patient safety initiatives
	Discuss current major challenges in health care and provide leadership in the contribution to and implementation and evaluation of policies and standards relevant to cancer care
Engage in the stewardship of cancer care resources	Discuss factors involved with resource stewardship including financial and other costs of cancer patient care. This should include the concepts of efficiency and cost-effectiveness
	Discuss prioritisation of patients on waiting lists
	Appreciate the conflict sometimes inherent between access to gold standard equitable healthcare opportunities advocate and available resources
Demonstrate elements of leadership in practice	Discuss how your leadership style may impact team working
	Prioritise tasks including patient assessment and treatment
	Engage in developing self-awareness: strengths, weaknesses, values, behaviour drivers and impact on others
	Run effective and efficient meetings
	Take responsibility for effective communication around the vision for, and purpose of, change with multidisciplinary team members, patients and other stakeholders
	Demonstrate the ability to negotiate and problem-solve with other team members
	Demonstrate awareness of the roles and organisational structures of relevant professional societies

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Health Advocate

9) Advocate for cancer patient

Advise the patient on behaviour and lifestyle	Understand the principles of screening, including the main advantages and drawbacks of a screening programme, and the organisation of screening using breast, lung and colorectal cancer as core examples and outline national and international guidelines in this field
	Provide appropriate and individualised evidence-based verbal and written information regarding the benefits and risks of screening for cancer to people affected by cancer
	Undertake a comprehensive history to identify the individual, familial, genetic, sociocultural, economic and environmental factors which may increase the risk of developing cancer and provide information and psychological and emotional support on strategies to reduce risk
	Advise the patient on relevant changes in behaviour and lifestyle prior to treatment to increase the chance of tumour response and to cope with acute toxicities e.g., smoking cessation and diet
	Advise the patient on relevant changes in behaviour and lifestyle to enable them to cope optimally with late toxicities due to previous treatment and the side effects of the present medication
Support patients to navigate the healthcare system	Enable patients to access the available resources, to obtain treatment in a timely, efficient manner
	Advocate for and promote shared decision-making between people affected by cancer and their healthcare team regarding all stages of treatment, care and management

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Scholar

10) Plan personal and professional learning experiences and use them to enhance patient care
11) Contribute to the knowledge base that underpins patient care

Develop and follow a continuing personal and professional development plan	Assess gaps in knowledge and identify resources to meet these
	Retrieve high-quality research articles and evidence-based guidelines relevant to cancer care by formulating effective research questions and utilising effective search strategies for sourcing relevant electronic and print material and critically reviewing medical information
	Develop or revise local evidence-based guidelines integrating evidence into personal practice
Participate in research and scholarly activities	Discuss trial design
	Provide safe and effective care to patients on clinical trials following study protocols with a view to ensure optimal outcomes and experiences for patients
	Discuss challenges to recruit teenagers and young adults to research trials, ensuring that patient choice is considered and appropriate advice in complex and challenging situations is delivered
	Describe and contribute to health service research and clinical audit in their clinical area
	Discuss the organisations that design and run trials nationally and internationally and how to access information regarding their trials
	Show awareness of rules for writing scientific papers and how to submit them for publication

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Professional

12) Demonstrate that the care of their patients is their first concern
13) Manage their work life balance to maintain their own wellbeing

Adherence to high ethical standards	Discuss ethical principles and be able to apply them when caring for patients
	Respect diversity. Do not disadvantage a patient on grounds of their gender, race, culture, philosophical or religious beliefs. Show understanding for patients' ethical concerns and divergent viewpoints
	Demonstrate respect for patients and caregivers
	Maintain appropriate boundaries with patients
	Maintain patient confidentiality and be able to inform patients on the legal situation regarding information held on them in medical notes
	Apply codes of research ethics including the Good Clinical Practice Guidelines
	Provide the patient with all relevant information when taking consent
	Manage conflicts of interest appropriately
	Exhibit appropriate behavior in the use of communication on the internet
Aspire to excellence	Work according to professional codes and laws
	Keep knowledge and skills up to date, recognise own competency limits and refer appropriately
	Take responsibility for actions and respond appropriately to negative feedback
	Work collaboratively with other health care professionals to optimise patient care and to encourage shared decision-making between health professional and patient
	Recognise and respond to unethical behavior in other health care professionals
Maintain own wellbeing	Exhibit self-awareness and manage personal and professional demands to reduce the risk of burn out
	Seek emotional and developmental support when required

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Appendix 1

Survey - Inter-specialty Cancer Training Programme Curriculum

Desirability of Inter-specialty Training

	Median	Interquartile Range	Mean	SD
It is valuable to recommend that a period of interdisciplinary training, in each of the other two disciplines, be mandated for all trainees in the specialties of 1) medical oncology 2) surgical oncology/cancer surgery and 3) radiation oncology/clinical oncology	7.00	1.00	6.33	1.05
It is valuable for cancer nurses and medical trainees (in clinical oncology, medical oncology, radiation oncology, radiology, surgical oncology/cancer surgery) to have the opportunity to observe each other in practice consulting with patients	7.00	1.00	6.38	0.90
It is valuable to recommend that cancer nurses have access to interdisciplinary training	7.00	1.00	6.42	0.92

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Median and Inter-quartile ranges for draft competencies

<80% respondents agreeing or strongly agreeing that competency is valuable.

Interquartile range > 1.0

Medical Expert

		Median	Interquartile range
Contribute effectively to tumour board discussions	Explain the pathological factors that determine treatment decisions including prognostic and predictive biomarkers including cytogenetic and molecular biomarkers and the most common targetable mutations and associated targetable therapies	6.50	1.0
	Understand the terminology for high-throughput Omic technologies, including genomics, proteomics, transcriptomics, epigenomics and metabolics	6.00	2.00
	Describe indications and contraindications and radiation burden of imaging modalities and the optimal imaging strategy for staging and response assessment based on the imaging anatomy and pathways of spread for the common cancer types	6.00	1.0
	Understand the role of imaging in treatment planning e.g., surgery, radiotherapy	7.0	1.0
	Be familiar with the wide range of interventional techniques used in oncological radiology and their potential risks and complications	6.0	1.0
	Understand the relative costs of the various imaging examinations in oncological imaging	6.00	2.00
	Apply national or international guidelines and research evidence to the management of an individual patients	7.0	1.0
	Analyse clinical reasoning processes an demonstrating understanding of cognitive bias, human factors and diagnostic error	6.0	1.0

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	Discuss the implications of hereditary gene mutations on the management of a patient	6.00	2.00
	Discuss paraneoplastic syndromes and their management	6.0	1.0
	Describe the different types of radiotherapy, their mechanisms of action, dosing and administration	6.0	1.0
	Describe the role of radiotherapy in the treatment of cancer either offering a significant improvement in local recurrence thereby impacting disease-free survival and overall survival or improving symptoms	7.0	1.0
	Discuss the scheduling of systemic anti-cancer therapy, radiotherapy and surgery in those cancers treated with combined modality therapy including the use of combined medical and surgical oncology treatments such as cytoreductive surgery and HIPEC and isolated limb perfusion	6.00	1.0
	Discuss the role of surgery either as a primary modality in cure or palliation or in enabling other treatment modalities (e.g., placement of clips, spacers or omentum) to enable optimal radiation treatment, outline common operations for cancer and the role of adequate margins following surgery	7.0	1.0
	Outline the interpretation of pathological response found at surgery following neoadjuvant therapies and how this may impact the surgical outcome or the adjuvant treatment strategy	6.5	1.0
	Outline the mechanism of action of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies	6.0	1.0
	Discuss the role of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies in the neoadjuvant, adjuvant, curative and palliative settings	7.0	1.0
	Explain the criteria used to assess response to systemic therapy e.g., the RECIST criteria	6.0	1.0

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	Discuss the management of a patient when there is therapeutic uncertainty, complexity and ambiguity	7.00	1.0
	Identify when a patient should be offered the opportunity to enter a research trial (ESTRO CC 2019)		
	Justify a decision that radiotherapy, systemic therapy or surgery are not indicated due to cancer stage, performance status or comorbidities	7.00	1.0
	Discuss the role of palliative care in the management of the patient	7.00	0.0
Undertake the initial outpatient consultation	Structure the consultation effectively by taking a focused history, undertaking a careful clinical examination and ordering relevant investigations to accurately diagnose conditions that may require curative, adjuvant, neoadjuvant or palliative radiotherapy, chemotherapy or surgical intervention including emergency treatment	7.00	1.0
	Diagnose oncological emergencies, manage them effectively or recognise when referral to another specialty or the Intensive Care Unit is indicated	7.0	1.0
	Provide people affected by cancer with evidence-based written and verbal information about the development of cancer with a view to addressing their informational and supportive care needs	7.00	1.00

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	Support people affected by cancer through the diagnosis and staging process. Undertake initial and comprehensive assessments (using validated tools where appropriate) to identify people affected by cancers' informational, physical, emotional and social care needs (where relevant) during the diagnostic and staging process	7.00	1.00
	Evaluate and discuss with the patient the possible management strategies taking into account the factors related to cancer, the patient's goals, their comorbidities and frailty and the adverse effects of possible options	7.00	1.00
	Modify approach to address pregnancy (ESTRO Clinical Oncology CC Module 2021)	7.00	1.00
	Explain the implications of hereditary genetic abnormalities and refer appropriately for genetic counselling (ESTRO CC 2019)	7.00	1.00
	Discuss the influence of pre-existent psychological/psychiatric illness and how to support and treat the patient (ESSO CC 2021)	6.00	1.00
	Encourage people affected by cancer to utilise appropriate local, national and/or international cancer organisations for further information and psychosocial, spiritual and/or financial support (EONS Framework 2018)	6.00	1.00
Support the patient prior to and during treatment	Understand the role of optimisation of nutrition before surgery, radiotherapy, chemotherapy and chemoradiotherapy and be aware of the importance of nutritional support if malnutrition is present in patients who may require these therapies	7.00	1.00
	Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the acute side effects of systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies and tyrosine kinase inhibitors	7.00	1.00
	Know and prevent adverse events and interactions between commonly used drugs	7.00	1.00
	Know interactions between food and systemic anti-cancer therapies	6.00	1.00

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	Describe prophylactic strategies that can reduce and minimise the frequency and/or severity of complications/toxicities with systemic anti-cancer therapies	7.00	1.00
	Outline appropriate treatment for patients experiencing toxicities from systemic anti-cancer therapies in the acute setting	6.00	1.00
	Be familiar with the adverse events reporting system	6.00	1.00
	Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose acute toxicities from radiotherapy or chemoradiotherapy and outline an appropriate treatment	7.00	1.00
Manage survivorship	Develop a long-term strategy for follow-up of the patient following treatment for cancer including a plan for patient-specific rehabilitation and surveillance imaging	7.00	1.00
	Provide information to people affected by cancer to promote and support self-care including the role of exercise, diet, smoking cessation or alcohol as appropriate	7.00	1.00
	Know who to refer to for legal issues such as employment, financial issues such as insurance and family issues such as international travel and holidays	6.00	2.00
	Recognise the importance of smooth transitions such as between acute health care settings and home care, from active treatment to survival programmes, or from paediatric to adult cancer services	6.00	1.00
	Demonstrate knowledge and understanding of how cancer and therapies for this can affect teenagers and young adults including short and long-term fertility, emotional implications, education and employment	7.00	1.00
	Educate people affected by cancer to monitor for and report signs of acute, chronic and late toxicities of cancer treatments	7.00	1.00

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	Demonstrate awareness of the range of services and professionals including statutory, voluntary and charitable organisations, available to support people affected by cancer and refer appropriately to meet the individual need of people affected by cancer	6.00	1.00
	Consider the needs of younger and older patients who may not have the capacity to make decisions for themselves	7.00	1.00
	Take a focused history to diagnose the common psychological sequelae following a cancer diagnosis and treatment for cancer, manage them or refer them appropriately to other specialties	6.00	1.00
	Discuss Patient Related Outcome Measures (PROMs)	7.00	1.00
	Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the late side effects of radiotherapy, systemic anti-cancer therapies, radiochemotherapy and surgery for cancer. Discuss options for managing these and implement them or refer appropriately to other specialities	6.50	1.00
Manage patients with relapsed disease	Describe the patterns of recurrence in common cancers	7.00	1.00
	Take a careful history, perform a careful clinical examination and request relevant investigations to diagnose relapsed disease	7.00	1.00
	Take a focused history, undertake a careful clinical examination and order relevant investigations to evaluate the possible management strategies taking into account the factors related to the cancer including whether there is a possibility of curative treatment, the patient's goals, their comorbidities and frailty and the adverse effects of the possible options	7.00	1.00

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	Discuss the role of radiofrequency ablation and cryotherapy in the management of metastases	6.00	2.00
	Recognise when radiotherapy, systemic therapy and surgery are not indicated	7.00	1.00
	Discuss the role of palliative care in the management of the patient. Implement treatment to control symptoms or refer appropriately to other specialties	7.00	1.00
	Recognise the final phase of life	7.00	1.00
	Inform, support and educate people affected by cancer about palliative and end-of-life care where appropriate and elicit their preferences according to goals of care and the transition between care aimed at cure and end-of-life care including appropriate discussions regarding; Do not resuscitate orders or DNR	7.00	1.00
	Demonstrate awareness of the legal importance of living wills and advance directives and how these may be arranged by patients	6.00	1.0
	Undertake a holistic assessment of the needs, concerns and symptoms commonly experienced by people affected by cancer receiving palliative and/or end of life care, recognising and supporting vulnerable patients e.g., the elderly, cognitively impaired and responding to different cultural and religious perspectives	7.00	1.00
	Support and give advice to families and carers following death outlining theories of loss, grief and bereavement and how these are applied in clinical practice	6.00	2.00

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Communicator

		Median	Interquartile range
Build a therapeutic relationship with patients and their relatives	Discuss the theory underpinning communication skills	6.00	1.0
	Effectively utilise verbal, written and digital modes of communication to provide information, education and support in an emphatic, clear, understandable and caring manner while maintaining confidentiality	7.00	1.00
	Assess for and address any patient-related, health care professional-related or environmental barriers to effective communication	6.00	1.00
Elicit and synthesise accurate and relevant information from patients	Select and adopt an appropriate communications approach, from a range of core communication and consultation skills, to effectively assess the informational, educational and supportive care needs of people affected by cancer throughout the cancer trajectory, reacting to body language and verbal cues with relevant observations and questions and demonstrating active listening	6.00	1.00
	Communicate clearly with patients respecting their social, political, cultural, religious and sexual standpoint	7.00	1.00
Develop management plans with patients and their families that reflect their healthcare needs and goals	Give clear objective information about standard treatments, clinical trials and experimental treatments including the process, side effects and risks	7.00	1.00
	Discuss the results of the investigations clearly and empathetically with the patient and their carers	7.00	1.00

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	Ascertain if the patient and their families have understood the information and take effective measures if this is not the case and assist them to access reliable sources of information including trusted websites and patient organisations	7.00	1.00
	Explain to the patient that their care is being discussed by an MDT and the nature of the decision-making process	7.00	1.00
	Discuss their beliefs regarding alternative and complementary therapies	6.00	1.00
	Take informed consent from patients and know the legal position if the patient lacks capacity	7.00	1.00
Manage emotionally charged conversations	Elicit the patient's wishes about the information they wish to receive at various stages of their journey and break bad news in an appropriate way including communicating sensitively, truthfully and without ambiguity about, for example, life with cancer, sexual issues and the dying process	7.00	1.00
	Disclose errors and adverse safety events appropriately	7.00	1.00
Document accurately and share appropriate information about the consultation	Detail in a timely and accurate manner details of the consultation and management plan, either in a written or digital form, complying with national legislation and communicating this information clearly to the healthcare team	7.00	1.00
	Maintain patient confidentiality	7.00	0.00

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Collaborator

		Median	Interquartile range
Work effectively across disciplinary and professional boundaries with other members of the healthcare professions	Contribute to effective discussions in multidisciplinary teams (MDT). Understand and value the roles of all health care professionals and encourage team working to optimise treatment. Willing to compromise to reach a consensus. Respect the views of others and the conclusions of the MDT	7.00	0.00
	Negotiate overlapping responsibilities for shared care of patients	7.00	1.00
Transfer care safely to another health care professional	Determine when care should be transferred to another physician or healthcare professional and facilitate continuity of care by timely, effective communication. This may include supporting the patient's request for further opinions	7.00	1.00
Support colleagues	Identify when colleagues are under pressure and offer help	7.00	1.00

Leader

		Median	Inter quartile range
Contribute to the improvement of cancer care delivery in teams and the wider health care system	Identify where quality improvements may be initiated in the work environment and demonstrate knowledge of the steps and tools that may be applied to quality improvement processes including the use of data to drive change	6.00	1.00
	Describe key quality indicators for monitoring service performance in oncology	6.00	1.00

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	Assess risk and implement appropriate risk management strategies to promote patient well-being and safety in practice and participate in the development and implementation of patient safety initiatives	6.00	1.00
	Discuss current major challenges in health care and provide leadership in the contribution to and implementation and evaluation of policies and standards relevant to cancer care	6.00	1.00
Engage in the stewardship of cancer care resources	Discuss factors involved with resource stewardship including financial and other costs of cancer patient care and describe local and international guidelines and initiatives to promote resource stewardship including initiatives which bring about increased efficiency in cancer care focusing on what is important to the patient while not sacrificing quality	6.00	2.00
	Discuss prioritisation of patients on waiting lists	6.00	1.00
	Appreciate the conflict sometimes inherent between access to gold standard equitable healthcare opportunities advocate and available resources	6.00	1.00
Demonstrate elements of leadership in practice	Describe leadership theories and styles and how these may apply in practice	6.00	1.25
	Prioritise tasks including patient assessment and treatment	6.00	1.00
	Engage in developing self-awareness: strengths, weaknesses, values, behaviour drivers and impact on others	6.00	1.00
	Run effective and efficient meetings	7.00	1.00
	Take responsibility for effective communication around the vision for, and purpose of, change with multidisciplinary team members, patients and other stakeholders	6.00	1.00

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	Demonstrate the ability to negotiate and problem-solve with other team members	6.50	1.00
	Demonstrate awareness of the roles and organisational structures of relevant professional societies	6.00	1.00

Health Advocate

		Median	**Interquartile range**
Advise the patient on behaviour and lifestyle	Describe the occurrence and distribution of the most common cancers with a focus on Europe	6.00	2.00
	Understand the principles of screening, including the main advantages and drawbacks of a screening programme, and the organisation of screening using breast, lung and colorectal cancer as core examples and outline national and international guidelines in this field	6.00	1.00
	Provide appropriate and individualised evidence-based verbal and written information regarding the benefits and risks of screening for cancer to people affected by cancer	6.00	2.00
	Undertake a comprehensive history to identify the individual, familial, genetic, sociocultural, economic and environmental factors which may increase the risk of developing cancer and provide information and psychological and emotional support on strategies to reduce risk	6.00	1.00
	Advise the patient on relevant changes in behaviour and lifestyle before treatment to increase the chance of tumour response and to cope with acute toxicities e.g., smoking cessation and diet	7.00	1.00

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	Advise the patient on relevant changes in behaviour and lifestyle to enable them to cope optimally with late toxicities due to previous treatment and the side effects of the present medication	6.00	1.00
Support patients to navigate the healthcare system	Enable patients to access the available resources, to obtain treatment in a timely, efficient manner	7.00	1.00
	Advocate for and promote shared decision-making between people affected by cancer and their healthcare team regarding all stages of treatment, care and management	7.00	1.00

Scholar

		Median	**Interquartile range**
Develop and follow a continuing personal and professional development plan	Assess gaps in knowledge and identify resources to meet these	7.00	1.00
	Retrieve high quality research articles and evidence-based guidelines relevant to cancer care by formulating effective research questions and utilising effective search strategies for sourcing relevant electronic and print material and critically review medical information	6.00	1.00
	Develop or revise local evidence-based guidelines integrating evidence into personal practice (ESTRO CC 2019)	7.00	1.00

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Participate in research and scholarly activities	Discuss trial design	6.00	1.00
	Provide safe and effective care to patients on clinical trials in accordance with study protocols with a view to ensuring optimal outcomes and experiences for patients	7.00	1.00
	Discuss challenges to recruit teenagers and young adults to research trials, ensuring that patient choice is considered and appropriate advice in complex and challenging situations is delivered	6.00	1.00
	Describe and contribute to health service research and clinical audit in their clinical area	6.00	1.00
	Discuss the organisations that design and run trials nationally and internationally and how to access information regarding their trials	6.00	1.00
	Show awareness of rules for writing scientific papers and how to submit them for publication (ESTRO CC 2019)	6.00	1.00

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Professional

		Median	Interquartile range
Adherence to high ethical standards	Discuss ethical principles and be able to apply them when caring for patients	7.00	1.00
	Respect diversity. Do not disadvantage a patient on grounds of their gender, race, culture, philosophical or religious beliefs. Show understanding of patients' ethical concerns and divergent viewpoints	7.00	1.00
	Demonstrate respect for patients and caregivers	7.00	0.00
	Maintain appropriate boundaries with patients	7.00	1.00
	Maintain patient confidentiality and be able to inform patients of the legal situation regarding information held on them in medical notes	7.00	1.00
	Apply codes of research ethics including the Good Clinical Practice Guidelines	7.00	1.00
	Provide the patient with all relevant information when taking consent	7.00	1.00
	Manage conflicts of interest appropriately	7.00	1.00
	Exhibit appropriate behaviour in the use of communication on the internet (ESTRO CC 2019)	7.00	1.00
Aspire to excellence	Work according to professional codes and laws (ESTRO CC 2019)	7.00	1.00
	Keep knowledge and skills up to date, recognise own competency limits and refer appropriately	7.00	1.00
	Take responsibility for actions and respond appropriately to negative feedback	7.00	1.00

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	Work collaboratively with other health care professionals to optimise patient care and to encourage shared decision-making between health professionals and patient	7.00	1.00
	Recognise and respond to unethical behaviour in other healthcare professionals	7.00	1.00
Maintain own wellbeing	Exhibit self-awareness and manage personal and professional demands to reduce the risk of burnout	7.00	1.00
	Seek emotional and developmental support when required	7.00	1.00

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Lowest Scoring Competences From Survey

Median 6, Interquartile Range>1

Note all of these competencies had <80% respondents agreeing or strongly agreeing regarding their value.

	Median	Interquartile range	Role	% agreeing or strongly agreeing
Understand the terminology for high-throughput Omic technologies, including genomics, proteomics, transcriptomics, epigenomics and metabolics	6.00	2.00	Clinical expert	73
Understand the relative costs of the various imaging examinations in oncological imaging	6.00	2.00	Clinical expert	62
Discuss the implications of hereditary gene mutations on the management of a patient	6.00	2.00	Clinical expert	73
*Know who to refer to for legal issues such as employment, financial issues such as insurance and family issues such as international travel and holidays	6.00	2.00	Clinical expert	74
Discuss the role of radiofrequency ablation and cryotherapy in the management of metastases	6.00	2.00	Clinical expert	74
Support and advise to families and carers following death outlining theories of loss, grief and bereavement and how these are applied in clinical practice	6.00	2.00	Clinical expert	73
Discuss factors involved with resource stewardship including financial and other costs of cancer patient care and describe local and international guidelines and initiatives to promote resource stewardship including initiatives which bring about increased efficiency in cancer care focusing on what is important to the patient while not sacrificing quality	6.00	2.00	Leader	74
Describe leadership theories and styles and how these may apply in practice	6.00	1.25	Leader	64
Describe the occurrence and distribution of the most common cancers with a focus on Europe	6.00	2.00	Health Advocate	69
Provide appropriate and individualised evidence-based verbal and written information regarding the benefits and risks of screening for cancer to people affected by cancer	6.00	2.00	Health Advocate	74

Note that there were no competences falling into this category from the Communicator, Collaborator, Scholar or Professional roles.
*Competency suggested by patient advocacy group

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<80% Respondents Agreeing or Strongly Agreeing Regarding Their Value, Median 6, Interquartile Range 1

	Median	Interquartile range	Role	% agreeing or strongly agreeing
Describe indications and contraindications and radiation burden of imaging modalities and the optimal imaging strategy for staging and response assessment based on the imaging anatomy and pathways of spread for the common cancer types	6.00	1.00	Clinical expert	79
Discuss paraneoplastic syndromes and their management	6.00	1.00	Clinical expert	78
Discuss the scheduling of systemic anti-cancer therapy, radiotherapy and surgery in those cancers treated with combined modality therapy including the use of combined medical and surgical oncology treatments such as cytoreductive surgery and HIPEC and isolated limb perfusion	6.00	1.00	Clinical expert	78
Know interactions between food and systemic anti-cancer therapies	6.00	1.00	Clinical expert	78
Demonstrate awareness of the range of services and professionals including statutory, voluntary and charitable organisations, available to support people affected by cancer and refer appropriately to meet the individual need of people affected by cancer	6.00	1.00	Clinical expert	76
Demonstrate awareness of the legal importance of living wills and advance directives and how these may be arranged by patients	6.00	1.00	Clinical expert	76
Discuss the theory underpinning communication skills	6.00	1.00	Communicator	79
Discuss their beliefs regarding alternative and complementary therapies	6.00	1.00	Communicator	77
Discuss prioritisation of patients on waiting lists	6.00	1.00	Leader	76
Demonstrate awareness of the roles and organisational structures of relevant professional societies	6.00	1.00	Leader	77

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Appendix 2

Inter-specialty training in oncology: a qualitative study for INTERACT-EUROPE

McInally W, Benstead K, Brandl A, Dodlek N, De Munter J, Gasparotto C, Grau-Eriksen J, Kelly RG, Lecoq C, O'Higgins N, Oliver K, Popovics M, Rollo I, Sulosaari V, Diez de Los Rios de la Serna C. Like *Frying Multiple Eggs in One Pan: A Qualitative Study Exploring the Understanding of Inter-speciality Training in Cancer Care*. J Cancer Educ. 2023 Apr 3. doi: 10.1007/s13187-023-02285-w.

Abstract

High-quality cancer care is a key priority worldwide. Caring for people affected by cancer requires a range of specific knowledge, skills, and experience to deliver complex care regimens both within the hospital and within the community environment.

In June 2022 the European Cancer Organisation along with 33 European cancer societies began working together to develop a curriculum for inter-speciality training for healthcare professionals across Europe. As part of the project this research consisted of a qualitative survey distributed to the European Union societies via email. The aim of this paper is to disseminate qualitative findings from healthcare professionals across Europe.

Questionnaires were sent out to a convenience sample of 219 healthcare professionals and patient advocates with a response rate of 55% (n=115).) The findings identified that there were four key themes**: '**Not sure what inter-speciality training is', 'Barriers and challenges', 'Support throughout the cancer journey' and 'New ways of working'**.**

These results are part of a larger needs analysis and scoping review to inform the development of a core competency framework which will be part of an inter-speciality curriculum for specialist cancer doctors, nurses, and other health care professionals across Europe. Healthcare professionals will be able to access education and training through the virtual learning environment, workshops and clinical rotations to other specialties.

Keywords: Healthcare professionals, experiences, cancer, care, education, inter-specialty training

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Appendix 3

INTERACT-EUROPE online pilot

Introduction to INTERACT-EUROPE: Aims & Objectives and why we have chosen these competencies for the Pioneer Cohort/what to expect – 15 minutes.

Role	Competency	Length of session
Communicator	Patients' Perspectives on Education and Training	30 minutes
	Effectively utilise verbal, written and digital modes of communication to provide information, education and support in an emphatic, clear, understandable and caring manner while maintaining confidentiality	30 minutes
	How to communicate clearly with patients respecting their social, political, cultural, religious and sexual standpoint	30 minutes
Collaborator	Understanding the roles and value of all healthcare professionals in an MDT	30 minutes
	Negotiate overlapping responsibilities for shared care of patients	30 minutes
Leader	How to run effective and efficient meetings	30 minutes
	Discuss how your leadership style may impact team working	30 minutes

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INTERACT-EUROPE event in-person

	Time	Session
Day 1	13.30-14.30	Arrival and registration
	14.30-14.45	Introduction
	14.45-16.00	Champalimaud MDT meeting (15 minutes introduction, 1 hour MDT)
	16.00-16.30	Coffee break
	16.30-19.00	2 parallel workshops: Communication with colleagues Groups A & B
	19.30	Dinner
Day 2	8.30-10.30	2 parallel workshops: Leadership skills Group A Communication with patients Group B
	10.30-11.00	Coffee break
	11.00-13.00	2 parallel workshops: Leadership skills Group B Communication with patients Group A
	13.00-13.30	Discussion and closing remarks
	13.30-14.30	Lunch and departure to visit Champalimaud (optional)
	15.00-16.30	Visit Champalimaud

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Appendix 4

Inter-specialty Cancer Training Programme

Curriculum: Competences organised to support programme design

The suggested number of one-hour online sessions is shown in red.

1) Pathology for non-pathologists - 1 module

- Explain the value of pathological factors and biomarkers in determining treatment decisions
- Discuss the implications of hereditary gene mutations in guiding the care of patients and their families
- Outline the interpretation of pathological response found at surgery following neoadjuvant therapies and how this may impact the surgical outcome or the adjuvant treatment strategy
- Describe the patterns of recurrence in common cancers

2) Radiology for non-radiologists - 2 modules

- Describe indications, contraindications and radiation burden of imaging modalities and the optimal imaging strategy for staging and response assessment based on the imaging anatomy and pathways of spread for the common cancer types
- Describe the role of imaging in treatment planning e.g., surgery, radiotherapy
- Describe the wide range of interventional techniques used in oncological radiology and their potential risks and complications
- Explain the criteria used to assess response to systemic therapy e.g., the RECIST criteria
- Understand the principles of screening, including the main advantages and drawbacks of a screening programme, and the organisation of screening using breast and lung and cancer as core examples and outline national and international guidelines in this field

3) Radiation oncology for non-radiation oncologists - 2 modules

- Describe the different types of radiotherapy, their mechanisms of action, dosing and administration
- Describe the role of radiotherapy and therapeutic isotopes in the treatment of cancer either offering a significant improvement in local recurrence thereby impacting disease-free survival and overall survival or improving symptoms

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- Structure the consultation effectively by taking a focused history, undertaking a careful clinical examination and ordering relevant investigations to accurately diagnose conditions that may require curative, adjuvant, neoadjuvant or palliative radiotherapy, including emergency treatment
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose acute toxicities from radiotherapy and outline an appropriate treatment
- Discuss the interactions of commonly used drugs including complementary therapies with radiotherapy
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the late side effects of radiotherapy for cancer. Discuss options for managing these and implement them or refer appropriately to other specialties

4) Systemic anti-cancer therapy for non-medical/clinical oncologists - 2 modules

- Outline the mechanism of action of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies
- Discuss the role of commonly used systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies, tyrosine kinase inhibitors and immune therapies in the neoadjuvant, adjuvant, curative and palliative settings
- Structure the consultation effectively by taking a focused history, undertaking a careful clinical examination and ordering relevant investigations to accurately diagnose conditions that may require curative, adjuvant, neoadjuvant or palliative chemotherapy including emergency treatment
- Describe prophylactic strategies that can reduce and minimise the frequency and/or severity of complications/toxicities with systemic anti-cancer therapies
- Outline appropriate treatment for patients experiencing toxicities from systemic anti-cancer therapies in the acute setting
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the acute side effects of systemic therapies including chemotherapy, monoclonal antibodies, hormonal therapies and tyrosine kinase inhibitors
- Discuss side effects of commonly used drugs including complementary therapies and their interactions with each other and with systemic anti-cancer therapies
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the late side effects of systemic anti-cancer therapies. Discuss options for managing these and implement them or refer appropriately to other specialties

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5) Surgery for non-surgeons - 2 modules

- Discuss the role of surgery as a primary modality the cure, palliation or in enabling other treatment modalities (e.g., placement of clips, spacers or omentum) to enable optimal radiation treatment, outline common operations for cancer and the role of adequate margins following surgery
- Structure the consultation effectively by taking a focused history, undertaking a careful clinical examination and ordering relevant investigations to accurately diagnose conditions that may require curative or palliative surgical intervention including emergency treatment
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the late side effects of surgery for cancer. Discuss options for managing these and implement them or refer appropriately to other specialties
- Discuss the organisation of screening using colorectal cancer as a core example and outline national and international guidelines in this field

6) Putting it all together - combined modality therapy - 1 module

- Discuss the scheduling of systemic anti-cancer therapy, radiotherapy and surgery in patients whose cancers are treated with combined modality therapy
- Discuss the possible interactions between systemic anti-cancer therapies, radiotherapy and surgery in patients whose cancers are treated with combined modality therapy
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose acute toxicities from chemoradiotherapy and outline an appropriate treatment
- Take a focused history, undertake a careful clinical examination and order relevant investigations to accurately diagnose the late side effects of radiochemotherapy for cancer. Discuss options for managing these and implement them or refer appropriately to other specialties

7) Role of the cancer nurse, psychosocial support, advocacy, informing and empowering - 2 modules

- Provide people affected by cancer with evidence-based written and verbal information about the development of cancer with a view to addressing their informational and supportive care needs
- Support people affected by cancer through the diagnosis and staging process. Undertake initial and comprehensive assessments (using validated tools where

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appropriate) to identify people affected by cancers' informational, physical, emotional and social care needs (where relevant) during the diagnostic and staging process

- Discuss the influence of pre-existent psychological/psychiatric illness and how to support and treat the patient
- Encourage people affected by cancer to utilise appropriate local, national and/or international cancer organisations for further information, psychosocial, spiritual and/or financial support
- Provide appropriate and individualised evidence-based verbal and written information regarding the benefits and risks of screening for cancer to people affected by cancer
- Undertake a comprehensive history to identify the individual, familial, genetic, sociocultural, economic and environmental factors which may increase the risk of developing cancer and provide information and psychological and emotional support on strategies to reduce risk
- Advise the patient on relevant changes in behaviour and lifestyle prior to treatment to increase the chance of tumour response and to cope with acute toxicities e.g., smoking cessation and diet
- Advise the patient on relevant changes in behaviour and lifestyle to enable them to cope optimally with late toxicities due to previous treatment and the side effects of the present medication
- Enable patients to access the available resources, to obtain treatment in a timely, efficient manner
- Advocate for and promote shared decision-making between people affected by cancer and their healthcare team regarding all stages of treatment, care and management

8) Pain management, palliative care and bereavement - 2 modules

- Discuss assessment and management of pain throughout the cancer journey including in vulnerable populations such as the frail elderly, adults with learning disabilities and those at risk of substance abuse disorders
- Justify a decision that radiotherapy, systemic therapy or surgery are not indicated due to cancer stage, performance status or comorbidities
- Discuss the role of palliative care in the management of the patient. Implement treatment to control symptoms or refer appropriately to other specialties
- Recognise the final phase of life
- Inform, support and educate people affected by cancer about palliative and end-of-life care where appropriate and elicit their preferences acoording to goals of care and the transition between care aimed at cure and end of life care including appropriate discussions regarding; Do not resuscitate orders or DNR

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- Demonstrate awareness of the legal importance of living wills and advance directives and how these may be arranged by patients
- Undertake a holistic assessment of the needs, concerns and symptoms commonly experienced by people affected by cancer receiving palliative and/or end-of-life care, recognising and supporting vulnerable patients e.g., the elderly, cognitively impaired and responding to different cultural and religious perspectives
- Support and counsel bereaved families and carers. Discuss the impact of loss, grief and bereavement including the long-term effects

9) General management of patients including - 1 module

- Evaluate and discuss with the patient the possible management strategies taking into account the factors related to cancer, the patient's goals, their comorbidities and frailty and the adverse effects of possible options
- Take a focused history, undertake a careful clinical examination and order relevant investigations to evaluate the possible management strategies taking into account the factors related to the cancer including whether there is a possibility of curative treatment, the patient's goals, their comorbidities and frailty and the adverse effects of the possible options
- Diagnose oncological emergencies, manage them effectively or recognise when referral to another specialty or the Intensive Care Unit is indicated
- Take a careful history, perform a careful clinical examination and request relevant investigations to diagnose relapsed disease
- Modify the approach to address pregnancy
- Explain the implications of hereditary genetic abnormalities and refer appropriately for genetic counselling
- Discuss paraneoplastic syndromes and their management
- Discuss the management of a patient when there is therapeutic uncertainty, complexity and ambiguity

10) Nutrition-1 module

- Understand the role of optimisation of nutrition before surgery, radiotherapy, chemotherapy and chemoradiotherapy and be aware of the importance of nutritional support if malnutrition is present in patients who may require these therapies
- Discuss interactions between food and systemic anti-cancer therapies

11) Survivorship - 2 modules

- Develop a long-term strategy for follow-up of the patient following treatment for cancer including a plan for patient-specific rehabilitation and surveillance imaging

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- Provide information to people affected by cancer to promote and support self-care including the role of exercise, diet, smoking cessation or alcohol as appropriate
- Know who to refer to for issues such as employment, rights/benefits; financial matters such as insurance and mortgages, and challenges such as the logistics of international travel and holidays
- Recognise the importance of smooth transitions such as between acute health care settings and home care, active treatment to survival programmes, or from paediatric to adult cancer services
- Demonstrate knowledge and understanding of how cancer and therapies for this can affect teenagers and young adults including short- and long-term fertility, emotional implications, education and employment
- Educate people affected by cancer to monitor for and report signs of acute, chronic and late toxicities of cancer treatments
- Demonstrate awareness of the range of services and professionals including statutory, voluntary and charitable organisations, available to support people affected by cancer and refer appropriately to meet the individual need of people affected by cancer
- Consider the needs of younger and older patients who may not have the capacity to make decisions for themselves
- Take a focused history to diagnose the common psychological sequelae following a cancer diagnosis and treatment for cancer, manage them or refer them appropriately to other specialties
- Discuss Patient Related Outcome Measures (PROMs)
- Discuss the factors that affect the patients' adherence to therapies and compliance with monitoring

12) Communicating - 2 modules

- Discuss the theory underpinning communication skills
- Effectively utilise verbal, written and digital modes of communication to provide information, education and support in an emphatic, clear, understandable and caring manner while maintaining confidentiality
- Assess for and address any patient-related, health care professional-related or environmental barriers to effective communication
- Select and adopt an appropriate communications approach, from a range of core communication and consultation skills, to effectively assess the informational, educational and supportive care needs of people affected by cancer throughout the cancer trajectory, reacting to body language and verbal cues with relevant observations and questions and demonstrating active listening
- Communicate clearly with patients respecting their social, political, cultural and religious standpoint and concerns regarding sexuality and gender

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- Give clear objective information about standard treatments, clinical trials and experimental treatments including the process, side effects and risks
- Discuss the results of the investigations clearly and empathetically with the patient and their carers
- Ascertain if the patient and their families have understood the information and take effective measures this is not the case and to assist them to access reliable sources of information including trusted websites and patient organisations
- Explain to the patient that their care is being discussed by an MDT and the nature of the decision-making process
- Discuss the beliefs of people affected by cancer regarding alternative and complementary therapies
- Take informed consent from patients and know the legal position if the patient lacks capacity
- Elicit the patient's wishes about the information they wish to receive at various stages of their journey and break bad news in an appropriate way including communicating sensitively, truthfully and without ambiguity about, for example, life with cancer, sexual issues and the dying process.
- Disclose errors and adverse safety events appropriately
- Detail in a timely and accurate manner details of the consultation and management plan, either in a written or digital form, complying with national legislation and communicating this information clearly to the health care team
- Maintain patient confidentiality
- Exhibit appropriate behaviour in the use of communication on the internet

13) Collaborating and Leading - 2 modules

- Contribute to effective discussions in multidisciplinary teams (MDT). Understand and value the roles of all health care professionals and encourage team working to optimise treatment. Willing to compromise to reach a consensus. Respect the views of others and the conclusions of the MDT
- Negotiate overlapping responsibilities for shared care of patients
- Determine when care should be transferred to another physician or health care professional and facilitate continuity of care by timely, effective communication. This may include supporting the patient's request for further opinions.
- Identify when colleagues are under pressure and offer help
- Discuss the role of patient organisations locally in supporting patients and helping them to navigate the system and nationally as partners in research and health care systems

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- Discuss current major challenges in health care and provide leadership in the contribution to and implementation and evaluation of policies and standards relevant to cancer care
- Discuss factors involved with resource stewardship including financial and other costs of cancer patient care. This should include the concepts of efficiency and cost-effectiveness
- Discuss prioritisation of patients on waiting lists
- Appreciate the conflict sometimes inherent between access to gold standard equitable healthcare opportunities advocate and available resources
- Discuss how your leadership style may impact team working
- Prioritise tasks including patient assessment and treatment
- Engage in developing self-awareness: strengths, weaknesses, values, behaviour drivers and impact on others
- Run effective and efficient meetings
- Take responsibility for effective communication around the vision for, and purpose of, change with multidisciplinary team members, patients and other stakeholders
- Demonstrate the ability to negotiate and problem-solve with other team members
- Demonstrate awareness of the roles and organisational structures of relevant professional societies

14) Safety and Quality Improvement - 1 module

- Analyse clinical reasoning processes demonstrating an understanding of cognitive bias, human factors and diagnostic error
- Assess risk and implement appropriate risk management strategies in order to promote patient well-being and safety in practice and participate in the development and implementation of patient safety initiatives
- Describe the adverse events reporting system
- Describe key quality indicators for monitoring service performance in oncology
- Identify where quality improvements may be initiated in the work environment and demonstrate knowledge of the steps and tools that may be applied to quality improvement processes including the use of data to drive change

15) Research/Guidelines - 1 module

- Assess gaps in knowledge and identify resources to meet these
- Retrieve high-quality research articles and evidence-based guidelines relevant to cancer care by formulating effective research questions and utilising effective search strategies for sourcing relevant electronic and print material and critically reviewing medical information

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- Develop or revise local evidence-based guidelines integrating evidence into personal practice
- Discuss trial design
- Provide safe and effective care to patients on clinical trials in accordance with study protocols with a view to ensure optimal outcomes and experiences for patients
- Discuss challenges to recruiting teenagers and young adults to research trials, ensuring that patient choice is considered and appropriate advice in complex and challenging situations is delivered
- Describe and contribute to health service research and clinical audit in their clinical area
- Discuss the organisations that design and run trials nationally and internationally and how to access information regarding their trials
- Show awareness of rules for writing scientific papers and how to submit them for publication
- Apply national or international guidelines and research evidence to the management of an individual patients
- Identify when a patient should be offered the opportunity to enter a research trial

16) Aspiring to excellence-ethics, continuous professional development and self-care - 1 module

- Discuss ethical principles and be able to apply them when caring for patients
- Respect diversity. Do not disadvantage a patient on grounds of their gender, race, culture, philosophical or religious beliefs. Show understanding of patients' ethical concerns and divergent viewpoints
- Demonstrate respect for patients and caregivers
- Maintain appropriate boundaries with patients
- Maintain patient confidentiality and be able to inform patients of the legal situation regarding information held on them in medical notes
- Apply codes of research ethics including the Good Clinical Practice Guidelines
- Provide the patient with all relevant information when taking consent
- Manage conflicts of interest appropriately
- Work according to professional codes and laws
- Keep knowledge and skills up to date, recognise own competency limits and refer appropriately
- Take responsibility for actions and respond appropriately to negative feedback
- Work collaboratively with other health care professionals to optimise patient care and to encourage shared decision-making between health professionals and patient
- Recognise and respond to unethical behavior in other healthcare professionals

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- Exhibit self-awareness and manage personal and professional demands to reduce the risk of burnout
- Seek emotional and developmental support when required

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APPENDIX 5

INTERACT-EUROPE Evaluation

To evaluate INTERACT-EUROPE, we have taken into account the following points from the SWOT analysis:

The analysis highlights the strengths and weaknesses of having a large consortium with a lot of expertise. While this diversity can be a significant asset, finding consensus on project goals can be challenging. To overcome this, it is crucial to establish clear and concise project goals that are easy to understand and work towards. By testing all project elements against these goals, the consortium members can contribute to the same objective and maintain a cohesive direction. Despite the potential difficulties of aligning everyone's efforts, focusing on shared project goals can overcome obstacles and lead to project success.

Another strength of the project is having many consortium partners contributing to it. However, the limited time available for the grant project can be a challenge. To ensure the project is achievable within the given resource and time constraints, it is essential to carefully select a clear project scope and create a high-quality program. It is important to strike a balance between the project's scope and quality to avoid compromising the quality by including too much. By considering these factors, we can achieve project success and deliver an outcome that is both achievable and of high quality, ensuring that the project is a success within the constraints of the grant.

SMART Goals

The SWOT analysis has led us to the conclusion that setting SMART goals is crucial for the success of the project. SMART goals are Specific, Measurable, Achievable, Relevant, and Time-bound. These types of goals allow for clear and concise communication of the project's objectives, which reduces confusion and promotes alignment across the consortium members. Measurable goals enable project managers to track progress effectively, making it easier to identify any issues and opportunities for improvement. Achievable goals help ensure that the project is realistic and feasible, allowing us to stay within our resource and time constraints. Relevant goals ensure that the project aligns with the grant requirements and the overall mission of the consortium. Finally, time-bound goals provide a clear deadline for the project, making it easier to plan and prioritize work effectively. By setting SMART goals, we can increase the chances of project success by providing clarity, alignment, and focus for all consortium members. This approach enables us to work towards a common objective and helps us overcome potential obstacles and challenges throughout the project lifecycle. Ultimately, setting SMART goals will be key to ensuring that the project meets its objectives within the given time and resource constraints.

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Indicators

When setting SMART goals for a project, it is important to have good and objective indicators of success. To evaluate the success of the INTERACT-EUROPE project, we have identified key indicators of progress, performance, and impact with each work package. Indicators are essential for project evaluation, as they provide a quantitative or qualitative measure of a project's performance, allowing us to assess the project's success.

This was presented to the INTERACT-EUROPE Steering Committee to give directions on what should be the focus of curriculum development and the relevant steps that should be considered. In turn, this framework helped WP2 to critically reflect on key definitions (such as a clear definition of what is meant by inter-specialty cancer training) and to thus focus on the key outcomes that the curriculum seeks to achieve, which was ultimately around effective communication within a multi-disciplinary cancer team, and patient-centered care. The CANMEDs framework was introduced by the WP2 team as an appropriate model on which to build the curriculum, and the framework already includes competencies and ways to assess that these competencies have been achieved. On this basis, the INTERACT WP2 leaders were able to build on the framework and resources already produced by CANMED and to focus on the specific outcomes and metrics for a cancer inter-specialty training scheme. The outcomes and indicators of WP2 curriculum development were therefore drawn from that basis from a core team of experts that included a patient and nurses. The needs of all members of an MDT were further explored during a needs assessment gained responses from across the board, and which ranked the competencies in an order of priority. The results of this survey were discussed in a meeting with all disciplines in Brussels, where key outcomes of the curriculum were discussed and challenged. This methodology was deemed appropriate rather than a full Delphi consensus for the purposes of our INTERACT-EUROPE project specifically as it builds on a competency framework that is already developed and operational, and this was more a process of defining which were most relevant to the multi-disciplinary cancer team. As such elements such as the communicator role from the CANMED framework (both with the MDT and with patients) and leadership were defined as priorities for this curriculum.

Pilot Evaluation

The communication skills outlined in the CANMED framework were utilized in developing our pilot training program. The program will consist of both theoretical and practical components, including simulated role-playing exercises and at least one simulated question. Patients will be involved as part of the evaluation team. The pilot evaluation will focus on the first two levels of the Kirkpatrick evaluation model, namely reaction and learning. To measure the program's effectiveness, we will conduct pre- and post-tests and analyse the results to determine its impact.

Pre-and post-testing is a method of evaluating the effectiveness of a training program by comparing participants' knowledge or performance before and after the program. In the context of a communication training program for healthcare professionals, pre- and post-testing can be used to assess how well the program has improved their knowledge of important factors of communication with patients. Before the training program, participants can take a pre-test to assess their baseline knowledge of communication with patients. The pre-test can consist of questions that cover important factors such as active listening, empathy, clear explanation of medical information, and patient-

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centred communication. After completing the training program, participants can take a post-test that covers the same topics as the pre-test. The post-test results can then be compared to the pre-test results to determine the extent to which the training program has improved participants' knowledge of communication with patients.

Analysing the results of the pre- and post-tests can also help identify areas of strength and weakness in the training program. If there are certain topics or skills that participants have not improved in, it may suggest that those areas need more attention in the training program. Overall, pre-and post-testing can be a useful tool for evaluating the effectiveness of a communication training program for healthcare professionals.

To gain additional insight into the strengths and weaknesses of our communication training program, we will create an evaluation survey for both participants and faculty involved in the program. The survey will be designed to gather feedback on various aspects of the training program, including its content, delivery, and effectiveness. For participants, the evaluation survey will be distributed after the completion of the training program. It will ask questions about their experience with the program, including their level of satisfaction, what they found most helpful, and areas that could be improved. Participants will also be asked to rate their confidence in their skills before and after the training program. The evaluation survey for faculty will be distributed after the completion of the training program as well. It will ask faculty members to provide feedback on the program's content, delivery, and effectiveness. They will also be asked to provide suggestions for improvement and identify any areas that could be strengthened.

The results of the evaluation survey will be used to identify the strengths and weaknesses of the program and make improvements for future programmes. The feedback gathered from the survey will also help us identify areas where additional training and resources may be needed for both participants and faculty. Ultimately, the evaluation survey will provide valuable insights that will help us to continually improve our communication training program and ensure that it remains effective and impactful.

Finally, we will evaluate the training location to identify the impact it had on the effectiveness of the program. We will look at factors such as the quality of the facilities, and the overall environment. Evaluating the training location will help us to identify the criteria for future training locations. This information will help us to improve the set of criteria that we have to select the best training locations for our future programs. We will gather feedback on the training location through a survey that will be distributed to participants and faculty members. The survey will ask about their overall experience with the location, including its accessibility, comfort, and suitability for the program's needs. Participants and faculty members will also be asked to provide suggestions for improvements to the location or recommendations for future locations. The results of the survey will be analysed to identify the strengths and weaknesses of the training location and to identify the criteria for future locations. This information will help us to select training locations that meet the needs of our participants and provide the best possible environment for effective communication training.

Overall, evaluating the training location will provide us with valuable insights that will help us to improve our communication training program and ensure that future programs are conducted in locations that meet our criteria and provide the best possible learning experience for our participants.

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For INTERACT2 we would recommend the following process for curriculum development:

Curriculum development using simulation based training

Simulation is a representation of a situation over time, useful to predict and optimize its outcomes. This means that its development is critical in order to produce the desired effects. Following a systematic methodology, despite requiring considerable amount of time, may produce effective results. One of the most reliable development methodologies was designed by R.Satava and is called "Full life-cycle curriculum development". The development process begins with the definition of the expected outcomes.

Outcomes & Metrics

This is decided by a consensus of experts. The topic that needs to be simulated is deeply analysed, with a process called Cognitive Task Analysis (CTA)2. The CTA can be structured as an interview to one or more experts, with the aim not only to define the single steps, but also to understand the decisional pathway followed by the expert. A series of questions are formulated to define the different options, the reasons why one approach can be more favourable than another and the different information needed in order to decide which option can be the best. Within the CTA, the following data need to be collected:

- Define the task domain: Identify the task, its context, and the goals of the analysis.
- Identify key performance criteria: Determine what the person performing the task needs to know or be able to do to perform the task successfully.
- Decompose the task: Break down the task into smaller, more manageable steps or components.
- Identify decision points: Determine the key points where the person performing the task must make decisions.
- Determine task dependencies: Identify the relationships between the various components and steps of the task.
- Determine information requirements: Determine what information is needed to perform each step of the task and make decisions at the decision points.
- Identify potential sources of error: Identify the ways in which the person performing the task could make mistakes or misunderstand information.

The CTA data will be useful afterwards, to build specific parts of the curriculum. Once the CTA is completed, it needs to be compared to guidelines to avoid any experience-based bias and, afterwards, it needs to be shared with the experts. In this phase, Delphi Method can be used to reach consensus.

Curriculum development

After the preliminary data collection, in this phase the actual educational protocol starts to be designed. Thanks to the mentioned considerations, preliminary training-task description is produced, mentioning not only the sequence of steps to perform, but also the errors to avoid and the requirements of the simulation tool to be used, which will drive the next development step.

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Simulator development

This is the most stimulating part of the process, as it allows to check and test all the simulation tools that are useful to the designed tasks. In a first phase a test of the pertaining simulations tool on the market is needed. This is critical to highlight their pros and cons, to check the feasibility of the task on each of them and the possible upgrades or modifications to apply. Tests are usually run by a cohort of experts, after receiving in advance a detailed task description. If a simulation tool can be used with minimal modifications, then it's usually preferred to a brand-new product design, which may require some dedicated investment. In case no system is fulfilling the requirements, then a new simulation tool is designed. Simulation tool development requires a close collaboration of educators, engineers and physicians. While the educator may provide an insight about the correct methodology to use, the engineers allow the development of each component (3d-print, electronics, materials, software) and the physician double checks and provides support along the whole process. After the early development, the prototype is then tested again by the experts, who may ask for changes to allow easier replicability of the original training task. Once the simulation tool has been finalized, it is double checked for eventual production modifications.

Validation studies

Validation might be considered as the most important step, but a wise development drastically increases the chances of a success. According to the latest concept inspired by Messick's framework of validity 3,4, validation is mainly focusing on how the simulation tool was designed, how relevant is the background of the participant who is approaching it and how important is the assessment to understand the actual acquisition of skills5. According to the updated validity taxonomy summarized by Goldenberg6, validation includes the following aspects: test content, response processes, internal structure, relationships to other variables and consequences of testing. Test content pertains the ability of the simulator to produce the expected outcomes, usually decided by a cohort of experts. Response process is the analysis of the assessment methodology and its ability to reflect and score the observed performance of the trainee. Internal structure focuses again on the assessment methodology, its replicability and statistical reliability. Relationship to other variables correlates the performance with known measures of skill or ability, like for example the clinical background of the participant. Consequences of testing are considering the relationship between the assessment and what comes after the training itself (eg. improvement on the surgical field).

Validation is anyway not absolute: a valid simulation tool might be more or less beneficial to a trainee, depending on several variables and, most important, the teaching ability of the tutor7.

Implementation

Before becoming an actual "assessment tool", the validated protocol has to be tested as a "training tool" on a large scale, together with the relative simulation tool. Wide-spreading allows to understand the feasibility of the teaching model in a regular setting, which can be either a simulation centre, a University class or a conference, depending on the previously set goals. Implementation phase tests the portability of the simulation, the replicability of the training session and overall, the "standardise-ability" of the entire training system. Feedbacks are collected in this phase to check whether the participants are satisfied and if their expectations are met. Once again, being standardization the core of high-quality training, this phase is fundamental to make sure that everything is working correctly.

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Issue certification

The final part of the curriculum development endorses the assessment properties of the entire protocol and gives sense to the name suggested by Satava: Full life-cycle curriculum development1. Indeed, issuing the certification allows to confirm acquisition of the skills as planned during the first phase, outcomes and metrics. This “closes the circle” and needs to exactly correspond to what was expected since the very beginning, during the early consensus meetings.

WHAT	Outcomes & Metrics	Curriculum development	Simulator development	Validation studies	Implement	Issue Certification
HOW	CTA with 3 experts Guidelines check Delphi consensus	Task&metrics development based on CTA results On-line Cognitive content dev	Market check, modification of existing sim Simulator dev following sim requirements from CTA	Small scale test Check of: Content val. Construct val.	Large scale test Check of: Feasibility Costs	Testing with assessment Success is rewarded with access to the following step (PBP)

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