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## An inter-specialty cancer training programme curriculum for Europe

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## ARTICLE INFO

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## ABSTRACT

**Introduction:** Multidisciplinary and multi-professional collaboration is vital in providing better outcomes for patients. The aim of the INTERACT-EUROPE Project (Wide Ranging Cooperation and Cutting Edge Innovation As A Response To Cancer Training Needs) was to develop an inter-specialty curriculum. A pilot project will enable a pioneer cohort to acquire a sample of the competencies needed.

**Methods:** A scoping review, qualitative and quantitative surveys were undertaken. The quantitative survey results are reported here. Respondents, including members of education boards, curriculum committees, trainee committees of European specialist societies and the ECO Patient Advisory Committee, were asked to score 127 proposed competencies on a 7-point Likert scale as to their value in achieving the aims of the curriculum. Results were discussed and competencies developed at two stakeholder meetings. A consultative document, shared with stakeholders and available online, requested views regarding the other components of the curriculum.

**Results:** Eleven competencies were revised, three omitted and three added. The competencies were organised according to the CanMEDS framework with 13 Entrustable Professional Activities, 23 competencies and 127 enabling competencies covering all roles in the framework. Recommendations regarding the infrastructure, organisational aspects, eligibility of trainees and training centres, programme contents, assessment and evaluation were developed using the replies to the consultative document.

**Conclusions:** An Inter-specialty Cancer Training Programme Curriculum and a pilot programme with virtual and face-to-face components have been developed with the aim of improving the care of people affected by cancer.

## 1. Introduction

Multidisciplinary and multiprofessional collaboration is vital in providing better outcomes for patients [1]. Multidisciplinary meetings have become routine in the planning of care. A major impediment to mutual understanding and dialogue, however, lies in the training of cancer specialists. Clinical cancer specialists in medical oncology, cancer surgery/surgical oncology, clinical oncology/radiation oncology, radiology and oncology nursing are trained in different systems and regulated by different authorities that are largely independent of each other. This may result in specialists having a poor understanding of other disciplines limiting their ability to come to optimal joint decisions.

The development of, not only a curriculum that identifies valuable inter-specialty competencies across surgical, medical, radiation, nursing and radiology oncology, but also a training programme that promotes achievement of these competencies, is therefore important in improving the care of people affected by cancer across Europe. The initial project included funding for a pilot programme covering a sample of competencies in the curriculum. A follow-up programme, INTERACT 2, will deliver training for all the competencies in the curriculum [2]. The aim of this paper is to describe the methodology used to develop and the content of the inter-specialty cancer training programme curriculum.

## 2. Methodology

For the purposes of this project inter-specialty training occurs when two or more specialties within professions or multidisciplinary teams learn from each other and practice in collaboration to provide high quality cancer care to patients. The European Cancer Organisation (ECO) developed the INTERACT Europe Project (Wide Ranging Cooperation and Cutting-Edge Innovation As A Response To Cancer Training Needs) bringing together 33 partners from 17 countries involving the main oncology specialties and professions, cancer centres and patient advocacy organisations.

### 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
- a short survey looking at the perceived value of an inter-specialty curriculum in oncology
- a qualitative study investigating respondents' knowledge, experience and valuing of interprofessional education [3].

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 focuses on this question and does not attempt to cover all the oncology curricula for the specialties. Therefore, for example, there is not a separate basic science section, as trainees are expected to cover this in their specialty training.

The competencies were developed from:

- A review of relevant published curricula including:
  - Interdisciplinary training for cancer specialists [4].
  - ESSO core curriculum committee update on surgical oncology [5].
  - ESTRO core curriculum for radiation oncology/radiotherapy 4th edition [6].
  - Clinical oncology module for the ESTRO core curriculum [7].
  - European training curriculum for radiology [8].
  - EONS Cancer Nursing Education Framework (2018) [9].
  - European training requirements for the specialty of medical oncology [10].
  - Leader role curriculum for radiation oncology [11].
  - European Pain Federation core curriculum for the diploma in pain medicine [12].
  - The European Code of Cancer Practice [13].

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

- Three questions regarding the perceived value of an inter-specialty curriculum scored on a 7-point Likert Scale
- A qualitative survey including 8 open questions [3].

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 Committee, who also forwarded it to their members. It was stated that responding to the questionnaire implied consent. Replies were anonymized and stored according to General Data Protection Rights principles.

These results were discussed at two meetings of stakeholders from

the European specialist and patient/advocate organisations in the light of the results from the scoping review and the qualitative survey, and discussion was continued via email. The first meeting 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.

## 2.2. Assessment of cancer centre needs

A formal consultation document was circulated to the thirty-three consultative partners and shared publicly online and with cancer centres inviting comments.

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 for tutors and mentors
- What benefits can be understood for cancer centres from participation?
- Learning from other programmes

## 3. Results and Discussion

### 3.1. Learning needs analysis

The survey available in the [supplementary material](#) demonstrated that cancer professionals and patient advocates (varying between 119 and 121 respondents), thought that the inter-specialty cancer training programme was a very valuable concept with a median of 7 (strongly agree) for all 3 questions.

The number of respondents scoring each proposed competence varied from 103 to 121 of the 219 who acknowledged receiving the questionnaire. The professions of the respondents scoring the competencies was derived from the answers to one question and is shown in [Table 1](#). They came from 28 countries. 91% of the doctors were specialists and 9% trainees. 47% of the nurses identified themselves as registered nurses and 53% as specialist nurses. The median score was 6 (agreeing) or above for all competencies. Twenty competencies had <80% of respondents agreeing or strongly agreeing with the value of the competence. Ten of these had an interquartile range of >1. Of these 20 competencies, 7 were revised and 3 omitted. Of the other 107 competencies, 4 were revised. Three further competencies were added following discussion with the stakeholders. These were in the areas of pain control, collaboration with patient organisations and factors influencing adherence of patients with therapies and monitoring. The latter two were suggested by patient advocates. Therefore 127 competencies were developed and these represented the enabling competencies.

The competencies were divided into the seven roles of a physician

**Table 1**  
Profession of respondents.

Profession/Role	Percentage (number)
Cancer Nurse	11.0% (13)
Clinical Oncologist	7.6% (9)
Medical Oncologist	16.1% (19)
Medical Physicist	3.4% (4)
Radiologist	8.7% (10)
Patient Advocate	0.9% (1)
Radiation Oncologist	7.6% (9)
Radiation Therapist	0.9% (1)
Surgeon	11.9% (14)
Surgical Oncologist	15.3% (18)
Other	17% (20)

**Table 2**

Number of enabling competences in each CanMEDS role.

CanMEDS ROLE	Number of Enabling competencies
Clinical Expert	61
Communicator	15
Collaborator	5
Leader	14
Advocate for Health	7
Scholar	9
Professional	16

identified in the CanMEDS 2015 physician competency framework [14] ([Table 2](#)). In view of the interprofessional nature of the curriculum, however, “Medical Expert” was replaced by “Clinical Expert.” The curriculum defines the Entrustable Professional Activities (EPAs), competencies and enabling competencies that health professionals need to develop to meet the aim of the inter-specialty cancer training curriculum. An EPA 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 [15]. The curriculum identifies 13 EPAs that are valuable for all health professionals caring for patients with cancer.

### 3.2. Assessment of cancer centre needs

Sixteen responses were received to the formal consultation from INTERACT-EUROPE Steering Committee members, the Consultative Partners of the project, and other organisations responding to the open consultation available on the ECO website. These provided a basis for discussion regarding the design of the curriculum.

### 3.3. INTERACT-EUROPE curriculum

The curriculum, including the competencies, is summarized below and available on the European Cancer Organisation website [16] and in the [supplementary material](#).

### 3.4. Aim

To provide education and training to enable those in specialist training to learn to work more effectively with different specialties and professions in order to deliver better care and provide psychosocial and nutritional support for cancer patients.

### 3.5. Infrastructure and organisational aspects

#### 3.5.1. Leadership

INTERACT-EUROPE brings together 33 partners from 17 countries led by ECO and ESO. ECO leads on the organisation of the project. The roles of ESO are the development and delivery of the online and face-to-face programme for the pioneer cohort of trainees.

#### 3.5.2. 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. Completion of the programme is envisaged to take place in the successor project to INTERACT-EUROPE. 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 and 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 completion of the inter-specialty cancer training programme.

These criteria may be modified for the second cohort depending on the experience gained from the pioneer cohort. 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.

### 3.6. Training programme

#### 3.6.1. Eligibility of training institutions and recruitment strategy

At the pioneer stage of the inter-specialty training programme the obligations upon the supporting cancer centre will be limited to providing trainees from their centre with the time required to participate in the pioneer cohort training events. The centre must demonstrate commitment to:

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

Centres will be encouraged to achieve a balanced representation of trainees from their centre, ideally composed of at least one cancer surgeon, one medical oncologist, one radiation oncologist, one radiologist and one cancer nurse. This will best support the ethos of conducting shared learning across the multidisciplinary cancer care team.

An invitation letter was sent to a list of identified prospective centres involved in curriculum development. Selection of centres for the pioneer cohort was designed to ensure wide geographical representation. The programme for the second cohort will aim to recruit a wide range of centres.

#### 3.6.2. Faculty in training institutions

In the initial INTERACT-EUROPE project each trainee will be supported by a mentor within their cancer centre. The mentor should have previous experience in teaching and mentoring. The INTERACT-EUROPE programme will provide support to mentors through the "train-the-trainer" approach.

In INTERACT 2, aimed at delivering education and training covering the whole curriculum, a team should be identified in each institution including at least one nurse, one surgeon, one clinical oncologist (or a radiation oncologist and medical oncologist) and a radiologist. They will be responsible for organising the delivery of the programme in their institution. The recommended model is that the trainee should have one tutor in a different specialty/profession to their own, whom they meet on a regular basis to review progress.

The multidisciplinary education team should attend a face-to-face induction train-the-trainers session. There should be an annual online refresher course that will include presentations from institutional teams on areas of good practice. National meetings will also be encouraged.

#### 3.6.3. Components of the educational programme

The programme has both on-line and face-to-face components. The competencies in the curriculum were analysed according to Bloom's taxonomy of educational objectives [17] 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 sessions translated into four European languages (French, German, Slovenian and Spanish) using translation models developed at the Universitat Politècnica de València. This will provide a trial of the feasibility of this software. The training programme for the pioneer cohort will address competencies in the communicator, collaborator and leader roles.

The future programme will include a 4-week rotation in other specialties and professions. In order to ensure access is not limited by economic factors, 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 to visit another centre, this will be possible.

#### 3.6.4. Assessment

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

- MCQs
- Workplace based assessments during the face-to-face component. Examples of these include:
  - o Case-based discussions (CBDs)
  - o Mini-clinical evaluation exercise (mini-CEX)
  - o 360-degree appraisal
- A reflection on the working of the MDTs they have observed that will be discussed with their tutor
- Audits in their institution investigating the percentage of patients discussed at MDTs

### 3.7. Certification of learning

All online and live training events will be submitted for accreditation with the Accreditation Council of Oncology in Europe (ACOE). The certificate for nurses will include recommendation of ECTS (European Credit Transfer and Accumulation System) equivalent for the learning activities and completion of the training programme.

### 3.8. Evaluation

The evaluation of the pilot programme will focus on the first two levels of the Kirkpatrick evaluation model, reaction and learning [18]. Pre- and post-tests will be conducted. This will be used to identify the strengths and weaknesses of the programme to recommend modifications with the input of a patient evaluator.

## 4. Discussion

A questionnaire study of national societies of medical, radiation and surgical oncology professionals across Europe demonstrated a wide variation in training and practice regarding multidisciplinary care of cancer patients [19]. The European Commission Expert Group on Cancer Control established a group to develop inter-specialty competencies for surgical, medical and radiation oncology [4]. 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 [5,6] and the European Training Requirements of the European Union of Medical Specialists (UEMS) [20]. The important insights provided by oncology nurses and radiologists, however, were not included 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 [21]. These included insufficient teaching faculty, lack of coordination and the need for influential leadership. A survey, including cancer nursing data from 38 of the 53 WHO European countries, found that 17 (45%) countries did not provide university level specialist cancer nursing education that was nationally recognised. Only 13 of the 38 countries (34%) offered postgraduate courses and only 10 (29%) had professors in cancer nursing. This highlights that a large proportion of oncology nurses have limited education and training which may impact on the quality of patient care [22].

This project grew out of Europe's Beating Cancer Plan [23] that announced the launch of an "Inter-Specialty Cancer Training Programme." The curriculum reported here will provide the basis for INTERACT-2 that will deliver education and training for professionals involved in cancer care in more than 100 cancer centres in more than 15 countries. This should help to improve inter-specialty understanding and collaboration as well as to overcome the barriers to implementation of the curriculum. A wide range of professional groups have expressed their interest in participating in INTERACT-2 and this is reflected in the medical physicists, radiation therapists and "other" category who chose to complete the competency survey.

## 5. Conclusions

The use of a range of methods seeking the opinion of a wide range of stakeholders including patient advocates, trainees and specialists has enabled the development of an interspecialty cancer training programme curriculum. This provides a basis for future training programmes.

## Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Kathy Oliver, Co-chair European Cancer Organisation Patient Advisory Committee and chair and co-director International Brain Tumour Alliance (IBTA).

For the sake of completeness and transparency I confirm that the IBTA has received

grants/sponsorships/donations from the following companies over the last 36 months: Bristol-Myers Squibb, Novocure, Pfizer, Bayer, Novartis, Northwest Biotherapeutics, MagForce, Medac,

photonamic, Apogenix, STOPhersentumoren, Karyopharm, The Sontag Foundation, Elekta, GW Pharma/Jazz Pharmaceuticals.

In addition, I confirm that the IBTA has received honoraria in relation to various events.

(moderating webinars, advisory boards, chairing and co-chairing meetings, presenting, etc) from the following companies/organisations in the last 36 months: Novartis, Seagen, Sanofi Regeneron, Sharing Progress in Cancer Care, Bristol-Myers Squibb, Eisai, Novocure.

Finally, I confirm that over the last 36 months and for and on behalf of the IBTA, I have held the following leadership/committee/advocacy group roles: Chair and Co-Director, International Brain Tumour Alliance (IBTA); Co-Chair, European Cancer Organisation Patient Advisory Committee; Steering Committee Member, Rare Cancers Europe; member the Patient Advocacy Working Group of ESMO; Steering Committee Member, SISAQOL-IMI; Steering

Committee Member, ERN EURACAN; Advisory Board Member, GLIOTRAIN.

No other authors declared any competing interests.

## CRedit authorship contribution statement

**Kim Benstead:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing – original draft, Visualization, Supervision, Project administration. **Andreas Brandl:** Conceptualization, Methodology, Validation, Writing – review & editing. **Ton Brouwers:** Conceptualization, Methodology, Validation, Writing – review & editing. **Jorge Civera:** Software, Validation, Formal analysis, Investigation, Resources, Data curation. **Sarah Collen:** Conceptualization, Methodology, Validation, Writing – review & editing. **Degi L. Csaba:** Conceptualization, Validation. **Johan De Munter:** Validation, Writing – review & editing. **Marieke Dewitte:** Conceptualization, Validation. **Celia Diez de los Rios:** Formal analysis. **Nikolina Dodlek:** Formal analysis. **Jesper G. Eriksen:** Conceptualization, Methodology, Data curation, Writing – review & editing. **Patrice Forget:** Conceptualization, Validation. **Chiara Gasparatto:** Investigation, Resources, Data curation, Writing – review & editing. **Jan Geissler:** Conceptualization, Validation, Writing – review & editing. **Corinne Hall:** Conceptualization, Methodology, Investigation, Resources, Writing – review & editing, Project administration. **Alfons Juan:** Software, Validation, Formal analysis, Investigation, Resources, Data curation. **Marco Kalz:** Writing – review & editing, Validation. **Richard Kelly:** Writing – review & editing, Project administration. **Giorgos Klis:** Supervision, Project administration. **Taibe Kulaksız:** Writing – review & editing, Validation. **Carine Lecoq:** Investigation, Data curation, Project administration. **Francesca Marangoni:** Conceptualization, Methodology, Investigation, Resources, Writing – review & editing, Project administration. **Wendy McNally:** Conceptualization, Methodology, Validation, Writing – review & editing. **Kathy Oliver:** Conceptualization, Validation, Writing – review & editing. **Maria Popovics:** Formal analysis, Investigation, Data curation, Project administration. **Christos Poullos:** Conceptualization, Validation. **Richard Price:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Project administration, Funding acquisition. **Irena Rollo:** Project administration. **Silvia Romeo:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Project administration. **Jana Steinbacher:** Writing – review & editing, Validation. **Virpi Sulosaari:** Conceptualization, Methodology, Validation, Writing – review & editing. **Niall O'Higgins:** Conceptualization, Validation, Formal analysis, Writing – review & editing, Supervision, Project administration.

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## Appendix A. Supplementary data

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