



Short Communication

Professional development through mentoring: Final evaluation of the pilot mentoring programme of the European society of radiotherapy and oncology



Steven F. Petit^{a,b,*}, Daniel Portik^{a,c}, Azadeh Abravan^{a,d,e}, Jenny Bertholet^{a,f}, Dylan Callens^{a,g}, Ludwig Dubois^{a,h}, Pierfrancesco Franco^{a,i,j}, Morten Horsholt Kristensen^{a,k}, Pierre Montay-Gruel^{a,l}, Daan Nevens^{a,m}, Sophie Perryck^{a,n}, Kathrine Røe Redalen^{a,o}, Bartłomiej Tomasiak^{a,p}, Amanda Webster^{a,q,r}, Jesper Grau Eriksen^k, Jolien Heukelom^{a,s}

^a yESTRO (young ESTRO) Committee of the European Society for Radiotherapy and Oncology, Belgium

^b Erasmus MC Cancer Institute, University Medical Center Rotterdam, Department of Radiotherapy, the Netherlands

^c European Organisation for Research and Treatment of Cancer (EORTC) Headquarters, Brussels, Belgium

^d Division of Cancer Sciences, School of Medical Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, United Kingdom

^e Department of Radiotherapy Related Research, Christie National Health Service (NHS) Foundation Trust, Manchester, United Kingdom

^f Division of Medical Radiation Physics and Department of Radiation Oncology, Inselspital, Bern University Hospital and University of Bern, Bern, Switzerland

^g Department of Radiation Oncology, University Hospital Leuven, Leuven, Belgium

^h The M-Lab, Department of Precision Medicine, GROW – School for Oncology and Reproduction, Maastricht University, Maastricht, the Netherlands

ⁱ Department of Translational Medicine (DIMET), University of Eastern Piedmont, Novara, Italy

^j Department of Radiation Oncology, 'Maggiore della Carità' University Hospital, Novara, Italy

^k Dept. of Experimental Clinical Oncology, Aarhus University Hospital, Aarhus, Denmark

^l Iridium Netwerk, Radiotherapy Department, Faculty of Medicine and Health Sciences, Center for Oncological Research (CORE), Antwerp Research in Radiation Oncology (ARERO), Integrated Personalized and Precision Oncology Network (IPPON), Universiteit Antwerpen, Antwerp, Belgium

^m Iridium Netwerk, Radiotherapy Department, Center for Oncological Research (CORE), Integrated Personalized and Precision Oncology (IPPON), University of Antwerp, Antwerp, Belgium

ⁿ Department of Radiation Oncology, University Hospital Zürich, Zürich, Switzerland

^o Department of Physics, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

^p Department of Oncology and Radiotherapy, Faculty of Medicine, Medical University of Gdańsk, Gdańsk, Poland

^q UCLH Radiotherapy and PBT Department, University College London Hospital NHS Foundation Trust, United Kingdom

^r Department of Medical Physics & Biomedical Engineering, University College London, London, United Kingdom

^s Department of Radiation Oncology (Maastr), GROW – School for Oncology and Reproduction, Maastricht University Medical Centre+, Maastricht, the Netherlands

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ABSTRACT

The European Society for Radiotherapy and Oncology (ESTRO) organized a one-year pilot mentoring programme. At evaluation after one year, both mentors and mentees scored the programme with a median score of 9 on a scale of 10. All of the mentors indicated that they wanted to participate again as mentors.

Introduction

A large body of literature exists on the importance of mentoring in healthcare. It is increasingly recognized as a bidirectional process where both mentors and mentees benefit. Benefits for the mentees include increased self-efficacy, job satisfaction and productivity at work, while

mentors can benefit through personal fulfilment, and the development of leadership and coaching skills [1]. These advantages are also pertinent for radiation oncology (RO). While mentorship appears to be exceptionally valuable also in RO, it remains understudied [2–4]. Data suggest that mentee satisfaction reported by mentees in formal mentoring programmes is considerably higher than mentee satisfaction

* Corresponding author at: Department of Radiotherapy, Erasmus MC Cancer Institute, P.O. Box 2040, 3000 CA Rotterdam, the Netherlands.

E-mail address: s.petit@erasmusmc.nl (S.F. Petit).

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reported by residents with informal mentors in their RO residency programmes [5]. Despite the known advantages, formal mentoring programmes are rare and the informal route is not always evident. This was exemplified by Lananit *et al.* who found that also among early career board-certified radiation oncologists in North America the majority struggled finding a mentor and build a mentorship relationship [6]. It can be postulated that finding a mentor is possibly more challenging in Europe, where there is less experience in mentoring and less of a mentoring culture. Regardless of the plea by De Souza and Viney in the British Medical Journal that mentoring is ‘is a key part of the armamentarium of today’s doctor’ [7] most studies that have been published on mentoring in the field of RO are from North America, with little data available for Europe [2].

Indeed, many of the members of the European Society for Radiotherapy and Oncology (ESTRO) do not have access to mentoring programmes in their home institutions [8]. Nevertheless, they find mentoring as an instrumental tool for education, training and professional development. This has been clearly shown in the ESTRO survey on education, where 91 % of respondents declared they consider mentoring as an important and relevant option to improve education in RO (unpublished member survey). This dichotomy identifies an educational gap and an unmet need that deserves consideration and an attempt to be mitigated.

Moreover, it has been recently shown that Diversity, Equity and Inclusion (DEI) scores are lower in Europe compared to United States benchmark data for most inclusion factors, and to a greater extent for minority groups [9]. This may be caused by an imbalance towards relevant personal and professional values such as personal development, togetherness and people-oriented culture [10]. Mentorship is considered one of the options to address disparities and inequities in the RO workforce, creating an inclusive environment and improving engagement, retention and job satisfaction [11].

Job satisfaction and burn-out are related subjects. High burnout scores were recently found among RO professionals (RTTs (25 %) medical physicists (30 %) and radiation oncologists (31 %) [12–15]). There are indications that participating in a mentoring programme is inversely related to having high burnout scores [16–19]. Taking the high burn-out scores, the willingness to improve DEI in Europe, and poor availability of mentoring programmes into consideration, the young ESTRO committee (yESTRO) decided to initiate a pilot mentoring programme for ESTRO members.

The goal of this project was to develop an international, multidisciplinary mentoring programme for dyad-based (i.e., one-on-one) mentoring, and evaluate the satisfaction among the involved mentees and mentors after one year.

Materials and methods

The pilot programme was initiated by the yESTRO committee and developed in collaboration with the ESTRO Education Council. The organization and evaluation of the programme was executed by yESTRO representatives, while the Education Council played an enabling role within the society.

Selection of mentees and mentors

An open call for mentees to apply to the programme was launched in December 2019 with an e-mail blast to all eligible members and an article on the ESTRO website. All early-stage career ESTRO members from all professions (radiation oncologists, physicists, biologists and RTTs) were invited. Conditions to apply consisted of being under the age of 45, with a minimum of 2 years of postgraduate work experience and being aware of recent developments in their field. Fifteen mentees were selected by the yESTRO committee based on candidates CV and motivation letter, while striving for a balance in geographical location, gender and profession.

Twenty mentors were recruited for the programme through the standing committees and councils of ESTRO. For the pilot, mentors with experience, enthusiasm for education and with positive references were selected, while striving for a balance in geographical location, gender and profession. A surplus of mentors was invited to increase the likelihood of good mentor–mentee matches.

Description of the programme

Due to the COVID-19 pandemic, the kickoff meeting, planned to take place in spring at ESTRO 2020, was postponed and ultimately held at the annual ESTRO conference in Madrid in August 2021. As homework before the kickoff, the mentees and mentors watched presentations about mentoring recorded during the ESTRO 2020 conference [20,21] which are now available online [22]. Topics discussed in the educational videos included the difference between mentoring and sponsoring, and factors that contribute to a successful mentoring relationship. Research shows that mentoring works best when both mentees and mentors share values and interests, therefore preferably mentor–mentee couples should not be assigned, but couples should be self-identified [1]. To promote this in an international setting where mentees and mentors did not know each other *a priori*, the following procedure was applied. First the mentees were asked to submit a list of five of the 20 potential mentors that they would like to meet at the conference. At the conference a speed dating session was organized. During the four rounds of speed dating, of 10 min per round, each mentee spoke with potential mentors, based on the submitted lists following a schedule made by the organizers. After the speed dating mentees provided a top three of their preferred mentors, based on which the final mentor–mentee couples were assigned by the organizers, who made an effort to accommodate as many matches of first choice as possible.

Due to the pandemic, some of the mentors and mentees were not able to travel to the physical conference. Therefore, in addition to the onsite kickoff, an online kickoff and speed dating were organized.

During the one-year mentoring programme, mentor–mentee couples committed to meeting at least once every three months online or in person, according to their possibilities and preferences.

Evaluation plan

Formal evaluation questionnaires were sent out to both mentees and mentors two weeks after the speed dating sessions and after completion of the programme. The speed dating evaluation questionnaire consisted of 10 questions regarding their experience with the speed dating and their general expectations of the programme (including a score on a 1 to 10 scale). The final evaluation consisted of 21 questions on how often and how long the couples met, what were the benefits of the programme for the mentees, how they experienced the programme (including a score on a 1 to 10 scale) and whether they would advise others to join. The full evaluation questionnaires can be found in the [supplementary files S1](#).

Results

Participants

Six mentees attended the onsite and seven the online speed dating sessions. Two mentees could not attend any speed dating session and therefore had to withdraw from the programme. After the speed dating, thirteen mentor–mentee couples were formed. The thirteen mentees consisted of eight radiation oncologists, three physicists and two RTTs. The median age was 34 (range 31–40) and the countries of residence were Albania, Belgium, Netherlands, Romania, Slovenia and the UK. Reasons mentioned by multiple mentees to participate to the program were broadening their network (12/13), guidance on (career) decisions and or long term goals (11/13) and gaining RT knowledge (4/13).

The mentors of the assigned couples consisted of eight radiation oncologists, two physicists, two biologists and one RTT, from Denmark, Ireland, Italy, The Netherlands, Poland, Sweden and the UK. For only one couple the mentor and mentee worked in the same country. For the onsite group, by chance each mentee could be matched with the mentor of their first choice. For the online group, three mentees could be matched with their first choice and four with their second choice.

For eight out of thirteen couples the mentor and mentee were from the same profession (seven radiation oncologist couples, and one RTT couple). One mentee did not contact their mentor and the relation ended after the speed dating. One mentor and mentee couple had a conflict of interest that occurred within the first months of the programme, after which the mentee was assigned to their second-choice mentor for the remainder of the programme (Supplementary files S2).

Evaluation of the speed dating

The evaluation form of the speed dating was filled out by 11 mentees (84 %) and nine mentors (70 %). In the absence of COVID-19 restrictions, 81 % of the mentees that responded indicated they would have preferred to take part in the onsite speed dating, while the majority of the mentors (63 %) had no preference. Given a fixed timeframe of 40 min for the speed dating, the majority of mentees (63 %) and mentors (78 %) preferred 4 speed dates of 10 min each, over 2, 3, 5 or 8 speed dates. Based on the experience of the speed dating, 100 % of the mentees and 89 % of the mentors would have advised others to join the programme, and 89 % of the mentors would like to join again. Based on the speed dating experience, on a scale of 1 to 10, the mentees gave a median score of 9 for how useful they expected the programme to be for them, compared to a median score of 8 for the mentors.

Evaluation of the programme after one year

Eighty-five percent (11/13) of both participating mentees and participating mentors filled out the final individual evaluation form at the end of the programme. One of the mentees that did not fill in the final evaluation, was the mentee that did not contact its mentor, and can

therefore be considered to have that left the programme after the speed dating. The other mentee that did not fill in the final evaluation, was later approached by the authors, and the mentee turned out to be very enthusiastic about the programme. The number of times that mentees and mentors had met during the year after the speed dating varied between 0 and 8 times with a median of 3 (the recommendation was 4 times). Regarding their experience at the end of the programme, on a scale from 1 to 10, both mentees and mentors scored the programme with a median score of 9 (mentees range 8–10, mentors range 5–10). There was no markable difference between the mentees that attended the onsite vs the online speed dating session (onsite median 9 (range 8–10); online median 9 (range 8–10)) nor for the mentors (onsite median 8 (range 5–10); online median 9.5 (range 7–10)). We observed a very weak correlation between the number of times the mentees and mentors met and their final score of the programme (R-squared of 0.13 for mentees, and 0.27 for mentors). Fig. 1 shows the percentages of mentees and mentors that expected a positive impact on the career of the mentee (100 % and 82 % respectively), that would like to keep on meeting their mentor/mentee (91 % and 82 %), that would advise others to join the programme (100 % and 100 %), and that would like to participate again as mentor (100 % of mentors). The mentor who was not contacted by its mentee after the speed dating and that scored the programme a 5, did not expect a positive impact on the career of the mentee, and would not like to keep meeting their mentee. Of note, even though the mentor scored the programme with a 5, the mentor would like to participate again to future editions. In addition the mentor would advise also other potential mentors to participate to the program. We chose to not exclude the couple from the results, as it underlines that a mentor–mentee relationship cannot exist without mutual commitment.

The evaluation highlighted four recurring reasons mentors expressed their satisfaction with the programme. For the following quotes, the question number of the final evaluation questionnaire is indicated (Q) and well as the mentor number. Text between square brackets was inserted by the authors for clarity or to avoid identification of the mentee. The first reason mentors liked the programme, was they learned from it themselves, and it gave them confidence, to mentor others (N = 6/11), which illustrates that mentoring is a bidirectional process. “The

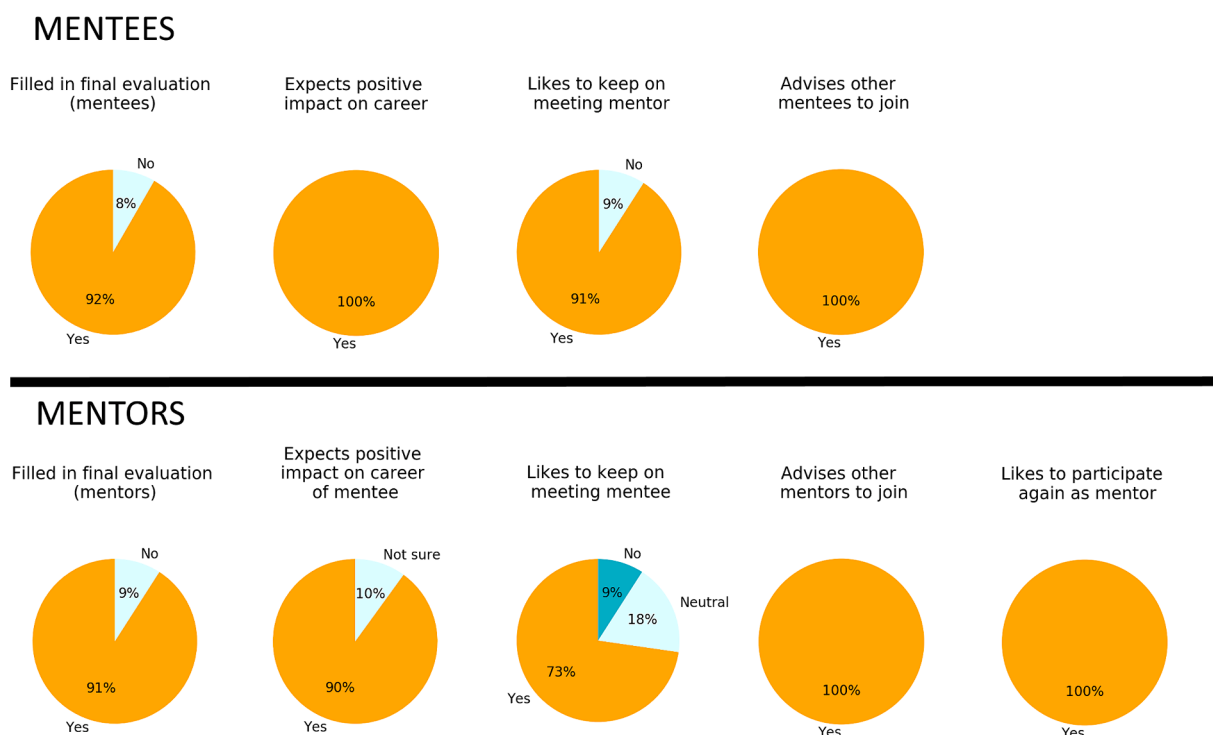


Fig. 1. Overview of the results of the final evaluation of the programme by the mentees (upper row) and mentors (lower row).

exchange was fantastic and I learnt both as mentor and as mentee" (Q11, mentor 5); "I learned from hearing the mentees perspective how I can improve helping my own students" (Q11, mentor 10); "This programme showed me I also have something to offer to someone with years of experience" (Q11, mentor 11); "reflections with an unbiased colleague" (Q11, mentor 3); "... it has given me confidence and skills to use when mentoring people within my own institution" (Q11, mentor 4); "the opportunity to meet new people ... learn about the system of work of other centers.. learn from each other" (Q11, mentor 1);

The second reason was that it was rewarding to help the mentee (N = 4/11; "it has been hugely rewarding and enjoyable" (Q11, mentor 4); "I have witnessed a transformation of the mentee-increased confidence is one ... no doubt this will boost the mentees career" (Q10, mentor 5); "It gave more back than the hours spent." (Q21, mentor 10); "[I liked] using [my] experience and network to help others" (Q11, mentor 3));

The third reason was that mentors enjoyed the personal connection. A good match with the mentee (N = 4/11, "I might have had a particularly good chemistry with my mentee" (Q11, mentor 11); "I very much enjoyed my sessions [with the mentee]" (Q11, mentor 4); "The way we were matched ... made mentoring very attractive" (Q11, mentor 8); "I connected well with my mentee" (Q10, mentor 10).

Lastly, the international aspect was given as reason why mentors enjoyed the program. (N = 3/11; "to discuss with someone with very different work and life conditions than mine" (Q11, mentor 7); "we were from different specialties and countries. The exchange was fantastic" (Q11, mentor 5); "Nice to be introduced to someone from a very different health system and to make links which we'll hopefully use in the future" (Q11 mentor 9);

Suggestions for improvement of the programme that were given by mentors were to send out reminders to plan meetings (N = 2/11); to more clearly define that the scope of the programme was not research mentorship (N = 1/11); and an additional face to face meeting, e.g., at the end of the year (N = 3/11). Six (6/11) mentors did not have suggestions for further improvements.

Table 1 presents what the programme brought for all mentees and how they expect it will affect their career. Most often (7/11)^{mentee 1,3,6,7,8,9,10} the program brought them useful recommendations and advice; followed by the network of the mentor (6/11)^{mentee 2,4,5,9,10,11}; the opportunity to reflect and get feedback (3/11)^{mentee 1,5,6}; advice on research (2/11)^{mentee 2,7}; help with prioritization (2/11)^{mentee 4,8}; an independent view (1/11)^{mentee 3}; reassurance(1/11)^{mentee 4}; and an example to follow (1/11)^{mentee 11}.

Discussion

ESTRO organized a one-year pilot mentoring programme focused on dyad-based (one-on-one) mentoring. The programme underwent evaluation upon its completion. The programme commenced with two speed dating sessions for mentors and mentees, one held during the ESTRO 2021 annual conference in person and the other conducted online. The evaluation at the end of the program revealed considerable the benefits reported by mentees (as shown in Table 1) and consistent high ratings from both mentors and mentees (with median scores of 9 out of 10). These factors contributed to the programme being deemed highly successful. Notably, the ratings were high regardless of whether mentors and mentees participated in the onsite or online speed dating sessions. Though the majority of the mentees (82 %) expressed a preference for participating in onsite speed dating.

There are some possible implications of an international mentoring programme organized by a European society, compared to hospital, university-based or national programmes. First, three important prerequisites for a fruitful mentoring relationship being mentoring confidentiality, no power disbalance and no conflicts of interest, may be easier to achieve in an international setting among mentors and mentees that are both from the same field. On the other hand, it may be challenging to establish a relationship through online meetings only.

Table 1

Mentees explain what the programme brought them and how they expect it will affect their career. Names of mentors are replaced by "mentor", the name of a hospital is replaced by "a prestigious hospital" and typos are corrected.

Mentee	What did the programme bring you?	In what sense do you expect the programme has affected your career path/opportunities?
1	The possibility to reflect on the environment I work in and get feedback on it and some fresh ideas and recommendations for things to do and not do.	It has helped me to be more aware of the impact of choices I make or steps I take and be more efficient and focused in what I do.
2	The mentoring programme was a great opportunity to gain experience from an experienced mentor on research projects and I hope this programme will help me to expand my networking in the radiation-oncology community.	I hope I will have the possibility to work on the research project that we elaborated during the mentorship year and to have a publication on that topic.
3	Mostly an independent view of an experienced person.	The mentor helped me to formulate strategies and gave advice on my career advancement.
4	Reassurance, these are normal issues for the current stage of my career. New ideas on actions to take and things to prioritize. Rehearsal session for my PhD defense	International network. A broader scope on my career, new aspects to take into account.
5	This programme was a great programme for me and the matching with my mentor was a perfect match. The mentor helped me to clarify in what direction I want to go with my career.	First of all, this programme gave me the opportunity to meet my mentor. At this moment I'm working on my PhD and I explained to my mentor how difficult it is for me to finish in my home country. My mentor put me in contact with some person from his hospital that could help me. Also I visited my mentor for a period of one week and it was a great experience.
6	In a very difficult time of being new in my role (starting my PhD 50 % of the week and being clinical the other 50 %) my mentor was fantastic at guiding me through this difficult time of adjustment. We talked out situations and we able to come up with solutions. It was really helpful at the time.	I think in future situations I will be able to use some of the approaches again which I developed with the guidance of my mentor.
7	Help during my Master's thesis, projection and future career guidance, professional tips	The mentoring programme helped me during the development of my master thesis and guided me towards some specific projects. Having the opportunity to discuss my vision and be advised by someone more experienced was undoubtedly a great benefit and certainly very helpful in shaping my future career path.
8	Someone who gives insights and advice from a foreign perspective	My mentor has helped me fine-tune my short to medium term goals, such as finalizing my fellowship plans and the skills that I want to learn for medical practice
9	The programme was like a safe net, which acts like a trampoline, too. I could ask for professional advice, support, recommendations. On the other hand, I felt that my enrollment in this programme was not well received by my local	It opens the horizon and brings the opportunity that people with experience and a wider network to get to know us better. They also make recommendations on what to read, how to write, what

(continued on next page)

Table 1 (continued)

Mentee	What did the programme bring you?	In what sense do you expect the programme has affected your career path/opportunities?
	supervisor, so it had a detrimental effect, from this point of view.	courses to take, how and where to apply for training opportunities.
10	An opportunity for clinical training at a prestigious hospital which would not have happened otherwise. Besides, useful advice was provided by my mentor about the current issues of my career, e.g. applying to various scholarships, other training programs, issues with my current research etc.	See previous question.
11	It brought me into a wider contact with ESTRO, making me much more confident to approach new positions. The mentoring programme also got me excited again about working in research. It also offered me an example on how to advise younger colleagues within my home country.	It helped me get a fellowship at a research oriented institution. It also widened my circle of friends

Although satisfaction was not lower in the online speed-dating group than in the in-person speed-dating group, 82 % of the mentees expressed they would have preferred onsite speed dating. However, the annual conference does allow physical introduction between mentees and mentors as basis that may allow further online interactions. In addition, there are four main specialties within ESTRO (radiation oncologists, physicist, RTTs and biologists) that know of each other's setting, which allows for interdisciplinary mentor–mentee couples.

This study has a few limitations that should be acknowledged. Firstly, the sample size of the programme consisted of only thirteen mentee-mentor couples, which can be considered relatively small. Secondly, as the programme was evaluated after just one year, it is not yet possible to assess the long-term quantitative effects of the programme. However, in qualitative terms, the impact of the programme on the mentees was identified and documented (as shown in Table 1). Additionally, the authors are aware of at least three specific instances where the mentees indicated that the mentoring programme significantly contributed to new career opportunities. One mentee moved abroad for a clinical fellowship at a prestigious hospital. Another switched from a clinical practice to a research oriented fellowship in another country. The third became group leader at a different institution. Thirdly, to facilitate future comparisons with other studies, it is recommended to utilize a standardized questionnaire, such as the Munich-Evaluation-Of-Mentoring-Questionnaire (MEMeQ) [23]. Caveats of this programme also included an imbalance in the background of the mentees who applied, with a complete absence of biologists, while two of the mentors had a biology background. This could be explained by the relatively low representation of young biologists within ESTRO compared to other professions, but potentially also the possibility for biology fellows to get mentorship through other faculty programmes. Furthermore, there was only one RTT mentor and two RTT mentees in the pilot programme.

Despite RTTs being the largest profession within RO, there is an underrepresentation of RTTs in international professional activities such as ESTRO, as indicated also by attendance figures from previous ESTRO congresses. Particular attention will be given in the future editions of the mentoring programme to increase the representation of all disciplines within the mentees, including in improving the communication related to this programme.

Building upon the initial pilot's success, the mentoring programme's second edition commenced with its official launch at the ESTRO 2023 annual conference held in Vienna. Drawing from the evaluation of the pilot version, the programme was expanded to accommodate 20

mentor–mentee couples. The evaluation questionnaires for this edition will incorporate the MEMeQ as a standardized assessment tool. Prior to the speed dating sessions, mentors and mentees were required to submit brief biographies. To prepare the mentees for the speed dating process, an online meeting was conducted. Additionally, reminders will be sent to the mentee-mentor couples to facilitate scheduling of their meetings. Lastly, mentor education will be optimized in future editions to maximize the benefit for both mentors and mentees in the programme. The 2024 (third) edition will have its official launch at ESTRO 2024 in Glasgow.

CRedit authorship contribution statement

Steven F. Petit: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Visualization. **Daniel Portik:** Validation, Writing – review & editing. **Azadeh Abravan:** Writing – review & editing. **Jenny Bertholet:** Conceptualization, Writing – review & editing. **Dylan Callens:** Validation, Writing – review & editing. **Ludwig Dubois:** Conceptualization, Writing – review & editing. **Pierfrancesco Franco:** Conceptualization, Writing – review & editing. **Morten Horsholt Kristensen:** Validation, Writing – review & editing. **Pierre Montay-Gruel:** Validation, Writing – review & editing. **Daan Nevens:** Validation, Writing – review & editing. **Sophie Perryck:** Conceptualization, Writing – review & editing. **Kathrine Røe Todalen:** Conceptualization, Writing – review & editing. **Bartłomiej Tomasiak:** Formal analysis, Validation, Writing – review & editing. **Amanda Webster:** Validation, Writing – review & editing. **Jesper Grau Eriksen:** Conceptualization, Resources, Writing – review & editing. **Jolien Heukelom:** Conceptualization, Formal analysis, Investigation, Supervision, Visualization, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radonc.2024.110226>.

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