Survey on the practical implication of the ESTRO/EFOMP Core Curriculum for education and training of Medical Physics Experts in Radiotherapy

Section 1: Respondent/Country characteristics

In 2019 an ESTRO/EFOMP working group performed a survey to assess the current education and training practice in Europe [1] and in 2022 the ESTRO/EFOMP Core Curriculum for education and training of Medical Physics Experts in Radiotherapy, 3rd Edition was published [2].

Further to this, a new survey has been designed to understand the perception of each European country/national society of the ESTRO/EFOMP updated Core Curriculum (CC) with the aim to identify barriers that might impact the CC implementation at a national level. In particular, this questionnaire contains questions about context, application and potential changes to the national curricula to comply with the CC. The results of this survey will be published in an anonymous form.
There are 36 questions in this survey, divided in four sections, and it will take approximately 15-20 minutes to complete it. Some questions are similar to the ones in the 2019 questionnaire, so that we can see if things have changed in the meantime, perhaps also as a result of the revised 2022 ESTRO/EFOMP CC.
We kindly request that each National Society provide only one response. The questionnaire is also being sent in PDF format so that it can be reviewed within the National Society's Board.

We thank you for your valuable cooperation.

[1] Garibaldi *et al.* Towards an updated ESTRO-EFOMP core curriculum for education and training of Medical Physics Experts in Radiotherapy – Assessment of current education and training practice in Europe. Phys Med. 2021 :84:65-71. doi: 10.1016/j.ejmp.2021.03.030.
[2] Garibaldi *et al.* The 3rd ESTRO-EFOMP core curriculum for medical physics experts in radiotherapy. Radiother Oncol. 2022;170:89-94. doi:10.1016/j.radonc.2022.02.012

1. Which country are you completing this survey for?

2. Do you currently have a national post-graduate education and training programme in Medical Physics?

- ◯ Yes
- ◯ No

3. In case the education and training programme is not national, is it regulated on a regional or institutional basis ?

- ◯ Regional Basis
- ◯ Institutional Basis

4. Which disciplines of Medical Physics does your national education and training programme cover?

- [ ] Radiotherapy
- [ ] Nuclear Medicine
- [ ] Radiology
- [ ] Radioprotection
- [ ] All above
- [ ] Other (please specify)

5. Do you have a curriculum for Medical Physics?

6. Does it include all disciplines or do you have separate curricula for each discipline?

7. When was this/these curriculum/a last updated?

8. If not updated in the last 5 years, when do you intend to update?

9. How long does the current education and training programme take?

10. If the education and training is in more disciplines of Medical Physics, what is approximately the proportion of the education and training specific for Radiotherapy?

11. Does certification as Medical Physics Expert (MPE) happen directly after completing the education and training?

12. If not, after how many years of clinical practice do you receive the MPE certification?

13. Is the certification of MPE in one or more disciplines?

14. Which authority issues the MPE certification for completion of education and training programme?

15. Approximately, how many physicists start each year their education and training programme in Medical Physics (all disciplines)?

16. Have you discussed the new ESTRO/EFOMP CC in your National Society?

17. Have you discussed the new ESTRO/EFOMP CC with the certifying body or ministries in your country?

18. Have you decided to start working on (partial) implementation of the ESTRO/EFOMP CC in a short term (<2y)?

19. If not, what are the reasons for not considering a (partial) implementation of the ESTRO/EFOMP CC in a short term (<2 y)?

20. If you have not yet decided on implementation in the short term, are you considering to implement it in the future?

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Section 2 : CC Implementation Phase

In this section we want to assess what the current implementation stage and possible barriers to implementing the ESTRO/EFOMP CC are. This will allow us to perform a gap analysis to define future action plan/strategies for implementation support.

In particular, we are interested to understand what is your interpretation of the concept of implementation of the ESTRO/EFOMP CC in your national context and

what are you are doing, or plan to do, to implement it in the short (<2 y), medium (2-5 y) or long term (>5 y).

21. Are you planning or working on a full implementation: entrance level, content, length, methods to assess competences?

- ◯ Yes, we are planning a full implementation in within 2 years (go to Q26)
- ◯ Yes, we are planning a full implementation between 2-5 years (go to Q26)
- ◯ Yes, we are planning a full implementation in over 5 years (go to Q26)
- ◯ Yes, we are working on a full implementation (go to Q26)
- ◯ No, we aren't (go to Q22)

22. Are you planning or working on partial implementation: for instance, entrance level or part of the content but keep the same existing length of the training?

- ◯ Yes, we are planning a partial implementation within 2 years
- ◯ Yes, we are planning a partial implementation between 2-5 years
- ◯ Yes, we are planning a partial implementation over 5 years
- ◯ Yes, we are working on a partial implementation

23. If you are planning or working on a partial implementation, are you planning to change some of the content or time spent on a topic?

- ◯ Yes, part of the content and time spent on a topic
- ◯ Yes, only part of the content
- ◯ Yes, only time spent on a topic
- ◯ Other (Please specify)

24. If you are planning or working on a partial implementation, are you planning or working on changing the length of the training to the advised 4 years?

- ◯ Yes
- ◯ No, we are planning to keep the current length
- ◯ No, we decided to (try to) change the length of the training to ……

25. If you are planning or working on a partial implementation, are you planning or working on changing the entrance level of the training?

Yes, we are changing the entrance level to …

No, we are planning to keep the current entrance level, which is……

26. Which topics of the ESTRO/EFOMP CC content are currently not addressed in your national CC?

- [ ] Complex quantitative data analysis/AI/automation
- [ ] Personalized treatments (integration of imaging with clinical, genetic and biological data)
- [ ] MR-guided RT
- [ ] Particle therapy (extension to image guidance, adaptive radiation therapy, treatment monitoring and patient-specific QA)
- [ ] New treatment modalities (eg. FLASH RT, spatially fractionated RT, …)
- [ ] More emphasis on quality management due to increased RT complexity
- [ ] More emphasis on Science and Innovation
- [ ] Other (please specify)

27. Which among the above-mentioned topics do you think are most urgent to implement?

- [ ] Complex quantitative data analysis/AI/automation
- [ ] Personalized treatments (integration of imaging with clinical, genetic and biological data)
- [ ] MR-guided RT
- [ ] Particle therapy (extension to image guidance, adaptive radiation therapy, treatment monitoring and patient-specific QA)
- [ ] New treatment modalities (eg. FLASH RT, spatially fractionated RT, …)
- [ ] More emphasis on quality management due to increased RT complexity
- [ ] More emphasis on Science and Innovation
- [ ] Other (please specify)

28. Which actions were undertaken by your country/NS to implement the ESTRO/EFOMP CC?

- [ ] Presentation of the CC to the competent authority
- [ ] Presentation of the CC at the national Medical Physics congress
- [ ] Other (please specify)

29. Which actions do you think ESTRO and EFOMP should put in place to facilitate your country in the implementation phase?

- [ ] Access to ESTRO/EFOMP courses on new topics for trainees as part of their training
- [ ] Assessment tools
- [ ] Facilitate mobility of students to allow training on topics on which no trained faculty is available in the country
- [ ] Providing support letters to convince local authorities
- [ ] Other (please specify)

30. How long do you think the implementation phase will last?

31. Do you think the implementation of the ESTRO/EFOMP CC would improve MPE professional development in your country?

Yes, please explain why...

No, please explain why...

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Section 3 : Barriers to Implementation

This section aims to identify items that were or might be barriers to implementing the ESTRO/EFOMP CC for your national training scheme.

32. Potential barriers related to the context.

- [ ] Lack of support from the government to implement the ESTRO/EFOMP CC (e.g. financial support)
- [ ] Poor coordination between the government and institutions on the implementation of the ESTRO/EFOMP CC
- [ ] Lack of hospital organization support to implementation of the ESTRO/EFOMP CC (e.g. financial support)
- [ ] Misalignment between the ESTRO/EFOMP CC and the political and economic context
- [ ] Suggested curriculum length (4 years for common area of Medical Physics and RT) or even enhancing the length to get closer to 4 years is considered unfeasible
- [ ] Poor fit between the ESTRO/EFOMP Core Curriculum and the assessment system in training settings (for example – the University assessment system)
- [ ] Other (please specify)

33. Potential barriers related to the implementation process

- [ ] Insufficient faculty members to teach the ESTRO/EFOMP CC
- [ ] Faculty are not trained on the topics to teach the ESTRO/EFOMP CC
- [ ] Lack of an influential person leading implementation of ESTRO/EFOMP CC
- [ ] Lack of organizational interest or time for leading implementation of ESTRO/EFOMP CC
- [ ] Other possible barriers: ...

34. Potential barriers related to the changes introduced in the updated ESTRO/EFOMP CC

- [ ] Lack of availability of courses on new topics such as Complex quantitative data analysis/AI/automation
- [ ] Lack of availability of courses on new topics such as Personalized treatments (integration of imaging with clinical, genetic and biological data)
- [ ] Lack of availability of courses on new topics such as MR-guided RT
- [ ] Lack of availability of courses on new topics such as Particle therapy (extension to image guidance, adaptive radiation therapy, treatment monitoring and patient-specific QA)
- [ ] Lack of availability of courses on new topics such as New treatment modalities (eg. FLASH RT, spatially fractionated RT, ...)
- [ ] Lack of funding
- [ ] Lack of assessment tools
- [ ] Other possible barriers...

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Section 4 : Future Developments

In view of a harmonization of the level of education and training at European level and the recognition of MPE as health profession, EFOMP together with ESTRO, EANM, and ESR are investigating the possibility of developing a “single combined CC for all three MPE specialities” once the CC for MPE in Nuclear Medicine and in Radiology have been updated. In this way, the total length of the training for MPE in the three disciplines can be clearly defined. In 2014 the EC issued the document Radiation protection RP N° 174 on “Guidelines on Medical Physics Experts” which defines the framework to achieve the MPE certification in one speciality of Medical Physics, that is 2-year training to get clinical certification in Medical Physics (in one specialty) + 2 y to get MPE certification (EQF 8).

35. Did you discuss the future of the MPE profession in your country and the corresponding requirements for the CC. E.g., a combined CC for all disciplines, the length of such an education, the compulsory items in such a CC, etc?

36. Do you think EFOMP together with the three European scientific societies (ESTRO, EANM, ESR) should develop a “single combined CC for the education and training of MPE with a general part common to the three disciplines and then discipline-related specific parts? This combined CC would be suitable either for those countries where the certification of MPE is achieved in all specialties of Medical Physics or in those countries where the MPE certification is achieved only in one speciality.