

Amplifying Educational Effect Size Through Micro-Credentialing: Insights from the European Cardio-Oncology Symposium (ECOS) Online Certificate Course

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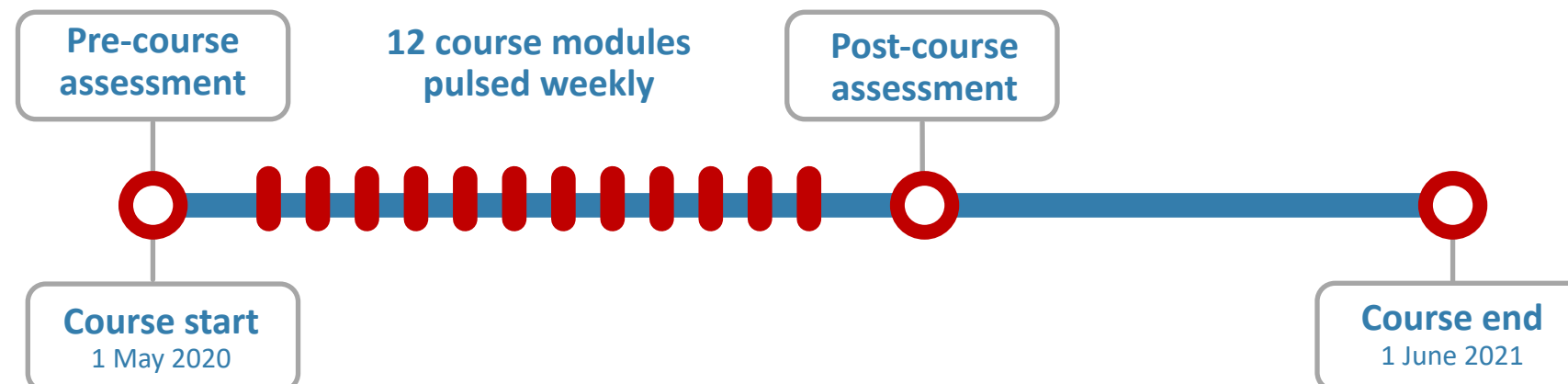


BACKGROUND

The European Cardio-Oncology Symposium (ECOS), an ongoing global continuing medical education (CME) initiative, launched with a live 2.5-day meeting in October 2019.¹ To extend the reach of the education, we developed 12 enduring 30-minute CME activities from the event recordings. Research suggests that offering learners the opportunity to earn a micro-credential, such as a course certificate, incentivizes sustained engagement.² Therefore, we packaged the 12 on-demand modules into an online certificate course, *Essentials of Cardio-oncology*, offering the certificate as an incentive to learners to complete 14 activities: the 12 enduring modules, plus a 24-item pre- and post-course assessment survey designed to measure knowledge and calculate the course effect size. In a recent pooled analysis, Olivieri et al described a “medium” effect size (i.e., 0.48–0.75 as measured by Cohen’s *d*) as an appropriate benchmark for online CME activities.³

METHODS | Educational Design

The *Essentials of Cardio-oncology* course included 14 touchpoints: a 24-item pre-course assessment survey, 12 core knowledge modules (0.5 credits each), and the post-course assessment. Learners who wished to earn the certificate were required to begin and end with the pre- and post-course assessments, respectively; the 12 core knowledge modules could be completed in any order. Learners who did not intend to complete the certificate were invited to engage with and claim CME credit for any of the 12 knowledge modules.



Core Knowledge Modules

- 1 Overview of cardio-oncology
- 2 Cardiotoxicity: a universal definition
- 3 Cardiovascular toxicities of targeted cancer therapies
- 4 Role of biomarkers in cardio-oncology
- 5 Speckle tracking echocardiography
- 6 Cardiac imaging in cardio-oncology
- 7 Primary prevention in cardio-oncology
- 8 Thrombosis and anticoagulation in cancer patients
- 9 Exercise therapy and rehabilitation in cardio-oncology
- 10 Cardio-oncology registries
- 11 Debate: Every patient receiving 5FU should have a stress test
- 12 Debate: All patients should be monitored for lifelong late effects

METHODS | Assessment Measures

- For learners who completed ≥ 1 core knowledge modules, assessment questions at the end of each module evaluated:
 - Satisfaction: degree of agreement that the learning objectives were met
 - Self-reported intent to change practice and barriers to change
- For the subset of learners who completed all 14 components of the full certificate course, the 24-item pre- and post-course assessment surveys evaluated:
 - Knowledge: mean pre- vs post-course assessment scores
 - Certificate course effect size using Hedges’ g_{av}

RESULTS | Reach & Engagement



Reach by Job Type

Physicians	71.1%
Nurse	4.6%
Pharmacist	0.9%
Other healthcare professional	4.2%

Reach by Region of Practice

Europe	53.1%
Latin America/Caribbean	23.1%
North America	10.6%
Asia	9.5%

Reach by Specialty

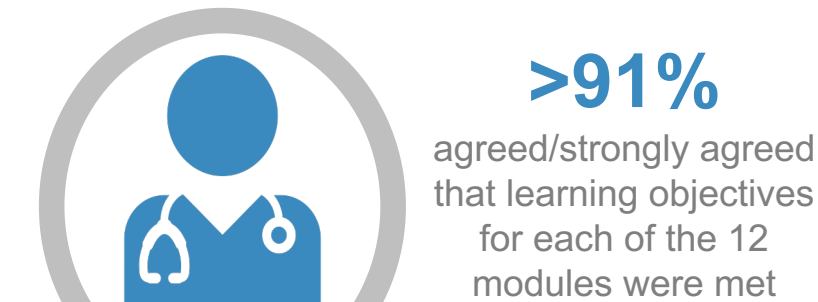
Cardiology	65.8%
Oncology	10.4%



Online Engagement

>1,350 Twitter followers
@EuroCardioOnc

Learner Satisfaction



RESULTS | Intent to Change Practice

- Across the 12 modules, 60% to 83% of HCPs (N = 433) reported an intent to change practice immediately or with additional training/information. Examples included:



60–83%

reported intent to change clinical practice

“I will be more attentive to the symptoms and course of cardiac patients who undergo chemotherapy as well as non-cardiac cancer patients developing heart failure symptoms.”

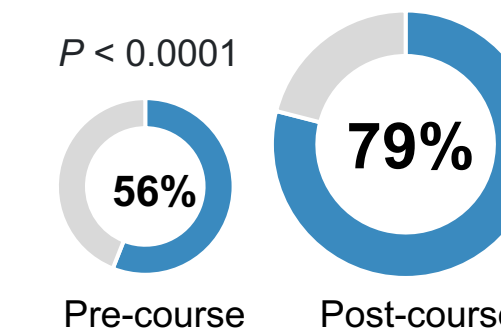
“[I will] consider referral/setup of cardiac rehab-type program for cancer patients.”

“I will reschedule my working plan to see more patients from oncology.”

“I have to keep in mind the side effects [of targeted therapies] and how to deal with them.”

RESULTS | Effect Size

- Among learners who completed the online *Essentials of Cardio-oncology* certificate pre- and post-course assessments (n = 71), the outcomes evaluation showed:
 - Statistically significant increase in knowledge ($P < 0.0001$)
 - Large course effect size (Hedges’ $g_{av} = 1.49$)



Mean Course Assessment Score

1.49 Hedges’ g_{av}

Indicates a **large effect size** for the overall certificate course

Certificate Course Effect Size

CONCLUSIONS

- The ECOS *Essentials of Cardio-oncology* online certificate course achieved a wide reach, with 433 total learners from 61 countries completing ≥ 1 modules.
- Our findings support the use of micro-credentialing to incentivize learners toward sustained engagement with online CME.
 - Among 332 learners who completed the pre-course assessment, 71 (21.4%) completed all 14 activities to earn the *Essentials of Cardio-oncology* certificate.
- Incorporating a micro-credential into the design of a multi-component CME course does not appear to compromise the effectiveness of the education.
 - We found a statistically significant gain in knowledge among certificate completers, as well as a large effect size, exceeding emerging benchmarks for online CME.