



# BRACHYTHERAPY

## Report from BRAPHYQS

Åsa Carlsson Tedgren, August 2023

The Brachytherapy Physics Quality Assurance System (BRAPHYQS) working group of the Groupe Européen de Curiethérapie (GEC) and the European Society for Radiotherapy & Oncology (ESTRO) is involved with a variety of projects related to brachytherapy physics.

In recent years two new working packages, WP-22 and WP-23 have been initiated.

The WP-22 "Ru-106 eye plaque therapy" is a joint project, run together with the GEC-ESTRO Head and Neck working group (chaired by Luca Tagliaferri, Italy) and additional invited experts. Two surveys one for physicians and one for physicists, among clinics performing Ru-106 ocular brachytherapy, have been performed. Preliminary results showing a widely varying clinical practice were presented on the annual ESTRO meeting in Vienna in 2023. Publications on the results of the surveys are in progress.

The WP-23 "Medical device regulations" was started early 2023. The aim is to gain knowledge on how the new regulations affect the brachytherapy discipline. Jacob Johansen (Denmark) is chairing this group that also have additional invited experts and is arranging a session on the topic during the GEC-ESTRO workshop to be held in Prague in November.

The working package WP-21 has resulted in new European recommendations for the calibration of high energy HDR and PDR brachytherapy sources "GEC-ESTRO ACROP recommendations on calibration and traceability of HE HDR-PDR photon-emitting brachytherapy sources at the hospital level", Perez-Calatayud J et. al. 2022 *Radiother Oncol* **176** 108-17. The recommendations also provide information on available calibration services for <sup>192</sup>Ir and <sup>60</sup>Co sources. Underlying the tightened limit on agreement between brachytherapy source strength, as measured at the hospital and stated on vendor certificates, compared to earlier recommendations is a sub-project conducted within the WP-21 and published as "Source strength determination in iridium-192 and cobalt-60 brachytherapy: A European survey on the level of agreement between clinical measurements and manufacturer certificates" by Vijande J et. al. *Physics and Imaging in Radiation Oncology* 2021 **19** 108-11.

The comprehensive project on commissioning and quality assurance of TG-43 brachytherapy treatment-planning systems chaired by Marisol de Brabandere (Belgium) and conducted as BRAPHYQS WP-19 has been approved by ACROP (now ESTRO Guidelines committee) to issue recommendations on the topic. A draft manuscript is in progress.

BRAPHYQS is participating in arranging one of the tracks of the up-coming Physics workshop (Turin, Italy, October 2023) "Methods to combine and sum external beam and brachytherapy dose distributions".

BRAPHYQS was involved in the international project to develop primary standards and traceable measurements for electronic x-ray brachytherapy sources (PRISM-eBT) that was closed in early 2023. PRISM-eBT is a project within the European Metrology Programme for Innovation and Research (EMPIR) to develop new primary standards for eBT. BRAPHYQS members have been involved in several subprojects, among others to measure 3D dose distributions around electronic brachytherapy sources. Outcome of the project in form of publications and other resources such as spectra of electronic brachytherapy sources can be found on the PRISM-eBT web page [http://www.ebt-empir.eu/?page\\_id=734#publications](http://www.ebt-empir.eu/?page_id=734#publications).

BRAPHYQS is represented by Frank-André Siebert in the SAMIRA ERVI project, which is an EU initiative to "ensure that radiological and nuclear technologies continue to benefit the health of EU citizens, and contribute to the fight against cancer and other diseases". ERVI stands for European Radioisotopes Valley Initiative and is part of SAMIRA (SAMIRA Action Plan - the Strategic Agenda for Medical Ionising Radiation Applications, an EU initiative). An aim is to ensure reliable European production of radioactive sources for medical use. GEC-ESTRO, through BRAPHYQS, is involved to follow the project and stress the importance of continued availability of brachytherapy sources.

BRAPHYQS members have contributed to an invited paper on risk and quality in brachytherapy which has resulted in the publication: Poder et. al. 2023 Risk and Quality in Brachytherapy From a Technical Perspective *Clin Oncol (R Coll Radiol)* **35** 541-7. A full day meeting is planned for September 2023 in Valencia, Spain with Javier Vijande as the local host. Existing projects will be pushed and new topics to develop brachytherapy further will be discussed.



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