

# Instructions for EMBRACE dummy run

## Introduction

The role of quality assurance (QA) is to provide a review that ensures that each participating centre meets the requirements of the protocol. This will ensure that the clinical patient information is provided appropriately, the image quality is appropriate, the radiotherapy procedures are consistent, and that the reported DVH parameters are reliable. The QA will be based on evaluation prior to patient enrolment. Principles of contouring and treatment planning will be reviewed in the dummy run. Furthermore, the centres are required to complete a compliance form that documents procedures for imaging, treatment planning, delivery and verification.

Full 3D evaluation of dose plans is challenging, and has never been done before in European brachytherapy protocols. Import and export functions for brachytherapy are not yet standardised, and there does not exist any commercial product which can read dose plans from all brachytherapy treatment planning systems (TPS). Therefore we have to rely on individual solutions for different TPS's. We can not from the beginning provide a fully tested framework for export and import, but we will have to solve individual problems in the process. We therefore ask for your patience in helping us and the companies in making this 3D evaluation possible! It will be of great importance for the study and for brachytherapy protocols in the future.

## Dummy run cases and treatment planning

### Cases

Each institution is asked to supply dummy run cases with MRI guided brachytherapy from their own clinical routine.

Two cases should be submitted with medical information, clinical drawings for both time of diagnosis and brachytherapy, images and dose plan for both EBRT and BT, representing typical situations for cervix cancer treatment:

- 1) large tumour at diagnosis, IIB, (GTV >4cm width; >30 ccm), proximal/mid parametrial infiltration and with good response (GTV <3 cm width; <15 ccm at the time of brachytherapy; max width of HR CTV <5 cm)
- 2) large tumour, IIB distal or IIIB (GTV>4 cm width; >40 ccm), distal parametrial or pelvic wall infiltration and insufficient response (GTV >3cm width; >15 ccm; max width of HR CTV > 5 cm)

Case 2 should result in poor coverage from pure intracavitary BT.

Additional means of treatment should be reported: parametrial boost and/or combined intracavitary and interstitial treatment.

### ***MR imaging for BT***

Target contouring is performed on T2 weighted images (no fat suppression). The quality of the MR images will be evaluated together with target and OAR contours.

### ***Images, contouring and dose planning***

- EBRT: Use the treatment planning CT at diagnosis.
- In case of any boost treatment the CT used for this should be provided including contouring and dose plans
- BT: Use the MRI from the first BT fraction.

- Delineate structures according to the EMBRACE protocol and the GEC ESTRO Recommendations (2005).
- Make a dose plan according to your usual approach and in accordance with the EMBRACE protocol and the GEC ESTRO Recommendations (2006)

## Reporting

An ftp-site has been created for the EMBRACE dummy run. Indicate to Kari Tanderup ([ktanderup@as.aaa.dk](mailto:ktanderup@as.aaa.dk)) that you want to submit a dummy run and you will receive username, password and instructions for upload on the ftp-server.

Four items should be uploaded by you on the ftp server:

- Protocol compliance questionnaire
- Clinical drawings at diagnosis and at the time of BT
- EMBRACE dummy run CRF's (Clinical & radiological description and Treatment & dose parameters)
- Images and dose plans

The "EMBRACE dummy run CRF" Excel spreadsheet contains:

- Status at diagnosis form
- Status at BT form
- Treatment & DVH form

### ***Export of images and dose plans***

Patients are anonymised and renamed according to the case and institution, for instance "good response, Utrecht" and "bad response, Utrecht".

Full 3D information should be exported for each case:

- MRI data sets at diagnosis
- CT images, structures and dose plan, EBRT
- T2 weighted MRI with target and OAR structures, BT
- Dose plan, BT

BT dose plans should be exported using the "ftp-export"-function.

For the Nucletron PLATO system the following procedure should be followed:

Export the directory with all the data to another medium. Most important is that you first have to know in which IDxxxxxx the data are kept. Two IDxxxxxx are involved normally, one for the xxx.pat and plan files, and one for the dose grids xxx.BEX. This directories and files should be transferred to the ftp-server.

The companies are kindly available for questions on anonymisation and export. Contact persons are:

Varian: Geneviève Lafreniere ([Genevieve.Lafreniere@varian.com](mailto:Genevieve.Lafreniere@varian.com))

Nucletron: Harold Beunk ([harold.beunk@nl.nucletron.com](mailto:harold.beunk@nl.nucletron.com))

Isodose Control: Paul Krechting ([pkrechting@isodosecontrol.com](mailto:pkrechting@isodosecontrol.com))

Please give a notion on email to Anna Stepien ([anna.stepien@akhwien.at](mailto:anna.stepien@akhwien.at)) when you have submitted your cases. If you have further questions, please do not hesitate to contact us:

Christian Kirisits ([Christian.kirisits@akhwien.at](mailto:Christian.kirisits@akhwien.at))

Kari Tanderup ([ktanderup@as.aaa.dk](mailto:ktanderup@as.aaa.dk)).