

AbstractID: 9247 Title: Quality Assurance of TPS, based on 'Code of Practice for Quality Control of Treatment Planning Systems in Radiation Therapy' by SEFM (Spanish Medical Physics Association)

**Purpose:**

A quality assurance program has been established for our 3D TPS following "Code of Practice for Quality Control of Treatment Planning Systems in Radiation Therapy" by SEFM. A new quality assurance phantom designed by SEFM has been used. It facilitates the evaluation of a large number of non-dosimetric functions. These include CT image acquisition and transfer, graphical displays of 3D radiation beams, multiplanar CT image reconstructions, digitally reconstructed radiographs, the representation and manipulation of contoured patient anatomy and the conversion of CT numbers to relative electron densities with thirteen different inserts from air to iron.

Besides it can be used with NMR, PET and SPECT image acquisition, in order to ensure registration methods

**Method and Materials:**

The phantom purposed by SEFM contains materials and geometries that are appropriate for the routine QA of the features described above. It was used to evaluate two different 3D-RTPSs with images from three different CTs, NMR, PET and SPECT. The same tests can be done in every machine because exists one cylinder empty in order to fill it with the appropriate radionuclide

**Results:**

Using this phantom you can know the limitations of your TPS, in order to manage tools properly. Errors in geometry automatic tools can be evaluated. CT number to relative electron density conversion data has been established.

**Conclusion:**

The complexities of modern TPS require a quality assurance program. The Spanish Protocol details a complete set of the tests that can be followed in commissioning and routine QA with a very clearly and helpful way in the daily practice.

The phantom is a tool designed explicitly for the QA of 3D treatment planning software. It is a good tool for the QA in registration as well. Phantom is an effective device for this task.

**Conflict of Interest (only if applicable):**