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## On the way to paperless –a multi-professional project in radiation therapy

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The installation of Mosaiq 2.62 (Elekta) in the Radiotherapy Department at IPOCFG, E.P.E. was preceded by a rigorous process of planning and configuration. A multi-professional working group was appointed to work out the complete workflow of a radiation treatment, trying to meet the usual followed procedures with an optimized sequence. Receptionists, secretaries, nurses, radiation oncologists, dosimetrists, medical physicists and radiation technologists have worked together for around three months prior to any software installation. The complete workflow of the patient through the treatment process in external radiation therapy (ERT) was discussed and structured, including all the forms and documents usually kept in paper support, for records. The process was led by a medical physicist.

The purpose of this work is to present the result of this process which aimed at installing an Oncology Information System (OIS) that could regulate, control and register all the steps followed by the patient since his/her entrance in the RT Dept. towards his/her hospital discharge, including medical and nursing appointments, image acquisition procedures with positioning and immobilization requirements, structures delineation, treatment planning and optimization, treatment verifications and treatment delivery sessions, image review, nursing care procedures, medication prescription and clinical assessment of treatment outcome. The major ambition of this project was to make it paperless.

RT Dept. staff includes 12 radiation oncologists, 3 residents, 25 RTTs, 10 clinical secretaries, 5 receptionists and more than 30 nurses. Six medical physicists and 5 dosimetrists, belonging to an independent Medical Physics Dept. give permanent support to the RT Dept. The major equipment integrates 2 Siemens Oncor linear accelerators, 1 Tomotherapy HD unit, 1 Simulix Evolution (Elekta) conventional simulator and 1 CT-simulator Siemens Sensation Open. A MR unit belonging to the Radiology Dept. is connected via PACS. The brachytherapy (BT) sector has one Flexitron (Elekta) afterloader for breast, gynae and prostate HDR implants. Also LDR prostate seed implants are performed with ProLink Bard system. Overall around 1500 patients are treated per year.

The previous use of Lantis R&V system has facilitated the first approach to Mosaiq. The database conversion from Lantis to Mosaiq was done with no major problems. Mosaiq 2.62 installation required the upgrade of Syngo RT Therapist platforms of the Oncor linacs.

The tools available in Mosaiq 2.62 made it possible to structure and configure the external radiotherapy (ERT) sequence for the first implementation phase of the Mosaiq project. IQ Scripts engine enables the use of logical building blocks to define patient pathways and clinical protocols according to the department clinical practice and the structured workflow. For ERT, the patient pathway included 76 Quality Check Lists (QCL) which correspond to the same number of task descriptions –e.g. booking of a clinical appointment, perform some nursing assessments, delineate structures, etc. Through IQ scripts these 76 tasks have been grouped by automation in 14 building blocks where one initial task triggers off for the intended staff or location a sequential list of tasks including the automated generation of the needed documents like dose prescription form or positioning and immobilization form. The sequential completion of each task drives the following steps of the process. At the end, the RT patient chart contains all the relevant information and approved documentation concerning his/her complete pathway through the RT Dept.

Patient related documents can be either imported (like treatment planning documents, independent MU calculation or other patient specific QA documentation) or automatically generated and presented to the user for filling in (like dose prescription form, immobilization and positioning form, or the technical reception

form through which the RTT welcomes the patient and registers some preference for daily treatment hours, for instance). The first type of documents is eScan whereas the second is eScribe. The latter requires Word configuration and may include merging fields to be automatically filled in upon, for instance, completing assessments in earlier steps in the workflow.

ERT workflow configuration and testing in Mosaik required one month full time of a dedicated medical physicist supported by Elekta applications specialist. An intensive training program was also organized for all professionals. Staff was divided in multi-professional groups and the configured ERT workflow was simulated with test patients.

Connectivity to the general Hospital Information System (HIS) and the hospital electronic patient chart was assured by dedicated solutions that prevent task and registry duplication. This integration is a dynamic process that can evolve with the natural HIS development.

The GoLive of paperless Mosaik project took place on October 10, 2016. With less than one month of practice, it still requires a close daily monitoring. A daily 30 minutes briefing including a multi-professional team is a fundamental pillar of the successful implementation of such an ambitious project. Brachytherapy and Radiosurgery patient pathways have already been configured and will soon be tested and implemented.

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