

## solutions applied | a case study

# IT Solutions Streamline Radiation Oncology Practice Workflow

## Success linked to electronic medical record (EMR), record and verify system

Shands Jacksonville's (Jacksonville, Fla.) solution to streamline the complexity of radiation therapy started with their selection of a radiotherapy treatment vendor. In 2000, amid a massive renovation of the radiation oncology department, officials at Shands Jacksonville decided to switch linear accelerator vendors, opting for two digital linacs from Elekta to equip the UF (University of Florida) Shands Cancer Center.

The Stockholm, Sweden-headquartered manufacturer utilizes the oncology management system from IMPAC, and Shands Jacksonville would become the first commercial installation of the companies' integrated systems. In 2004, Elekta AB acquired IMPAC, which operates as a standalone company fervently committed to an open systems philosophy demonstrated at Shands by the system-wide, seamless integration of older linacs from other manufacturers.

Shands Jacksonville acquired two Elekta digital accelerators – each of which treats 25 patients a day in 15-minute slots – and the IMPAC system, featuring a record and verify system and an electronic medical record (EMR). Efficiency is crucial in a radiation oncology department; any delay at all in the carefully orchestrated treatment process imposes a scheduling conflict that can impact on patient convenience and comfort and on the department's operational efficiency.



Therapists Angela Chellini and Ernie St. John, Shands, Jacksonville

### Efficiency starts with the EMR

The EMR is the high-tech rival of the traditional paper chart, which is easily misplaced, prone to inconsistency, impossible to query and never available in more than one place at a time. IMPAC's comprehensive electronic chart for radiation oncology includes core charting features that are specific to radiation oncology, according to Shands Lead Therapist Ernie St. John.

"The system is like a clearinghouse of information on individual patients and includes literally everything that happened to the patient under this roof," St. John said. "It includes the type of treatment received and at what date and time, how many monitor units the patient received, the gantry and collimator angles, field size, table orientation and even facilitates processes such as electronic portal image review and plan review. With hard charts and manual data entry, people can record mistakes or fail to document part of a treatment, but with an EMR, all the information is there and it's a permanent record of treatment."

Added Angela Chellini, a therapist at Shands: "The EMR is instantly and simultaneously available to all authorized users whenever and wherever they need it. Virtually every PC in the entire department has the EMR handy. The scheduler is a nice feature, because it manages the movement of everyone within our department, the patient, nurses, doctors, dosimetrists, physics and other staff."

The system also maintains a library of the cancer clinic's preferred Care Plans for radiation therapy; at Shands, for example, are Care Plans for the Cancer Center's wide range of head and neck, prostate, breast, craniospinal and IMRT studies. The system also provides the capability to attach notes to the EMR, as well as send electronic messages to staff members and locations throughout the department.

"When I back out of an individual patient record, the system prompts me to charge their insurance, which is a really attractive capability, because that means I don't have to go to another station to charge the patient," St. John said. "We export all of those requests at the end of the day in one easy step. If I need to add something, I go to another feature, which electronically captures charges for

procedures and supplies at the point-of-service. At my previous place of employment, therapists spent 40 minutes at the end of the day typing in codes."

### Integrating record and verify with the EMR

Precise setup, consistent delivery and accurate documentation are critical to radiation therapy, and with increasingly complex treatment protocols, quality assurance measures are more important than ever before. IMPAC's record and verify system accomplished these goals by connecting Shands Cancer Center's Elekta treatment systems to the vital information stored in the EMR. In this way, the system helps therapists set up and document patient treatments quickly, accurately and safely, while ensuring that essential information is recorded directly in the patient's EMR.

"The IMPAC verify and record system verifies that everything – the table, the patient and all the parameters, such as the field size, collimator and gantry angles and wedge factor, are all correct," St. John explained. "Anything that is not correct for any reason is highlighted in red on the monitor. You then simply adjust it and it will set up everything automatically. IMPAC will then concur and proceed with treatment and record what you treated right into the EMR."

Via DICOM RT, the IMPAC system supports the transfer of information from any radiation therapy treatment planning system – treatment fields, MLC plans, prescriptions, and dose tracking information – directly into the EMR.

"Our physicists use dose tracking to warn us when, for example, a patient is supposed to do to a 'reduction' at this dose," Chellini noted. "A warning will pop up on the patient's EMR, say, a week before so that it advises you, that you have a reduction coming in a few days. Similarly, the system can be set to show us predetermined dose action points, prescription and field notes to assist in setup, and photos and diagrams for use in patient positioning.



Elekta systems offer the latest radiation therapy techniques, including IMRT, IGRT, 3-D volume imaging functionality and adaptive image-guided radiation therapy

"In addition, a series of warnings also helps prevent possible mistreatment when prescribed fraction count or dose is about to be exceeded, when the field has already been treated on a given day or when all prescribed fields have not been treated," she continued. "This QA checking is essential for any facility treating patients."

Both St. John and Chellini indicated that since the Elekta-IMPAC solution was implemented in 2001, system uptime has been excellent. "The integrated systems – the treatment units, EMR and record and verify – have been very reliable," St. John noted. "The only problems appear to be unrelated to the systems – such as power fluctuations within the building or electrical storms tripping interlocks occasionally. Other than that, they're extremely dependable." **OPCT**

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