Radiation oncology's data-intensive climate links the OIS to EHRs

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"If you can't measure it, you can't manage it" is a popular mantra in health care, where measuring and managing data has become part and parcel of a doctor's daily routine. Couple that with pressures on reimbursement and procedure times, and only the most powerful health record systems are able manage all of that data in the most efficient way.

This data-intensive climate in the clinical setting makes selecting the right electronic health records (EHRs) for an existing oncology information system (OIS) more important than ever.

On Jan.1, 2013, the Centers for Medicare and Medicaid Services (CMS) implemented changes in payment policies and rates, resulting in an overall 15% payment reduction for radiation oncology services. This includes a 7% change in treatment times for intensity modulated radiation therapy (IMRT) and stereotactic body radiation therapy (SBRT) procedure codes.

Some of the code changes include reducing procedure times from 60 minutes to 30 minutes for IMRT, and from 90 minutes to 60 minutes for SBRT. This could negatively impact patient safety. Ultimately, IMRT delivery reimbursement has decreased by 40% this year, and SBRT delivery reimbursement has decreased by 28%.[1]

The cuts in procedure times pose a significant challenge to maintaining the same levels of patient throughput with the same quality of care.

Efficiency in a multidisciplinary environment

One of the most fundamental changes providers can make to adapt to CMS requirements is to maximize workflow efficiency.

To streamline department workflow, however, procedural inefficiencies need to be identified. Some key questions to ask include: Is there access to a single patient record in a central repository or are data being siloed in disparate systems? How fluid is communication and collaboration among specialists?

Many cancer programs take a multidisciplinary approach to care, and the trend will continue as studies have shown patients receiving treatment in such a multidisciplinary setting had an improved 2-year survival.[2-4] This collaborative environment requires coordination among many different specialties,[2] and integrating disparate systems across radiology, pathology, oncology, and other departments offers several benefits to radiation oncology workflow. To coordinate a complex network of care, many cancer care centers are integrating the OIS with the enterprise EHR.

EHR-enabled OIS

Today, most radiation oncology facilities use an EHR system,[5] according to results from a pilot study published in 2012. The study was designed to determine the level of adoption and barriers to implementation of meaningful use (MU) for the EHR Incentive Program. Of the 40 academic institutions and private practices surveyed, all respondents said they use an electronic record-and-verify (R&V) system, and a large percentage (81%) said they used at least one EHR system.[5] That is not to say that adopting an EHR doesn't come with many obstacles. The study found that the most common challenges to successful EHR system implementation were:

1. Unexpected difficulties in implementation (71%),
2. Inadequate support services (52%)
3. High cost (47%)
4. Lack of physician support (18%)

Starting with an OIS that is interoperable with any EHR can lessen the burden. A powerful OIS has been instrumental in bringing one small clinic in Arizona to the next level. Cancer Treatment Services Arizona (CTSA) is a full-service outpatient cancer treatment center in Casa Grande, AZ, providing oncology and hematology services, and administering chemotherapy, biologic therapy, and supportive care for regimens of all

TECHNOLOGY TRENDS

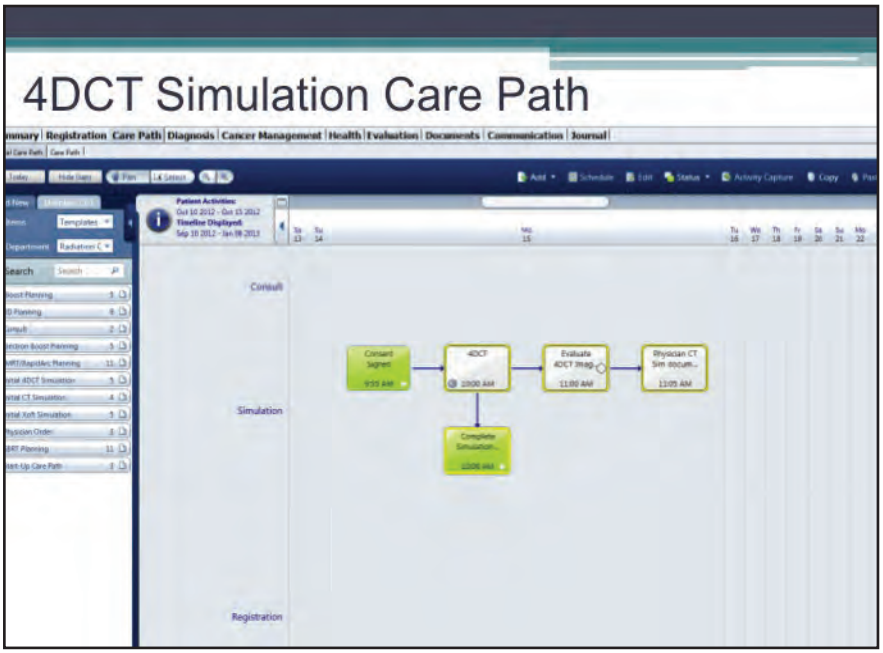

FIGURE 1. *Varian's ARIA OIS provides Visual Care Paths, flow charts providing a graphical view. Featured is a 4DCT simulation view. Activities are linked, which means that the 4DCT appointment must be completed prior to the Evaluate 4DCT activity showing up on the task pad. Courtesy of Ajay Bhatnagar, MD, MBA, Cancer Treatment Services Arizona.*

levels of complexity. Patients are treated using clinical pathways, or evidence-based treatment "roadmaps," that are disease and stage specific.

The clinic's services include 3-dimensional (3D) conformal radiation therapy, IMRT, image-guided radiation therapy (IGRT), and stereotactic radiosurgery (SRS) using the Trilogy Stereotactic System from Varian Medical Systems (Palo Alto, CA). To boost efficiencies, the center added RapidArc to the Trilogy system, decreasing radiation treatment times by up to 60% while maintaining the same level of precision and therapeutic efficacy. Nonetheless, with new protocols dramatically cutting procedure times, the clinic needed to maximize efficiencies even further.

The clinic's first step to better managing data was to implement ARIA, Varian's oncology-specific EHR solution. Using standard HL7 interfaces, ARIA enables multiple departments to interface with other healthcare departments, to connect radiation oncology with pathology, radiology, pharmacy, lab, and billing.

"I can access the patient's plan and radiation dose. We're also connected to ARIA medical oncology, so we can get chemotherapy, we have access to their diagnosis, stage, specific cancer therapy, the type of radiation, what dose they are at right now, as well as the chemotherapy," explained Ajay Bhatnagar, MD, MBA, a Radiation Oncologist at Cancer Treatment Services Arizona Adjunct, and an Assistant Professor of Radiation Oncology, University of Pittsburgh School of Medicine.

ARIA links the key components across the continuum of care, providing access to the patient chart, the physician modules, the treatment planning modules, the R&V system, and the EHR.

"You can go from the patient manager or the clinical modules, to the treatment planning modules all within the same system," said Dr. Bhatnagar. "It enhances the workflow because everyone now has access to the charts, and everyone can do their own particular task for that patient on their own computer, thus making it efficient rather than having to wait to get the physical chart. This allows for increased throughput because it allows the patients to be seen quicker."

CTSA uses ARIA v11, which provides Visual Care Paths, a tool that helps doctors at CTSA communicate, assign tasks, and provide status checks (Figure 1). "Sometimes the oncologist is not available to talk to the therapist and dosimetrist, but this lets the oncologist communicate with me without having to talk to me. This significantly helps our treatment planning process because that process requires a team of people," noted Dr. Bhatnagar.

The system has expedited the entire care process at CTSA. As Dr. Bhatnagar explains, doctors can perform a clinical assessment, complete documentation with follow-up notes, have the report faxed to the referring physician, and bill for the visit by the time the doctor leaves the exam room. "We can also do e-prescribing and directly fax to the pharmacy—that significantly enhances efficiency and throughput," he said.

Another leading OIS is the MOSAIQ Oncology Information System from Elekta (Stockholm, Sweden). The system centralizes radiation oncology, particle therapy, and medical oncology patient data into a single user interface, accessible by multidisciplinary teams across multiple locations. It provides image, data and workflow management, interfacing with a wide range of treatment planning systems and radiotherapy treatment delivery devices.

MOSAIQ Evaluate allows clinicians to review the entire treatment plan on any MOSAIQ workstation. This allows the dosimetrist to compare multiple plans from various treatment

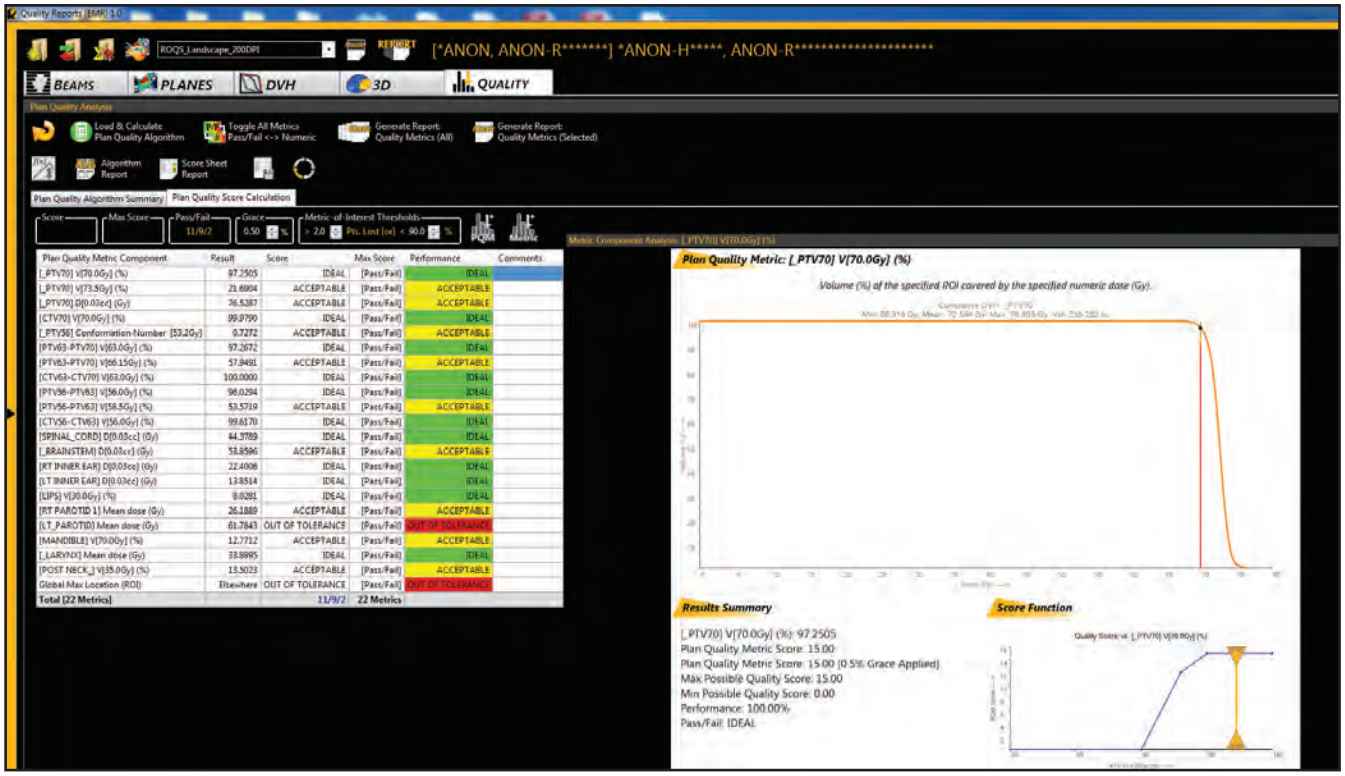

FIGURE 2. *Quality Reports EMR assigns a score to different dose constraints and then calculates the score for each treatment plan.*

planning systems and modalities and to access the complete clinical treatment data. Users can send treatment plans and reference images concurrently to MOSAIQ and view an interactive display of the actual plan and DRRs. MOSAIQ also provides safety and quality assurance tools. Supporting financial management of the cancer program, MOSAIQ handles treatment authorization, code capture, medical billing, and accounts receivable.

Meanwhile, Accuray's standards-based interface from the TomoTherapy and CyberKnife Systems is interoperable with other vendors' OIS. The company's OIS Connect also features treatment safety and quality assurance tools, including clinician worksheets, quality checklists, and care plans, biometric patient identification, and patient positioning and verification tools to summarize and support patient safety centers in scheduling appointments in the main departmental calendar held and managed in the OIS. Users can capture treatment procedures in the OIS, which facilitates charge capture and billing for treatments.

Measuring quality care

"The thrust of medicine of the future is measuring quality in a meaningful way," said James A. Wheeler, MD, PhD, Medical Director of Radiation Oncology at IU Health Goshen Center for Cancer Care, Goshen, IN.

This is already true today with the EHR Incentive Program. In Stage 1 of the program, clinical quality measures (CQMs), or tools that help measure and track the quality of healthcare services, are required as a core meaningful use objective.[6] In Stage 2, participants are required to submit CQMs to remain in the program.[5] The challenge will lie in standardizing the quality of care.

This is where EHR-enabled software can play a critical role. In fact, in the previously referenced pilot study, among the 17 facilities that use EHR systems, 71% reported that they believe EHR systems did improve safety or quality.[5]

Doctors at IU Health Goshen Center for Cancer Care have found the same to be true. The medical, surgical and radiation oncology staff, along with other specialists, work closely to develop comprehensive treatment plans for each patient. To standardize and automate their treatment plan analysis, they adopted Quality Reports EMR software from Radiation Oncology Resources, Inc. (Goshen, IN). Compatible with Varian, Elekta, and other companies' EHRs, the solution generates automated, customizable reports for radiation therapy that are compatible with treatment planning and R&V systems. Quality Reports EMR is designed to minimize the risk of omission by systematically analyzing and

Table 1. What can current users do to prepare for meaningful use?[8]

1. Make sure that CPOE are entered in the EHR
2. Enter the correct data for:
    a. Allergies – allergy information must be entered on every patient through allergies and alerts
    b. Medication list – all patients must have their medications entered in the EHR medication list
3. Set up a lab interface
4. Purchase and implement ePrescribing
5. Enter the patient's vital signs: At minimum this means entering height, weight, blood pressure, temperature, and pulse

displaying every dose constraint. Then the Plan Quality module score sheets provide rapid analysis of dose constraints or clinical goals (Figure 2).

"I can specify in Quality Reports EMR my criteria for doses I don't want the normal tissue to exceed, and the minimum coverage for the cancer tissues that I need to treat. We color code the results in the program. If everything shows up green, then I know that the plan met all of my constraints. If something shows up red, then I know there's a problem, and I have to look it that," said Dr. Wheeler.

The system has improved the facility's workflow and quality. "Previously, the dosimetrist would have to try several different approaches, but now the software will tell us if a particular constraint is achievable or not," he said.

With a performance distribution module, users can save data for statistical analysis and correlation with patient outcomes. Each of the different dose constraints is assigned a score, and the Quality Reports EMR software calculates the score for each treatment plan. "This tells us if we are above or below the standard score for this tumor," said Dr. Wheeler. "It encourages development of uniform dose constraints for each particular body site and tumor type. This, in turn, promotes better uniformity of the treatment plans within the institution, which may have several dosimetrists and several physicians."

Numerical quality scores of treatment plans over time are then used to set benchmarks for acceptability. This allows the department to establish clear guidelines for minimum quality standards for each treatment plan and enables supervisors to trend the quality of treatment plans.

"When you are using indicators that actually correlate to survival or local control, and you can put clinical endpoints to those quality scores—that's measuring quality care," indicated Dr. Wheeler. As the same time, the doctors at Goshen can enter these measurements into the EHR to work toward compliance with EHR Incentive Program.

The right EHR for MU compliance

One of the biggest game changers in the health care industry is the EHR Incentive Program. The program was designed to improve efficiencies, minimize errors, increase productivity, and streamline administrative processes. However, there are several challenges to overcome before providers can reap those benefits.

The American Recovery and Reinvestment Act (ARRA) established EHR incentive programs to promote the use of EHRs by health care professionals and hospitals.[7] The HITECH Act provides incentives for showing the "meaningful use" of certified EHRs. Eligible physicians (EPs) and hospitals that entered the program in 2011 will receive incentives totaling $44,000 over the course of 5 years, and those who begin in 2013 will get $39,000. For those who don't meet the criteria, penalties will kick in. Starting in 2015, there will be a 1% reduction in Medicare fees per year and up to 3% by 2017.

Qualifying for those funds makes choosing the right EHR partner critical.

Compared to many other specialties, radiation oncology has better integration [rates] with electronic information systems.[5] The pilot study found the majority of large academic practices (84%) were aware of MU criteria, and of these, 67% had expected to implement MU-compliant systems by the year 1 reporting deadline of Oct. 1, 2011.[5] The most frequently cited barriers to implementation were high cost, difficulty integrating with hospital systems, and a lack of national guidelines for implementation.[5]

While many EHRs are certified for the program, MU generally applies to primary care physicians; radiation oncologists interpret MU differently. Therefore, it is important that vendors provide support customized to the needs of each specialty.

CTSA, which is participating in the MU program for medical oncology and radiation oncology, attested to Stage 1 in February using ARIA's EHR and clinical practice management system certified for ambulatory environments. The doctors at CTSA value ARIA's dashboard, which monitors compliance with MU criteria.

"It requires a lot of work to implement MU and understand the system in terms of utilizing the EHR and the specific MU modules. You have to create patient-care visits, end-of-care summaries after they leave, and quality indicators. All of these requirements are

typically outside of the doctors' workflow, but it is inside the ARIA EMR," Dr. Bhatagar said.

"Complying with the MU program can be worth the investment, especially if there are multiple providers in the practice," he added.

Elekta's MOSAIQ solution is also a certified EHR, supporting EPs in demonstrating Stage 1 of MU. In addition, the company offers STRATEGIQ consultative services to help clients prepare to demonstrate meaningful use (Table 1). STRATEGIQ experts conduct an audit of a center's operations, and provide advice and action plans to reach program objectives. MOSAIQ v2.3, v2.4/2.41, and v2.5 are certified as complete EHRs.

Additional software components that are interoperable with EHRs can help in demonstrating compliance with meaningful use. With Quality Reports EMR, the enterprise EHR is populated directly with clinical data. "Meaningful use means you have to prove that your EHR has the relevant components for decision making and for treatment, and Quality Reports EMR has everything I need to review a plan," said Dr. Wheeler.

Quality Reports EMR also standardizes and automates the EHR documentation and performs billing tasks, including justification of 3-dimensional (3D) or IMRT utilization. "In order for insurance companies to approve IMRT, you often need to show that you truly had to do IMRT and couldn't get by with a 3D plan. Most of the modern planning systems can do a plan comparison, but with the Quality Reports EMR you can show that you couldn't satisfy a critical dose constraint with the 3D technique and needed to do IMRT. That lets a nonclinical person understand why IMRT was necessary," said Dr. Wheeler.

He noted, "Quality Reports alone doesn't make your EHR satisfy the meaningful use requirement by itself, but it helps you prove you're using EHRs in a 'meaningful' way."

Can MU wait?

Most oncology care centers may have begun the process of meeting MU criteria, yet a sizeable number have yet to attest to Stage 1 MU.

Despite the CMS' guidelines, which specify 15 common core objectives, researchers suggest that developing guidelines and measures that specifically target safety and quality in radiation oncology practices would improve outcomes to a greater extent than the current general objectives. They suggest including documentation of prior radiation treatment, uniform documentation of quality assurance checks, and ability to share planning and treatment delivery information electronically.

While the barriers to compliance—cost, IT integration, and a lack of guidelines specific to radiation oncology standards—still exist, many physicians believe there is no reason to postpone the inevitable.

"MU will have to be part of our work system because downward payment adjustments begin in 2015 for eligible professionals who aren't successful in demonstrating MU," said Dr. Bhatagar. "We should do it while it is a bonus, so we might as well start participating now."

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