

Acknowledgements

Jesse Kaestner, Chief Radiation Therapist, Epic Care

Snapshot: Epic Care, est. 2008, Radiation Oncology Department

Treatment systems:

Antioch – 1 Elekta Synergy®

Dublin – 1 Elekta Synergy

Pleasant Hill – 2 Elekta Synergy

OIS: MOSAIQ 2.5

Imaging: PET CT

Patient volume: Approx. 80 RO patients per day



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Customizing Radiotherapy Workflows through MOSAIQ IQ Scripts achieves dramatic efficiency savings at Epic Care

Epic Care injects increased automation and process improvement into its radiation therapy service to optimize operational efficiency

Epic Care's three radiation therapy centers in the California communities of Antioch, Dublin and Pleasant Hill have used MOSAIQ® since 2008, with each virtually a paperless practice. However, the complexity of the radiotherapy workflow meant there were always areas to improve and standardize. MOSAIQ® IQ Scripts, released in 2012, has helped Epic Care dramatically simplify its radiation therapy workflow by enabling the department to consolidate and eliminate many Quality Check Lists (QCL's), more fully exploit Assessments and automate the creation and completion of documents via eScribe merge fields.



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“Since Epic Care began using IQ Scripts in May 2013, our staff have experienced a much more fluid, orderly and streamlined radiotherapy operation. In the CT Simulation workflow alone, we have been able to reduce the time spent on workflow tasks from 30 minutes to just five minutes.”

Jesse Kaestner
Chief Radiation Therapist and Department Manager, Epic Care

Before the inception of IQ Scripts at Epic Care, staff at each center coordinated the flow of radiation therapy activities through MOSAIQ, generating a quick order and QCL task sets for a particular patient's care. Once each step in the workflow was complete the next QCL task set would be sent to another staff member to complete related to the patient's movement through the radiation therapy process.

No programming knowledge required, users can work with the preferences and parameters tool in MOSAIQ to manage their QCL's simply and easily.

While Epic Care employees diligently completed their QCLs on behalf of each patient's treatment, the somewhat disjointed nature of task sets and QCLs resulted in a sometimes lengthy, less-than-optimal workflow.

“The QCLs in a task set didn't really have any particular order of when to complete them – there were just QCLs sitting in someone's box, and any given task set could contain as many as 10 distinct QCLs,” says Jesse Kaestner, Epic Care's Chief Radiation Therapist and Department Manager. “Plain and simple, we just had too many QCLs.”

Epic Care needed a way to reduce the number of workflow steps (i.e., completion of QCLs) and speed up the workflow process in a coherent manner. In MOSAIQ IQ Scripts, the centers found the ideal solution, enabling them to automate and customize key aspects of the radiotherapy workflow to match their needs. IQ Scripts utilizes simple scripting via preferences that link together tasks in a chain. They automatically trigger the presentation

of one or more new QCLs or an Assessment when a previous QCL or Assessment is completed.

In its implementation of IQ Scripts, Epic Care also took advantage of an improved Assessment design in MOSAIQ 2.5 to consolidate many discrete QCLs into the automatic presentation (via an IQ Script) of items in checkbox Assessments. IQ Scripts automation also permitted data in Assessments to be captured and merged into eScribe documents, thereby eliminating the time-consuming, manual completion of MS Word documents.

Swift implementation

After receiving two days of on-site training from Elekta, Kaestner created all of them (> 50) in just one month and began to systematically launch them in May 2013 for each of several workflows at the Epic Care centers.

“IQ Scripts was very easy for me to learn. I created IQ Scripts for virtually all the workflows except for dosimetry, which we will

accomplish next,” he recalls. “As far as implementation, I approached this very carefully, making sure to have all of the different workflows written down and then testing the IQ Scripts before rolling them out. My immediate goal was to do a comprehensive evaluation of the existing QCLs and QCL task sets, and then reduce the number of QCLs and convert the task sets into a real-time workflow.”

Kaestner notes that he was able to reduce the number of QCL task sets from 68 to 0, and eliminate approximately 35 QCLs, most of which were inactivated and converted into line item checkboxes within Assessments.

The customizability of IQ Scripts enabled him to tailor IQ Scripts for each Epic Care location.

IQ Script workflows

Kaestner applied IQ Scripts, Assessments and automated eScribe document completion to several sub-workflows within the overall radiation oncology workflow, impacting everything from new patient consult and CT simulation to treatment and final summary. For the RO linac morning warm up, he even created an Assessment that used to be an off-line Excel spreadsheet. Kaestner is currently working on a set of IQ Scripts for dosimetry.

The following are examples of how IQ Scripts and Assessments condense, simplify and speed radiation oncology workflow at Epic Care:

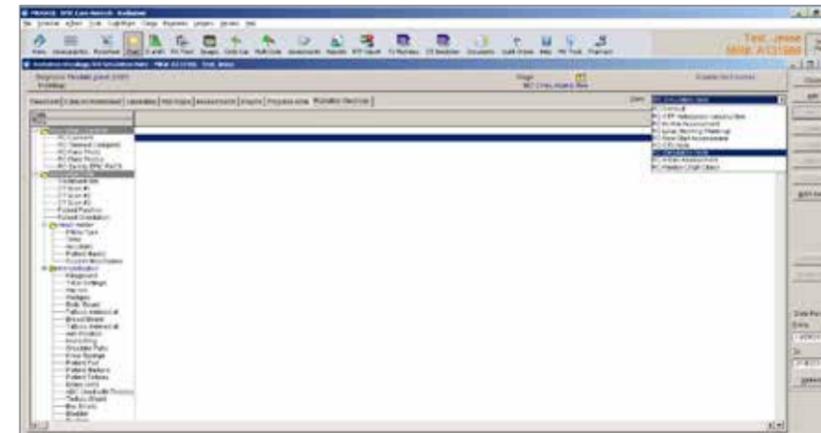


Figure 1: Pre-IQ Scripts, Assessments for both Radiation Oncology and Medical Oncology departments were combined, creating a long list from which to select the desired Assessment. Kaestner developed a new tab on this screen (Radiation Oncology) and grouped RO-only Assessments, making RO Assessment selection from the dropdown menu a quick task.

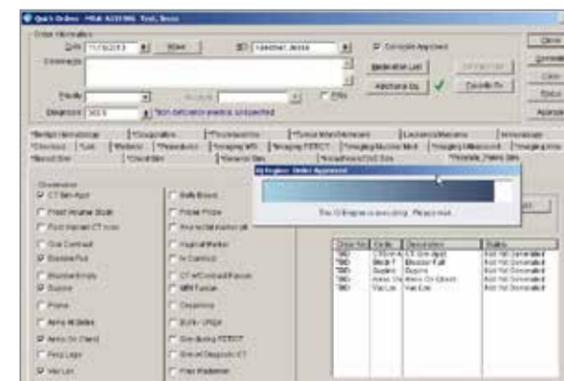


Figure 2: The clinician checks boxes that specify parameters for the patient's CT Simulation. Note that checking the box “CT Sim Appt” serves as the trigger for an IQ Script to run after the physician clicks “Generate.” The IQ Script (Engine) begins executing (note progress bar above) – automatically generating QCL's for the next step (Figure 3).

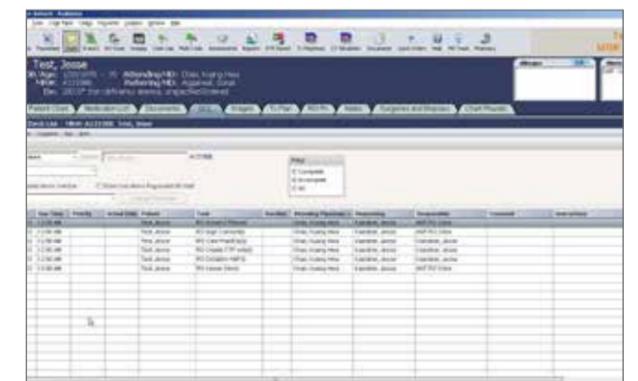


Figure 3: Automatically generated QCL's arrive in staff members' boxes ready for execution. Alerts can also be set up to remind users to complete the QCL.

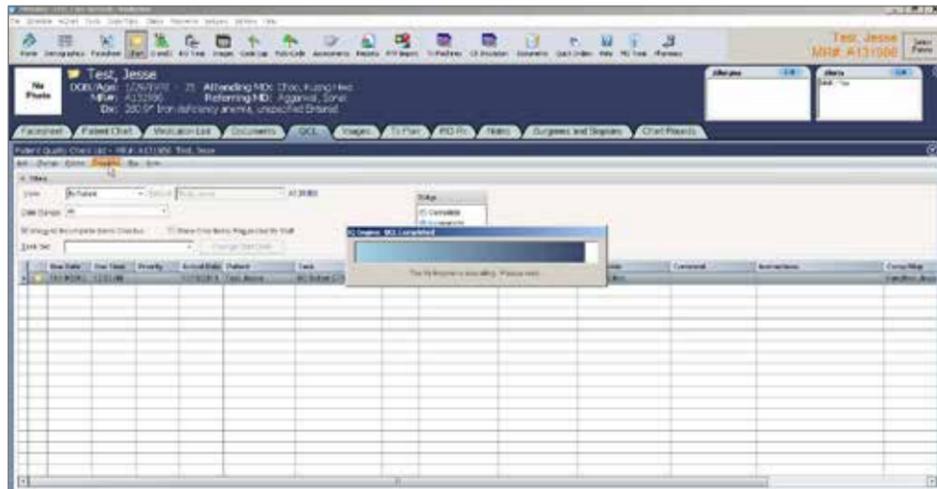


Figure 4: Completing QCL's triggers the IQ Script generation of other QCL's. Five of the six QCL's from Figure 3 have been completed and have disappeared from the screen in this figure. Shown is a staff member completing a QCL that the patient has been scheduled for CT Sim. This also triggers an IQ Script to run (note progress bar above), generating a QCL to the linac (Figure 5).

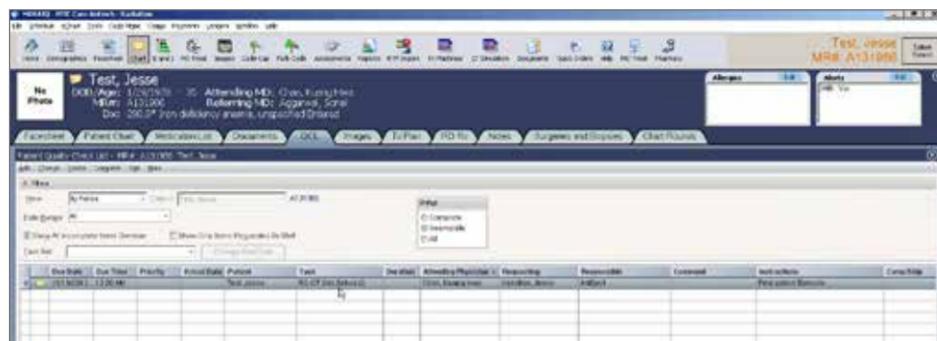


Figure 5: From Figure 4, the IQ Script-generated QCL arrives at the linac, in this case AntSyn1 (Antioch Elekta Synergy 1), letting the therapist know that there is a CT simulation scheduled. Once the simulation therapist has reviewed the CT Sim order, he marks this QCL as complete. This will then generate another QCL to the CT Sim location: "RO CT Simulation complete."

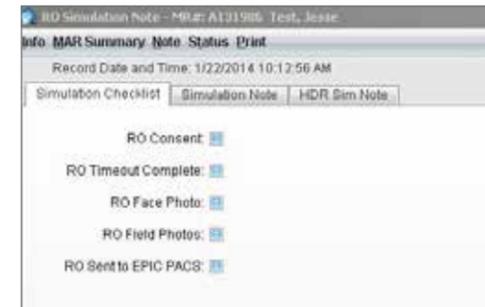


Figure 6: When the CT simulation is completed, the staff member completes the QCL, triggering an IQ Script to run and presenting an Assessment to the user. All of the checkbox items pictured here used to be separate QCL's. With a simple tabbed/checkbox Assessment format, visual clutter and excess QCL's are eliminated.

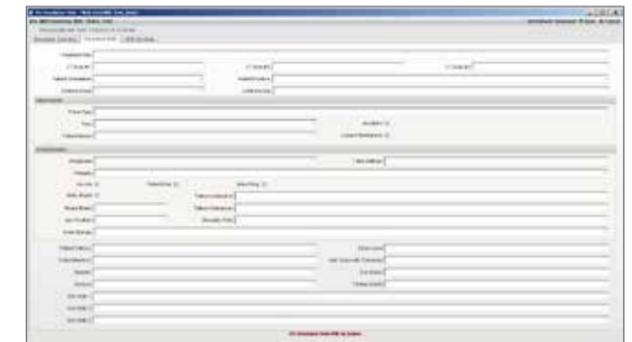


Figure 7: The middle tab from the Assessment pictured in Figure 6 is the Simulation Note, the contents of which can be selected from drop down menus or typed in and then merged automatically in an eScribe document. All of this occurs behind-the-scenes. Pre-IQ Scripts, an Epic Care staff member had to manually create an eScribe MS Word document after-the-fact and type in the information from the fields shown above. Problems arose when the documents would become corrupted, e.g., prevent input of information or checking of boxes.

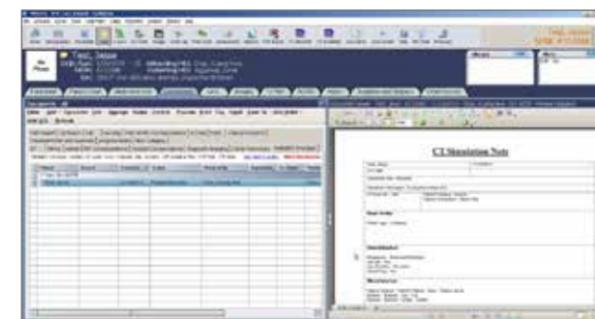


Figure 8: Completing Assessments in earlier steps in the workflow makes the data available for merging into eScribe documents, as noted in Figure 7. In this example, information from the Simulation Note Assessment has been merged into an eScribe document, CT Simulation Note and automatically makes the status review required to the physician. Observe that many document fields have been automatically filled in, while still enabling the doctor to edit and add additional information to customize the form.

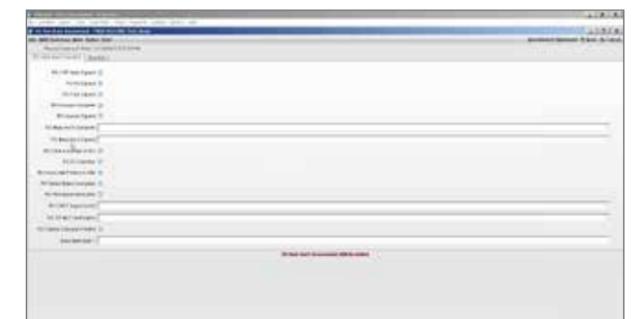


Figure 9: After CT Simulation and Dosimetry have been completed and the treatment plan approved, a QCL is issued (manually) to complete the RO New Start Assessment. Virtually all of the line item checkboxes used to be individual QCL's.

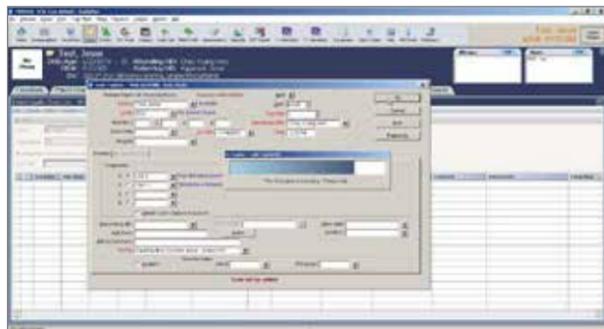


Figure 10: After the patient has completed his entire treatment course, the therapist will create an End of Course QCL informing the billing department and triggering an IQ Script that automatically generates QCL's for various staff members. One of the QCLs prompts the physician to complete the RO Treatment Summary.

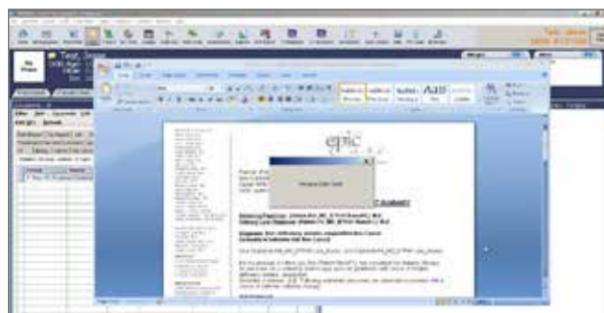


Figure 11: In the past, physicians at Epic Care dictated the RO Treatment Summary and sent the dictation to the dictation department, which would create a document and transmit it back to the physician for review. The physician would then send the approved document for transcription and faxing to relevant parties.



Kaestner overhauled this process by developing templates inside of eScribe that would merge patient, treatment and diagnostic data from treatment summary fields filled out by the clinician, automatically creating the RO Treatment Summary without dictation. Physicians can then edit as needed, approve and eFax the document themselves.

A future innovation at Epic Care, according to Kaestner, may be the integration of speech recognition software (e.g., Dragon NaturallySpeaking) so that clinicians who prefer dictation can populate treatment summary data fields or Consult Notes without typing them in.

“This process, which used to take two to three days before, can now be completed in less than 24 hours.”

IQ Scripts, Assessments and eScribe documents also assist in fulfilling Meaningful Use requirements under the U.S. HITECH Act. Kaestner created an Assessment that is completed during a new patient consult. Upon capture of the consult charge, it automatically merges specific information regarding patient education into an eScribe document that enables the physician to keep track of oral and written information conveyed to the patient.

Conclusion

IQ Script automation, redesigned Assessments and the ability to merge data fields in eScribe documents have helped accelerate and simplify Epic Care's radiation oncology workflow. From a total of 102 QCLs before the conversion, Kaestner has reduced the number of QCLs to 67 by using IQ Scripts to automatically generate QCLs and trigger assessments without manual user intervention. Evaluating their workflows throughout the process of implementing IQ Scripts led to the inactivation of some redundant QCLs and transforming them into check box items in Assessments.

“Now – especially for the CT simulation workflow – there are significantly fewer steps needed to get through the radiotherapy treatment process, which has saved us an enormous amount of time,” Kaestner says. “In addition, using data from Assessment fields for the automatic, generation of pre-populated eScribe documents also saves considerable time and money (i.e., less use of the dictation department). There is less stress on the staff and I believe these solutions have also helped reduce errors.”

The next steps for Epic Care are the creation of IQ Scripts and Assessments for dosimetry and integrating IQ Scripts for the organization's medical oncology centers.