

Development & Deployment of a Web-based Quality and Safety Toolbox:

PURPOSE

To illustrate the development and successful implementation of a **Quality Toolbox**, consisting of a series of user-friendly platform-independent modules designed specifically for today's PACS and RIS based radiology settings and to separately address radiologist peer review and performance evaluation requirements, error reporting and management, and results communication and follow up.

METHODS

In response to regulatory and credentialing requirements, we developed a series of 7 interlinked computer modules capable of interfacing with PACS and RIS systems using industrial network protocols including DICOM, HL7 and HTTP. The web-based user interface can be accessed from stand alone computer systems or deployed to PACS workstations with common operating systems and web browsers. The modules were specifically designed to adjust to institution-specific quality and safety requirements, to easily upload entire faculty e-mail address links, and to vary the levels of access and security.





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RadReview is a web-based peer review system that parallels in part the

ACR RADPEER system. Compliance with mandatory participation is shown to all radiologists (A), and data is depicted for each individual by section (B) and compared with published benchmarks. All category 3 and 4 cases are reviewed by a section where consensus is reached (majority agree or disagree) for each case (C). This consensus peer review meeting also documents attendance, and issues that arise during the discussion (D)

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RadReport is a tool for reporting and managing all technical (equipment-related) and clinical adverse events, errors, and near misses that occur. Web-based reporting is transmitted via secure e-mail to specific assigned staff (A) that review and manage each case. A database (B) continuously depicts the status of each case (eg assigned for review, reviewed, completed). We have collected over 4600 cases in just over 6 years.

InfoRadiology For more information, please visit our website at http://www.inforadiology.org

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The submitter is asked to briefly summarize pertinent issues (C) and to classify each case. For possible interpretive errors (D) the site links to our peer review database (RadReview) where a RadReview score is assigned and the case reviewed by section members.

Platform-independent Online Modules for Managing Peer Review, Results Communication, Safety Reporting, Faculty Performance Evaluation & a Quality Tutorial Jonathan Kruskal, MD, PhD • Chun-Shan Yam, PhD

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Select an Urgency Urgency Level	y Level Examples	Notification	Mode of Communication	Message to communicate: No pulmonary embolus.
Urgent	 Pneumothorax, if unexpected Tension pneumothorax Leaking or ruptured AAA Ischemic bowel on CT scan Acute extra-axial brain collection, including acute subdural and epidural hematoma Unstable spinal fracture Pneumoperitoneum (non post op) Significant mispositioning of tubes or catheters Massive hemoperitoneum on CT or US Ectopic pregnancy (even if suspected by ordering physicians) Procedural complication Appendicitis New or unexpected DVT or pulmonary embolus Any result not necessarily in the preceding list which the reporting radiologist feels will require immediate medical attention 	≤ 30 minutes	Immediate, interruptive communication from the interpreting radiologist to either a responsible physician or other licensed caregiver who can initiate the appropriate clinical action to the patient -Face to face -Telephone contact	Recipient(s): Dr Gangadaran Communication type: Pager Communication outcome: Unsuccessful Note: no answer after 1 minute Attempted Communication #2 Ime of attempt: Time of attempt: 11/4/2010 3:13:49 PM Message to communicate: No pulmonary embolus and no lung cancer. Communication by: pspin Recipient(s): pr Kent Communication type: Telephone Communication outcome: Unsuccessful Note: No one answered the phone. Will send a resident to find the house office
Non-Urgent	 Any finding suggestive of a new or unknown malignancy Any new fracture Biopsy recommendation on a mammogram (e.g., Lung nodules, Solid renal mass, etc.) 	≤ 3 days	Communication from either the interpreting radiologist or a coordinator. -Face to face -Telephone contact -Other method that allows communication to verify that notification is successful.	Attempted Communication #3 Time of attempt: 11/4/2010 3:15:44 PM Message to communicate: Communication by: pspin Recipient(s): Dr Kent Communication type: In Person
See DiDivic Critical V	rane recurrences roucy for more information.			Note: Resident discussed case face to face with Dr Kent
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Comment:

[4] Encourages implementation of new technologie

[5] Promotes quality assurance in the section

ncourages evaluation of the latest imaging technologies and subsequent implementation as appropri

(ensures that the section holds quality assurance meetings on a regular basis and monitors and encourages

RadQual

Beth Israel Deaconess A teaching hospital of Harvard Medical School Beth Israel Deaco Medical Center

Quality Improvement in Radiology: The Basic Principles & Tools Required to Achieve Success

> Jonathan B. Kruskal, Joshua D. Kruskal, Chun S. Yam, Phillip Boiselle

As an extension of our resident QA elective, we developed an online tutorial to teach and to introduce the fundamental principles of quality, safety & performance improvement to all members of our Department. This exhibit illustrates the main components of the tutorial.

RadQual is a web-based tutorial that teaches a basic approach to quality and performance improvement, and illustrates the common tools used to analyze clinical operations and to design, implement and monitor change.

For further information, please see e-Education Exhibit 4094,

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RadDash is a continuously updated dashboard that searches a RIS and/or PACS system showing the status of all unapproved cases. Cases are broken down according to modality and clinical section, by assigned radiologist; and the status is shown as unread incomplete, and dictated but unapproved.

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For further information, please see Quality Storyboard 3051



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Trusted sites

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RadEval is a web-based tool for obtaining confidential multisource or 360° feedback about a radiologist. Depending on the purpose of this review and on the radiologist being evaluated, the reviewer is asked to provide feedback on the radiologist's clinical and interpersonal skills, and for section chiefs, leadership skills. The ABR referring clinical survey is also included and meets requirements for the ABR's Maintenance of

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RadResults is a

Certification process.

tool for communicating critical or important results directly to referring physicians, and for documenting and auditing compliance with rules governing such communications.

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	Invited lectures - international	
	Mentored QA elective resident	O Yes O No
	Resident and title of QA project	
	Leadership roles	A
	Resident teaching scores	
	Customer complaints/compliments	
	wRVU's wRVU percentile vs AAARAD data	
	Up to date with Compliance testing 🖘	O Yes O No
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	depicted.	

CONCLUSION

We have designed, developed and successfully deployed a series of related quality, safety and performance enhancing management tools for an academic radiology department. The webbased user interface can be accessed from desktop computers including Mac and PC, or deployed to PACS workstations with common operating systems and web browsers. This Web-based Quality Toolbox allows us to meet and adapt to regulatory requirements, to actively manage and monitor radiologist performance, and to practice safe and high quality clinical radiology. The ready availability of these modules, coupled with ease of use, security, and demonstrated positive value, have led to a marked increase in their daily utilization across our enterprise.