Added Value & Improved Performance Resulting from an Online Radiology Quality & Safety Reporting and Learning System

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SUMMARY STATEMENT

Ten years ago, in response to the lack of a suitable mechanism for collecting and managing quality and safety data, our Quality Team chose to develop and implement a secure online reporting tool for collecting and managing all adverse events or near misses that occurred across our sites of service in our tertiary academic medical center.

- **Purpose of Storyboard:**
  The purpose of this storyboard is to share our lessons learned, and to illustrate how relevant mission-driven quality and safety data can be collected, analyzed, trended, and managed.
- **Message to Share:**
  We show how an online secure tool can be employed to meet new regulatory compliance requirements, to identify PQI projects, to implement new processes, to improve clinical operations and patient safety, and to identify learning and educational opportunities for all staff.

- **Prior Conditions at Onset of Project:**
  Ten years ago, our Quality and Safety Program consisted of a group of inexperienced yet enthusiastic "champions" drowning in the following:
  - A confusing array of emerging regulatory requirements, including peer review, ever changing National Patient Safety Goals, sentinel event reporting, PQRS metrics etc.
  - A lack of resources, including protected time, human, IT and financial. We didn't even know what resources we needed!
  - A lack of effective and efficient processes for collecting and managing relevant data.
  - The lack of a reliable mechanism for collecting, documenting and managing all safety-related events that occur in a large radiology department
  - A Culture of skepticism and lack of willing participation by all staff

TARGET GOALS

- Identify and secure the necessary resources required to develop an effective process
- Develop and implement a secure managed online system that ensures that all 4 domains of quality and safety are addressed:
  - Staff and patient safety
  - Customer service
  - Practice improvement
  - Professional improvement
- Identify Key Performance Indicators (KPI's) that are linked to the department's mission statement
- Develop tools that allow data from each KPI to be continuously collected, monitored and managed
- Make outcomes data visible: show the gains and the losses!
- Apply basic PDSA principles to the tool to ensure continuous evaluation of effectiveness and allow and promote change and improvement

Principles of Initial Engagement

- The system is secure, anonymous, and data can never be discovered
- No retaliation will ever be tolerated
- Submitted cases are immediately auto-directed to assigned technical or clinical quality officers depending on modality or organ system.
- The tool is continuously managed and submitters are notified of each outcome when the case has been resolved or investigated.

Guiding Principles for Enhancing Participation of Faculty

- Each submitter receives secure prompt feedback
- All cases are assigned to dedicated modality or clinical section quality officers respectively (to ensure appropriate investigation, resolution and sharing with peers).
- Lessons learned and implemented changes are shared across divisions,
- The tool can be used to ensure regulatory compliance (including audits of national patient safety goals and peer review), and
- The tool preserves anonymity and our just culture of no blame
- Every submission is seen as a learning, educational or even research opportunity.

The Journey Begins

- In 2003, we developed and implemented a secure managed online Quality and Safety reporting system for all technical and clinical errors, near-misses and adverse events that occurred in our department.
- Initial enthusiasm for case reporting was great due in part to a coordinated publicity effort. Technical cases outpaced diagnostic clinical cases and a steady state plateau of reporting was reached after 2 years, after which case reporting started to diminish. Our assumption was that this reflected improved performance with a reduction in errors and adverse events.
- We soon realized that reporting of cases required regular reminders to all staff along with simplifying the process of case submission. Secure reporting was enabled on PACS and via all modes of portable digital media.

RESULTS

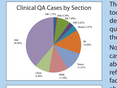
The "*Culture Shift*" Curves

- The submission per month "culture shift" curve shows that it took approximately 6.5 years for staff to feel comfortable reporting cases and we now receive a plateau of 30 technical and 40 clinical cases per month.

Submission data

- Since July 2003, over 7000 cases (41% technical, 59% clinical) have been reported into the system.

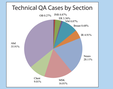
Online QA Reporting Tool

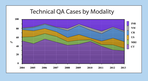


The secure submission system auto-directs cases to designated clinical or technical quality officers and manages the status of each case.

Note that the majority of cases are submitted by the abdominal section, either reflecting the culture of the faculty members, or the abundant improvement opportunities that exist.

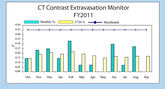
Technical QA dashboard tool





Modality scorecard dashboard

A variety of dashboard can be used to depict mission-based operations metrics; choice of data, methods and frequency of analysis and data management depend on the missions, strategic and annual operating goals of a group. Here we illustrate some commonly used technical operations metrics.



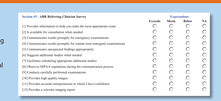
Lessons learned: Dashboards must be monitored and managed, or the data collected will be of no value to the system. Simply collecting data for data sake is unhelpful.

Domain: Customer Service & Satisfaction

KPI	Tool	Dashboard	Outcomes Data

Referring MD Surveys

ABR PQI tool
With survey questions developed by the ACR, this simple tool allows feedback to be sought from referring physicians and can serve as the nidus of an individual PQI project. Radiologists can use the confidential information for self-improvement purposes.



Lessons learned:
Careful selection of representative referring physicians is important for receiving constructive feedback. Simply asking friends for feedback is unlikely to be helpful in the long run. Also, allowing free text responses will encourage constructive suggestions.

Multisource feedback

MSF Tool: **RadEval** is a web-based tool we developed to obtain confidential multisource or 360° feedback about any member of staff. Depending on the purpose of this review and on the role or job description of the individual being evaluated, the reviewer is asked to provide feedback on clinical, interpersonal skill and, leadership skills.

Lessons learned:
A 360 degree review should not be taken lightly — this requires a commitment on both sides to respond to the feedback effectively, even if this requires coaching and future reevaluation.

Patient Satisfaction

Electronic kiosks
We have placed electronic kiosks at our exit and elevator sites and encourage all patients to provide us with rapid touch screen feedback about their experience and our service.

Lessons learned:
It is possible that frustrated, angry or upset patients are more likely to vent into a readily available survey kiosk located at the exit of a department, so data should be carefully analyzed with this in mind. By the same token, having technologists "encourage" patients to fill out a survey may provide a false sense of satisfaction.

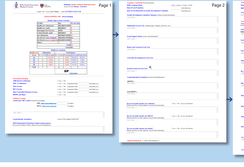
Report notification

The report notification tool notifies the ordering physicians via email that a study report has been finalized and is available for review. This was developed in response to a customer feedback survey where referring physicians requested that we notify them as soon as their final reports and/or revised addendums are available.

Lessons learned:
This tool was developed in response to requested customer feedback and suggestions and has been very much appreciated by our referring physicians, who can choose whether to participate or to opt out. We find that this is especially helpful for non-hospital-based physicians who might not have ready access to electronic medical records.

Academic planning

Fac development Dashboard **RadPlan** is an online academic planning repository that is both manually and automatically populated to facilitate annual academic, administrative and clinical productivity assessments. Compliance with mandatory testing, peer review and clinical quality metrics are also continuously depicted. The site includes performance and productivity metrics, as well as trainee teaching scores, annual academic planning review, self-review and written feedback from the mentor and section chief.



Domain: Practice Improvement

KPI	Tool	Dashboard	Outcomes Data

Unread cases on PACS

RadDash is a continuously updated and managed dashboard that searches a RIS and PACS system for the status of all incomplete and 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.

Following the implementation of this managed dashboard, we no longer have any cases that are "lost" in our PACS system

Result communication

RadResults is a tool for communicating critical or important results directly to referring physicians, and for documenting and auditing compliance with rules governing such communications. Available on all secure digital media, data is input and directly communicated to the physician of record.

Lessons learned:
By implementing a managed dashboard that permits direct communication of important (but not critical) results to ordering physicians, we have enabled over 27,000 results to be communicated, 85% of which occur in under 3 days.

Important results notification tool:
A dashboard to distinguish urgent/ critical and clinically important results, that facilitates direct communication, manages the status of communication and documents the outcome.

Critical results notification compliance tool: A web based tool to monitor compliance with the policy for critical results communication. All reports from a single day are uploaded and anonymized and easily scored by clinical section for the required elements of communication.

This tool was developed to allow us to monitor compliance with the elements of results communication. The dashboard is a visual depiction of our degree of compliance and can be filtered down to individual physicians and the specific elements of failure.

Unapproved reminder

RadRemind is an email tool that is automatically sent to radiologists every 90 minutes until all reports are finally approved. We have found this to be particularly helpful in a teaching environment where trainees prefer to edit their reports before an attending is able to check and approve them.

ED Wet read compliance

ED-Rad is a dashboard populated with timed wet reads for all cross-sectional studies performed in the ED. The data auto populates the permanent patient record and can also be used to monitor radiologist performance and changed reads (helpful in a teaching environment).

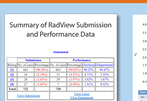
The graph on right shows how the compliance with ED wet reads grew consistently up to approximately 98% after implementation of the dashboard. We now need to close the 2% gap.

Domain: Professional Improvement

KPI	Tool	Dashboard	Outcomes Data

Radiologist peer review

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, and data is depicted for each individual by section 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. This consensus peer review meeting also documents attendance, and issues that arise during the discussion.

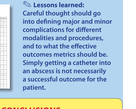


Regulatory compliance

RadComply is a dashboard that monitors compliance with the growing number of mandatory tests that we are all required to take, pass and keep current. Auto email reminders are sent out to radiologists when a test required updating or renewing.

Clinical performance

RadStick is a dashboard for managing and monitoring outcomes of interventional procedures. Beyond the standard minor and major complications, the site records data such as equipment used, number of passes, adequacy of sampling, relevant results and wherever possible, impact of each outcome.



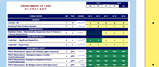
Lessons learned:
Careful thought should go into defining major and minor complications for different modalities and procedures, and to what the effective outcomes metrics should be. Simply getting a catheter into an abscess is not necessarily a successful outcome for the patient.

Domain: Staff and Patient Safety

KPI	Tool	Dashboard	Outcomes Data

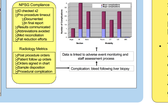
Clinical adverse events

Patient Safety Reporting tools: The **Hospital PSRS** and **environment of care scorecard** are systems for submitting secure data and managing all adverse clinical events that are not only required from a regulatory perspective, but that bridge departments or clinical services. The balanced event scorecard shows trends, outliers and gap to goal data.



Environmental safety

Safety Rounds data manager: **Performance Manager** is a web based tool to guide in data collection, analysis and trending. The dashboard focuses on environmental and life safety, cleanliness and TJC preparedness.



CONCLUSIONS

From over 10 years of experience using a web-based quality and safety management tool, we have made the following observations:

- it takes approximately 6.5 years for physicians to feel "safe" in reporting their own or others errors
- the system requires active and sustained management by members of enthusiastic and skilled quality team
- the system requires continuous additions and improvements in response not only to adverse events or even near misses, but to ever changing hospital and Joint Commission requirements and operations policies
- based on our aggregated data, such a managed tool results in continuous quality, safety and performance improvement for both patients and staff.
- The entire process has become an integral component of our culture and our daily workflow, and continues to sprout additional tools, processes, guidelines and protocols.