Incident Reporting and Safety Culture: Change Takes Time

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Aaron S. Kusano MD, SM
WWAMI University of Alaska Anchorage

Patty Sponseller MS, CMD, RT(R)(T)
University of Washington
No Conflicts of Interest
Outline

- Background
- Incident Learning and Safety Culture
- Program and Team Structure
- Real World Examples of Changes
- Observing Culture Change
- Scalability for different settings
Radiation Offers New Cures, and Ways to Do Harm

By WALT BOGDANICH   JAN. 23, 2010

As Scott Jerome-Parks lay dying, he clung to this wish: that his fatal radiation overdose — which left him deaf, struggling to see, unable to swallow, burned, with his teeth falling out, with ulcers in his mouth and throat, nauseated, in severe pain and finally unable to breathe — be studied and talked about publicly so that others might not have to live his nightmare.
• 1999 report from the Institute of Medicine
• 98,000 annual preventable medical error deaths
• Highlighted need to capture information that aids in quality improvement and reduce harm
Hospital Incident Report Systems

• Report the rare event rather than the countless upstream misses or system issues that could have prevented that event

• Completely Reactive in nature rather than Proactive

• Strong associations with a reporting and error and punitive repercussions
Radiation Oncology Incident Learning System® - ROILS

- FREE mechanism for shared learning in secure and non-punitive environment established 2011
- Contribute to national database while receiving national level and practice specific reports
Incident reporting is but a tool and we’re all human

Entrenched hierarchy hinders open communication...

Medical Errors and the Culture of Shame

...and the “teach by shame” approach has been slow to change.
People Define Culture

• **Culture of Safety** - The collective values, attitudes, perceptions, competencies and patterns of behaviors that demonstrate a commitment to health and safety management.

• **Key Features**
  - Acknowledgement of the high-risk nature of an organization’s activities and determination to achieve consistently safe operations
  - Blame-free environment where individuals are able to report errors or near-misses without fear of reprimand or punishment
  - Encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems
  - Organizational commitment to resources to address safety concerns

*https://psnet.ahrq.gov/primers/primer/5/safety-culture*
University of Washington Continuous Safety Improvement Team

- Therapists, Dosimetrist, Nurses, Administrative staff, Medical Student Researchers, Residents, Physicists, Physicians
Successful Incident Reporting

• Encourages reporting and celebrates opportunities for improvement
• Creates a safe environment where everyone feels heard
• Investigates all reports big or small and isn’t afraid to adopt prompt change
• Provides ongoing feedback to every stakeholder
Structure of the UW System

- Desktop based quick and easy way to enter reports in a database
- ALL reports reviewed weekly by multi-professional team who rank severity and perform root cause analyses as necessary
- “Good Catch” award for those picking up thoughtful near misses or errors
- Monthly department wide feedback on outcome of analyses and implemented changes
Near Misses in Dosimetry

- RT planning is a complex workflow
- New technologies
- Electronic medical record
- Compressed time frame
- Impact at treatment unit
- Track near misses

We report most everything!
Isopair fields created for wrong Linac

<table>
<thead>
<tr>
<th>MRN</th>
<th>Name</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>69</td>
</tr>
</tbody>
</table>

**Category Tags**

- #ChecklistDosi
- #DRR-ISO-Port

**Near Miss Review**

- **Date:** 9/3/2013 1:52:40 PM
- **Description:** Iso pair fields created using SynC instead of PrecA.
- **Review:** Reviewed in CSI. on DRR, shifts will be machine specific. Potential exists for shifting the wrong way.
Isocenter concerns high NMRI

Category Tags: #GoodCatch #IsocenterConcerns #Localization #Simulation

Near Miss Rating: 4 - Critical
Assigned To:
CSI Review: [ ]
Status: Complete

9/19/2013 3:32:42 PM - Pts localization is not in the right spot. It was localized 21.75 cm inferoir to the CT origin. The localization was fixed and the planning continued.-JH
9/26/2013 12:28:35 PM - reviewed in CSI
9/26/2013 12:31:24 PM - Same issue that we previously discussed with RCA, not clicking on the correct slice to confirm localization results in improper sup/inf
Localization not on correct Z

Z = 0.0 cm
Correct localization
Isopair fields wrong point

Near Miss Review

This Patient has 3 incidents within 2 weeks

2550 last minute DRR push for filming and wrong isocenter

MRN Name Age

Process Improvement Project

Category Tags

#ChecklistDosi #ChecklistPhysCheck #DRR-ISO-Port #IsocenterConcerns #PlanningError

Near Miss Rating 4 - Critical
Assigned To:

Barriers

CSI Review Status Complete

7/16/2014 1:16:53 PM - Patient on table and needed to interrupt physician reviewing treatment plan in order to send over DRRs for filming. Sent DRRs to the first point highlighted, CT origin instead of isocenter. Therapists called and said DRRs incorrect resent the isopair with correct isocenter.
TPS places beam on selected point

Points of Interest

<table>
<thead>
<tr>
<th>POI Name</th>
<th>ct origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Set</td>
<td></td>
</tr>
<tr>
<td>POI Type</td>
<td>ISOCENTER</td>
</tr>
<tr>
<td>Lateral</td>
<td>0.00 cm</td>
</tr>
<tr>
<td>Ant–Post</td>
<td>0.00 cm</td>
</tr>
<tr>
<td>Sup–Inf</td>
<td>0.00 cm</td>
</tr>
</tbody>
</table>

Beam Name: [Information]
Plan Version: [Information]
Eye Position: [Information]
Isocenter: ct origin
(Reported as Table/Laser Meridians)
Laser 0.00 cm --- (looking from foot of table)
Laser 0.00 cm ---
Targeting safety improvements through identification of incident origination and detection in a near-miss incident learning system

Avrey Novak, Matthew J. Nyflot, Ralph P. Ermoian, Loucille E. Jordan, Patricia A. Sponseller, Gabrielle M. Kane, Eric C. Ford, and Jing Zeng

Most incidents originated in Treatment Planning

- 1897 incidents were analyzed (NMRI scored)
- Classified by origination and detection based on workflow steps
- Steps then divided into categories
- Average NMRI calculated
- Safety barriers identified
Dosimetry Plan check script

• Written By Dr. Eric Ford
• Run script in treatment planning system
• Checks for various parameters in plan
• Flags mis-matches or errors
• SBRT plans
• Pacemaker
• Linac table
Script run prior to plan export

Yes/No Question

Is this an SBRT plan?

Yes
No
Does the patient have a pacemaker or other CIED?
Pacemaker

Plan Check Summaries:

- Plan has only one trial: passed.
- Rx method set to Prescribe: passed.
- All Fields have MU less than or equal to 999.
- Step & Shoot beam control point MU check: passed.
- Dose rate check: passed.
- Checked for MLCs on all beams: passed.
- Isocenter names conform to convention: passed.
- CT couch removal check: passed.
- Laser system check: passed.
- Machines with couch overrides check: passed.
- Patient mark set check: passed.
- Lasers not at default position: passed.
- Laser relative coordinates at zero check: passed.
- CT dataset extension check: passed.
- Dose grid voxel size check: passed.
- Outside patient air threshold check: passed.
- Beams all on a single treatment machine: passed.

**WARNING:** Patient with pacemaker. Planned with at least one high energy beam.
- Allowed machine check: passed.
More than 1 trial (version)

Plan Check Summaries:

ERROR: Plan contains more than one trial.
Rx method set to Prescribe: passed.
WARNING: At least one beam has MU larger that 999 (May be OK if VMAT, please check.)
Step & Shoot beam control point MU check: passed
Dose rate check: passed.
Checked for MLCs on all beams: passed
Isocenter names conform to convention: passed.
CT couch removal check: passed.
Laser system check: passed.
Machines with couch overrides check: passed.
Patient mark set check: passed.
Lasers not at default position: passed.
Laser relative coordinates at zero check: passed.
CT dataset extension check: passed.
Dose grid voxel size check: passed.
Outside patient air threshold check: passed.
Beams all on a single treatment machine: passed.
Allowed machine check: passed.
SBRT plan checks (energy, machine, couch): passed.
All clear!

Plan Check Summaries:

- Plan has only one trial: passed.
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- Allowed machine check: passed.
Emergent/sim and treat patients

Near Miss Review

This Patient has 2 incidents within 2 weeks

4324  Insufficient time budgeted for planning. 4 Treatment Sites, 4 Isos, 3 Prior RT sites Abutting. Composite info required to set borders for Two of the sites. RTPd for same day treatment without generating or reviewing composite info first and with no fields designed for any of the sites including the whole brain. Dr. Off site and would not be working after 2pm. Several iterations of exchanging plan remotely, followed by phone conference significantly delayed planning. Physician was warned this would not be ready for scheduled time and ran over at least an hour. Still finishing one of the composites the next day. Politely recommed budgetting more time for complex treatment planning when physician is off-site.

4/21/2016 12:28:10 PM -

CSI Review
Can emergent treatments result in more severe errors?: An analysis of a large institutional near-miss incident reporting database

Wendy Gao, MD, Matthew J. Nyflot, PhD, Avrey Novak, BS, Patricia A. Sponseller, MS, CMD, Loucille Jordan, BS, RT(T), Joshua Carlson, BS, MHA, Gabrielle Kane, MB, EdD, FRCPC, Jing Zeng, MD, Eric C. Ford, PhD
Department of Radiation Oncology, University of Washington, Seattle, Washington
Culture Change Doesn’t Happen Overnight

“Starting in 2010, a team of selected physicians, medical physicists, dosimetrists, and radiation therapists formed the Process Improvement Team (PIT). At the end of 2011, PIT was discontinued due to tensions within the team. There was a feeling that PIT had become punitive as errors were blamed on the individual rather than the process or workflow causing the error.”

“People still must be vigilant and held responsible for their actions. But when an error occurs, blaming an individual does little to make the system safer and prevent someone else from committing the same error.”

-To Err Is Human: Building a Safer Health System ©1999
Measuring Patient Safety Culture

• Safety Culture Surveys for both hospital and outpatient setting
Aspects of Patient Safety Culture

• Patient Safety Perceptions
• Teamwork
• Open Communication and Punitive Concerns
• Responsibility and Self-Efficacy
• Feedback
Tracking Patient Safety Culture

• 2012 baseline survey, prior to the implementation of incident reporting
• Survey based largely on the AHRQ Patient Safety Culture Survey
• Every individual in the department surveyed from front desk to residents
• Survey was anonymous, also allowed for free text comments
• Results presented to department wide meeting
Results

- ~80% survey response rate every year!
- Positive improvements seen in all domains
Patient Safety Perceptions

“I know errors and near misses happen, but my team is so careful we don’t have errors to report.”
Patient Safety Perceptions

“I know errors and near misses happen, but my team is so careful we don’t have errors to report.”

Disagree with Statement

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>2012</td>
<td>51</td>
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<tr>
<td>2013</td>
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<td>2014</td>
<td>27</td>
</tr>
<tr>
<td>2015</td>
<td>28</td>
</tr>
</tbody>
</table>
Teamwork

“People support one another in this department.”

![Bar chart showing the percentage of agreement with the statement from 2012 to 2015.](chart_image)
Open Communication/Punitive Concerns
“Staff worry that mistakes they make are kept in their personnel file.”
“In this unit, we discuss ways to prevent errors from happening again.”
“Staff are afraid to ask questions when something doesn’t seem right.”

Disagree with Statement

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<tbody>
<tr>
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<tr>
<td>2013</td>
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<tr>
<td>2014</td>
<td>67</td>
</tr>
<tr>
<td>2015</td>
<td>72</td>
</tr>
</tbody>
</table>
“When an event is reported, it feels like the person is being written up, not the problem.”

Disagree with Statement

<table>
<thead>
<tr>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>2012</td>
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<tr>
<td>2013</td>
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<tr>
<td>2014</td>
<td>57</td>
</tr>
<tr>
<td>2015</td>
<td>74</td>
</tr>
</tbody>
</table>
Responsibility and Efficacy
Responsibility and Efficacy

“I know how to report errors/near misses within my department.”
Responsibility and Efficacy

“I’d be more likely to report errors/near misses if it were easier to do so.”

Disagree with Statement

<table>
<thead>
<tr>
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<th>Percent</th>
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<tbody>
<tr>
<td>2012</td>
<td>28</td>
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<td>2014</td>
<td>59</td>
</tr>
<tr>
<td>2015</td>
<td>59</td>
</tr>
</tbody>
</table>
Responsibility and Efficacy

“I have confidence that my reports get used to improve our system.”

Agree with Statement

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
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<td>76</td>
</tr>
<tr>
<td>2015</td>
<td>76</td>
</tr>
</tbody>
</table>
Feedback

YOUR FEEDBACK MATTERS
Feedback

“After we make changes to improve safety, we evaluate their effectiveness.”
Barriers to Incident Reporting
Barriers to Incident Reporting

Self Reported Barriers to Incident Reporting

- **Effect it may have on our departments reputation**
  - 2012: 31%
  - 2013: 26%
  - 2014: 17%

- **Embarrassement in front of colleagues**
  - 2012: 37%
  - 2013: 31%
  - 2014: 19%

- **Getting my colleagues in trouble**
  - 2012: 49%
  - 2013: 26%
  - 2014: 29%

Getting my colleagues in trouble is the most common barrier, while Effect it may have on our departments reputation is the least common barrier.
While not all surveyed items showed statistically significant improvement, all trended towards positive impact on patient safety culture and no items showed significant decline.
Scalability
## Scalability

<table>
<thead>
<tr>
<th>Large Academic Center</th>
<th>Small Private Practice</th>
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</thead>
<tbody>
<tr>
<td>Multi-professional Team</td>
<td>Multi-professional Team</td>
</tr>
<tr>
<td>Desktop GUI Database Reporting</td>
<td>Paper Based Reporting</td>
</tr>
<tr>
<td>Weekly Meeting</td>
<td>Bimonthly/Quarterly Meeting</td>
</tr>
<tr>
<td>Monthly Department Feedback</td>
<td>TBD</td>
</tr>
<tr>
<td>ROILS-YES</td>
<td>ROILS-YES</td>
</tr>
</tbody>
</table>
“We need to do a much better job creating hospital cultures where people know the difference between error and misconduct, seek and remedy the systems failures behind the mistakes, and support the "second victim," the caregiver, when they err.”

Lucian Leape, M.D.
Institute of Medicine
Thank You!

Aaron S. Kusano MD, SM  (kusano@uw.edu)

Patty Sponseller MS, CMD, RT(R)(T)