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BUILDING BRIDGES. CULTIVATING SAFETY. GROWING VALUE.

Using an incident learning system to improve safety and efficiency

Christopher Deufel, Ph.D.
Mayo Clinic

Disclosures

Nothing to Disclose

Educational Objectives

1. Define a ‘culture of safety’ and describe how it can be promoted by an incident learning system (ILS)
2. Describe how an ILS can be used for evidence based practice improvement
3. Describe how you can set-up an ILS in your brachytherapy practice

ANALYSIS

Medical error—the third leading cause of death in the US

Medical error is not included on death certificates or in rankings of cause of death. **Martin Makary** and **Michael Daniel** assess its contribution to mortality and call for better reporting

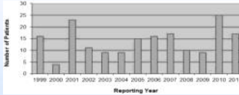
Martin A Makary professor, Michael Daniel research fellow

Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD 21287, USA

Recent errors in brachytherapy

How frequent are errors?

HDR Medical Events



Average = 11 per year

Prostate Seed Implant Medical Events

Average =24 per year
(18 per year excluding 2008)

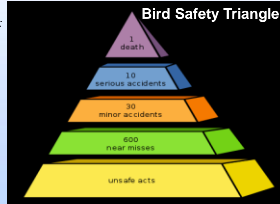
Wanbao Gai 2013 DOI: 10.7759/cureus.133 and https://www.brachyjournal.com/article/S1538-4721(13)00139-6/abstract

Serious events have warning signs

"The foundation of incident learning system lies on the realization that incidents do not happen overnight. 'Everything was OK till yesterday and today this occurred'-*it never happens this way!* "

- *Ganesh T.*

Incident reporting and learning in radiation oncology: Need of the hour. Journal of Medical Physics. 2014;39(4):203-5. 2014)



Getting the little things right …

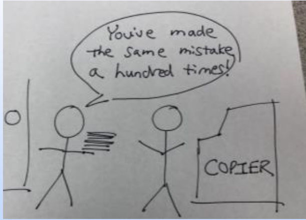
"If the restaurant can't be bothered to replace the puck in the urinal or keep the toilets and floors clean, then just imagine what their refrigeration and work spaces look like."

- Anthony Bourdain

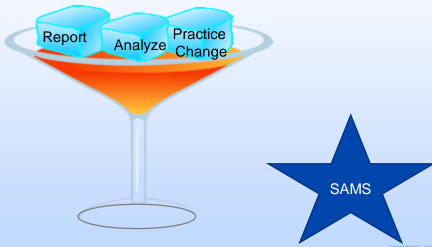
Blame Culture vs. Learn Culture

"Learn culture" recognizes that error is a fact of life; it cannot be eliminated but its frequency can be reduced

We all make mistakes…



The Incident Learning System



SAMS

Low Tech

ID	Who Reported	Date Reported	Time Reported	Procedure Type	Narrative	Where the Mistake Occurred	Where Caught	Contributing Causes	Frequency of Reccurrence	Frequency of Detection	Dose Risk	Non-dose Risk	Time Wasted	Total Risk Score	Follow-up Actions?
1	Mouse, Mickey	11/13/2018	10:54 AM	HDR Prostate	Bladder was missing a slice	Treatment Planning	Plan Check	Human	1	1	1	1	1	1	None

High Tech

Submission and Follow-up Forms

Scoring Form

Dashboards showing state-of-practice

Our ILS experience at Mayo Clinic

Radiotherapy and Oncology 125 (2017) 94–100

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

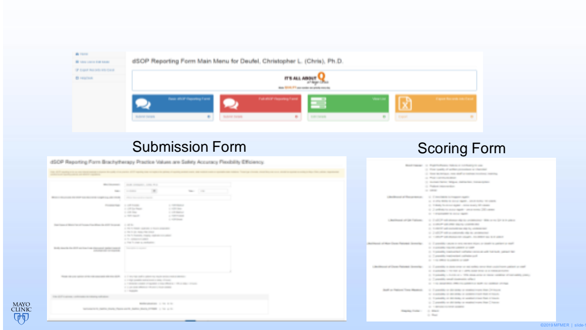
Patient safety

Patient safety is improved with an incident learning system—Clinical evidence in brachytherapy

Christopher L. Deufel *, Luke B. McLemore, Luis E. Fong de los Santos, Kelly L. Classic, Sean S. Park, Keith M. Furutani

Departments of Radiation Oncology and Radiation Safety, Mayo Clinic, Rochester, United States

ILS has been the single most valuable investment of time and resources for our practice



Safety Culture

- Emphasis on reporting <u>all</u> deviations from standard operating procedure
- Open meeting each week for review, scoring, discussion
- Regular process improvement based on evidence

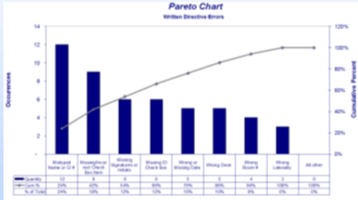
Example of the Process

1. Our system detected an unusually high number of documentation errors with Prostate Implant Written Directives

Number of LDR Prostate Treatments
Frequency of Incomplete Document
Frequency of Incomplete Document (%)
100%
80%
60%
40%
20%
0%
2013
Jan. 2014 to Nov.2014
Nov. 2014 through 2015
LDR Prostate Treatments
70
60
50
40
30
20
10
0

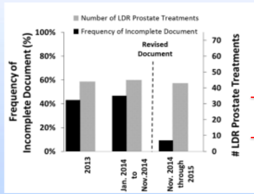
Example of the Process (cont.)

2. We analyzed the data to assess types of mistakes



Example of the Process (cont.)

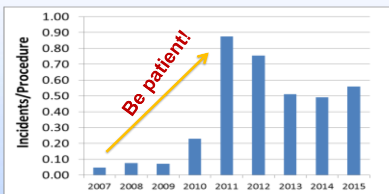
3. We implemented changes to our written directive form and measured the impact of the changes



~ 5x reduction in documentation mistakes

Chi-squared P value <0.001

Be patient, culture is hard to change



Deufel, Fong de los Santos, Park et al. 2017, Radiotherapy and Oncology 125:94-100

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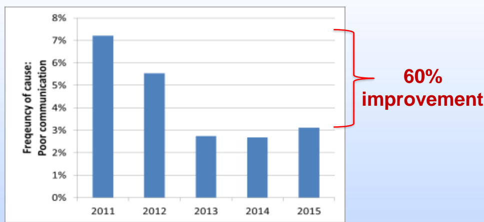
What happens after years of using an evidence based approach?

Improved communication

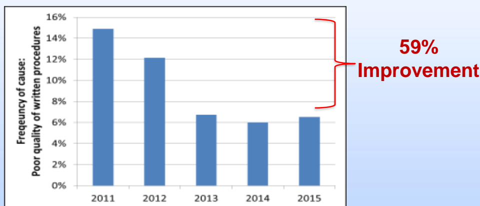


60% improvement

Deufel, Fong de los Santos, Park et al. 2017. Radiotherapy and Oncology 125:94-100

Better procedures and checklists

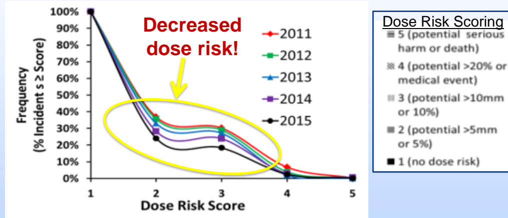
Since 2007,over 150 NEW written procedures and checklists



59% Improvement

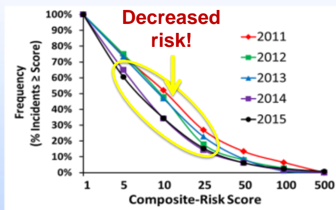
Deufel, Fong de los Santos, Park et al. 2017. Radiotherapy and Oncology 125:94-100

Absolute frequency of high risk mistakes decreases



Deufel, Fong de los Santos, Park et al. 2017, Radiotherapy and Oncology 125:94-100

Risk profile shifts from high risk mistakes to low risk mistakes



Deufel, Fong de los Santos, Park et al. 2017, Radiotherapy and Oncology 125:94-100

How can you set-up an ILS?

1. Draft your teammates
2. Build a reporting form and a follow-up/scoring form
3. Establish a workflow for managing reports and follow-up

Allocate resources

- Submissions
- Follow-up scoring/Prioritization
- Analysis
- Actions

Challenges

- You have a small clinic and no anonymity
- ILS is used as a personal improvement system
- We are a busy clinic and the ILS sounds like more work

National systems

- ROILS, NRC
- Ability to group data to learn
  - Best for most severe errors
  - Less useful for rooting out minor mistakes or inefficiencies that are particular to a process

Conclusions

1. ILS helps reduce probability or severity of future incidents
2. Requires culture of safety—people need to feel comfortable speaking up
3. Reporting matters little if we don't investigate or analyze results
4. Important for staff to know reports are acted upon

References

Deufel CL[1], McLemore LB[2], de Los Santos LEF[2], Classic KL[2], Park SS[2], Furutani KM[2]. Radiother Oncol. **Patient safety is improved with an incident learning system-Clinical evidence in brachytherapy.**

2017 Oct;125(1):94-100. doi: 10.1016/j.radonc.2017.07.032.

Synopsis

Incident learning systems have strong track record of reducing risk in the airline and nuclear power industries, and recently there is evidence that that a well-organized system improves safety in radiation oncology. An effective incident learning system has mechanisms for reporting, analysis, and evidence-based practice change. Strong leadership is essential to create a culture of learning, as opposed to a culture of blame, and to promote participation among all staff. This presentation will highlight how an incident learning system can be used to improve efficiency and quality in the brachytherapy clinic by capturing all levels of mistakes and not just the incidents with the highest risk. Examples will be provided for submission report forms, methods for analyzing and prioritizing incidents, and how reports can be used for continuous practice improvement. The presentation will also discuss the challenges of implementing an incident leaning system at your center.

Rationale

- According to Deufel et al
  https://www.ncbi.nlm.nih.gov/pubmed/28823406

deviations. The system included: 1) reporting mechanisms for identifying and communicating potential failure modes, 2) analysis mechanisms for quantifying incident recurrence and risk, and 3) modification mechanisms for changing the 'as is' process and measuring whether modifications reduced risk. The intervention applies a retrospective methodology for practice

CME Question

- An incident learning system includes which features:
  A. Reporting mechanisms
  B. Analysis mechanisms
  C. Modification mechanisms
  D. All of the above