Using an incident learning system to improve safety and efficiency

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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
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)

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!”


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

Low Tech

<table>
<thead>
<tr>
<th>ID</th>
<th>Who Reported</th>
<th>Date Reported</th>
<th>Time Reported</th>
<th>Procedure</th>
<th>Type</th>
<th>Narrative</th>
<th>Where the Mistake Occurred</th>
<th>Where Caught</th>
<th>Contributing Causes</th>
<th>Frequency of Recurrence</th>
<th>Frequency of Detection</th>
<th>Dose Risk</th>
<th>Non-dose Risk</th>
<th>Time Wasted</th>
<th>Total Risk Score</th>
<th>Follow-up Actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mouse, Mickey</td>
<td>11/13/2018</td>
<td>10:54 AM</td>
<td>HDR</td>
<td>Prostate</td>
<td>Treatment Planning</td>
<td>Bladder was missing a slice</td>
<td>Treatment Plan Check</td>
<td>Human 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
**High Tech**
Submission and Follow-up Forms

Dashboards showing state-of-practice

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**Our ILS experience at Mayo Clinic**

Radiation Oncology

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

Christopher L. Suvak, Jr., Brian R. McIntyre, Louis E. Fong de las Santas, Kelly L. Classic, Sura S. Park, Keith W. Farnan

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

- Emphasis on reporting all 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
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

Be patient, culture is hard to change

Be patient

Chi-squared P value <0.001

~ 5x reduction in documentation mistakes

Deufel, Fong de los Santos, Park et al. 2017, Radiotherapy and Oncology 125:94-100
What happens after years of using an evidence based approach?

Improved communication

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

Better procedures and checklists
Since 2007, over 150 NEW written procedures and checklists

Deufel, Fong de los Santos, Park et al. 2017, Radiotherapy and Oncology 125:94
Absolute frequency of high risk mistakes decreases

Risk profile shifts from high risk mistakes to low risk mistakes

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

Synopsis
Incident learning systems have strong track record of reducing risk in the airline and nuclear power industries, and recently there is evidence 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 learning system at your center.
Rationale
• According to Deufel et al

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