Educating Residents in Root Cause Analysis: Why, Why, Why

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An Interactive Session to Share Education Ideas: How Do You Teach Quality and Safety to Residents?
Disclosures

• R18 HS022204-01
Learning Objectives

• Participate in an interactive forum for the sharing of education ideas
• Adapt techniques shared in this session into your own medical physics residency or graduate program
• Become aware of various techniques for teaching patient safety and quality improvement
**State of Safety Training in Residencies (circa 2016)**

Survey of residents in therapy programs in North American.

n=56 (of 248, 23%) in physics

<table>
<thead>
<tr>
<th></th>
<th>No exposure or informal</th>
<th>Formal Training</th>
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<tbody>
<tr>
<td>Experience with incident learning</td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td>Root-cause analysis</td>
<td>77%</td>
<td>23%</td>
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<tr>
<td>FMEA</td>
<td>72%</td>
<td>27%</td>
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Safety training in residency is adequate: 40%


Note: numbers are not much different for MD residents. Maybe you expect this. Would this be acceptable for another core clinical competency such as linac QA or IGRT?
There is a disconnect here. 60% of residents think their program is NOT adequate, 90% of directors think resident are prepared for practice.

Survey of therapy program directors in North American. n=31 (32%) in physics

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<tr>
<th></th>
<th>Agree</th>
<th>Do not agree</th>
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<tbody>
<tr>
<td>Safety &amp; QI education is important</td>
<td>95%</td>
<td>5%</td>
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<tr>
<td>Residents are enthusiastic</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>Residents are prepared</td>
<td>90%</td>
<td>10%</td>
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*Spraker et al. Prac Radiat Oncol, accepted (2018)*
https://www.campep.org/ResidencyStandards.pdf. Both report No 249 and CAMPEP requirements note safety education – including FMEA & RCA. ACGME CLER pathway since 2006: 2 of 6 focus areas are safety &QI, Pathway to Excellence guide advocates Q&S education and that it should be experience-based
Residency at UW consists of 16 rotations. Quality and safety is one of them.
This is NOT radiation protection

- Exposure
- Effective dose, dose equivalent
- Annual limits
- Shielding
- Surveys

These are part of a separate “Radiation Protection” rotation
Key components

- Failure mode and effects analysis (FMEA)
- Incident learning
- Root-cause analysis
- Safety culture
- QA and error proofing
Safety Program for Residents

EDUCATION

A patient safety education program in a medical physics residency

Eric C. Ford  |  Matthew Nyflot  |  Matthew B. Spraker  |  Gabrielle Kane  |
Kristi R. G. Hendrickson

Safety Program for Residents

- Goal: Broad education in safety and quality
- Attend ILS meetings thru all 2 years
- 6 week rotation
- Readings and lectures, 2 projects, evaluation
- Progress
  - Began 2014 (5 years), 10 residents so far
  - Well received
Incident learning is one key component of the program. I do not have time in this talk to delve into incident learning in any depth, but here is a comprehensive review published recently. 19 pages. This is a key resource for us for teaching.
Note – every resident is expected to DO a root-cause-analysis (not just read about it)
Root Cause Analysis (RCA)


From Imperial college London (note there are others e.g. Cntr of pt safety, VA), Handy 20-page document with tables, easy to digest
Figure 4: Chronological Mapping of CDPs and Associated Contributory Factors

<table>
<thead>
<tr>
<th>CDPs</th>
<th>Contributory Factors</th>
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<tbody>
<tr>
<td>Care Delivery Problems (what)</td>
<td>Contributory Factors (why)</td>
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</table>
RCA: the 5 “Why”s
Example RCA

Unclear communications
Management of patient with pacemaker


Slide: courtesy Ryan Price, PhD UWMC
At this phase we focus on the ‘what’ not why. Timestamps in EMR are useful, also detailed interviews with people.

Chronology (What)

• Pacemaker not on consult document (dropped, document update)
• Patient simulated
• Husband mentions pacemaker to nurse and sim staff.
• Note made in OIS (Mosaiq). Urgent plan.
• Dosimetry looks at document (not note). Plans for 18MV.
• Physics initial chart review: notes pacemaker note and 18MV plan.
• Replanned with 6MV.

Slide: courtesy Ryan Price, PhD UWMC
RCA: Contributory factors

- Urgent work
- Incomplete communication
- Workflow does not have consistent modes of communication

*Slide: courtesy Ryan Price, PhD UWMC*
This event
If sim doesn’t send QCLs.
RCA follow-up

• Presented at department-wide meeting
• New workflow and communications methods

“I don’t trust those newfangled, battery-powered pacemakers.”
Conclusions

- Safety education: Key need in residency
- Experiential learning
- Benefits to program

Imagine what your program will look like when you do two RCAs every year.
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Medical Physics Residents!