The National Landscape of Radiation Therapy Safety Efforts – part II

Jennifer L Johnson, MS, MBA
Chair, WGPE
WGPE Brief History

- Charges (12 May 2005)
- Provide a historical database of errors reported in the Radiotherapy Community.
- To assess the utility methodologies and tools used in error reduction for application in medical physics.
- Make recommendations to the Radiotherapy Community in terms of: staffing, processes, tools needed to carry out particular procedures in order to avoid errors and provide guidance in the practice of error reduction techniques.

(Working Group on Prevention of Errors in Radiation Oncology (WGPE), 2016)
WGPE Brief History

AAPM COMMITTEE TREE

Work Group on Prevention of Errors in Radiation Oncology

delete bookmark (bookmarks show under "My AAPM" in the menu to left)

Chair

Committee Website | Committee Wiki | Directory: Committee | Membership

Email You may send email to this group now using gmail or outlook.
-or-
You may save the address 2016.WGPE@aapm.org
to your local address book. This alias updates hourly from the AAPM Directory.


Approved Date(s)
Start: 1/20/2005
End: n/a

Committee Keywords:

» Board of Directors  [Status]
» Science Council  [Status]
» Therapy Physics  [Status]
» Quality Assurance and Outcome Improvement SC  [Status]
» Work Group on Prevention of Errors in Radiation Oncology  [Status]
» TG100 Method for Evaluating QA Needs in Radiation Therapy [Status]
» TG275 Strategies for Effective Physics Plan and Chart Review in Radiation Therapy [Status]
» Active Task Group listing

(WGPE, 2016)
WGPE Brief History

- Charges (Dec 2013)
- Develop and disseminate tools to improve safety and quality in all the clinical areas of medical physics using approaches that extend beyond traditional measurement-based QA.
- Foster collaborative safety initiatives and projects with other professional societies within therapeutic and diagnostic radiation medicine.
- Facilitate interactive sharing of knowledge and experience in the areas of patient safety and quality.

(WGPE, 2016)
WGPE Brief History

- Charges (Dec 2013) con’t
- Disseminate information to the AAPM membership and the radiological community in general on issues involving safety and quality in all the clinical areas of medical physics
- Oversee and coordinate societal and inter-societal initiatives on the areas of patient safety and quality improvement, such as the implementation of the recommendations from Task Group 100
- Participate and provide guidance on distributed incident learning systems at the national and international level.

(WGPE, 2016)
WGPE Contributions

- Task Group 100 - Method for Evaluating QA Needs in Radiation Therapy (FMEA)
WGPE Contributions

• Consensus recommendations for incident learning database structures in radiation oncology

Consensus recommendations for incident learning database structures in radiation oncology

E. C. Ford
Department of Radiation Oncology, University of Washington Medical Center, Box 356043, 1999 Northwest Pacific Street, Seattle, Washington 98195

L. Fong de Los Santos
Department of Radiation Oncology, Mayo Clinic, Rochester, Minnesota 55905

T. Pawlicki
Department of Radiation Medicine and Applied Sciences, University of California, San Diego, La Jolla, California 92039

S. Sutliff
VA Puget Sound Health Care System, 1660 South Columbian Way, Seattle, Washington, 98108

P. Dunscombe
Department of Oncology, University of Calgary, Calgary, Alberta T2N 1N4, Canada

(Received 29 June 2012; revised 16 August 2012; accepted for publication 15 October 2012; published 26 November 2012)

Purpose: Incident learning plays a key role in improving quality and safety in a wide range of industries and medical disciplines. However, implementing an effective incident learning system is complex, especially in radiation oncology. One current barrier is the lack of technical standards to guide

• Definitions

(E. Ford et. al., 2012)
• Process maps common tasks

• Potential safety barriers

(E. Ford et. al., 2012)
• Severity scales

1. Medical severity scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Consequences (actual or predicted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Premature death</td>
</tr>
<tr>
<td>8/9</td>
<td>Life threatening—intervention essential. Possible recurrence due to underdose.</td>
</tr>
<tr>
<td>7</td>
<td>Permanent major disability (or grade 3/4 permanent toxicity)</td>
</tr>
<tr>
<td>5/6</td>
<td>Permanent minor disability (or grade 1/2 permanent toxicity)</td>
</tr>
<tr>
<td>3/4</td>
<td>Temporary side effects—major treatment/hospitalization</td>
</tr>
<tr>
<td>2</td>
<td>Temporary side effects—intervention indicated</td>
</tr>
<tr>
<td>1</td>
<td>Temporary side effects—intervention not indicated</td>
</tr>
<tr>
<td>0</td>
<td>No harm</td>
</tr>
<tr>
<td>...</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

2. Dosimetric scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Dose deviation per course</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/10</td>
<td>&gt; 100% absolute dose deviation from the total prescription for any structure</td>
</tr>
<tr>
<td>7/8</td>
<td>&gt; 25%–100% absolute dose deviation from the total prescription for any structure</td>
</tr>
<tr>
<td>5/6</td>
<td>&gt; 10%–25% absolute dose deviation from the total prescription for any structure</td>
</tr>
<tr>
<td>3/4</td>
<td>&gt; 5%–10% absolute dose deviation from the total prescription for any structure</td>
</tr>
<tr>
<td>1/2</td>
<td>&lt; 5% absolute dose deviation from the total prescription for any structure</td>
</tr>
<tr>
<td>...</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

• Causality

• Organizational management
• Technical
• Human behavior involving staff
• Patient-related circumstances
• External factors (beyond facility control)
• Procedural issues

(E. Ford et. al., 2012)
WGPE Contributions

- Safety Profile Assessment (SPA) tool

“Qualified by the American Board of Radiology as meeting the criteria for Practice Quality Improvement requirements of the ABR Maintenance of Certification Program.” (6/19/2014) (P. Dunscombe et. al., 2015)
• Safety Profile Assessment (SPA) tool con’t

• User assess clinical performance in key aspects of safety & quality in radiotherapy

• Based on AHRQ survey and others, but FREE

• Center’s results are benchmarked to participants in the following:
  • Institutional culture
  • Quality management
  • Managing change & innovation
  • Clinical process safety barriers section
  • Overall score

(P. Dunscombe et. al., 2015)
• Results

• Statistically significant (P<0.05 level) differences between Institutional Culture and Clinical Performance Indicators

• Highest-ranked compliance levels were associated with items regulated, billable, or considered good practice (ASTRO, ACR, elsewhere)

• Lowest-ranked compliance & greater variability
  • Fewer well-established recommendations
  • Physician peer-review prior treatment
  • Near-miss incident collection and analysis
  • Risk assessment of new clinical systems

(E. Ford et. al., 2015)
WGPE Contributions

- Task Group 230 – Medical Physics Practice Guidelines (MPPG) 4.a Safety Checklists

(L. E. Fong de los Santos et. al., 2015)
• Role of checklists
• Organizational influences on checklists: safety culture
• Teamwork essential

• Development & Implementation
• Revision
• Maintenance

(L. E. Fong de los Santos et. al., 2015)
• Use of checklists

<table>
<thead>
<tr>
<th>Checklist Approach</th>
<th>Redundancy</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static parallel or call-do</td>
<td>None</td>
<td>Procedure to set up a water tank</td>
</tr>
<tr>
<td>Static sequential with verification</td>
<td>Initial configuration</td>
<td>Plan check process</td>
</tr>
<tr>
<td>Static sequential with verification</td>
<td>Initial configuration and mutual</td>
<td>SBRT procedural pause</td>
</tr>
<tr>
<td>and confirmation</td>
<td>Initial configuration, mutual or</td>
<td>HDR emergency procedure</td>
</tr>
<tr>
<td>Dynamic</td>
<td>“cook book” approach</td>
<td></td>
</tr>
</tbody>
</table>

(L. E. Fong de los Santos et. al., 2015)

• Design recommendations
  • Content
  • Workflow, layout & format
  • Physical characteristics
    • E.g., font size, text color, shading
WGPE Contributions

- Educational sessions

Incident Learning Systems and Root Cause Analysis for Safer Radiation Oncology: A Hands-On Workshop

FEBRUARY 12-13, 2015 | UNIVERSITY OF CALIFORNIA | SAN DIEGO, CA

Welcome!

This workshop will provide the participant with the tools necessary to identify, analyze and confidentially report a near miss or medical error in radiation oncology. Participants will also learn how to leverage incident learning through an overview of root-cause analysis and intervention strategies that promote a culture of safety.

Registration is limited to the first 100 registrants.

Supported By:

ASTRO

MOC

3 SAMs sessions

(2015 ILS, 2015)
By the end of the workshop, participants will be able to
- Explain the utility of an effective incident learning system
- Learn how to design corrective actions and provide feedback to department members
- Effectively undertake root cause analyses of radiation oncology incidents
- Use specific tools to promote a positive "safety culture" in an organization
- Design a Practice Quality Improvement (PQI) project in patient safety

(2015 ILS, 2015)
WGPE Current Work

• Task Group 275 – Strategies for Effective Physics Plan and Chart Review (Charges)
  • Literature review of existing data and recommendations that support the use of physics plan and chart review; and to review the current recommendations on the qualifications for performing these.

• Design, pilot, and distribute a survey on current practices in the community with respect to physics plan and chart review.

SDEP document template; AAPM email 12 Feb 2016 (TG 275, 2016)
Task Group 275 – Strategies for Effective Physics Plan and Chart Review (Charges) con’t

- Provide risk-based recommendations (based on FMEA formalism) for the effective use of the following physics review:
  - Initial plan check process
  - On-treatment chart check process
  - End-of-treatment chart check

- Provide recommendations to software vendors for systems design and operations that best facilitate physics plan and chart review.

(TG 275, 2016)
WGPE Current Work

• Task Group 100 rollout

• Consensus for imaging incident learning
  • Bruce Thomadsen (Chair), William Geisler (Vice-Chair)

• Writing an incident report
  • Bruce Thomadsen (Chair), Ajay Kapur (Vice-Chair)
WGPE Current Work

• Examining safety barriers and their effectiveness from ROILS data

• Developing policy and procedure templates built from SPA results

(WGPE, 2016)
Reference List


Consensus recommendations for Incident Learning Systems (ILS) include which of the following:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>1. Definitions</td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>2. Process maps</td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>3. Severity scales</td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>4. Causality</td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>5. All of the above</td>
<td></td>
</tr>
</tbody>
</table>
Consensus recommendations for Incident Learning Systems (ILS) include which of the following:

- 20% 1. Definitions
- 20% 2. Process maps
- 20% 3. Severity scales
- 20% 4. Causality
- 20% 5. All of the above

Answer: 5. All of the above

The Safety Profile Assessment (SPA) tool results include which of the following:

<table>
<thead>
<tr>
<th></th>
<th>1. Institutional culture</th>
<th>2. Quality management</th>
<th>3. Managing change and innovation</th>
<th>4. Clinical process safety barriers</th>
<th>5. All of the above</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20%
The Safety Profile Assessment (SPA) tool results include which of the following:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>1. Institutional culture</td>
</tr>
<tr>
<td>20%</td>
<td>2. Quality management</td>
</tr>
<tr>
<td>20%</td>
<td>3. Managing change and innovation</td>
</tr>
<tr>
<td>20%</td>
<td>4. Clinical process safety barriers</td>
</tr>
<tr>
<td>20%</td>
<td>5. All of the above</td>
</tr>
</tbody>
</table>

Answer: 5. All of the above

The Medical Physics Practice Guideline (MPPG) 4.a on Safety Checklists include all of the following EXCEPT:

<table>
<thead>
<tr>
<th>20%</th>
<th>1. Repository of checklists</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>2. Role of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>3. Development of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>4. Implementation of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>5. Use of checklists</td>
</tr>
</tbody>
</table>
The Medical Physics Practice Guideline (MPPG) 4.a on Safety Checklists include all of the following EXCEPT:

<table>
<thead>
<tr>
<th>20%</th>
<th>1. Repository of checklists</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>2. Role of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>3. Development of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>4. Implementation of checklists</td>
</tr>
<tr>
<td>20%</td>
<td>5. Use of checklists</td>
</tr>
</tbody>
</table>

Answer: 1. Repository of checklists