UC San Diego Health

Safety - Prevention of Errors in Radiation Oncology: Current Strengths and Opportunities

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Technical Service chief of CNS
Radiation Medicine & Applied Sciences

AAPM 61th Annual Meeting, July 16, 2019

DISCLOSURE

- Member of AAPM Task Group 275
- Member of AAPM Work Group on Radiation Oncology Incident Learning System (RO-ILS)
- Chair of AAPM Work Group on Prevention of Errors in Radiation Oncology (Parent WG of TG-100, TG-275 etc.)

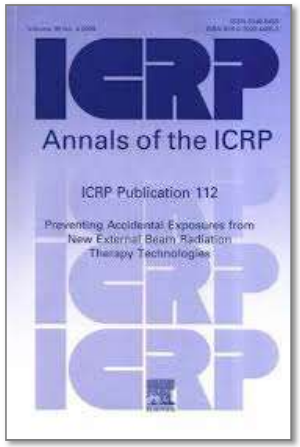
CELEBRATING MILESTONES - SAFETY INITIATIVES

PROACTIVE RISK ASSESSMENT – THE JOINT COMMISSION (2001)

- The Joint Commission, Standard LD.03.09.01, EP 7: At least **every 18 months**, the hospital selects one high-risk process and conducts a proactive risk assessment.
    - Benefits of a proactive approach to patient and resident safety includes increased likelihood of the following:
        - Identification of actionable common causes
        - Avoidance of unintended consequences
        - Identification of commonalities across dept./services/units
        - Identification of system solutions

PROACTIVE RISK ASSESSMENT – ICRP 112 (2009)

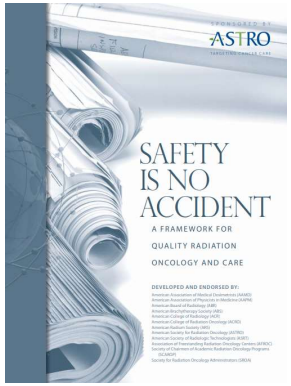
- As technology & processes change
  - Retrospective approaches are not sufficient
  - All-inclusive QC checks may not be Feasible
  - Develop proactive approaches to anticipation of failure modes
  - Evaluation and comparison potential risks from each failure mode



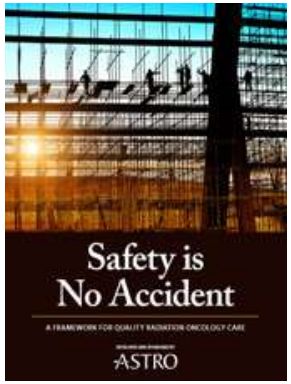
- **Resources**
  - Process trees
  - Design of a quality management system
  - Failure modes, Risk (FMEA, Probabilistic safety assessment, Risk matrix)
  - Closing the loop and applying prospective methods

SAFETY IS NO ACCIDENT

- Reference guide for patient safety and high-quality care during radiation therapy treatment.
- Additional efforts btw v.2012 and v.2019
  - Radiation Oncology Incident Learning System
  - ASTRO launched APEx (focus on CQI)
  - AAPM reports and guidelines
    - Task Group 263
    - MPPG 4.a.
    - Task Group 100
  - Major advances in the radiation oncology



2012



2019

TASK GROUP 100 REPORT

- Process Map
- FMEA
- Fault Tree
- Corrective / Preventive action
  - From the greatest risk and most severe
  - Use the most effective tools
- Test and validate

TASK GROUP 100 REPORT

Ad Hoc Committee for the implementation of TG-100 Report

: Initiate mechanisms to present the concepts for the TG-100 report and execute an implementation plan for the next generation of radiation therapy quality management

AAPM COMMITTEE TREE

Work Group on the Implementation of TG-100 (WG100)

- bookmark this page (bookmarks show under "My AAPM" in the menu to left)

Committee Website | **Directory:** Committee | Membership

Email You may send email to this group now using gmail or outlook.
- or -
You may save the address *2019.WG100@aapm.org*
to your local address book. This alias updates hourly from the AAPM Directory.

Charge To promote and facilitate the implementation of TG 100 methodology in a multidisciplinary radiotherapy environment. Charge:

1. To develop core educational/training materials for use in the promotion of TG 100 methodology.
2. To develop a step-by-step implementation guide for use by multidisciplinary radiotherapy teams.
3. To liaise effectively with professional organizations representing the members of the multidisciplinary radiotherapy care team.

Bylaws: Not Referenced. **Rules:** Not Referenced.

Approved Date(s) 1/4/2016

Committee Keywords: WG100

⊞ Board of Directors
⊞ Administrative Council [Status]
⊞ **Work Group on the Implementation of TG-100** [Status]
└ Unit No. 37 - Developing Repository Proposal (UN37) [Status]
└ Unit No. 38 - Review of WG100 Workshops (UN38) [Status]

Chair

Per Halvorsen
Workgroup Chair

RO-ILS

Benefits

- Can be utilized as a departmental ILS
- Education
- PQI template: qualified for physicians and physicists by ABR
- MACRA: CMS rule for the Quality Payment Program, RO-ILS participation will satisfy CPIA (clinical proactive improvement activities)

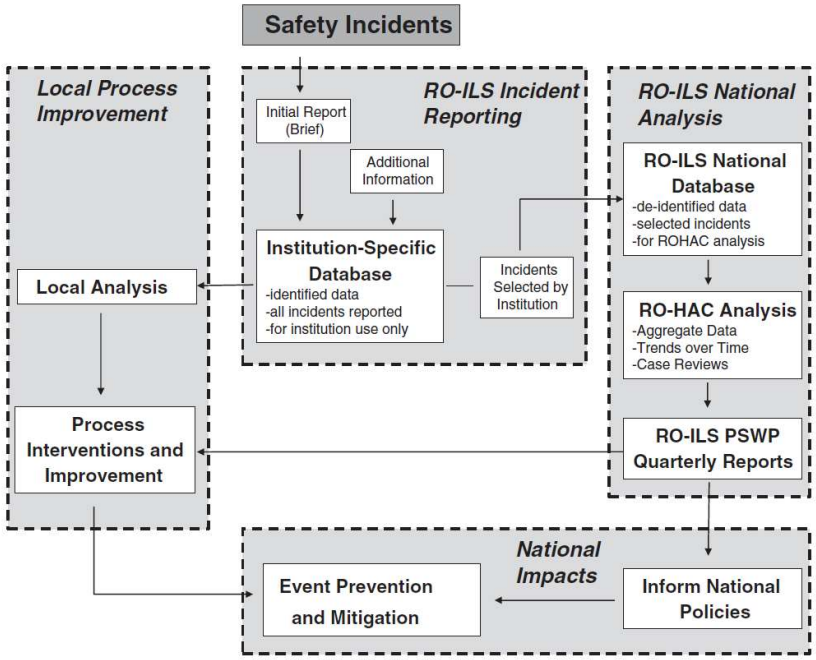
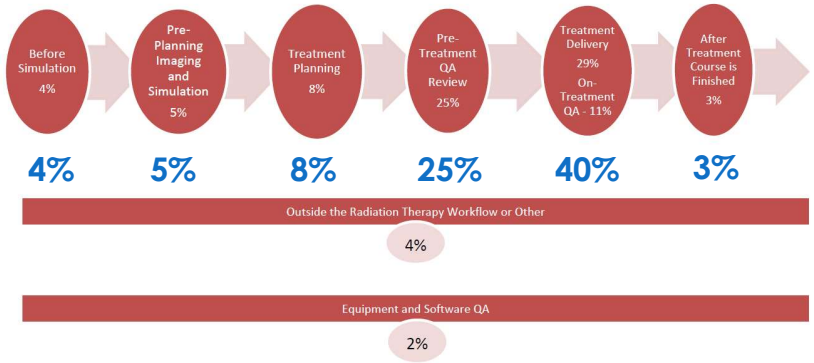


Figure 2 Current workflow for Radiation Oncology Incident Learning System (RO-ILS). PSWP, patient safety work product; RO-HAC, Radiation Oncology Health Advisory Council.

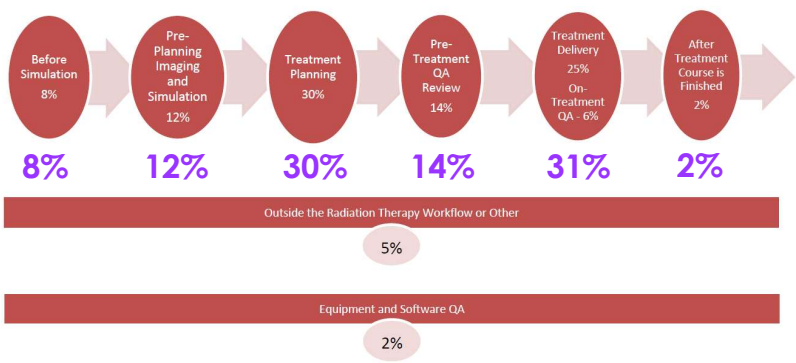
D Hoopes et al., Practical Radiation Oncology (2015) 5, 312-318

RO-ILS DATA

Aggregate Sum:
Workflow Step Where Event
Discovered



Aggregate Sum:
Workflow Step Where Event
Occurred



RO-ILS Q1-Q2 2018 Report
January 1, 2018 – June 30, 2018

INCIDENT LEARNING IN RADIATION ONCOLOGY: A REVIEW

Eric C. Ford and Suzanne b. Evans, Medical Physics, 2018;45(5),e100-e119

- The operation of an institutional ILS
- Practical Advice for developing and maintaining an ILS
- A system view of error
- Responding to incidents of harm

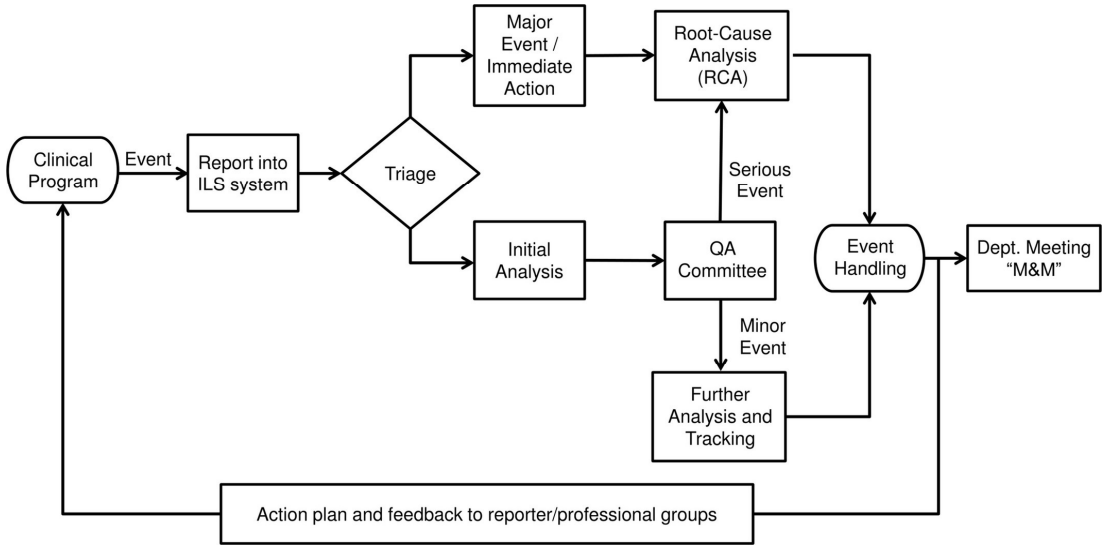


FIG. 1. Schematic representation of the operation of an institutional incident learning system.

WGROILS

- ROILS User Guideline
- AAPM WG RO-ILS Recommended Curriculum on Quality Improvement and Incident Learning
- Task Group 327: Crowd-sourced solutions to the problem of wrong shift instructions

AAPM COMMITTEE TREE

Working Group on Radiation Oncology - Incident Learning System (WROILS)

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Email	You may send email to this group now using gmail or outlook. - or - You may save the address *2019.WROILS@aapm.org* to your local address book. This alias updates hourly from the AAPM Directory.
Charge	Click here for committee charge.
Bylaws:	Not Referenced. **Rules:** Not Referenced.
Approved Date(s)	n/a
Committee Keywords:	WGROILS, WROILS

⊞ Board of Directors
⊞ Science Council [Status]
⊞ Therapy Physics [Status]
⊞ Quality Assurance and Outcome Improvement SC [Status]
⊞ **Working Group on Radiation Oncology - Incident Learning System** [Status]
└ TG327 - Crowd-sourced solutions to the problem of wrong shift [Status]

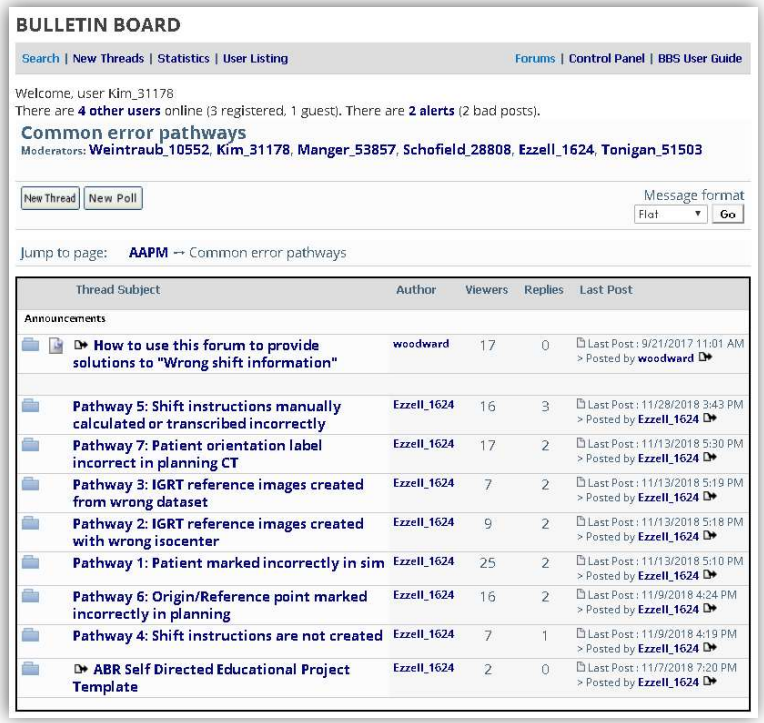
Chair

Jean Moran
Workgroup Chair

YOUR CONTRIBUTIONS! – TG327

We need your support!

Refer to the Newsletter article in Nov/Dec 2018 for more details.



BULLETIN BOARD

Search | New Threads | Statistics | User Listing — Forums | Control Panel | BBS User Guide

Welcome, user Kim_31178
There are **4 other users** online (3 registered, 1 guest). There are **2 alerts** (2 bad posts).

Common error pathways
Moderators: Weintraub_10552, Kim_31178, Manger_53857, Schofield_28808, Ezzell_1624, Tonigan_51503

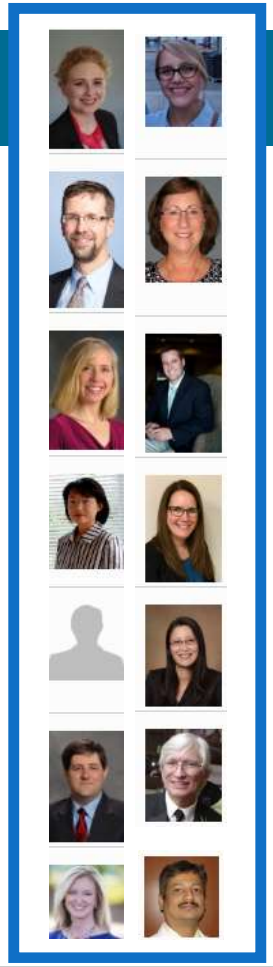
New Thread | New Poll — Message format: Flat | Go

Jump to page: AAPM ↔ Common error pathways

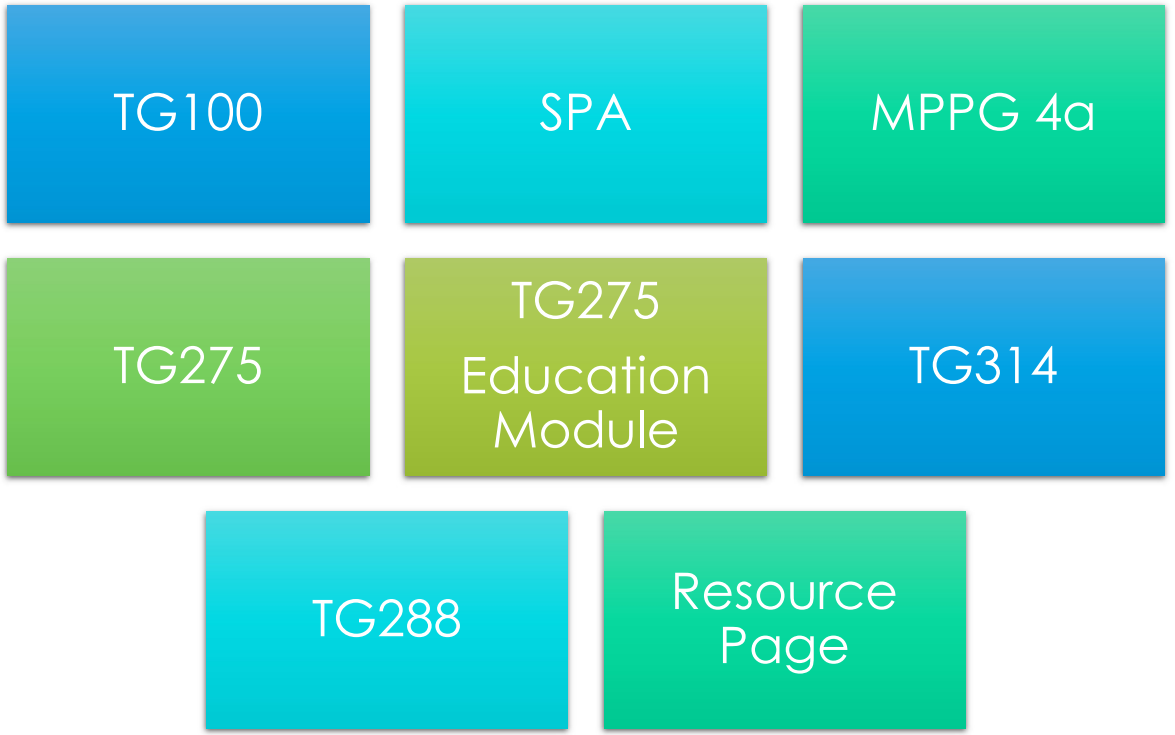
Thread Subject	Author	Viewers	Replies	Last Post
Announcements				
How to use this forum to provide solutions to "Wrong shift information"	woodward	17	0	Last Post : 9/21/2017 11:01 AM > Posted by woodward
Pathway 5: Shift instructions manually calculated or transcribed incorrectly	Ezzell_1624	16	3	Last Post : 11/28/2018 3:43 PM > Posted by Ezzell_1624
Pathway 7: Patient orientation label incorrect in planning CT	Ezzell_1624	17	2	Last Post : 11/13/2018 5:30 PM > Posted by Ezzell_1624
Pathway 3: IGRT reference images created from wrong dataset	Ezzell_1624	7	2	Last Post : 11/13/2018 5:19 PM > Posted by Ezzell_1624
Pathway 2: IGRT reference images created with wrong isocenter	Ezzell_1624	9	2	Last Post : 11/13/2018 5:18 PM > Posted by Ezzell_1624
Pathway 1: Patient marked incorrectly in sim	Ezzell_1624	25	2	Last Post : 11/13/2018 5:10 PM > Posted by Ezzell_1624
Pathway 6: Origin/Reference point marked incorrectly in planning	Ezzell_1624	16	2	Last Post : 11/9/2018 4:24 PM > Posted by Ezzell_1624
Pathway 4: Shift instructions are not created	Ezzell_1624	7	1	Last Post : 11/9/2018 4:19 PM > Posted by Ezzell_1624
ABR Self Directed Educational Project Template	Ezzell_1624	2	0	Last Post : 11/7/2018 7:20 PM > Posted by Ezzell_1624

WORK GROUP ON PREVENTION OF ERRORS (WGPE)

- Develop and disseminate tools to improve safety and quality in all the clinical areas of medical physics
- Foster collaborative safety initiatives and projects with other professional societies
- Facilitate interactive sharing of knowledge and experience in the areas of patient safety and quality.
- Disseminate information to the AAPM membership and the radiological community
- Oversee and coordinate societal and intersocietal initiatives on the areas of patient safety and quality improvement
- Participate and provide guidance on distributed incident learning systems

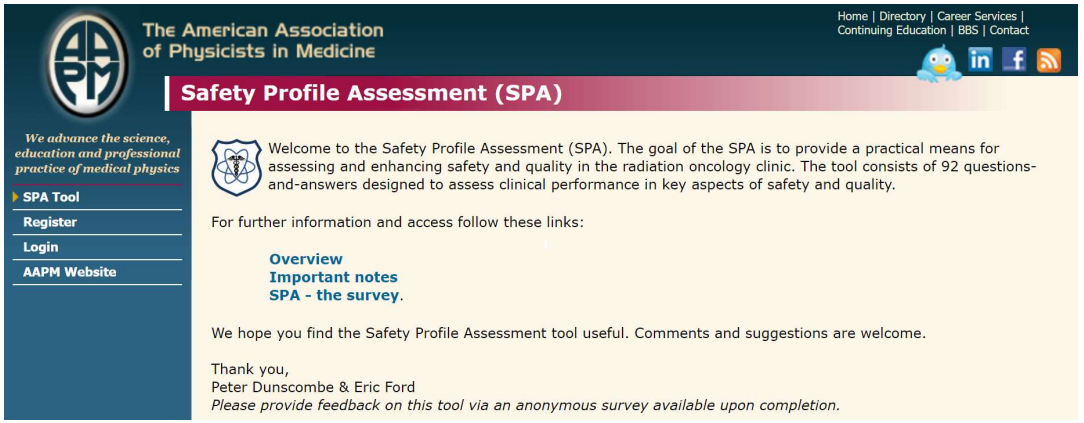


WGPE


TG100
SPA
MPPG 4a
TG275
TG275 Education Module
TG314
TG288
Resource Page

WGPE

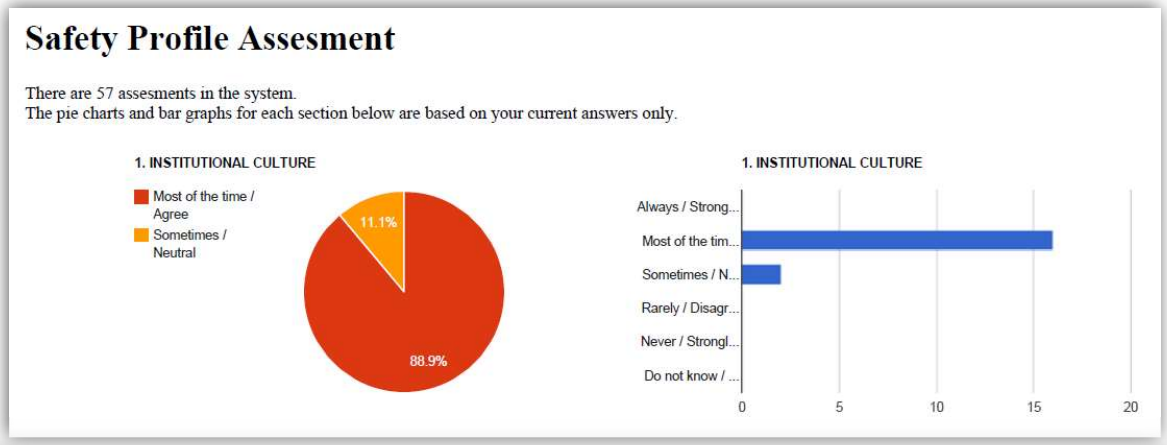
SPA

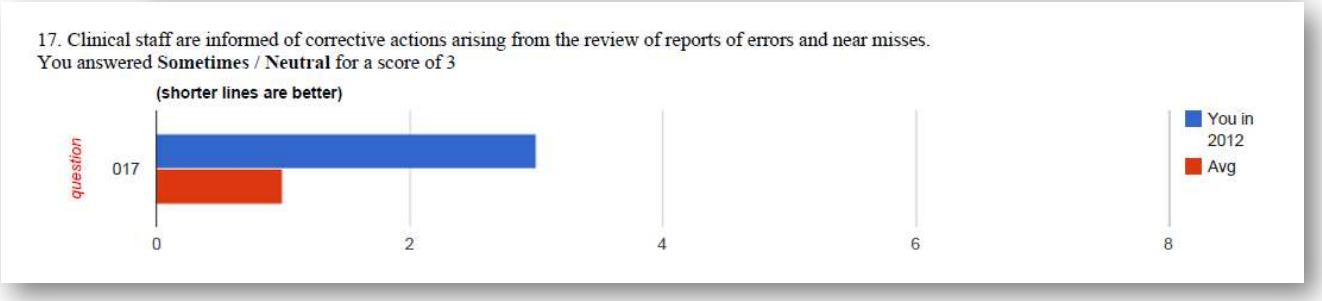


- **92** questions to assess performance in key, safety-critical areas.
- Summary of your clinic's performance via visual pie charts.
- Bar graphs allowing you to benchmark your performance against other participants.
- Downloadable Quality/Safety Improvement Log to guide safety improvement initiatives.
- Qualified by ABR as PQI project for Maintenance of Certification

WGPE

SPA


Safety Profile Assesment
There are 57 assesments in the system.
The pie charts and bar graphs for each section below are based on your current answers only.
1. INSTITUTIONAL CULTURE
Most of the time / Agree
Sometimes / Neutral
11.1%
88.9%
1. INSTITUTIONAL CULTURE
Always / Strong...
Most of the tim...
Sometimes / N...
Rarely / Disagr...
Never / Strongl...
Do not know / ...
0
5
10
15
20


17. Clinical staff are informed of corrective actions arising from the review of reports of errors and near misses.
You answered Sometimes / Neutral for a score of 3
(shorter lines are better)
question
017
0
2
4
6
8
You in 2012
Avg

WGPE

TG275

AAPM COMMITTEE TREE

Task Group No. 275 - Strategies for Effective Physics Plan and Chart Review in Radiation Therapy (TG275)

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Committee Website | **Directory:** Committee | Membership

Email You may send email to this group now using gmail or outlook.
- or -
You may save the address *2019.TG275@aapm.org*
to your local address book. This alias updates hourly from the AAPM Directory.

Charge

1. To review 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.
2. To provide survey information on current practices in the community with respect to physics plan and chart review.
3. To provide risk-based recommendations for the effective use of the following physics review: initial plan and chart check, weekly chart check and end-of-treatment chart check.
4. To provide recommendations to software vendors for systems design and operations that best facilitate physics plan and chart review.

Chair

Eric Ford
Task Group Chair

Web-based Survey → Risk Assessment → Provide recommendations

WGPE

Resource Page

COMING SOON

- PSYCHOLOGY OF HUMAN ERROR
- INCIDENT REPORTS AND DESCRIPTIONS
- GUIDELINES
- SAFETY CULTURE – GENERAL
- SAFETY CULTURE – CHECKLIST
- SAFETY CULTURE – TEAMWORK
- SAFETY CULTURE – PEER REVIEW
- SAFETY CULTURE – TRAINING
- SAFEETY CULTURE – INCIDENT LEARNING
- RISK ASSESSMENT TOOLS – PROCESS MAPPING
- RISK ASSESSMENT TOOLS – FAILURE MODE AND EFFECTS ANALYSIS
- RISK ASSESSMENT TOOLS – FAULT TREE ANALYSIS
- RISK ASSESSMENT TOOLS – ROOT CAUSE ANALYSIS
- RELATED QUOTES

SUMMARY

- Proactive risk management is becoming an integral part of patient safety.
- RO-ILS continues to steadily grow and leveraging lessons learned from the program to ensure ongoing quality improvement and patient safety in radiation oncology.
- The AAPM has many initiatives to assist the members to improve the quality and safety in radiation oncology.