UPMC CancerCenter

Partner with University of Pittsburgh Cancer Institute

The rollout of AAPM TG100: Getting engaged in risk assessment

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Disclosures

- Å chair Therapy Physics Committee, AAPM
- Å Vice chair, Science Council, AAPM
- Å Member, Clinical, Translational and Basic Science Advisory Committee, ASTRO

Learning objectives

- Understand different IHE-RO activities, including plan veto, and how they relate to improving patient safety: Bruce C
- Learn about the key strategies of AAPM TG100 and further resources focused on developing risk based quality management programs : Saiful H
- Learn how the concepts in TG100 can be used to analyze current clinical practice : Per H

Acknowledgement

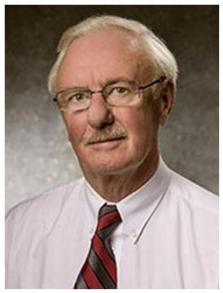
Å Thanks to the members of TG 100 for their commitment to the work of the TG 100 protocol.

Å Thanks to Keli Wilson for some lively discussions

Å Many slides shown in this presentation have been taken from the presentation given by Bruce Thomadsen at the Fall NCC-AAPM symposium in 2014. Special thanks to Bruce.

Authors of TG 100 (the TG was formed in 2003)

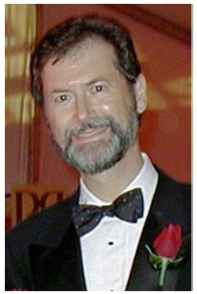
M. Saiful Huq (Chair)



Peter Dunscombe

Benedick Fraass

John Gibbons



Geoffrey Ibbott

Sasa Mutic

Ellen Yorke (Vice Chair)

Arno Mundt

Jatinder Palta

Frank Rath

Bruce Thomadsen

Jeffrey Williamson

News of the decade !

From: <Low>, Dan Low <DLow@mednet.ucla.edu>
Date: Saturday, December 27, 2014 at 2:26 AM

Colleagues,

The ad-hoc committee has read over the latest version of the TG100 report. That version was a consequence of our Chicago meeting and is ready to send to Medical Physics for review. As we had discussed with Dr. Williamson both parts 1 and 2 will be considered for publication in the journal.

The entire ad-hoc committee, as well as the Science Council appreciate the tremendous effort you have made over the past 10+ years in getting this report ready for publication and we hope that the review process goes smoothly.

Sincerely,
Daniel Low and the Ad-Hoc committee.

10+ years later – the happy authors !

Members of TG100 were happy at Christmas time because

20% 1. They wrote a high quality protocol

20% 2. They are by nature a bunch of happy people

20% 3. New yearôs partying was just 4 days away

20% 4. Itôs Christmas

20% 5. AAPM finally approved the protocol for publication

Members of TG100 were happy at Christmas time because

1. They wrote a high quality protocol
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3. New yearôs partying was just 4 days away
4. Itôs Christmas
5. AAPM finally approved the protocol for publication

Correct answer: 5

The approval of TG100 means that

20% 1. Regulations involving radiation therapy will change automatically to require compliance with TG100

20% 2. No further task group reports on quality assurance are needed

20% 3. QA methods can be revisited considering the tools of TG100

20% 4. TG100 explicitly replaces all previous task group reports

20% 5. TG100 protocol will have to be implemented in the clinic right away

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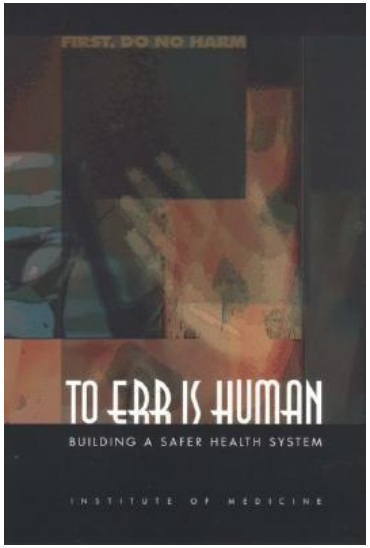
5. TG100 protocol will have to be implemented in the clinic right away

Correct answer: 3

Rationale for TG 100 approach



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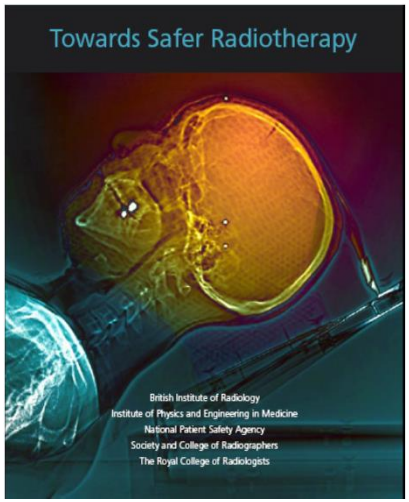

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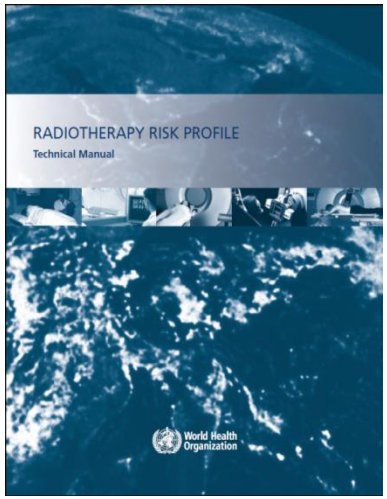

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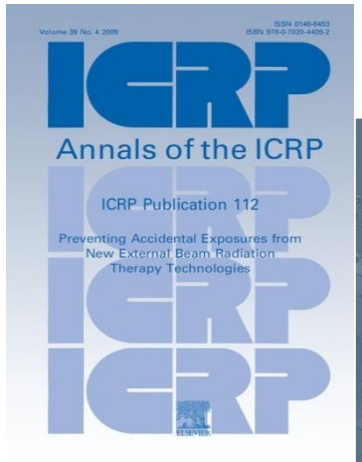

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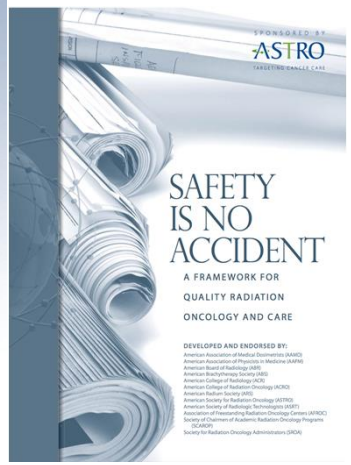
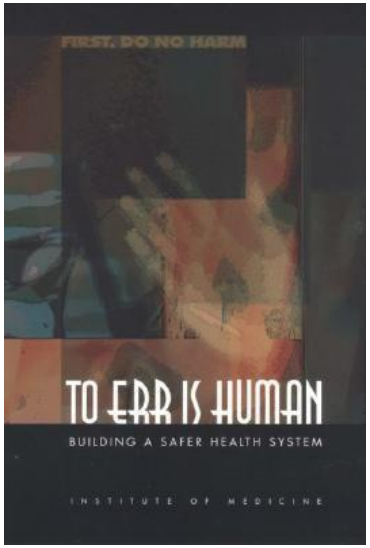


2012

Rationale for TG 100 approach



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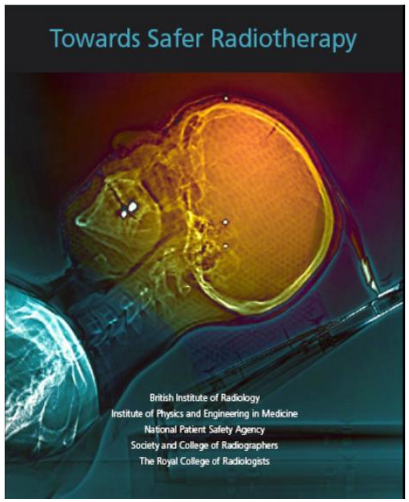

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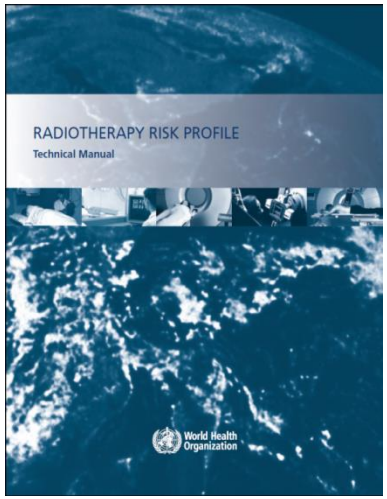

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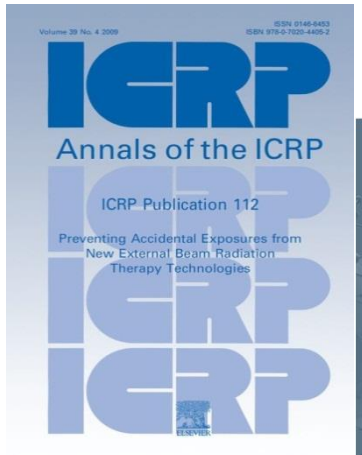

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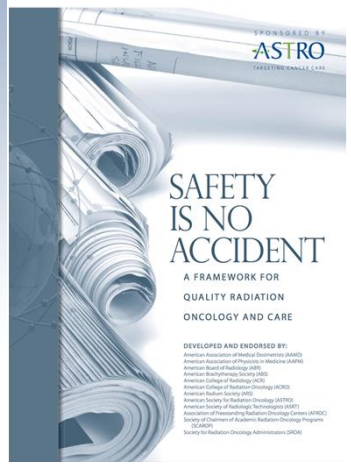

2012

Developed risk assessment methodology is not sufficient

Anticipative QA checks may not be feasible

TG 100- risk based QM development

Å Understand the process ï Process Map

Å Assess the hazard ï FMEA

Å Establish the failure propagation ï Fault Tree

Å Address the hazards

- From the greatest risk and most severe
- Use the most effective tools

Å Test and validate

What does TG 100 report look like?

- Two parts : part 1 and part 2
- Five appendices
- Four tables, four figures, five example checklists
- Glossary

What does TG 100 report look like?

Å Part 1

- Preface
- Charge and scope of the report
- Problems with traditional approaches to quality management in RT
- Introduction
- Quality and Safety: An overview
- TG100 risk analysis methodology
- TG100 methodology for designing a QM program in RT
- Comparisons with previous work
- Recommendations for applying risk analysis in RT
- Conclusions

What does TG 100 report look like?

Å Part 2 : Application of risk analysis methodologies developed in Part 1 to design radiation therapy quality management programs. Used an IMRT case study from one of the authorôs institution to

- Design
- Process mapping
- FMEA
- FTA
- Design a QM program

What does TG 100 report look like?

Å Appendices

- Appendix A: FMEA by process
- Appendix B: FMEA by severity
- Appendix C: FMEA by RPN
- Appendix D: Fault tree
- Appendix E: Fault tree with quality management codes

TG100 protocol recommends the use of tools such as

20% 1. Failure modes and effects analysis alone

20% 2. Fault tree analysis alone

20% 3. Having Physics determine the key parameter for analysis

20% 4. Use of multiple tools including engagement of all stakeholders

20% 5. Process maps alone

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1. Failure modes and effects analysis alone
2. Fault tree analysis alone
3. Having Physics determine the key parameter for analysis
4. Use of multiple tools including engagement of all stakeholders
5. Process maps alone

Correct answer: 4

What needs to happen for the roll out?

- A roll-out advisory and coordination committee should be formed
  - Best as a committee under ExCom
  - This is because it needs to coordinate activities of Science Council, Education Council and Professional Council
- Members should include those council chairs, representatives of ASTRO, CRCPD, WGEP, ACRO, ABS, SROA, IROC-Houston, systems engineers, some TG 100 members

Ad Hoc Committee for the implementation of TG-100 report

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Advancing the Science, Education & Professional Practice of Medical Physics

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AAPM COMMITTEE TREE

Ad Hoc Committee for the Implementation of TG-100 Report

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

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 *2015.AHITGC@aapm.org*
to your local address book. This alias updates hourly from the AAPM Directory.

Charge The committee will initiate mechanisms to present the concepts of the TG-100 report and execute an implementation plan for the next generation of radiation therapy quality management.

Chair

Daniel Low
Committee Chair

What needs to happen for the roll out?

Å There will need to be a strong educational component for

- Practicing medical physicists
- Radiation oncologists
- Administrators
- Regulators
- Accrediting bodies

What needs to happen for the roll out?

- Need various types of training
  - Organize workshops
  - Develop slide sets or other materials
  - Videos
  - Talks and symposia at chapter meetings
  - Teaching and listening sessions at national meetings such as this one
  - Individual mentoring
- Need a budget: AAPM has already approved significant money for the rollout
  - 3 medical physics resident will be supported

Planned activities

- AAPM website (TG100 corner)
  - Draft of TG100 prior to Med. Phys. publication
  - Brief introduction of TG100
  - Process mapping
  - FMEA
  - FTA
  - Other relevant power point slides
- Summer school resources (copyright issues are discussed)

Planned activities

- Activities on the horizon
  - At least 5 AAPM chapters have requested a speaker for their chapter meetings
  - Bruce Thomadsen to give a presentation at the meeting of CRCPD on May 15 on how the regulators should be dealing with TG100
  - Two hour session scheduled at the Annual meeting of AAPM
  - One day workshop at the World Congress of Medical Physics
  - To date TG100 members have given many presentations at various national and international meetings
  - Had the hands-on session on Fault-tree today
- Identify a representative from ASTRO who will promote TG100 within ASTRO

What needs to happen for the roll out?

- Models and samples for quality management need to be accessible on a website
  - Process maps
  - FMEA
  - Fault Trees
  - Quality management program
- This will need a group to vet the models and maintain the website

Adopting the TG 100 approach

- Start with a small project or small part of a bigger procedure
  - Build confidence
  - Important to have the early project work
- Assemble a team of all the players
  - Important for getting information and generating ideas
- Be open to new ideas
- Be wary of, but do not exclude, major departures

TG 100's key core requirements for quality

- Standardized procedures
- Adequate staff, physical and IT resources
- Adequate training of staff
- Maintenance of hardware and software resources
- Clear lines of communication among staff

For clinics: prerequisites to quality

Å First, correct any environmental problems ï that usually is a relatively inexpensive but effective operation

Å Then consider the key core components identified by TG100

Å Make sure resources are allocated as needed (i.e., staffing and equipment)

Data for the future

- Participate in an incident reporting system
- Two national systems are available, through
  - ASTRO-AAPM
  - The Center for the Assessment of Radiological Sciences (CARS)

The rollout of TG100 strategy includes

20% 1. Presentations only at national meetings

20% 2. A combination of education and work with other stakeholders and regulators

20% 3. A primary emphasis on making online tools available to perform an FMEA analysis

20% 4. A primary emphasis on incident reporting system

20% 5. Educating only physicists on TG100 protocol

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2. A combination of education and work with other stakeholders and regulators
3. A primary emphasis on making online tools available to perform an FMEA analysis
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5. Educating only physicists on TG100 protocol

Correct answer: 2

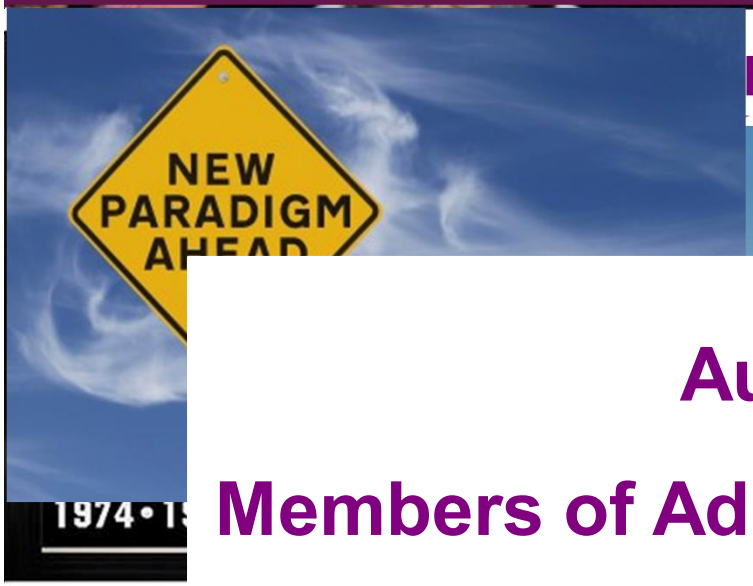
Summary

- TG 100 has been approved ☺
- Significant AAPM efforts are already underway for
  - Coordination
  - Education
  - Modeling
- In your practice
  - Start small
  - Ensure the key components and resources
  - Work as a team

The TG 100 journey

Å Important events in the world that happened between 2003 ï 2014 (from formation to approval of TG100 by the AAPM)

The TG 100 journey

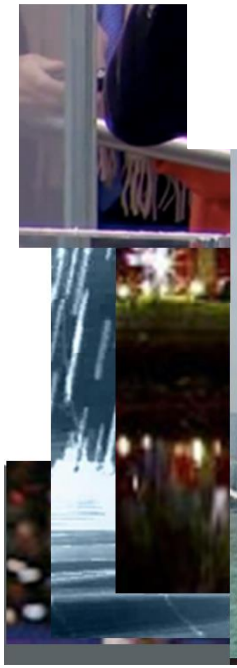


rld trade center completed

Risk – based quality management program

August 27, 2014

Members of Ad Hoc Committee of Science Council and TG 100 met in Chicago

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merci

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