



SAFRON

SAFety in Radiation ONcology

<https://rpop.iaea.org/SAFRON/Default.aspx>

A Newsletter on Patient Safety in Radiotherapy

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E-LEARNING ON SAFETY AND QUALITY IN RADIOTHERAPY



New IAEA E-learning course



Radiotherapy is a complex treatment modality with numerous opportunities for incidents to occur and potentially harm patients. A variety of techniques and tools can be used to decrease occurrence of these incidents. The IAEA recently developed an e-learning course on Safety and Quality in Radiotherapy to help professionals improve their understanding of safety in radiotherapy, learn techniques to reduce and avoid radiotherapy incidents and understand the value and use of incident learning systems.

The course is presented in 12 modules, designed to provide radiotherapy professionals with knowledge and skills to enhance the safety and quality of their practice. As a foundation, the course uses three significant errors that have occurred in radiotherapy to demonstrate the use of these tools and techniques:

- Module 1: Introduction
- Module 2: Major Incidents in Radiotherapy
- Module 3: Learning from Incidents
- Module 4: Process Maps, Severity Metrics, Basic Causes & Safety Barriers
- Module 5: Reporting incidents using SAFRON
- Module 6: Root Cause Analysis 1. Human Factors & Basic Causes
- Module 7: Root Cause Analysis 2. Safety Barriers & Preventive Actions
- Module 8: Failure Mode and Effects Analysis
- Module 9: Fault Tree Analysis
- Module 10: Safety Culture
- Module 11: Useful Resources
- Module 12: And Now What? Enhancing Quality and Safety in Your Clinic

The course is provided in English.

How to access the e-learning

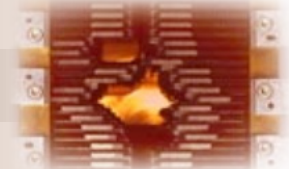
The [e-learning course on Safety and Quality in Radiotherapy](http://elearning.iaea.org/m2/) is freely available on the IAEA internet platform. To access the course, it is first necessary to create an account using the IAEA NUCLEUS portal at <http://elearning.iaea.org/m2/>. After logging into your NUCLEUS account, you may directly access the e-learning course at <http://elearning.iaea.org/m2/course/view.php?id=392>.

What are the Professionals saying?

“Following initial attainment of competence, all professional staff need to maintain their skills by lifelong learning through continuing professional development (CPD), which is a requirement for the maintenance of registration in most regulatory frameworks. Maintenance of competency is particularly important in radiotherapy due to the fast pace of change as new techniques and equipment are introduced. Training should include safety aspects, learning from radiotherapy incidents and quality assurance methodology. This should form an essential part of CPD.”

Towards Safer Radiotherapy, London: The Royal College of Radiologists, 2008. Available at www.rcr.ac.uk/docs/oncology/pdf/Towards_saferRT_final.pdf





Completion of the e-learning

At the conclusion of each module, there is a quiz to evaluate the participant's comprehension of the course material. A certificate of completion is available to participants who complete each module with a passing grade.

Completion of the e-learning course on Safety and Quality in Radiotherapy can enhance your use of the SAFRON Safety Reporting and Learning System. For example, the course helps SAFRON participants understand the use of severity metrics to prioritize the urgency and depth of investigation of a radiotherapy incident, and the value of a combined system that considers both medical and dosimetric consequences of these incidents. The course also helps SAFRON participants use root cause analysis to identify basic causes and contributing factors to an incident, allowing development of effective preventive actions.

How to use the new e-learning Safety and Quality in Radiotherapy

Though the course is designed for individual learning, it can also be used for department meetings to start the conversation about safety improvements. It can be used to demonstrate the value of incident learning systems, FMEA and RCA. It can be used to discuss with management the need to prioritize safety in radiotherapy and gain support for developing safety committees or expanding the role of radiation safety committees to address safety issues. Educational institutions can use the modules for prerequisite course work and for topical training. Though designed for radiotherapy professionals, the information and case studies have educational value for regulatory authorities, other healthcare professionals and manufacturers. As staff completes the course, it is encouraged that they receive recognition from their managers and peers. This can be used to strengthen the safety culture.

Acknowledgement from management of the self-motivation of staff to complete the course, indicates that the facility is supportive of improving both "Safety and Quality in Radiotherapy."

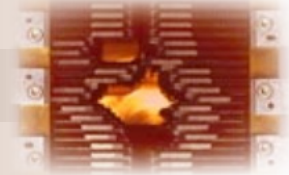
Radiotherapy Events

used in the e-learning course

Reports of events in France remind us that adoption of new radiotherapy approaches must be carefully planned to avoid introduction of unintended treatment errors. The French radiation regulator Autorité de Sûreté Nucléaire (ASN) releases detailed information about radiotherapy incidents that can be used by other institutions to plan safer implementation of new treatment techniques.

Two significant radiotherapy incidents from France are used in the Safety and Quality in Radiotherapy e-learning course to illustrate use of techniques and tools such as process maps, root cause analysis and failure modes and effects analysis. These incidents are also reported in SAFRON, as summarized in the tables on the next page:



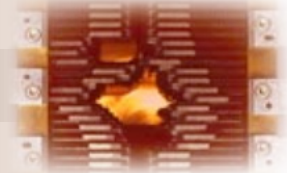


Two radiotherapy incidents from France reported in SAFRON:

Incident	Inappropriate measuring device used for calibration	Erroneous calculation for soft (dynamic) wedges
Description	Facility was commissioning a BrainLab Novalis stereotactic unit that used a small “micro multi-leaf collimator (MLC).” The medical physicist used a measuring device that was not suitable for measuring small micro beams. This data was entered into the treatment planning system. During an intercomparison study of dose measurements the manufacturer identified a dose discrepancy at this facility. 145 patients received doses that varied from the prescribed dose.	Institution changed from static wedges to dynamic wedges for the treatment of prostate cancer. The treatment planners were provided minimum training in the treatment planning system for the use of dynamic wedges. There was no independent review of the treatment plan using dynamic wedges. The treatment planners did not understand the interface of the dynamic wedge in the system. (They did not choose the dynamic wedge option.) Error involved 23 patients in a one year timeframe. Patients received a 20% overdose. At least one death attributed to complications. (https://rpop.iaea.org/RPOP/RPoP/Content/AdditionalResources/Training/1_TrainingMaterial/AccidentPreventionRadiotherapy.htm , Module 2.10)
What phase in the process is the incident associated with?	1.1.1.4. Commissioning	2.6 Treatment planning
Was anyone affected by the incident	Yes, more than 1 patient - 145	Yes, more than 1 patient - 23
Clinical incident severity	Severe	Critical
Describe the causes of the incident	1.2 Inadequate standard/procedure/practice 2.6 Inadequate assessment of materials/tools/equipment for task 6.1 Inadequate training/orientation	1.2 Inadequate standard/procedure/practice 2.6 Inadequate assessment of materials/tools/equipment for task 4.2 Inadequate management for change 5.3 Inadequate direction/information 6.1 Inadequate training/orientation 8.1 Failure to address recognized hazard
Describe contributing factors to the incident	Staff did not understand the properties and limitation of the equipment they are using. The institution did not have procedures in place to intercompare equipment calibrations with other institutions or procedures for performing independent assessment of calibration prior to human use.	Lack of adequate training; Lack of procedures for verifying new technologies and procedures before implementations; Lack of independent monitor units’ check before treatment; Lack of procedures for investigating and reporting of accidents; and Lack of procedures for patient notification and medical management.

If you would like to study these events in more detail, the two reports are available on the ASN website at <http://www.french-nuclear-safety.fr/Information/Publications/Others-ASN-reports>:

- 1) ASN report concerning the radiation therapy incident at the University Hospital Centre (CHU) in Toulouse – Rangueil Hospital,
- 2) Summary of ASN report on the Epinal radiotherapy accident n° 2006 ENSTR 019 - IGAS n° RM 2007-015P.



Join more than 550 of your colleagues and enroll into Safety and Quality in Radiotherapy!

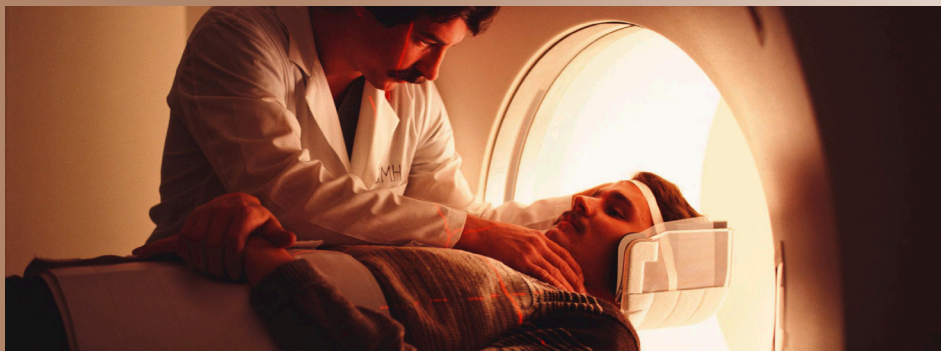
Go to: <https://rpop.iaea.org/RPOP/RPoP/Content/News/e-learning.htm>

After completion of 12 modules, you can access the certificate of completion:



Check out other IAEA e-learning courses

The IAEA has produced a vast range of e-learning material focused on different topics. Another e-learning from the area of radiation protection of patients is Radiation Dose Management in CT designed to provide continuing education to medical imaging professionals regarding safety and quality in computed tomography (CT). You can access it: <https://rpop.iaea.org/RPOP/RPoP/Content/News/10-e-learning.htm>.



Are there other e-learning courses that would interest you?

We will be glad to receive further ideas and suggestions for areas for future e-learning courses. You can submit your proposals on SAFRON.Contact-Point@iaea.org.