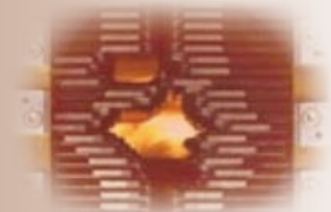




# SAFRON

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



## A Newsletter on Patient Safety in Radiotherapy

October 2015

SAFETY CULTURE

### Radiation Protection and Safety of the Radiotherapy Patients

Patient safety is essential to assure patient care. Patient care is a component of the treatment provided. Research has indicated that the interaction between healthcare professionals and patients contribute to improvements in the patient health in a shorter period of time. Safety is a continuous process. With every new patient, staff, or equipment acquisition there will be new safety challenges. Events reported in SAFRON provide an opportunity to discuss the needs for both radiation safety and patient safety. The IAEA has promoted the importance of safety through standards, guides, and reports. For radiotherapy facilities these standards, guides, and reports provide a baseline to build a robust safety system.

### Why the Focus of Patient Safety?

As long as humans are involved in patient care, we will continue to have safety concerns. This is not always a bad situation, as research has indicated that interaction between healthcare professionals and patients contribute to improvements in patient health in a shorter period of time<sup>1</sup>. Patients like the personal attention they receive from radiation therapists, nurses, medical physicists, and radiation oncologists. But human error is the largest contributing factor to events in radiotherapy. A strong safety culture is the foundation for improving patient safety and even treatment outcomes. Yet we tend not to focus on building a strong foundation for patient safety. (continue on page 2)

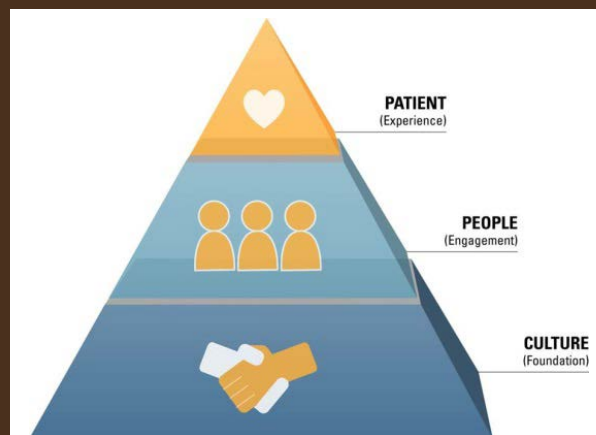


Image courtesy of <http://www.aha-solutions.org/newsletter/v1-i2/feature.shtml>

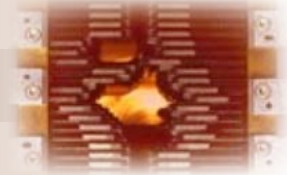
### What are the Professionals saying?

*“For the most part, radiation therapy is very safe. Nevertheless, there are recognized risks. Further, the interactive complexity of modern practice makes it challenging predict where problems will occur. Presently, much of the emphasis on making radiation therapy safer is in the realm of technical solutions: medical physics, computer software, etc. These initiatives are necessary and will certainly help to address the safety issues. This approach alone, however, will not bring us to the level of reliability we strive to achieve. We can and should do better, and the way to do that is to apply lessons from engineering/industry. We must consider the leadership/administrative component, the workplace and workflow component, as well as the people component, to minimize errors. We must use Lean improvement principles to motivate and enable all colleagues to be actively involved in assessing and improving their own systems -- This will increase safety mindfulness and help to create a “safety culture.” It is only through this multipronged approach that we can become the highly reliable organization that our patients deserve.”*

Lawrence Marks, radiation oncologist  
co- author of the book titled

[Engineering Patient Safety in Radiation Oncology: University of North Carolina Pursuit for High Reliability and Value Creation](#)  
[Interview with Michal Sinocci, Lean Insider.](#)

1. Green, O., International Journal of Quality in Health Care, Patient centredness and quality improvement efforts in hospitals: rationale, measurement, implementation, <http://intqhc.oxfordjournals.org/content/23/5/531.full>



(continue from page 1)

Patient safety is a discipline in the health care professions that applies safety science methods to improve the system of health care delivery. Patient safety systems usually include a collection of tactics beginning with management support for a strong safety culture. The IAEA defines safety culture as *the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance.* This definition is applicable to both medical uses of radiation and the production of nuclear power. In fact most hazardous applications have a similar definition. Recent events reported in SAFRON identify human error as the contributing factor to the event, and in some instances corrective actions have been taken, such as employee reprimand or termination. But this response falls short of preventing a similar event from occurring again. The following reports indicate the need for enhanced safety culture at the respected institutions.

Root cause analysis can help identify behaviors that can be improved in order to prevent incident reoccurrence. But without a strong commitment to safety radiotherapy facilities will never know the contributing factors that resulted in an event that impacted a patient. See the IAEA ten safety culture traits on page 4.

## Are You Part of the Action to Improve Patient Safety in Radiotherapy?

### Reports from SAFRON

Wrong vertebrae treated.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1431>

Patient treated with 4 Gy fractions instead of 2 Gy fractions to the whole brain.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1348>

Patient treatment delayed due to communication breakdown in triaging.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1370>

Patient received treatment to his face instead of his neck.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1400>

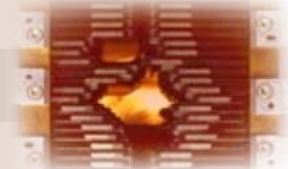
Location of the tumour was incorrectly tattooed on the patient.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1321>

Wrong patient treated with one field, 1.25Gy delivered to whole brain.

<https://rpop.iaea.org/SAFRON/IncidentReport/IncidentReportView.aspx?id=1397>





## Upgrades to SAFRON Incident Learning System

In September SAFRON incident and learning system was revised to provide a better tool for safety improvements in radiotherapy. There are many new features for participants who use the system as their incident reporting and learning system. Below are a few of the new features:

- Opportunity to preview submitted reports prior to submission. This allows contributors to view the report as it will appear in SAFRON before submittal.
- Increased number of search features. The combination of searches has increased from 4 fields with combinations to over 17 search parameters and combinations. (Continue next column)

- Opportunity to perform statistical analysis and benchmark with other participants of SAFRON. See reports and contributions trend over time and identify which process step has the most reports, and compare to the entire SAFRON dataset.
- Opportunity to download the statistical information. The statistical information can be provided in printable format for sharing with others interested in reducing radiotherapy errors.
- The reports submitted by the contributors can also be downloaded in an excel file for additional analysis.

More information will be available next month. Visit SAFRON at: <https://rpop.iaea.org/SAFRON/Default.aspx>



IAEA

SAFRON

Safety Reporting and Learning System for Radiotherapy



Select Dataset:

All incident reports

Home

Process Steps

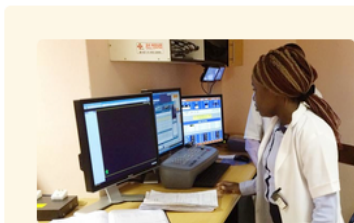
Incident Reports

Documents and Links

Registrations

Statistical Reports

Help



### Safer use of radiation in radiotherapy through learning and reporting

SAFRON aims to enable global shared learning from safety related events and safety analysis in order to improve the safe planning and delivery of radiotherapy.

#### Featured Incident Reports

Vertebral body adjacent to the target vertebral body received therapy administration.

Auto fusion software was "zoomed in" to the incorrect vertebral body, as set up by therapist. The error was found upon review by physicist on May 20th and the 2nd and 3rd treatments were reviewed...

#### Wrong vertebrae treated

The patient had been treated previously to T6-T8, and we wanted to treat T10-T12. The plan was to set up to the old tattoo and shift 6.5 cm inferiorly. The shift did not happen and the field wound...

#### Featured Documents & Links

Impact of setup error and anatomical change on dose distribution during conventional radiation therapy

Publication on treatment setup and the need to reimage or replan when patients have marked anatomical changes.

Quantitative cone-beam CT imaging in radiation therapy using planning CT as a prior: first patient

This study looked at the difficulties of using CBCT for patient positioning because of poor imaging and scatter contamination. By using a correction method using the planning CT the capabilities of...

User

[My Registration](#)

Actions

[Browse Safety Info by Process Step](#)

[Search Reports](#)

[Search Documents & Links](#)

[See Statistical Reports](#)

[View Instructions](#)

[Submit Report](#)

[Download Reports](#)

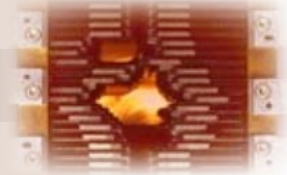


Links to IAEA Publication for Radiotherapy Training on Radiation Protection of Patients Website: [www.rpop.iaea.org](http://www.rpop.iaea.org)

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## IAEA Safety Traits

The IAEA has identified ten safety culture traits<sup>2</sup> that can be used to improve safety culture in radiotherapy. Facilities should look at building a safety system that considers all of these traits.

#	Trait	Description
1	Personal Accountability	All individuals take personal responsibility for safety. Responsibility and authority for safety are well defined and clearly understood. Reporting relationships, positional authority, and team responsibilities emphasize the overriding importance of safety.
2	Questioning Attitude	Individuals avoid complacency and continuously challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action. All employees are watchful for assumptions, anomalies, values, conditions, or activities that can have an undesirable effect on facility safety.
3	Effective Safety Communication	Communications maintain a focus on safety. Safety communication is broad and includes facility level communication, job-related communication, worker-level communication, equipment labelling, operating experience, and documentation. Leaders use formal and informal communication to convey the importance of safety. The flow of information up the organization is seen as being just as important as the flow of information down the organization.
4	Leadership Safety Values and Actions	Leaders demonstrate a commitment to safety in their decisions and behaviours. Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action. The nuclear safety message is communicated frequently and consistently, occasionally as a stand-alone theme. Leaders throughout the nuclear organization set an example for safety. Corporate policies emphasize the overriding importance of nuclear safety.
5	Decision-Making	Decisions that support or affect nuclear safety are systematic, rigorous, and thorough. Operators are vested with the authority and understand the expectation, when faced with unexpected or uncertain conditions, to place the facility in a safe condition. Senior leaders support and reinforce conservative decisions.
6	Respectful Work Environment	Trust and respect permeate the organization. A high level of trust is established in the organization, fostered, in part, through timely and accurate communication. Differing professional opinions are encouraged, discussed, and resolved in a timely manner. Employees are informed of steps taken in response to their concerns.
7	Continuous Learning	Opportunities to learn about ways to ensure safety are sought out and implemented. Operating experience is highly valued, and the capacity to learn from experience is well developed. Training, self-assessments, and benchmarking are used to stimulate learning and improve performance. Safety is kept under constant scrutiny through a variety of monitoring techniques, some of which provide an independent "fresh look."
8	Problem Identification and Resolution	Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance. Identification and resolution of a broad spectrum of problems, including organizational issues, are used to strengthen safety and improve performance.
9	Environment for Raising Concerns	A safety-conscious work environment (SCWE) is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination. The facility creates, maintains, and evaluates policies and processes that allow personnel to freely raise concerns.
10	Work Processes	The process of planning and controlling work activities is implemented so that safety is maintained. Work management is a deliberate process in which work is identified, selected, planned, scheduled, executed, closed, and critiqued. The entire organization is involved in and fully supports the process.

2. IAEA Safety Standards, The Management System for Nuclear Installations, 2009, [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1392\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1392_web.pdf)