Radiation Oncology Safety Information System (ROSIS) is a radiation oncology patient safety tool comprising an international voluntary incident and near incident reporting system and database, website of radiation oncology patient safety resources, publications and workshops. ROSIS was established in 2001, with support from the European Society of Therapeutic Radiology and Oncology (ESTRO).

On 4th and 5th of October a two-day ROSIS workshop Patient Safety in Radiation Oncology was held in Melbourne. The workshop was facilitated by the ROSIS executive team (Dr Joanne Cunningham, Assoc Prof Mary Coffey, Assoc Prof Tommy Knoos and Dr Ola Holmberg) and representatives of the Australian radiation oncology profession and government (Anthony Arnold, Louise Harrold, Prof Geoff Delaney, Prof Tomas Kron, Prof Chris Hamilton, Dr James MacKenzie and Dr Ivan Williams). The course was aimed at the three key professions involved in radiation oncology; radiation therapists, radiation oncologists and medical physicists. Participants were welcomed by Geoff Delaney who revealed the background and aspirations for the first Australian Patient Safety in Radiation Oncology Workshop.

“First do no harm” – Dr Joanne Cunningham
The basic ethical premise of medicine to first do no harm was used by Joanne Cunningham in the opening presentation to highlight the human and economic costs of medical errors and introduce the aims of the workshop. To promote a culture of safety in healthcare requires the transformation of organisational culture from one where individuals are blamed for incidents to one of openness, where reporting of incidents and near incidents is used for learning to improve processes and prevent failures in the healthcare system.

In Australia, the Radiation Oncology Practice Standards (Tripartite Initiative) provide the standards framework for best practice in radiation oncology including those for radiation safety, incident monitoring, and dosimetric intercomparison. These standards were discussed throughout the conference.

“Patient safety requires teamwork” – Tommy Knoos
A selection of incidents and accidents in radiation oncology were presented by Tommy Knoos, many of which also captured the attention of mainstream media. As the background, consequences and lessons to be learned from each incident were presented, similarities between contributing factors became apparent. Commissioning of new equipment, lack of independent checks, inadequacies in staff training, unclear understandings of roles and responsibilities, poor understanding of limitations of equipment, unusual or irregular technique planning, inadequate staffing levels and poor communication were common themes.

Independent checks, external audits, records of staff training and competence for procedures and techniques, the introduction of in vivo dosimetry, and working with awareness and alertness were recommendations from the investigations and audits.

Tommy's presentation used Reason's “swiss cheese model” where each layer of cheese represents a series of protective layers of defence
against incidents, with the holes in the cheese as individual failures in each layer. Unlike cheese, the weaknesses in complex health systems are often dynamic, opening, closing and moving between protective layers. Many of the incidents explored during the workshop were as a result of multiple failures, where the “holes in the cheese” lined up.

Discussion at the conclusion of the first session revealed that regular quality meetings involving all three disciplines to discuss plans, processes and protocols as a multidisciplinary team was an effective approach in improving patient safety in radiation oncology. Participants revealed that such meetings were regularly taking place in many radiation oncology departments in Australia.

“Incidents are not isolated to involving less experienced staff” – Geoff Delaney

Geoff Delaney’s presentation on detecting error and the clinical consequences of error highlighted the large number of handovers between radiation oncologist, therapist and physicist in the typical radiation therapy treatment process. Each profession is reliant on the others, and there are areas in each profession’s scope of practice that the others do not fully understand - trust and communication are essential. Anyone can make an error, not just junior, less experienced staff.

In radiation oncology incidents and near incidents may be detected by routine quality assurance procedures, an incidental observation, toxicity reviews or patient comments. Geoff discussed the emotional response that is often experienced by those involved in an incident or near miss including panic and loss of confidence. Processes for investigating incidents including, mapping of processes and tasks, root cause analysis, audits and external reviews were discussed. The goal of any investigation should be to have better processes in place after the investigation than prior to the incident.

“Reporting is one link in a longer chain” – Ola Holmberg

When reporting incidents and near misses, the narrative in the report provides rich insight for learning. Ola discussed the limited value of reporting if the additional steps of investigation, analysis, management and learning from the incident are not completed.

Mandatory and voluntary reporting systems were described, as well as the roles if internal and external reporting systems. A reporting system external to a clinical department (such as ROSIS), allows us to learn from the experience of others as the lessons to learn, and patterns of errors are collated from a larger pool.

Mary Coffey described a just culture as a culture that promotes an atmosphere of trust, balancing the benefits of learning from incidents and the need for personal accountability. A case study presented by Anthony Arnold described a quality improvement project that transformed the reporting process and culture, improving patient safety as technique complexity and attendances also increased.

Chris Hamilton discussed the disclosure of incidents to patients and the importance of open disclosure, with practical suggestions about how this may take place in the context of radiation therapy. The importance of documenting disclosures to patients was also discussed.

“Most radiation therapy quality assurance guidelines are based on equipment, not humans”

The final activities in the workshop challenged participants to consider what is currently being done in their own departments, and questioned if current quality assurance processes are achieving the best outcomes for patients.

In summary the ROSIS Workshop was a fantastic opportunity for the three radiation oncology professions to get together to focus on patient safety and best practice. In addition to the presentations and group exercises, there was great collaboration, open discussions, and formation of new networks between participants. The sponsors (Cancer Institute NSW, AIR, RANZCR, Liverpool Hospital, Australian Clinical Dosimetry Service, CMS Alphatech, Elekta, Varian and Brainlab,) should be commended for supporting such a valuable event and faculty, committee and delegates should be congratulated for helping make this event a great success.

Food for thought

Throughout the workshop there were many challenges raised for discussion by participants. You may like to consider some of the points below and discuss with your colleagues...

• How often are multidisciplinary quality meetings taking place in your clinical department, and how are the outcomes of these meetings disseminated in the workplace?
• How does your department deal with quality aspects of protocol management? How is it ensured that protocols are easily accessed so that the protocol is the source used for consultation rather than word of mouth which may lead to errors?
• How are staff in your department transitioned/rotated between the treatment and planning areas of the department?

With the increase in complex techniques and a reliance on computer systems for calculations, has there been some loss of key understandings of what reasonable values/outcomes are (e.g. MUs) for particular technique? Do you think that as the use of technology has increased, knowledge of first principles that may detect an incident or near incident has declined?

Links and resources

http://www.rosis.info
https://rpop.iaea.org/RPOP/RPoP/Content/InformationFor/HealthProfessionals/2_Radiotherapy/AccidentPrevention.htm