Radiological Protection Culture in Medicine

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WS RPCM, 30 November - 2 December 2015 WHO HQ, Geneva, Switzerland
Objective: attainment by all peoples of the highest possible level of health

Function: act as the UN directing and coordinating authority on international health work
The WHO 3-level structure

- 194 Member States
  Ministries of Health

- Headquarters
  Geneva

- 6 Regional Offices

- 150 Country Offices

- IARC, Lyon

- 7000 staff members
WHO definition of “health”

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”

( WHO Constitution, 1948)
Health Care Quality Dimensions

- Safety
- Effectiveness
- Patient-centeredness
- Timeliness
- Efficiency
- Equality
WHO General Programme of Work for 2014–2019 identifies 6 leadership priorities:

- Advancing universal health coverage (UHC)
- Health-related Millennium Development Goals
- Addressing the challenge of noncommunicable diseases
- Implementing the provisions of the International Health Regulations
- Increasing access to essential, high-quality, safe, effective and affordable medical products
- Addressing the social, economic and environmental determinants of health.
Universal Health Coverage includes access to medical uses of radiation

Annually worldwide

- 3,600 million X-ray exams (> 300 million in children)
- 37 million nuclear medicine procedures
- 7.5 million radiation oncology treatments
Universal Health Coverage encompasses SAFETY and QUALITY in health care.
RP culture and good medical practice

Radiological protection (RP) culture in health care is embedded in the broader concept of patient safety and included in the notion of good medical practice.

It is the product of individual and group values, attitudes, perceptions, goals, patterns of behaviour and practices that determine the commitment and proficiency of a healthcare institution on radiation safety management.

The ultimate goal of is to control radiation risks while maximizing the benefits for patients’ care.
Radiation Protection in health care

- To control and minimize health risks, while maximizing the benefits.

- Achieving this balance is particularly challenging in medicine.
Need to reduce unnecessary radiation exposures and associated risks

- The benefits outweighs the risks when the procedure is:
  - appropriately prescribed
  - properly performed.

- This is not the case if there is no clinical indication or if the radiation dose is higher than necessary for the clinical purpose (e.g. adult protocols used for imaging children)
  - Do the right procedure!
  - Do the procedure right!

JUSTIFICATION
OPTIMIZATION
A culture of patient safety longtime ago...

"Primum non nocere"

"First do no harm"

- The two principles of radiological protection in medical exposures (justification and optimization) are consistent with this concept.

- However, in general, health professionals are not familiar with these principles and have a low awareness of radiation doses and risks

Hippocrates (460 BC–377 C)
“First do not harm” ???...

D.K. Sokol “First do no harm” revisited BMJ 2013;347:f6426

- It was suggested that a more accurate formulation would be

  “First do not net harm”

- At an individual level, clinicians must balance their obligation to benefit the patient (the principle of **beneficence**) against their obligation not to cause harm (the principle of **non-maleficence**).

- These twin obligations go hand in hand and are weighed against each other.
UNSCEAR 2008 Report: "Sources and effects of ionizing radiation" **Volume II**

Annex C - Radiation exposures in accidents

- UNSCEAR has reviewed radiation accidents within a period of >60 years (1945-2007);
- A large number of fatalities (46) and the highest number of cases of acute injuries (623 cases) was due to accidents occurred during the use of radiation in health care.
- Other accidents either not recognized or not reported may have occurred.

Mostly radiotherapy accidents
CT sequences over 65 minutes

Parents sue California hospital over pediatric CT radiation overdose

By Cynthia Keen
AuntMinnie.com staff writer
November 20, 2008

A rural California hospital is being sued by parents of a child who underwent a CT exam during an emergency department visit for a neck injury. The parents allege that their 23-month-old boy received radiation burns and has permanent chromosomal damage due to excessive radiation exposure from the CT scan, which took over an hour to perform.

The incident allegedly took place on January 23, 2008, at Mad River Community Hospital in Arcata, a rural town of 17,000 located 290 miles north of San Francisco. Television news anchor Sam Shane of CBS 13 of Sacramento broke the story on October 30.

Unintended exposures may also happen in nuclear medicine, interventional radiology, and... in **pediatric** diagnostic imaging!!

Education, training, Q&A, RP culture

California Department of Public Health spokesman Ken August told Tam that the state of California will determine whether any state or federal laws were violated. A hospital in violation can be fined up to $25,000, a fine that will increase to $100,000 in January 2009.

The lawsuit has a case management conference set for February 4, 2009. The hospital will not comment due to pending litigation, and the California Department of Public Health did not explain the six-month delay before suspending Knickerbocker's license to either CBS 13 or the Times-Standard.
Safety culture in health care settings

To promote safer patient care, professional and organizational cultures in health care settings must abandon the philosophy of perfect, error-free performance.

Health care is yet behind other industries in putting safety first when dealing with its consumers.

Need for tools: risk profile assessment, risk analysis, classification of adverse events and near misses, reporting and learning systems, …
When does RP culture exist in health care?

- When health workers take an active role in ensuring safe and appropriate use of radiation and when the medical organization supports this role and shares the same cultural values.

- The establishment of a RP culture in medicine starts with a top-down approach, while its promotion and maintenance needs the engagement of all the relevant stakeholders involved in the health care pathway: health authorities, policy makers, senior hospital managers, physicians, medical physicists, radiographers, technicians, support staff, patients and families.
Adverse events reporting and learning systems in health care

- Primary prevention first!

- Adverse event reporting & learning systems enhance patient safety.

- These systems should lead to a constructive response based on dissemination of lessons & prospective risk analysis for preventing similar events.
How to strengthen RP culture in health care?

- The working environment should foster excellence in care - the organizations should continually seek to improve **service quality and safety** in health care delivery.

- **Leadership** is a critical element for establishing RP culture, and **team work** is a key factor for maintaining and strengthening RP culture.

- **Education and training** of health professionals is a key component of RP culture in medicine.
How to strengthen RP culture in health care? (cont’)

- Close cooperation between relevant professional societies, RP regulatory bodies and health authorities.

- Other key factors:
  - individual and collective motivation and commitment,
  - provision of means to support individuals/teams in performing their tasks safely and successfully,
  - encouragement of stakeholders’ participation
  - ensure accountability of the individuals and the organization.
The BSS are the benchmark(*) for radiation safety requirements worldwide.  

(*) not legally binding

They represent the culmination of unprecedented efforts towards global harmonization of standards for radiation safety.

Safety culture in the new international radiation safety standards (BSS)

Req. 2.51 - to promote and maintain safety culture by:

(a) Promoting individual and collective commitment to protection and safety at all levels of the organization;

(b) Ensuring a common understanding of the key aspects of safety culture within the organization;

(c) Providing the means by which the organization supports individuals and teams in carrying out their tasks safely and successfully, with account taken of the interactions between individuals, technology and the organization;

(d) Encouraging the participation of workers and their representatives and other relevant persons in the development and implementation of policies, rules and procedures dealing with protection and safety;
(e) Ensuring accountability of the organization and of individuals at all levels for protection and safety;

(f) Encouraging open communication with regard to protection and safety within the organization and with relevant parties, as appropriate;

(g) Encouraging a questioning and learning attitude and discouraging complacency with regard to protection and safety;

(h) Providing means by which the organization continually seeks to develop and strengthen its safety culture.

Recommendations of the Bonn Conference

Bonn Call for Action

10 actions to improve radiation protection in medicine in the next decade

To foster the application of the new BSS in medical facilities

Workshop on “RPCM, 30 November – 2 December 2015, Geneva, SWITZERLAND
This WHO initiative is currently focused on supporting the implementation of the "Bonn Call for Action"
Radiation Safety Culture in the Bonn Call for Action

1. Enhancing implementation of justification of procedures
2. Enhancing implementation of optimization of protection and safety
3. Strengthening manufacturers’ contribution to radiation safety
4. Strengthening RP education and training of health professionals
5. Shaping & promoting a strategic research agenda for RP in medicine
6. Improving data collection on radiation exposures of patients and workers
7. Improving primary prevention of incidents and adverse events
8. **Strengthening radiation safety culture in health care**
9. Fostering an improved radiation benefit-risk-dialogue
10. Strengthening the implementation of safety requirements (BSS) globally

http://www.who.int/ionizing_radiation/about/14-2649_bonncallforaction.pdf?ua=1
Action 8: Strengthen radiation safety culture in health care

a) Establish **patient safety** as a strategic priority in medical uses of ionizing radiation, and recognize leadership as a critical element of strengthening radiation safety culture;

b) Foster closer **co-operation between radiation regulatory authorities, health authorities and professional societies**;

c) Foster closer **co-operation on radiation protection between different disciplines** of medical radiation applications as well as between **different areas of radiation protection** overall, including professional societies and patient associations;

d) Learn about **best practices for instilling a safety culture from other areas**, such as the nuclear power industry and the aviation industry;

e) Support integration of **radiation protection aspects in health technology assessment**;

f) Work towards recognition of **medical physics** as an independent profession in health care, with **radiation protection responsibilities**;

g) Enhance information exchange among peers on radiation protection and safety-related issues, utilizing **advances in information technology**.
Stakeholders' engagement to improve safety culture in health care: Patients' associations are key stakeholders
Side Event "Imaging for saving kids" at the 68th World Health Assembly (2015)

Health authorities, health care providers (radiologists, medical physicists, radiographers), manufacturers, and patients' representatives

4 Member States and 9 NGOs in Official Relations with WHO
The Conceptual Framework (CF) for the International Classification for Patient Safety

This component of the framework is highly dependent on the area of health care / discipline.
Minimal Information Model for Adverse Event Reporting in Health Care

WHO Inter-Cluster Task Force

Patient Safety    Pharmacovigilance    Safety in surgery
Injection Safety    Radiation Safety    Safety in vaccination
Blood Safety    Human-derived    Technovigilance

To integrate MIM with existing reporting & learning systems for radiation safety adverse events (SAFRON, SAFRAD)
The ongoing RPCM Project

- To collect feedback for the development of a **framework document** providing **guidance** to establish and maintain RPCM.

- A series of **regional workshops** in different regions
  - 2015: Latin America, Europe
  - 2016: Africa, Eastern Mediterranean,
  - Asia, North America…
Thank you very much!

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