

RADIATION PROTECTION AND SAFETY: THE PRINCIPLES

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Introduction

Radiation protection:

- Still a much discussed / debated aspect
- Fukushima Disaster
- The use of Medical Imaging
- Present training avenues for medical imaging practitioners

Meaning of “principle”:

- a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning ; fundamental source or basis of something (oxforddictionaries.com).
- Based on the above premise / basis the objectives of the presentation is hereby outlined..

Objectives of the presentation.

- To highlight the basic principles of Radiation Protection as applied to healthcare
- To examine the application of these principles to various aspects:
 - practitioner (Radiographer)
 - profession / practice / peers
 - the administration
 - the technologies
- To align the application of these principles in the above aspects to Islamic perspectives

A Revision: The principles of Radiation Protection

- General principle of Radiation Protection
 - To reduce the effects of radiation to man and the environment
- Specific principle of Radiation Protection in Medical Imaging
 - To reduce the effects of radiation to patient, staff and general public.

The rationale for radiation protection

- External Factors

- The role of IT
- Changes in healthcare scenario
- Observing the ‘Rights of the Patients’
- Profession and professionalism

- Internal Factors

- Patient characteristics
- Different modalities
- Different equipment specifications with a given imaging modality

General guidelines of Radiation Protection

General guidelines:

- **Concept of Justification of Radiological Examination.**
- **Concept of Optimization and ALARA / ALARP**
- **Benefits against the Risk.**

Challenges to Radiation protection

To examine from the following aspects:

- Radiation Protection Guidelines
- Practitioner / radiographer
- The professionals / Peers
- The professionalism / practice
- The technologies
- The Administration / Administrators
- Other Healthcare practitioners

Radiation Protection Guidelines

- Practice guidelines
- Dose Reference Levels (DRLs)
- Concept of Maximum Permissible Dose
- Some questions concerning MPD

Practitioner / radiographer

Individual perspectives / commitment towards embracing Radiation Protection.

- Personal indifferences / attitudes to RP
- Not accommodating to the recognition to practice
- Not accommodating to professional standards
- Not accommodating to the rights of patients
- Not accommodating to customer satisfaction
- Not accommodating to the impact of accessibility to information

The professionals / Peers

- Highly influential group of people
- Avoid conflicts and confusions
- Cohesiveness among the group
- Promoting safe practice

The professionalism / practice

- Different professionalism among the professionals themselves.
- Differences in practice that creates confusion or doubts between the practitioners themselves.
- Different centers practicing different radiation protection approaches.

The technologies

- Over – dependence on pre-set imaging parameters (CT Scanning and Digital Imaging)
- Present Digital technologies do not suggest lower radiation dose

The Administrators / Administration

- Accept the responsibility to use the “authority”.
- Adhere to the Concept of “R and R”.
- Ensure enough accessories to support and observe RP
- To continuously identify, plan, implement, monitor, evaluate and sustain RP initiatives

Other Healthcare Practitioners

- Knowledge towards Radiation Protection.
- Perceptions towards Radiation Protection
- Behaviours towards Radiation Protection in their area of work.

Radiation Protection from Islamic Perspective

- Examine from Islamic Worldview
- Examine from Maqasid (Objectives) and Qawaid (Principles) Al-Shari'ah

Worldview

- “Worldview” is derived from the German word “Weltanschauung”.
- The American Heritage Dictionary describes it as *“the overall perspective from which one sees and interprets the world”* and *“a collection of beliefs about life and the universe held by an individual or a group.”*

Characteristics of The Islamic Worldview

- **Submit to the Oneness / Unity of Allah**
- **The Aqeedah :**
 - **The Pillars of Islam**
 - **The Pillars of Iman**
- **Vicegerent on earth**

Vicegerent on earth

- Accept the fact that Allah has assigned him as a Vicegerent on earth.
- Responsible to utilise all available resources as well as the knowledge.
- Guided by the values, ethics and theological standards as encompassed in Islam .

Man as the Vicegerent on Earth

- enjoining good and forbidding bad
- not to do destruction on earth
- preserving religion, life, wealth, progeny and intellect
- human rights and justice

Islamic worldview: what it should be.

- Islam do not reject the current practices, which might be associated with secular practices.
- It is the duty of the Muslim to use the Allah given intellect to differentiate what constitutes the acceptable and what does not.

Desired application of Islamic Worldview

- In all aspects of life ; self, community, professional and non-professional.
- In the profession , a thorough re-examination of the various aspects of the profession to enable the assimilation / integration of the worldview.

Examining from Maqasid Al-Shari'ah

- Preservation of life
- Preservation of *Diin* / religion
- Preservation of wealth
- Preservation of mind
- Preservation of progeny

A Quranic verse that could relate to concept of shielding.

- They said: "O Zul-qarnain! the Gog and Magog (People) do great mischief on earth: shall we then render thee tribute in order that thou mightest erect a barrier between us and them?"
- He said: "(The power) in which my Lord has established me is better (than tribute): Help me therefore with strength (and labour): I will erect a strong barrier between you and them:
- "Bring me blocks of iron." At length, when he had filled up the space between the two steep mountain-sides, He said, "Blow (with your bellows)" Then, when he had made it (red) as fire, he said: "Bring me, that I may pour over it, molten lead."

Examining from Qawaid Al-Shariah

- Harm must be eliminated (Ad-dararuyuzal)
- Harm may neither be inflicted nor be reciprocated (la darara wa la dirar).

Important notes:

- To examine from Maqasid Al-Shari'ah is to align the discussion to an approach taken by Muslims scholars such as Al-Ghazali, As-Shatibi, Ar-Razi and a host of other Muslim Scholars at least 1000 years ago.
- Maqasid Al-Shari'ah and Qawaid Al-Shari'ah are based on Islamic Revealed Knowledge and the interpretations of Muslim Jurists

Conclusion

- The principles of Radiation protection has been revisited.
- The Practice of Radiation Protection needs continuous monitoring and evaluation in order for the objectives of Radiation Protection be achieved.
- To view the principles / objectives of Radiation Protection from the Islamic Perspectives could help direct Muslim practitioners of the religious obligations towards Radiation Protection.
- Accept the fact that the recognition to practice radiography has its religious roots.