Chapter 1
Radiological Safety and Quality: Paradigms in Leadership and Innovation

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Abstract Radiation medicine and medical imaging save lives and are indispensable in patient-centered care. In many parts of the world access to these procedures is poor, while in others utilization has increased significantly. Increased utilization, appropriate or inappropriate, increases cost and population exposure. From a public health perspective, procedure use should be rational and be guided by quality, safety, and appropriateness; aiming to maximize the benefits and minimize the risks.

Appropriateness and safety, including radiation safety, are key quality elements. The stakeholders in daily practice are the patients, referrers, providers and payers. These and others have delivered many actions to improve quality in different settings, addressing healthcare system, facility and end-user needs.

This chapter outlines the emerging challenges threatening radiological quality and radiation safety and discusses the solutions for healthcare systems, facilities and end-users. Good teamwork and an integrated framework would overcome many of these challenges. An action framework consisting of quality and safety measures, synergistic implementation strategies, and performance enhancements is presented. Recommendations and guidance tools are used to improve practice by indicating the requirements and processes. Each stakeholder plays a unique and complementary role in the development, advocacy, adoption and use of recommendations and tools.

The goal is to do the right procedure by justification and to do the procedure right by optimization and error minimization in daily practice. To bridge the gap between evidence and practice requires an innovative approach, leadership from authorities, collaboration with stakeholders, and participation of end-users.

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