ISRG JOURNAL OF CLINICAL MEDICINE AND MEDICAL RESEARCH [ISRGJCMMR]

ISRG PUBLISHERS
Abbreviated Key Title: ISRG J Clinic.Medici.Medica.Res.
ISSN: 3048-8850 (Online)
Journal homepage: https://isrgpublishers.com/cmmr/
Volume – III, Issue - II (March-April) 2026
Frequency: Bimonthly

RADIATION SAFETY CULTURE IN IMAGING DEPARTMENTS-EDITORIAL

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| **Received:** 04.04.2026 | **Accepted:** 08.04.2026 | **Published:** 16.04.2026

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INTRODUCTION

Radiations are key components of diagnostic and therapeutic imaging, especially in modalities like computed tomography (CT), fluoroscopy, and traditional radiography[1]. Although these methods have revolutionized patient care, their growing use has increased patients' and healthcare professionals' cumulative radiation exposure. To guarantee excellent, patient-centered radiology practice, imaging departments must establish a strong radiation safety culture [2,3].Imaging departments that prioritize radiation protection while preserving diagnostic picture quality are said to have a "radiation safety culture." Instead than focusing only on regulatory compliance,[4] it prioritizes proactive dose management, optimal imaging selection, and ongoing quality improvement.

Medical imaging has become a significant contributor to population radiation exposure due to the quick development of imaging, particularly CT and fluoroscopy-guided operations. While interventional radiology techniques can result in substantial patient and occupational exposure, CT adds a disproportionately high radiation burden when compared to other modalities[5,6]. Recurrent imaging can raise the danger of stochastic effects and, in high-dose treatments, deterministic harm if it is not well justified and optimized.

In imaging departments, radiologists and imaging technologists play a key role in radiation safety leadership. Protocol design, dosage optimization, technician monitoring, and training of trainees and referring physicians are among their duties. To avoid radiation-induced injuries, radiologists using fluoroscopy and interventional imaging must be careful with beam location, fluoroscopy time, and real-time dose monitoring[7]. Medical physicists support radiation safety through dose audits, optimization studies, equipment quality assurance, and adherence to radiation protection regulations. A sustained safety culture requires effective cooperation between radiologists, technicians, and physicists[8]. A fundamental skill in radiology education and ongoing professional development should be radiation safety. Awareness and responsibility are strengthened by education in radiation biology, dose reduction strategies, pediatric imaging, and occupational safety[9]. Dose-reduction technologies including automated exposure control, tube current modulation, iterative reconstruction, and dose tracking systems are included into

DOI: 10.5281/zenodo.19604205

contemporary imaging equipment. However, to guarantee efficient dosage adjustment, these instruments need skilled users and frequent quality control[10].

Hence, High-quality imaging practices are characterized by a culture of radiation safety. Imaging departments may reduce radiation hazards while maintaining diagnostic accuracy by focusing on rationale, optimization, education, teamwork, and ongoing audit[11,12]. In the end, excellence in radiology is attained by a persistent dedication to the safe, responsible, and patient-centered use of ionizing radiation in addition to cutting-edge technology and high-quality images

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DOI: 10.5281/zenodo.19604205