DOSE MANAGEMENT SYSTEMS – FROM SETTING UP TO QUALITY ASSURANCE (IAEA HUMAN HEALTH SERIES 49)

Review by

F. Hasford[1], K.O. Akyea-Larbi[1]

[1] Ghana Atomic Energy Commission, Accra, Ghana

I. BOOK DETAILS

Dose Management Systems – From Setting Up to Quality Assurance (IAEA HHS 49)

Authors/Contributors: JS Andersson, L Arlany, N Bevins, H Bosmans, M Carrara, V Gershan, F Giammarile, P Gilligan, F Hasford, R Loose, KH Ng, O Noor, IS Reiser, S Rose, R Ruggeri, AG Sanchez, R Sanchez, JA Seijas Acosta, A Torresin, A Trianni, IA Tsalafoutas, V Tsapaki

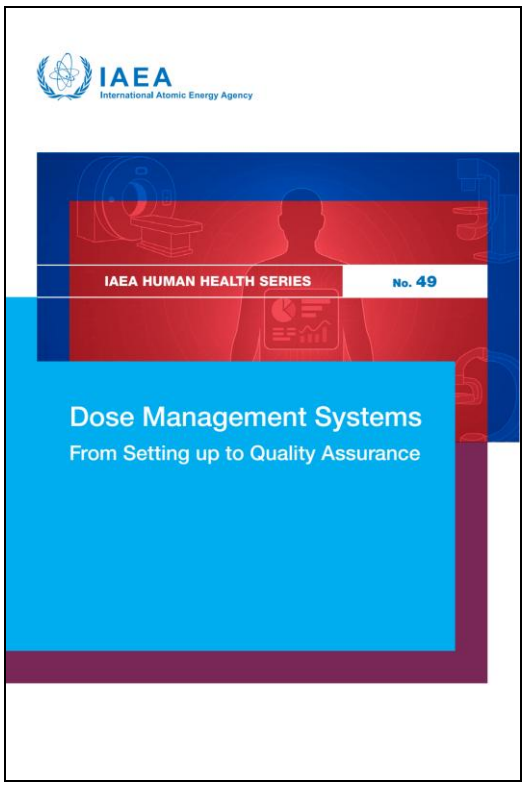
Publisher: International Atomic Energy Agency (IAEA)

Year: 2025

Pages: 145 pages

DOI: https://doi.org/10.61092/iaea.6h45-1o3c

ISBN: 978-92-0-108725-6 (paperback); 978-92-0-108825-3 (pdf); 978-92-0-108925-0 (epub)



II. REVIEW

The International Atomic Energy Agency's *Human Health Series No. 49 (HHS 49)*, titled *Dose Management Systems – From Setting Up to Quality Assurance*, is a timely and authoritative publication that addresses the growing global emphasis on radiation dose optimization and patient safety in medical imaging. As diagnostic imaging procedures continue to increase in complexity and frequency, particularly computed tomography and interventional radiology, the need for robust dose management systems (DMS) has become central to radiation protection practice. This publication provides comprehensive guidance on the conceptualization, implementation, and sustainable use of DMS within healthcare institutions.

The book is structured in a logical and progressive manner, beginning with a clear justification for dose management systems within the framework of radiation protection principles, notably justification, optimization, and dose limitation where applicable. It situates DMS as a practical tool for implementing diagnostic reference levels (DRLs), monitoring patient exposure, and supporting clinical decision-making. The early chapters effectively introduce key concepts, terminology, and regulatory drivers, ensuring that readers from diverse professional backgrounds – medical physicists, radiologists, radiographers, regulators, and hospital administrators – can engage meaningfully with the content.

A major strength of HHS 49 lies in its detailed discussion of **setting up a dose management system**, covering system architecture, data sources, interoperability with imaging modalities, and integration with hospital information systems. The publication provides pragmatic advice on vendor-neutral considerations, data standardization (including DICOM Radiation Dose Structured Reports), and workflow design. This practical orientation makes the book particularly valuable for low- and middle-income countries, where resource constraints often pose challenges to full-scale DMS implementation.

The book further excels in its treatment of **quality assurance and quality control** in dose management systems. It emphasizes that DMS are not merely data

repositories but active tools requiring continuous validation, periodic audits, and performance evaluation. The guidance on acceptance testing, commissioning, and ongoing QA processes underscores the critical role of the medical physicist in ensuring data accuracy, system reliability, and clinical relevance. Importantly, the publication links QA activities to clinical governance and regulatory compliance, reinforcing accountability across professional roles.

Another notable contribution of HHS 49 is its emphasis on **clinical use and interpretation of dose data**. The book moves beyond technical deployment to address how dose metrics should be analyzed, trended, and communicated to support optimization and risk awareness. The inclusion of practical examples and use cases enhances the book's applicability in routine clinical practice and institutional dose audits.

In conclusion, *Dose Management Systems – From Setting Up to Quality Assurance* is a well-crafted, technically sound, and highly relevant publication that fills a critical gap in medical imaging practice. It successfully bridges policy, technology, and clinical application, making it an essential reference for institutions seeking to strengthen radiation protection and patient safety. HHS 49 stands out as both a strategic guide and an operational manual, and it is strongly recommended for medical physicists, imaging departments, regulators, and educators involved in diagnostic radiology and interventional procedures.

III. REFERENCE

Andersson JS, Arlany L, Bevins N, Bosmans H, Carrara M, Gershan V, Giammarile F, Gilligan P, Hasford F, Loose R, Ng KH, Noor O, Reiser IS, Rose S, Ruggeri R, Sanchez G, Sanchez R, Seijas Acosta JA, Torresin A, Trianni A, Tsalafoutas IA, Tsapaki V. Dose Management Systems – From Setting Up to Quality Assurance (IAEA HHS 49). International Atomic Energy Agency, 2025. https://doi.org/10.61092/iaea.6h45-1o3c