



## Standardisation of Image Quality in Radiology Departments: An International Investigation.

McFadden, S. L. (in press). Standardisation of Image Quality in Radiology Departments: An International Investigation. In *Unknown Host Publication* Supplement to Radiology.

[Link to publication record in Ulster University Research Portal](#)

**Published in:**  
Unknown Host Publication

**Publication Status:**  
Accepted/In press: 04/12/2003

**Document Version**  
Author Accepted version

### General rights

The copyright and moral rights to the output are retained by the output author(s), unless otherwise stated by the document licence.

Unless otherwise stated, users are permitted to download a copy of the output for personal study or non-commercial research and are permitted to freely distribute the URL of the output. They are not permitted to alter, reproduce, distribute or make any commercial use of the output without obtaining the permission of the author(s).

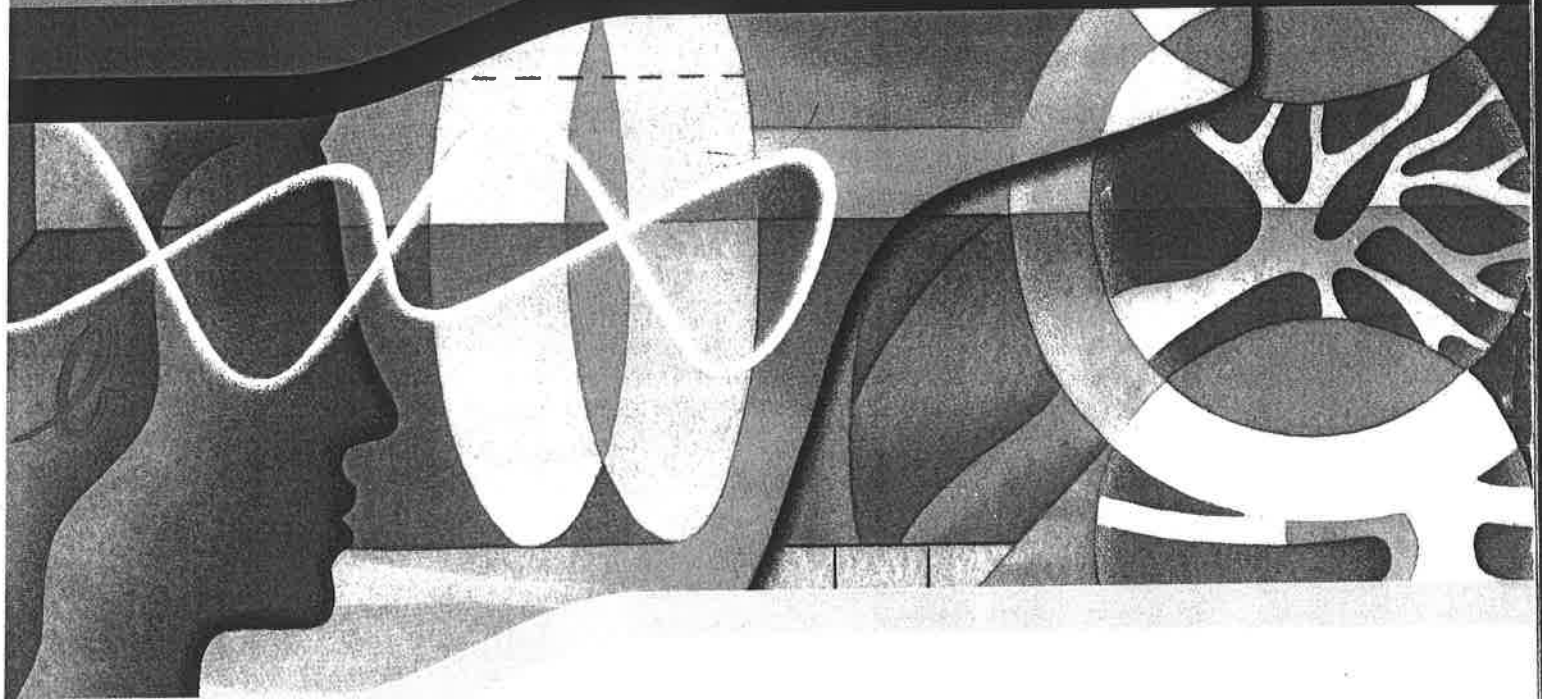
If the document is licenced under Creative Commons, the rights of users of the documents can be found at <https://creativecommons.org/share-your-work/licenses/>.

### Take down policy

The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact [pure-support@ulster.ac.uk](mailto:pure-support@ulster.ac.uk)




RSNA'03  
COMMUNICATION FOR  
BETTER PATIENT CARE



# Radiological Society of North America Scientific Assembly and Annual Meeting Program

The Radiological Society of North America • 89th Scientific Assembly and Annual Meeting  
November 30 – December 5, 2003 • McCormick Place, Chicago

**RSNA** Radiological Society  
of North America  
Founded in 1915

 American Association  
of Physicists in Medicine

# Standardisation of Image Quality in Radiology Departments: An International Investigation

DATE: Thursday, December 04 2003

START TIME: 12:15 PM

END TIME: 12:25 PM

LOCATION: Lakeside Center - Poster Exhibits - Space 147HS-p

CODE: 147-p

## TOOLS

 [ADD TO BRIEFCASE](#)

 [PRINT](#)

 [EMAIL](#)

## PURPOSE

Diagnostic efficacy of X-ray images within radiology departments is dependent on image quality. Work by our group has demonstrated that a close relationship exists between image quality, radiological equipment and X-ray techniques. These factors have been shown to vary widely across Irish hospitals for a number of examination types. The aim of the current work is to evaluate the level of image quality variation that exists within and between 24 hospitals in Oman, Kuwait, UK and Ireland and to relate this to equipment used, techniques employed and radiation dose delivered.

## PARTICIPANTS

### PRESENTER

Patrick [Brennan](#)  
[PhD](#)

Dublin Ireland

### CO-AUTHOR

Ebtehal [Al-Qattan](#)  
[MSc](#)

Louise [Rainford](#)  
[PhD](#)

Sonyia [McFadden](#)  
[MD](#)

## METHODS AND MATERIALS

Digital and analogue diagnostic imaging departments, in the aforementioned countries, were involved in the study. X-ray images of patients following chest, abdomen, pelvis and lumbar spine examinations were analysed by an evaluative panel consisting of experienced clinicians. Visual grading analysis (VGA) based on anatomical criteria, was performed using gold standard reference images and technical and procedural parameters were recorded. Psychophysical tests using line pair and contrast detail phantoms were also carried out and radiation doses were monitored using thermoluminescent dosimeters.

## Keywords

► [Images, analysis](#)

► [Images, quality](#)

## RESULTS

The data collected have demonstrated significant image quality variations within and between hospitals for all countries involved. Technical and procedural causal agents have been identified such as beam energy, acquisition system type, detector focus distance and radiographic technique employed. Options for improving and standardising practice have been noted. Poor correlation between VGA analysis and psychophysical tests was shown.

## **CONCLUSION**

Image quality within and between radiology departments varies widely. The data provided by this work has facilitated identification of specific areas of improvement thus enabling optimisation of chest, abdomen, pelvis and lumbar spine X-ray examinations at lowest risk to the patient.