

Introduction

In order to protect patients undergoing medical imaging from the risks associated with ionising radiation, the government enacted the Ionising Radiation (Medical Exposure) Regulations on 13th May 2000, (IR(ME)R 2000). These regulations derived from the European council medical exposures directive were published in 1997, (Teunen, 1998). These regulations along with Ionising Radiation Regulations (IRR 99) form the main legal requirements for the use and control of ionising radiation in the United Kingdom. A wide variety of imaging examinations may be requested on the premise of a clear justification for the radiographic exposure to be undertaken, (IR(ME)R 2000). Justification refers to the practice of deliberating the potential benefits of an exposure against any potential harm to the patient. The final judgement should consider whether the examination requested will produce the desired result or if an alternative technique or imaging modality is more appropriate.

Aim of audit

The primary aim is to identify a radiography student's potential knowledge gaps with regard to chest x-ray request justification. The audit will be conducted prospectively, examining the existing knowledge of the final year student. The primary objective is to improve the quality of the service delivered to patients through continuing professional development (Figure 1).

National standard

The national standard as set out by the IR(ME)R 2000 guidelines is a justification rate of 100%.

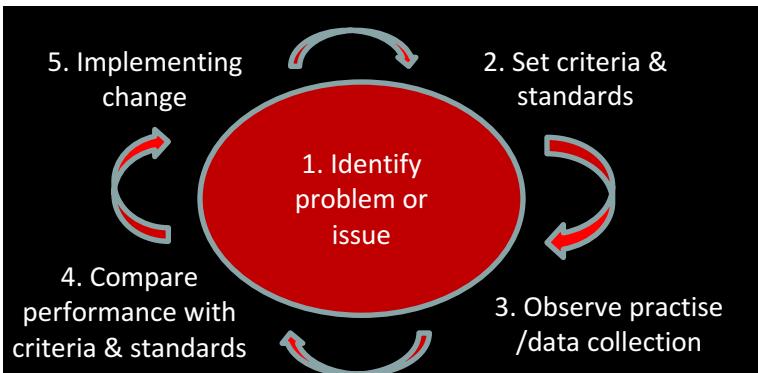
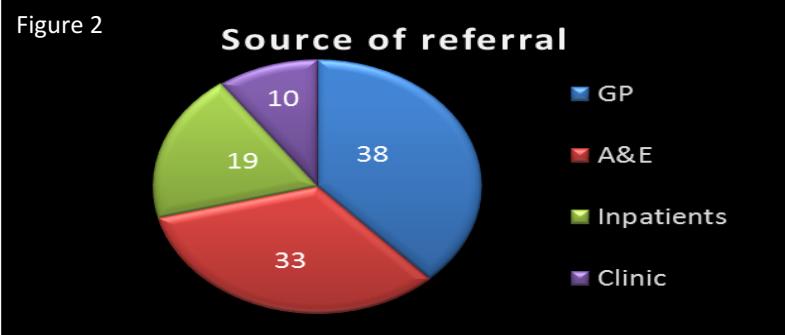


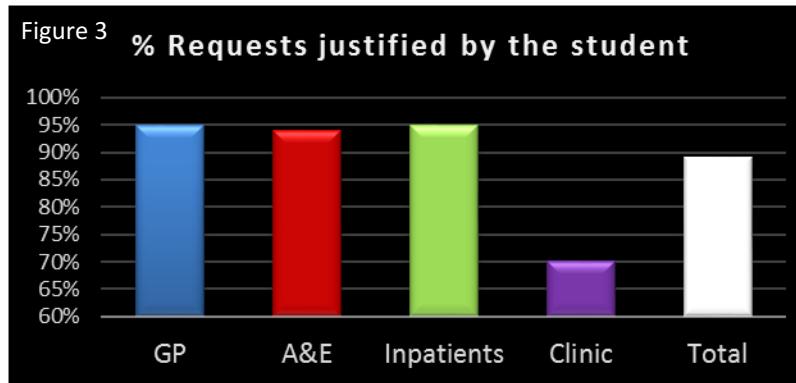
Figure 1. Clinical Audit Cycle. (Adapted from McConville, E. (2016))

Methodology

100 patients attending the radiology department for a chest x-ray were randomly selected for this audit. Referral sources included general practise (GP), accident and emergency (A&E), outpatient clinic and inpatient (Figure 2). Requests were assessed by student radiographer prior to patient entering the examination room, using the clinical history provided by referrer. Requests were either classified as justified or unjustified by the student and discussed with the supervising radiographer prior to the exposure. A catalogue of each request and clinical information was stored on an excel file under each of the patient sub-groups for further analysis.



Results

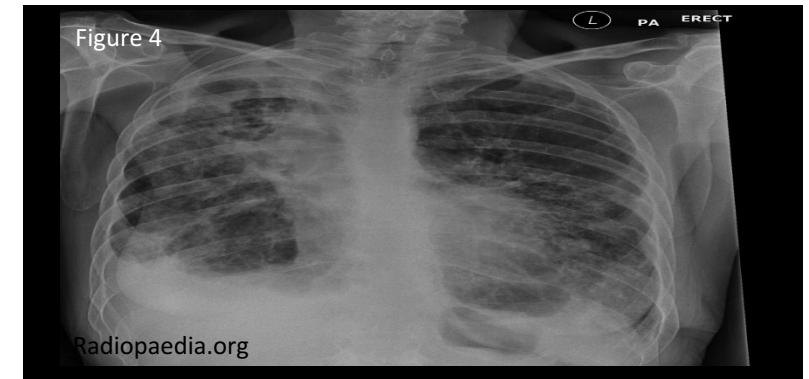


As demonstrated in Figure 3, the student could independently justify 89% of requests. 4% of total requests were correctly identified by student as unjustified and returned to referrer. A&E and GP requests performed well with a 95% justification rate in comparison the student could independently justify 70% of outpatient clinic requests

Discussion/limitations

Limitations include availability sample and small sample size. A further consideration includes the potential for operator bias as this was a self audit.

Conclusion



It is evident from the results that the student's understanding and knowledge of clinic requests requires attention. Shortcomings include a lack of clinical experience and interpretation of medical terminology on requests for example bronchiectasis (Figure 4). 4% of requests were determined as unjustified, this highlights the importance of upholding our duty of care to the patient and remaining cognisant of our legal obligation. As per the IR(ME)R guidelines, radiographers and student radiographers have a responsibility to scrutinise radiographic requests and endeavour to avoid complacency, (Longrigg & Channon, 2006).

Action plan

I aim to create a compilation album of chest radiographs displaying chest pathology with relevant clinical information provided in order to aid learning. An information letter will be produced and distributed to referrers highlighting the importance of supplying complete and accurate clinical information, ideally in the form of electronic requests. A re-audit will be conducted within the next year to identify if learning needs have been addressed, (McInerney & Braid, 2016). After reflecting on this audit process, my main objective is to continuously self audit in order to ensure an an upward quality spiral of improvement, (McConville, 2016).

References

- Ionising Radiation (Medical Exposure) Regulations 2000. (2000).
- Health and Safety Legislation. Statutory Instrument 1999 No. 3232 The Ionising Radiations Regulations 1999. (1999).
- Longrigg, B. and Channon, B. (2006). The X-ray request – an effective vehicle of communication? *Journal of Diagnostic Radiography and Imaging*, 6(01), p.35.
- Mc Conville, E. (2016). Measuring clinical practise, *Imaging & therapy practise*. August 2016.
- Mc Inerney, J. and Baird, M. (2016). Developing critical practitioners: A review of teaching methods in the Bachelor of Radiography and Medical Imaging. *Radiography*, 22(1), pp.e40-e53.
- Teunen, D. (1998). The European Directive on Health Protection of Individuals Against the Dangers of Ionising Radiation in Relation to Medical Exposures (97/43/EURATOM). *Radiation Protection Dosimetry*, 80(1), pp.11-13.

Abstract

Keywords

Justification, Radiography, Learning, Continuing Professional Development, Student

Introduction: Patients undergoing medical imaging are protected by Ionising Radiation (Medical Exposure) Regulations 2000, (Teunen, 1998). While X-ray imaging supplies important information, their undertaking exposes patients to radiation risks. Hence the justification of all requests prior to exposure remains essential in protecting patients from unnecessary risk.

Purpose: To identify any knowledge gaps that may exist in a final year radiography student's learning with regard to justifying chest x-ray requests.

Relevance: According to IR(ME)R 2000 all X-ray requests need to be justified. In the final year of their studies it is expected that radiography students are beginning to operate independently and this audit will assess their competence with regard to the justification of requests.

Methods: The audit was conducted prospectively examining the existing knowledge of the student. 100 requests were randomly selected for inclusion from a variety of referral sources. Justification by the student was classified as justified or unjustified based on clinical information provided by referrer.

Results: The student could independently justify 89% of total requests. 4% of requests were unjustified and returned to the referrer. A&E and GP requests performed well with a 95% justification rate in comparison the student could independently justify 70% of outpatient clinic requests.

Conclusions/Action Plan: A learning requirement has been identified with regard to the interpretation of medical terminology and chest pathology. Further information needs to be distributed to referrers highlighting the importance of providing a complete clinical history on requests.

Re audit: Further data collection within the next 12 months to determine if learning needs have been addressed.