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Literature search results

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Search details
Radiographer led discharge/hot reporting/interpretation of limb x rays

Resources searched
NICE Evidence; TRIP Database; Cochrane Library; AMED; CINAHL; MEDLINE

Database search terms: radiograph*, "led discharge", ("hot reporting" OR reporting), (x-ray* OR "x ray*" OR xray*), interpret*

Evidence / Google Scholar search string(s): radiographer (discharge OR interpretation OR reporting)

Guidelines and Policy
Royal College of Radiologists
Medical image interpretation by radiographers: Guidance for radiologists and healthcare providers, 2010

Standards for the Reporting and Interpretation of Imaging Investigations, 2006

Evidence Reviews
Database of Abstracts of Reviews of Effects
Accuracy of radiographer plain radiograph reporting in clinical practice: a meta-analysis, 2006
NHS Economic Evaluation Database
Is a radiographer led immediate reporting service for emergency department referrals a cost effective initiative?, 2013

NHS Scotland
Assessment of the Radiographer led reporting service at NHS A&A, (undated)

Published Research – Databases

Radiographer led discharge/hot reporting
The perceived impact of an emergency department immediate reporting service: An exploratory survey.

Author(s) Snaith, Beverly, Hardy, Maryann
Citation: Radiography, 01 May 2013, vol./is. 19/2(92-96), 10788174
Publication Date: 01 May 2013
Abstract: Abstract: Background: Immediate reporting, commonly referred to as a ‘hot reporting’, has been advocated as a method of effectively supporting clinical decision making. However, its implementation nationally has been limited with poor understanding of its value in practice. Method: A cross sectional attitudinal survey was distributed to emergency department clinicians (medical and nursing staff) and radiographers to explore perceptions of an immediate reporting service in terms of its influence on professional role and autonomy, patient care and service quality. Results: A total of 87 (n = 87/155; 56.1%) completed questionnaires were returned. The findings suggest that significant support for immediate reporting exists. Immediate reporting is believed to improve service quality, reduce clinical errors and provide opportunity for image interpretation skills development. However, responses were not consistent across clinical professions and staff grades. Conclusion: The immediate reporting of emergency department images is perceived to benefit patient, emergency department clinicians and hospital organisation.
Source: CINAHL

Assessment of a reporting radiographer-led discharge system for minor injuries: a prospective audit over 2 years.

Author(s) Henderson D, Gray WK, Booth L
Citation: Emergency Medicine Journal, April 2013, vol./is. 30/4(298-302), 1472-0205;1472-0213 (2013 Apr)
Publication Date: April 2013
Abstract: BACKGROUND AND PURPOSE: In the UK, there is a continuing effort within the National Health Service to reduce patient waiting times in emergency departments (EDs). This audit aimed to evaluate whether a reporting radiographer-led discharge system could reduce waiting times from x-ray to discharge with no detrimental effect on patient outcomes.METHODS: A prospective audit over 2 years was conducted. Patients were considered for discharge by a reporting radiographer-led service if they were >5 years old, attended the hospital ED between 9:00 and 17:00, Monday to Friday, had an injury below the elbow in the upper limb or below the knee in the lower limb that required an x-ray, and were able to be discharged home without further medical intervention. Outcomes of interest were overall waiting times, accuracy of diagnosis and re-attendance at the ED within 28 days.RESULTS: Between July 2006 and June 2008, 497 patients met the inclusion criteria and were discharged home by the radiographer-led service, and 2632 were discharged home using standard practices. Overall waiting times were >20 min quicker for the radiographer-led service at 100.9 min. The false negative rate was reduced from 2.09% to 0.2%, and re-attendance at the ED within
28 days for the same injury was reduced from 3.27% to only 0.4% for radiographer-led discharge. CONCLUSIONS: The service reduced waiting times and re-attendance rates while improving the accuracy of diagnosis. The efficacy of such services should be further studied in relation to more complex patient groups.

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Available in fulltext from Emergency Medicine Journal at EBSCOhost

Is a radiographer led immediate reporting service for emergency department referrals a cost effective initiative?

Author(s) Hardy, Maryann, Hutton, John, Snaith, Beverly
Citation: Radiography, 01 February 2013, vol./is. 19/1(23-27), 10788174
Publication Date: 01 February 2013
Rationale, aims, objectives: Demand for both Emergency Department (ED) and radiology services continues to increase across the UK while simultaneously, healthcare organisations are being asked to evaluate the quality of care provided and constrain service costs. National guidance on radiograph reporting times recommends ED radiographs are reported on day of patient attendance but in practice, delays in reporting persist. This study considers whether a radiographer led immediate reporting service for ED referrals could provide a cost-effective service improvement solution. Methods: A pragmatic multi-centre randomised controlled trial was undertaken. 1502 patients were recruited and randomly assigned to an immediate or delayed reporting arm and treated according to group assignment. Patient health gain was measured in terms of change in utilities derived from EQ-5D responses at baseline and 8 week follow-up. Resources used and the costs of an immediate reporting service were analysed at the patient level and compared to standard reporting practices. Results: 1688 radiographic examinations were performed (1502 patients). 79 discordant radiographic interpretations were identified ($n = 79/1688; 4.7\%$). Interpretive errors were significantly reduced within immediate reporting arm. No significant difference was noted in the relative improvement in patient perceived health status between the 2 arms of the study. The average cost saving per patient in the immediate reporting arm was £23.40. Conclusions: Radiographer led immediate reporting of ED radiographs is a cost-effective service development and its universal introduction could make a significant contribution to the current drive to increase service productivity within current budget constraints.

Source: CINAHL

Radiographer emergency department hot reporting: an assessment of service quality and feasibility.

Author(s) Hardy M, Spencer N, Snaith B
Citation: Radiography, 01 November 2008, vol./is. 14/4(301-305), 10788174
Publication Date: 01 November 2008
Abstract: Purpose. Radiographer reporting has been implemented widely as cold reporting. This study aimed to compare hot and cold reports by the same radiographer to establish whether there was any significant difference in the diagnostic outcome.

Source: CINAHL

Radiographer-led discharge in accident and emergency -- the results of a pilot project.

Author(s) Snaith BA
Citation: Radiography, 01 February 2007, vol./is. 13/1(13-17), 10788174
Publication Date: 01 February 2007
Abstract: Introduction
Introduction: The radiographers role in trauma has been traditionally limited to
image acquisition, but has evolved to include responsibility for image interpretation. The contribution to ongoing patient management has been limited, despite pressure on A&E systems to decrease any potential delays. Background: Three experienced reporting radiographers were trained to discharge patients with a normal radiology report or refer to A&E for further management, following a documented management plan by the examining clinician in A&E. Discharge included advice on the acute management of soft tissue injuries including analgesia and exercise. Methodology: Over a 4-month period in early 2004 all patients whose examinations received a report at the time of attendance (hot report) were included and data were collected in relation to those who were discharged including journey times and further A&E attendances. Data were also collected regarding patients recalled to the A&E department due to misinterpretation of radiographs during the study period. Results: The radiographers hot reported 1760 examinations, discharging 88 (5%) and referring a further 26 (2%) directly for treatment. The number of patients recalled due to misinterpretation of the radiographs was decreased by 52% when compared with the previous 3 years data. Conclusion: Radiographers can safely extend their roles outside of the radiology department and contribute to the management of patients whilst decreasing risk of radiographic misinterpretation by A&E.

Source: CINAHL

The introduction of a radiographer-led A&E hot reporting service.

Author(s) Jones H

Citation: Synergy: Imaging & Therapy Practice, 01 June 2005, vol./is. /(16-18), 13605518

Publication Date: 01 June 2005

Source: CINAHL

Interpretation of x-rays

Anatomical and/or pathological predictors for the "incorrect" classification of red dot markers on wrist radiographs taken following trauma.

Author(s) Kranz R, Cosson P

Citation: British Journal of Radiology, February 2015, vol./is. 88/1046(20140503), 0007-1285;1748-880X (2015 Feb)

Publication Date: February 2015

Abstract: OBJECTIVE: To establish the prevalence of red dot markers in a sample of wrist radiographs and to identify any anatomical and/or pathological characteristics that predict "incorrect" red dot classification. METHODS: Accident and emergency (A&E) wrist cases from a digital imaging and communications in medicine/digital teaching library were examined for red dot prevalence and for the presence of several anatomical and pathological features. Binary logistic regression analyses were run to establish if any of these features were predictors of incorrect red dot classification. RESULTS: 398 cases were analysed. Red dot was "incorrectly" classified in 8.5% of cases; 6.3% were "false negatives" ("FNs") and 2.3% false positives (FPs) (one decimal place). Old fractures [odds ratio (OR), 5.070 (1.256-20.471)] and reported degenerative change [OR, 9.870 (2.300-42.359)] were found to predict FPs. Frykman V [OR, 9.500 (1.954-46.179)], Frykman VI [OR, 6.333 (1.205-33.283)] and non-Frykman positive abnormalities [OR, 4.597 (1.264-16.711)] predict "FNs". Old fractures and Frykman VI were predictive of error at 90% confidence interval (CI); the rest at 95% CI. CONCLUSION: The five predictors of incorrect red dot classification may inform the image interpretation training of radiographers and other professionals to reduce diagnostic error. Verification with larger samples would reinforce these findings. ADVANCES IN KNOWLEDGE: All healthcare providers strive to eradicate diagnostic error. By examining specific anatomical and pathological predictors on radiographs for such error, as well as extrinsic factors that may affect reporting accuracy, image interpretation training can focus on these "problem" areas and
Evaluating the true clinical utility of the red dot system in radiograph interpretation.

Author(s): Brown N, Leschke P

Citation: Journal of Medical Imaging & Radiation Oncology, October 2012, vol./is. 56/5(510-3), 1754-9477;1754-9485 (2012 Oct)

Publication Date: October 2012

Abstract: INTRODUCTION: The 'red dot', or 'asterisk', system is used in many hospitals as a method for radiographers to identify potential abnormalities on plain radiographs prior to reporting by radiologists. While published studies into the accuracy of the 'red dot' system exist, analysis of its reliability in identifying subtle pathology is lacking. This is relevant because the prevalence and apparent success of the 'red dot' system has been cited by some authors as justification for non-radiologist reporting of medical imaging. It is important that all systems within medical imaging add value, and this audit evaluates the accuracy and clinical value of the 'red dot' system, particularly in the critical area of detecting undisplaced fractures.

METHODS: All appendicular musculoskeletal trauma radiographs performed in the Department of Emergency Medicine at a major Australian metropolitan hospital over a continuous four-month period were retrospectively assessed to evaluate the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the 'red dot' system. The presence or absence of an asterisk was correlated with validated radiologist reports. A sub-analysis of fractures displaced <1mm was also performed.

RESULTS: A total of 3638 radiographs were assessed and 938 (25.8%) fractures identified; 338 (9.3%) contained undisplaced fractures. Overall sensitivity and specificity of the 'red dot' in detecting appendicular fractures are 80.4% and 98.0%, respectively. PPV is 93.6% and NPV is 93.5%. However, the accuracy of the 'red dot' in detecting undisplaced fractures is significantly reduced, with a sensitivity of 45.9% and a PPV of 74.8%.

CONCLUSIONS: Detection of subtle abnormalities is fundamental to the service provided by radiologists. The 'red dot' system's inability to reliably detect undisplaced fractures following trauma limits its value within a tertiary radiology department and suggests that role extension of plain film reporting to non-radiologists has potential to yield less accurate assessments. To maintain the highest quality of medical imaging services and standards of patient care, it is optimal that clinical decisions are based upon radiograph reports issued by medical specialists who have completed appropriate radiology training. Strategies to maintain this are suggested.

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April 1999 to September 2003 was evaluated prospectively using a selected sample of radiographs. Assessment of fracture identification occurred before, immediately after and 6 months after the course. The same film set was used and consisted of 30 axial and appendicular cases, 18 with fractures and 12 normal or normal variants. Following a test for normality of the data, a Wilcoxon Signed-Rank Test was selected and paired tests were done between each assessment for sensitivity and specificity. There were significant differences in sensitivity between all three assessments (p<or=0.05), the pre-course/post-course and the post-course/6 month comparison being highly significant (p<or=0.01). Specificity showed significant differences between the pre-course/post-course (p<or=0.01) and the post-course/6 month follow-up scores (p<or=0.05), but no difference was found between the 6 months/pre-course scores. The participants improved their ability to identify fractures and this appears to be as a result of the course. This improvement was not demonstrable after 6 months, although only 30% of participants took part in this follow-up. Radiographers can improve their image interpretation skills from a short course of study, but probably need continuing professional development to maintain these skills.

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**Interpretation of trauma radiographs by radiographers and nurses in the UK: a comparative study.**

**Author(s)** Hardy M, Barrett C

**Citation:** British Journal of Radiology, August 2004, vol./is. 77/920(657-61), 0007-1285;0007-1285 (2004 Aug)

**Publication Date:** August 2004

**Abstract:** The purpose of this study was to identify the number of hospitals employing nurses and radiographers formally to undertake radiographic interpretation of trauma images and to compare the education undertaken by these professionals and any limitations imposed. A cross-sectional questionnaire survey of nurse and radiographer managers responsible for Accident and Emergency services within National Health Service hospitals in the UK was undertaken in January 2002. A total of 526 questionnaires were distributed. Response rates of 75.3% (n=198/263) and 69.2% (n=182/263) were received from radiographer and nurse managers, respectively. 96 nurse managers (52.7%, n=96/182) indicated that nurses within their departments were formally interpreting radiographs as part of their extended role whereas only 68 radiography managers (34.3%, n=68/198) indicated that radiographers were undertaking this role. Education to support radiographic interpretation varied markedly with 92.6% (n=63/68) of radiographers having undertaken a postgraduate qualification in image interpretation. In contrast, nurse education at all levels was more generic to the nursing role. The range of examinations which nurses and radiographers were permitted to interpret also varied markedly. Radiographic interpretation is undertaken by both nurses and radiographers. However, there is interprofessional and intraprofessional inconsistency in the range of examinations they are permitted to interpret and the level of education provided to support this role. Consequently, it can be surmised that national variation in service delivery and quality exists and a review of current service delivery strategies is recommended.

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