Current Problems in Diagnostic Radiology 48 (2019) 207–209

Current Problems in Diagnostic Radiology

journal homepage: www.cpdrjournal.com

Ring Ring Ring! Characterising Telephone Interruptions During Radiology Reporting and How to Reduce These

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Background: Telephone calls remain one of the most frequent interruptions in radiology reporting rooms, despite modern electronic order communication systems. A call received by a radiology trainee during the hour before completing a report may increase the chance of a discrepancy by 12%.
Aim: To characterise telephone calls to radiology reporting rooms and identify ways to reduce these interruptions.
Methods and Materials: An observational study over five working days (10 programmed activity reporting sessions equivalent) was conducted across 2 large teaching hospital reporting rooms. Radiologists were requested to record all calls between 9A.M and 5P.M on a preprepared Excel proforma and indicate their initial rating of call appropriateness.
Results: A total of 288 calls recorded, 92% (266/288) interrupted reporting. Reasons for calls were 48% (139/288) ask for a request to be vetted, 17% (50/288) ask for a study to be reported, 17% (45/288) "other," 7% (19/288) discuss choice of study, 6% (16/288) review a report, 3% (9/288) wrong number, 2% (7/288) returning a bleep, and 1% (3/288) provide further explanation in addition to the electronic request form.
Conclusion: Radiologists and referrers remain over reliant on telephone interruptions for their workflow. Attempts to educate referrers previously reduced calls to a computed tomography reporting room by 28%. Our recommendations include (1) defining protected activities, (2) adhering to fully electronic requesting and vetting processes, other than in time critical or exceptional circumstances, (3) electronic critical report alerts and review of report priority triaging to reduce calls for reports, (4) revising duty radiologist timetables to tackle nonreporting responsibilities, and (5) improving new doctor induction in the organization to improve radiology request practice.

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Introduction

It is part of everyday practice for healthcare professionals to interrupt one another to communicate urgent information. Interruptions during radiology reporting cause inefficiency and potentially harm to patients.[1] When an individual's attention is diverted from their primary task, memory of the primary task begins to decay while processing the interrupting task.[2,3] After returning to complete the remainder of the primary task, the likelihood of making an error is increased.[4]

During reporting sessions in our department, radiologists often are required to perform additional responsibilities which are a distraction from the primary task of, sometimes time critical, diagnostic image interpretation. These include vetting requests, protocolling studies and dealing with radiographer queries, ad hoc in-person clinical discussions, consenting pregnant patients, intravenous cannulation, contrast administration, attending contrast reactions, ad hoc ultrasound scanning and verbal communication of critical findings. Noninterpretative responsibilities now consume an oversized portion of reporting radiologists' time and attention.[5]

Many efforts continue to be made to increase patient safety in our NHS hospital working environments. The WHO checklist mandates allowing time to perform what are basic safety steps, but designing safety in radiology workflow scenarios where interruption can reduce accuracy have received less attention. Modern radiology order communication systems with linked electronic patient records mean that telephone interruptions to communicate requests and reports are necessary only in exceptional circumstances (eg, change in the clinical situation affecting scan protocolling or an increase in urgency since the information was initially submitted). Despite this, telephone calls are one of the most frequent interruptions to radiology reporting.[5]

Numerous studies report an overall major discrepancy rate between radiology trainees' initial reports and consultants' final reports of 1%-2%, which is relatively constant.[5] Minor but nevertheless important discrepancies are commoner. A number of variables affect this, however, a call received by a radiology trainee

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https://doi.org/10.1067/j.cpradiol.2018.01.004
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during the hour before completing a report may increase the chance of a discrepancy by 12%.[6] An audit abstract by Muir et al in Edinburgh, Scotland, 2013, reported that 52% of calls received during CT reporting sessions were considered inappropriate.[7] To our knowledge, that abstract is the only previously published information on the nature of telephone interruptions during radiology reporting.

We aimed to characterise telephone calls to radiology reporting rooms and identify potential ways to reduce these.

Materials and Methods

An observational study over five working days (10 programmed activity reporting sessions equivalent) was conducted across two large teaching hospital reporting rooms in London, UK. Radiologists were requested to record all calls, including indication of their rating on appropriateness, between 9A.M and 5P.M on a proforma.

Results

Twenty-three forms were returned in total, by Radiology Specialty Training year 1s (ST1s) (8), ST2s (6), ST3s (2), ST4s (1), ≥ST5s (2), and Consultants (4).

Of 288 calls recorded, 92% (266/288) interrupted reporting.

Callers were Senior House Officers 45% (129/288), Registrars 18% (51/288), Foundation Year 1s 11% (32/288), other staff 22% (62/288), and Consultants 5% (14/288).

Reasons for calls were 48% (139/288) ask for a request to be vetted (usually urgent investigations work, the caller seeking requests to be prioritized), 17% (50/288) ask for a study (a mix of urgent and nonurgent scans) to be reported, 17% (45/288) "other," 7% (19/288) discuss choice of study, 6% (16/288) review a report, 3% (9/288) wrong number, 2% (7/288) returning a bleep, and 1% (3/288) provide further explanation for a request in addition to the electronic form (Chart).

Totally, 58% (166/288) calls were deemed appropriate by the reporting radiologist, the remainder inappropriate or unnecessary.

The most frequent inappropriate calls were 54% (66/122) ask for a request to be vetted, 19% (23/122) "other," 17% (21/122) to ask for a study to be reported.

Discussion

Due to time pressures on radiologists completing forms, our data under-represents the total number of calls.

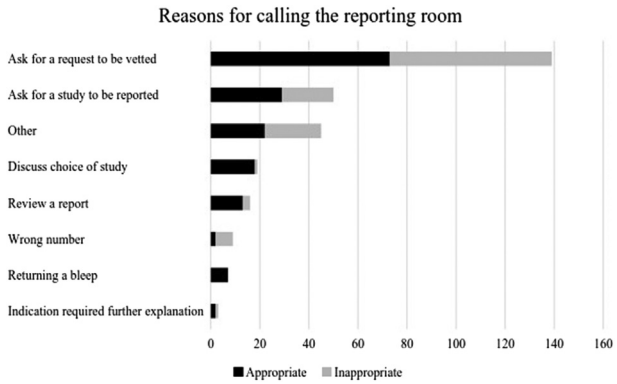

Chart. Reasons for telephone calls to the reporting room. Each bar represents the total number of each type of telephone call. The black portion of each bar represents the number that were appropriate and the gray portion represents the inappropriate.

Calls to ask for imaging requests to be vetted comprised the highest number of calls overall and of calls deemed inappropriate by the reporter. This was followed by "other" calls and to ask for studies to be reported. Calls to ask for vetting were underrepresented because, of the "other" calls 14 were listed as requests for vetting. Over half of all calls for vetting and for reports to be issued were categorized as "appropriate" by the reporter. This suggests, however, that the full benefits of an electronic system are not yet being realised and radiologists and referrers remain over reliant on and acceptant of telephone interruptions for functional workflow. Most were from junior doctors with poor understanding of the workflows to and from imaging.

Our recommendations for changes include (1) defining protected activities during which interruptions are not permitted, (2) streamlining radiologists' and referrers' workflow within the electronic requesting and vetting process, other than in exceptional circumstances, (3) electronic instant alert system for issuing critical reports and a review of report priority triaging to reduce calls for reports. Many calls for reports are due to an outpatient reporting backlog (not recorded) which would be ameliorated by faster reporting turnaround times, (4) formalising a duty radiologist timetable to tackle nonreporting responsibilities, and (5) referrer induction and education on workflows in imaging.

We found a similar proportion of telephone calls were deemed inappropriate as reported in the abstract published by Muir et al, who reported the most common reasons for inappropriate calls to a CT reporting room were non-CT related questions, wrong numbers and asking for verbal preliminary reports. They reduced calls by 28% after educating Emergency Department staff not to call for provisional reports and requesting switchboard to ensure only calls for CT-related questions were put through.[7]

The assessment of calls as "inappropriate" when related to reporting delays deserves closer comment. The UK consultant radiologist vacancy rate is 9% (equivalent to 308 full-time posts, almost two-thirds of which have been vacant for a year or more) and the UK employs the third lowest number of radiologists per patient population in Europe, whereas in England the number of CT and magnetic resonance imaging scans increased by 33% and 31%, respectively during 2013 to 2016. These pressures are reflected in our organization as in many in the UK.

The UK Government has set a target for referral to test results within 28 days by 2020, as part of drives to improve cancer mortality statistics.[8] Latest figures show that there are patients in 73% of NHS trusts waiting more than 30 days for radiology reports. Approximately, a quarter of a million patients wait over a month for the results of their radiology studies and around 12,000 of these are CT and magnetic resonance imaging scans.[9] Reporting delays not only increase anxiety for patients, but can delay treatment and potentially affect outcomes. A call to request a scan report which has not been issued within the time frame required for the clinical scenario is usually highly appropriate. Addressing this locally and nationally, however, is challenging. The number of images and reformats per study and the complexity of interpretative requirements, often for urgent scans, have increased time taken to report.[10] Improvements at a local level to streamline workflows and timetabling are ongoing to address some of these issues, but many of these "fixes" are examples of failure management and as in many UK imaging departments more robust resource issues also need to be addressed. Interruptions create a causal cycle that compounds inefficiency in radiology, the central hub of many care pathways, and introduces known risks in interpretative error rates.

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