Can You Hold Please? Telephone Call Disruptions May Negatively Impact Radiologist Diagnostic Accuracy

Medicine is a “knowledge-intensive service environment” that requires not only a great deal of knowledge, training and experience, but also focus and concentration for optimal performance, with interruptions in workflow having the potential to contribute to errors [1]. The effects of these interruptions have been linked to errors in both the laboratory [2,3] and clinical settings [4-13], however there are very little data on the effect of distractions in the reading room on radiologist diagnostic accuracy. It is intuitive that distractions have the potential to result in medical errors in radiology; however the degree to which these distractions affect diagnostic accuracy in radiology has yet to be defined. It is unknown which distractions, if any, may negatively impact radiologist diagnostic accuracy and if so, to what degree. It would thus be desirable to reduce known reading room distractions in an effort to optimize radiologist diagnostic accuracy and efficiency.

The radiology reading room, particularly those associated with emergency and critical care imaging services, can be a highly chaotic environment with innumerable potential distractions, including e-mail, cell phones, pagers, and consultations with referring clinicians and technologists. However, no other distraction is quite as ubiquitous, pervasive, and disruptive in the reading room as the unscheduled telephone call [14]. Recently, Yu and colleagues [14] described their experience with telephone call interruptions on radiologist workflow. For this study, there were on average 72 phone calls per 12 hour shift (average duration of 57 seconds) for a total of 108 minutes of phone time per shift. The results of the study by Yu and colleagues are probably quite familiar to all of us who work in the on-call setting. However, due to the relatively low rate of discrepancies for their radiologists, they were unable to identify a direct link between these telephone call interruptions and their effect on radiologist diagnostic performance. As such, there is a paucity of research investigating potential root causes for diagnostic errors in radiology.

Therefore, we set out to determine if there was a link between telephone call interruptions on radiology resident diagnostic accuracy, and if so, to what degree. Here, I will briefly present our research describing the effect of telephone call interruptions in the reading room, which was recently published in Academic Radiology [15].

STUDY DESIGN

Our study was approved by our institutional review board on human research. We collected on-call radiology resident preliminary report discrepancies and on-call reading room telephone logs over a 393 day period. Resident report “discrepancies” were defined as significant diagnostic errors requiring direct communication of the change in interpretation to the ordering health care practitioner the following morning after the attending radiologist reviewed both the imaging exam and the resident preliminary report. The resident preliminary reports were generated using a voice recognition dictation system, with dictation completion time stamps recorded in the PACS system. Any work-shift during which a discrepancy was reported was identified as a “discrepancy” shift, while those shifts without discrepancies were identified as “no discrepancy” shifts. The nature of the resident error and examination identification number were recorded in a discrepancy log spreadsheet, which was maintained for both quality and educational purposes. Collected telephone call data included the call start and end time (and thus call duration) and date. Imaging volume and frequency were not recorded for this study.

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We then calculated the average number of phone calls per shift, the average number of resident preliminary reports generated per shift, and the proportion of “discrepancy” versus “no discrepancy” shifts. We then identified the dictation time stamps of the reports containing resident diagnostic errors and correlated that time with the number of telephone calls during the one hour prior to the creation of the resident report (presumably the time during which the resident was generating the report). We then compared the number of phone calls the 1 hour preceding the generation of the “error” report with one hour time blocks during which there were no resident diagnostic errors.

SUMMARY OF RESULTS AND SIGNIFICANCE

During the study period, the on call residents generated just over 15,500 preliminary reports (approximately 46 reports per 10 hour on call shift). There were a total of 51 major discrepancies (error rate of 0.33%) during 41 distinct shifts. However the details of 12 of the 51 discrepancies were
not recorded, and as a result, were excluded from analysis. The remaining 39 major discrepancies occurred during 33 shifts (radiographs N=28, CT N=8, ultrasound N=3). Missed extremity fractures (N=8), missed pneumonia (N=5) and missed pneumothorax (N=5) were the most frequently encountered errors.

We have shown that a temporary increase in telephone call volume during the time when a radiology resident is generating a preliminary report increases the chances of a diagnostic error by 12%. [Stock Photo].

In summary, telephone call interruptions may serve as a root cause for diagnostic errors in the interpretation of radiologic images [15].

REFERENCES


Body Further reading