

# Direct Access and Skill Mix Can Reduce Telephone Interruptions and Imaging Wait Times: Improving Radiology Service Effectiveness, Safety and Sustainability

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# The Problem

- Vetting and protocolling scan requests has been shown to be the most common reason for telephone calls which interrupt radiology reporting.<sup>1,2</sup>
- Many imaging tests have clear guidelines regarding their indications and acquisition protocolling. These do not routinely require discussion with a radiologist.<sup>3</sup>
- Associations have been shown between telephone interruptions and radiologists' error rates, efficiency and stress levels.<sup>4-7</sup>
- When distracted, memory of the primary image interpretation task begins to decay, which increases the likelihood of an error occurring upon returning to it.<sup>8</sup>



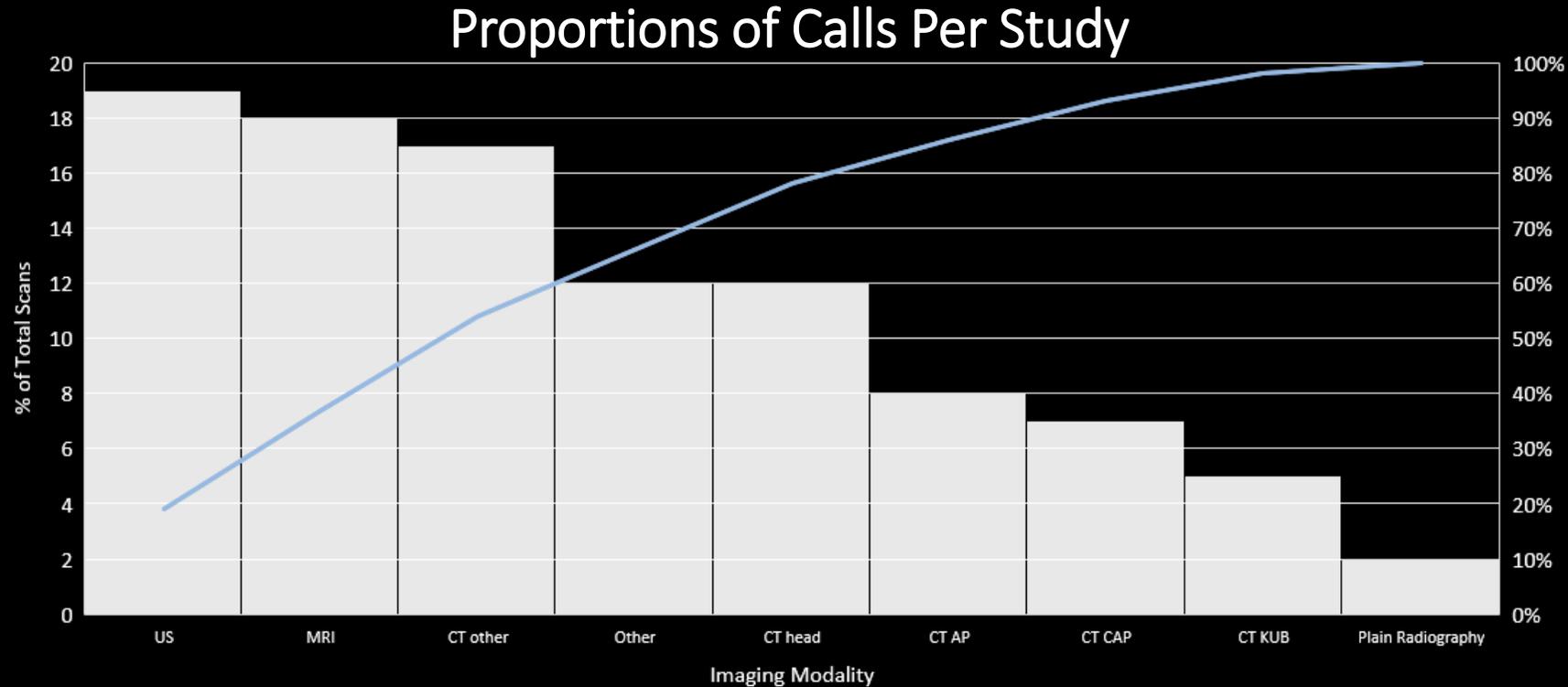
# Our approach

- Our aims were to (i) characterise telephone interruptions during radiology reporting and (ii) introduce and evaluate a concept for reducing these while simultaneously decreasing imaging wait times.
- To inform our change, a prospective study was conducted in two cycles, pre- and post-intervention.
- During each cycle, radiology registrars were asked to record all incoming calls to the 'hot' phone on a Excel spreadsheet over 1 week periods (21<sup>st</sup>–25<sup>th</sup> Sept 2020 and 25<sup>th</sup>–29<sup>th</sup> Jan 2021) during in hours (9am–5pm).
- The volumes of scans performed and average wait times between scan requests and completions were also reviewed, using PACS data.



# Pre-Intervention Results

- 92% (112/122) of calls were from junior clinicians.
- Requesting a scan to be vetted was the most frequent reason for a call, comprising 71% (87/122).
- 123 CT heads and 27 CT KUBs were performed during the data collection period.
- The mean average wait time between CT head request and scan completion was 5.2 hours.

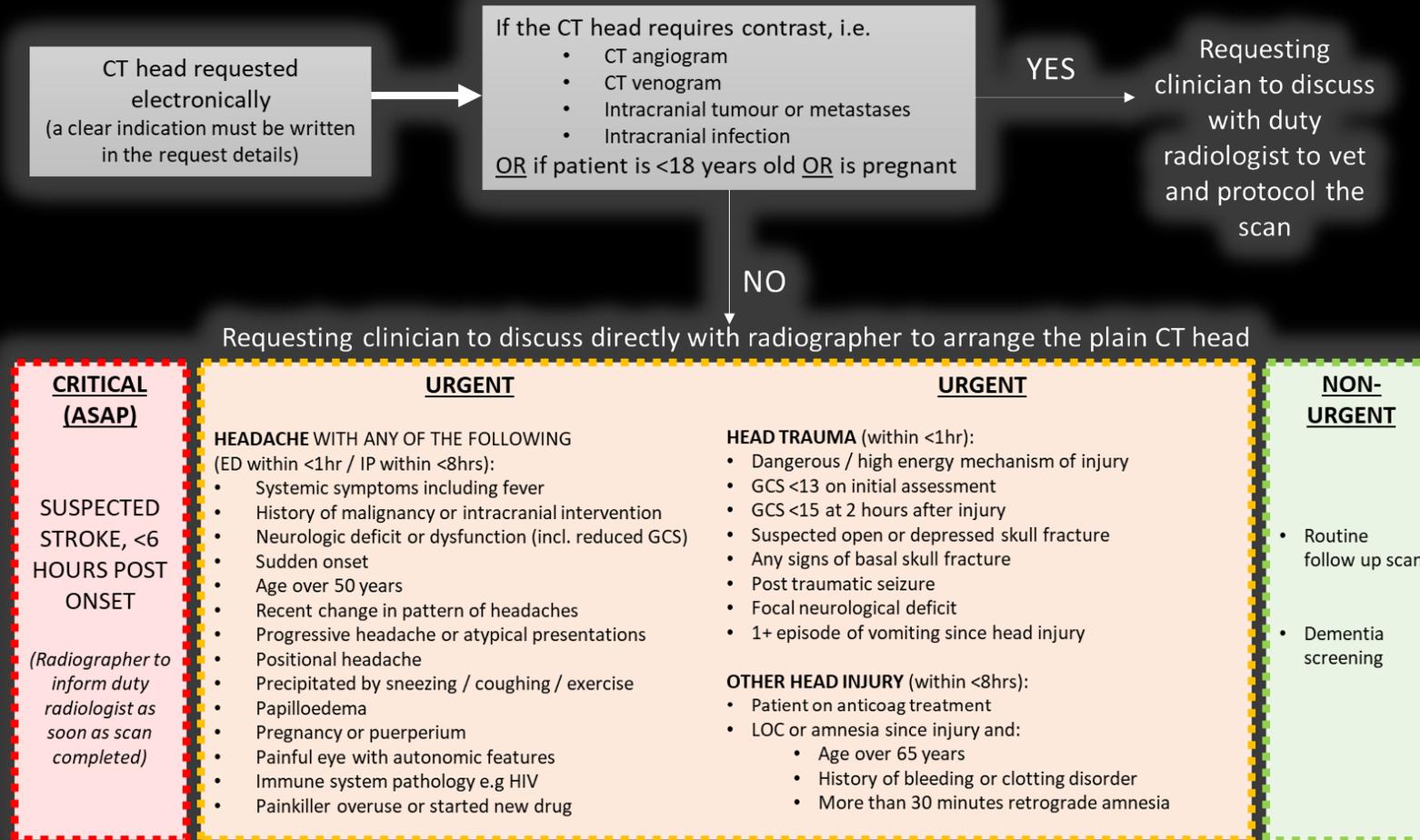


# Our Change

- CT head and CT KUB scans were identified as examples of imaging tests which have clear protocolling guidelines but for which frequent calls to radiologists for vetting persist nonetheless.
- We created two new flow diagrams to upskill radiographers to be able to safely vet routine requests for plain CT head and CT KUB scans directly, both in- and out-of-hours.
- To establish awareness of the new protocols, we communicated with stakeholders including radiologists, service leads and junior medical staff.
- Colourful print outs of the flow diagrams were also displayed in the CT scanning control rooms as aide mémoires for radiographers and in the relevant clinical departments for referrers.



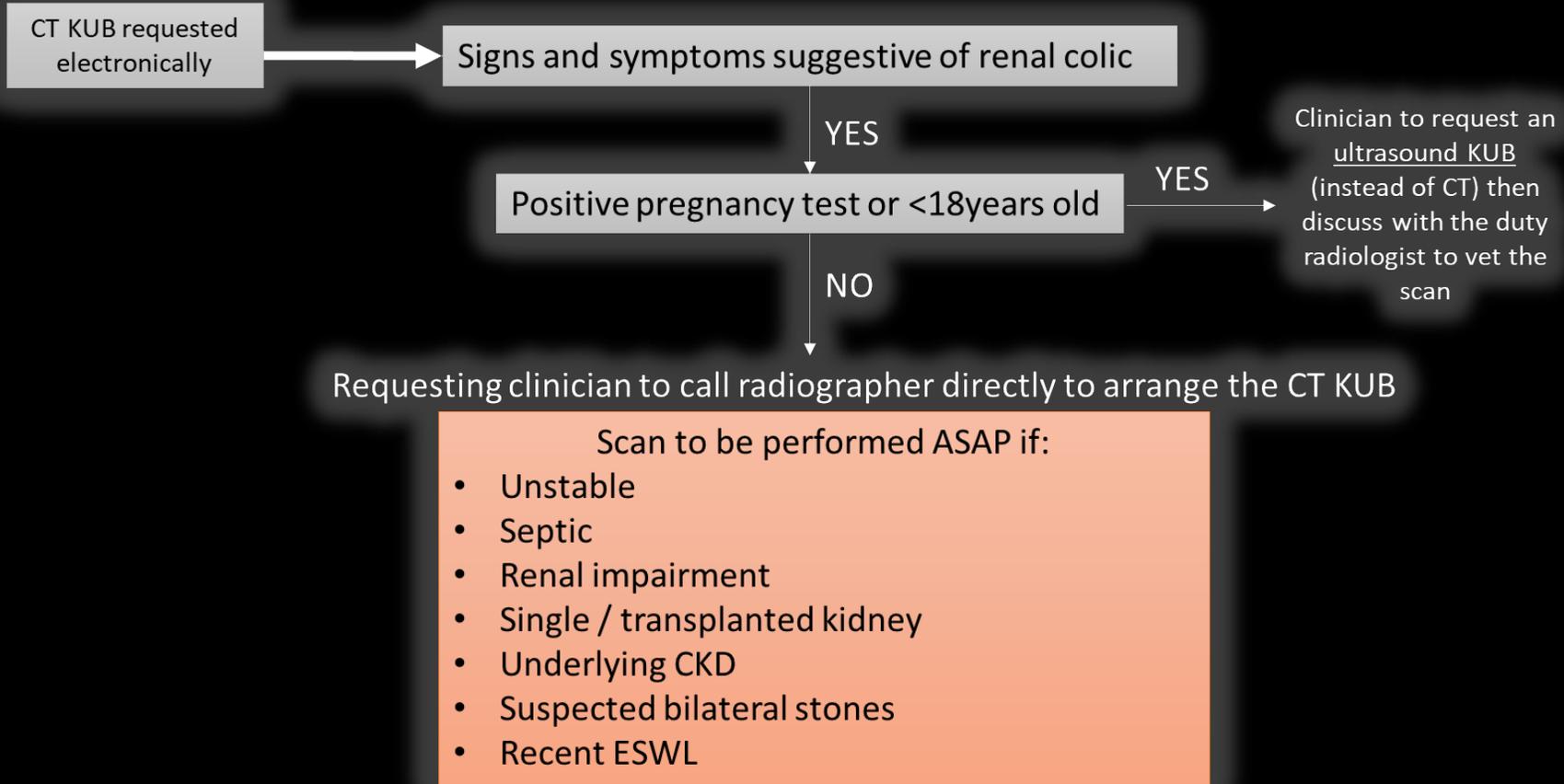
# New Adult Unenhanced CT Head Pathway



1. NICE Guidelines. *Head injury: assessment and early* [www.nice.org.uk/guidance/cg176/chapter/1-Recommendations#investigating-clinically-important-brain-injuries](http://www.nice.org.uk/guidance/cg176/chapter/1-Recommendations#investigating-clinically-important-brain-injuries)  
 2. Do TP, Remmers A, Schytz HW, et al. Red and orange flags for secondary headaches in clinical practice: SNNOP10 list. *Neurology*. 2019;92(3):134-144



# New Adult CT KUB Pathway



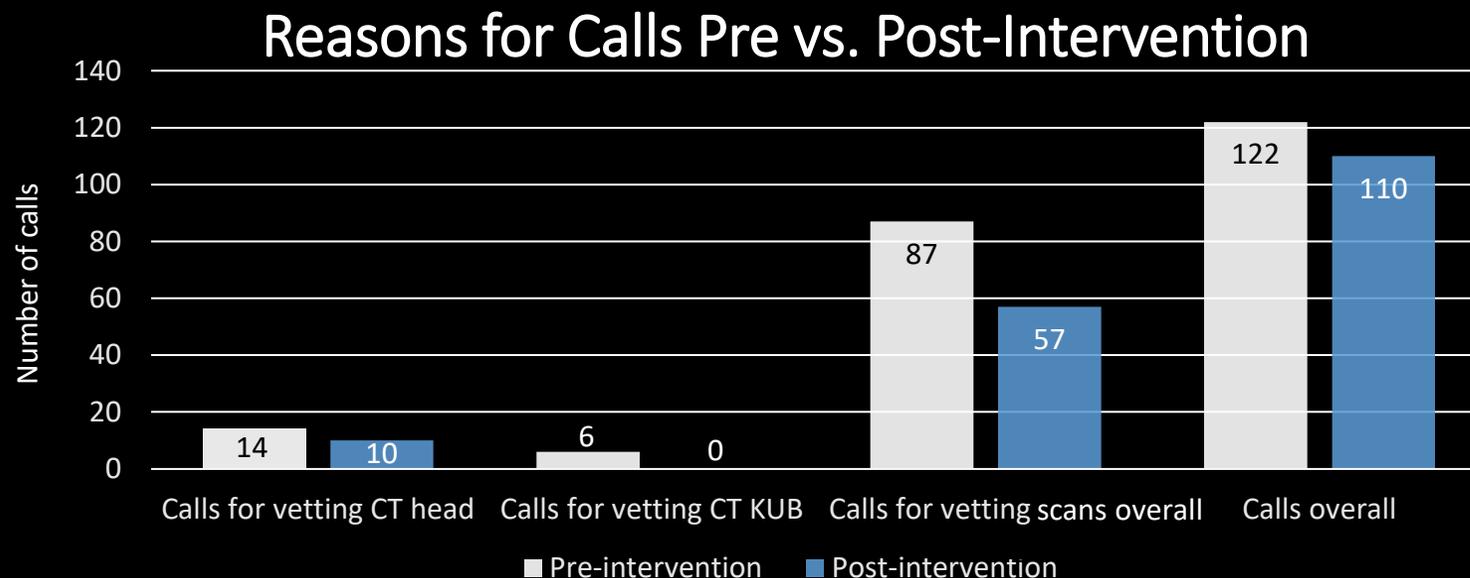
*If there are any queries, radiographer to discuss with duty radiologist*

1. NICE CKS Guidelines. *Management of Renal or ureteric colic - acute*. <https://cks.nice.org.uk/topics/renal-or-ureteric-colic-acute/management/>



# Post-Intervention Results

- The overall number of calls captured reduced by 10%.
- Calls for vetting CT heads reduced by 30% and for vetting CT KUBs by 100%.
- 117 CT heads and 20 CT KUBs were performed during the data collection period.
- The mean average wait time between CT head request and scan completion was 3.2 hours, demonstrating a 40% reduction.
- A high level of satisfaction was informally reported among radiologists, radiographers and referrers.



# Outcomes

- Firstly, we show that embracing skill mix and modern information technology infrastructure can decrease interruptions during radiology reporting.
- Secondly, our initiative improved workflow at an organisational level and increased CT scanner throughput by reducing CT head wait times by almost a half.
- The number of CT head and CT KUBs performed slightly reduced after introduction of our change, suggesting that there was no increase in investigations associated with the direct access pathways and therefore no rise in costs.
- Our data may underestimate total calls, because the radiologists could have missed recording some calls due to time pressures while simultaneously fulfilling other duties.
- Going forward, we suggest that the direct access and skill mix concepts which we have outlined should be considered for integration into the mechanics of all diagnostic centres.



# References

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8. Rivera Rodriguez AJ, Karsh BT. Interruptions and distractions in healthcare: Review and reappraisal. *Qual Saf Heal Care* . 2010;19(4).



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