Acute imaging volume over a 10-year period at a University Teaching Hospital

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Background
The global trend towards more imaging for acutely unwell patients continues unabated, and it is often inadequately resourced. We aimed to assess how this trend impacts workflow; and whether it is uniform across modalities and setting (emergency department (ED) & inpatient (IP)).

Method
We conducted a retrospective review of imaging numbers over a 10-year period from January 2007 to December 2017. We recorded the number of scans performed in ED and IP, and the time of each test — each day was divided into three time periods: day (0900-1700), twilight (1700-2100), and night (2100-0900).

Results
Overall increase for US, CT and MRI in ED was 61%, 127%, 122% from 2007-2017 and 1.7%, 38%, 40% from 2013-2017. A similar trend was seen for IP which showed overall increase for CT and MRI of 45% & 25% from 2007-2017, and 24% & 1% from 2013-2017. Interestingly, there has been a decrease in US of 16.6 % & 7 % for those same intervals. The massive increases in scan numbers was evenly spread over the three time periods for ED, however for IP there was a spike between 1700-2100 for US 7.9%, CT 233%, and MR 419% over 10 years; over the past 5 years, there has been an increase in CT, but decreases in US and MR (24%, -21%, -47%).

Conclusion
Annual increases in the number of scans performed in both ED and IP are seen. Daytime lists are running at capacity to service elective demand so a large number of acute IP scans are not imaged until later, increasing the burden on-call - this is often an SPR with potential higher discrepancy rates or out-sourced with its associated premium cost. Locally, impact has been lessened by providing more IP US and MR capacity, but CT use increases unchecked. Investment in daytime IP CT scanner capacity would be beneficial, controlling ED scan numbers appears to be a bigger hurdle.