Retrospective audit of sedation doses administered by radiologists in the MRI scanner department at Salford Royal NHS Foundation Trust (SRFT)
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BACKGROUND
There are a small minority of patients who require intravenous sedation to facilitate tolerance of an MRI scan. Minimal sedation is the preferred state in the outpatient setting. At our trust, this is supervised by radiologists.
Formal sedation training was introduced as a compulsory induction requirement for all radiology trainees in August 2015. This audit reviews the impact of this training on administered sedation doses.

AUDIT AIM
We reviewed sedation doses at outpatient MR scans and compared practice pre and post introduction of local induction training. Audit standard was the local trust guidelines.

Drug used for IV sedation at SRFT is IV Midazolam as per Trust guidelines:
- Initial maximum dose of 1mg midazolam IV
- Minimum of 3 minutes between additional doses
- Maximum total dose of 3mg midazolam IV to be administered during radiologist led sedation episode

METHOD
Retrospective audit over a 2 year period (2014-2016), using controlled drug record book in the MR scanners at SRFT.
We recorded procedure date, sedation dose (mg), grade of trainee and compared this data pre and post the introduction of sedation training on 11 August 2015.

RESULTS
There were 240 episodes between 2014-2016. 9 cases were excluded due to recording errors. Overall, mean average sedation dose was 2.3mg (range 0.75 – 5mg).

Above graph plots all sedation doses administered throughout 2014-2016. The dotted vertical line is positioned at the sedation training date (11 August 2015). Those points in red (senior ST4+) and yellow (junior ST1-3) are above recommended 3mg dose. There is only one outlying dose post induction training commencement. The unbroken line depicts general downward trend in doses administered over 2 years.

DISCUSSION
There were no adverse events and, overall, doses were appropriate and within trust guidelines.
After introduction of training, average dose decreased with only one outlier dose. Over the 2 year period, there was a general decrease in number of total episodes reflecting increased referrals to open magnet MR scanner. This allows trainees to spend time in other areas of training but means less exposure overall to sedation administration.

LIMITATIONS/GOING FORWARD
This audit did not address the titration of doses in each episode or the total duration of each sedation episode. We did not analyse image quality, or analyse those cases still unable to tolerate MR despite sedation at the reduced dose.
Since our audit, there has been inclusion of sedation training guidelines in SRFT local induction handbook which is issued to all trainees starting Aug/Feb each year. It should be highlighted to returning trainees that in view of reduced exposure, attendance at refresher session at induction is mandatory.
We intend to re-audit the findings yearly to ensure mean dose meets local standard.

REFERENCES
1) Magnetic resonance imaging scanners: provision of intravenous conscious sedation by non-anaesthetists. SRFT Protocol
2) Safe sedation, analgesia and anaesthesia within the Radiology department. www.rcr.ac.uk