

Reporting Template Shortens Turnaround Times of On-Call Radiology Residents for Preliminary Interpretation of Spine MRIs in the Emergency Room for Detection of Spinal Cord Compression

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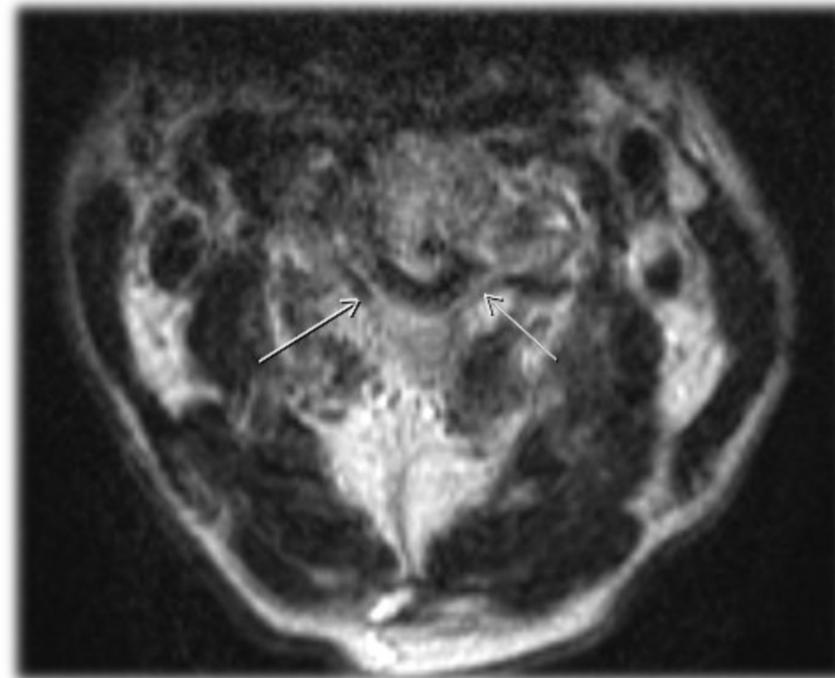
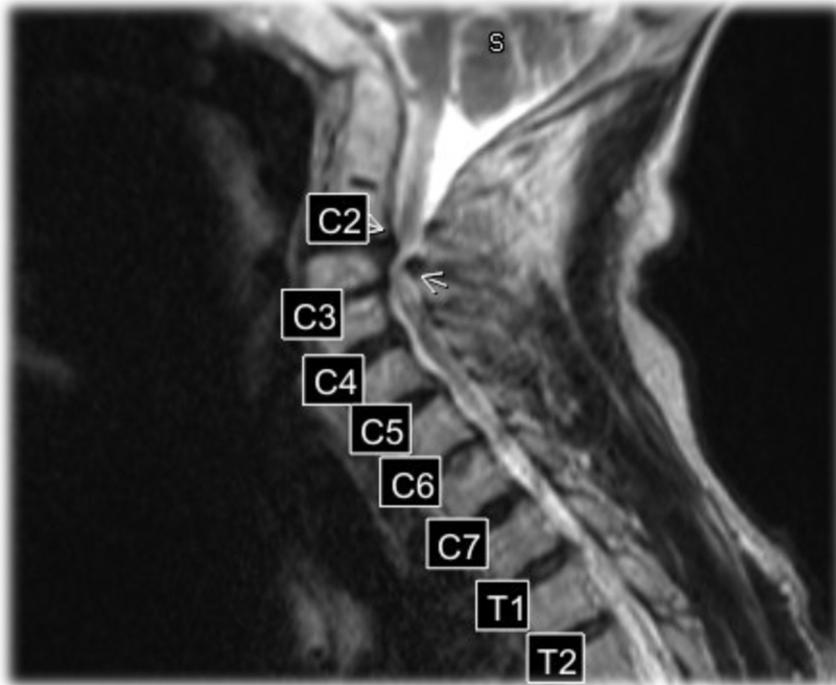
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BACKGROUND

- Spinal cord compression (SCC) or cauda equina compression (CEC) is a medical emergency that can have debilitating consequences.
- Accurate and timely diagnosis of SCC or CEC in the emergency room setting is essential to facilitate prompt decision making regarding subspecialty consultation and potential intervention.
- Preliminary interpretation of spine MRI studies during after hours is frequently performed by radiology residents at many academic institutions.

PURPOSE

- To evaluate the effect of a standardized reporting template on turn around time and accuracy of on-call radiology residents for the detection of spinal cord compression or cauda equina compression.



MATERIAL & METHODS

- Institutional Review Board approval was obtained and informed consent was waived.
- A reporting template was introduced in 2017 for the residents' preliminary interpretation of spine MRI studies in the emergency room setting.
- We conducted a retrospective review of 133 spine MRI studies performed during after-hours in 2016 (before implementation of the template) and 133 spine MRI studies performed during after-hours in 2019 (after implementation of the template), for a total of 266 spine MRI studies.

STRUCTURED REPORTING TEMPLATE

Observation	Finding
Spinal Cord Compression or Cauda Equina Compression	No Yes (level)
Cord Signal Abnormality (for example: tumor, signal abnormality, or other lesions)	Normal Abnormal (specify)
Epidural Collection (for example: hematoma, abscess, phlegmon, mass, or other)	No Yes (specify)
Other Findings	No Yes (specify)

This template was introduced in 2017 to aid on-call radiology residents in preliminary interpretation of Spine MRI studies in the Emergency Room setting.

MATERIAL & METHODS

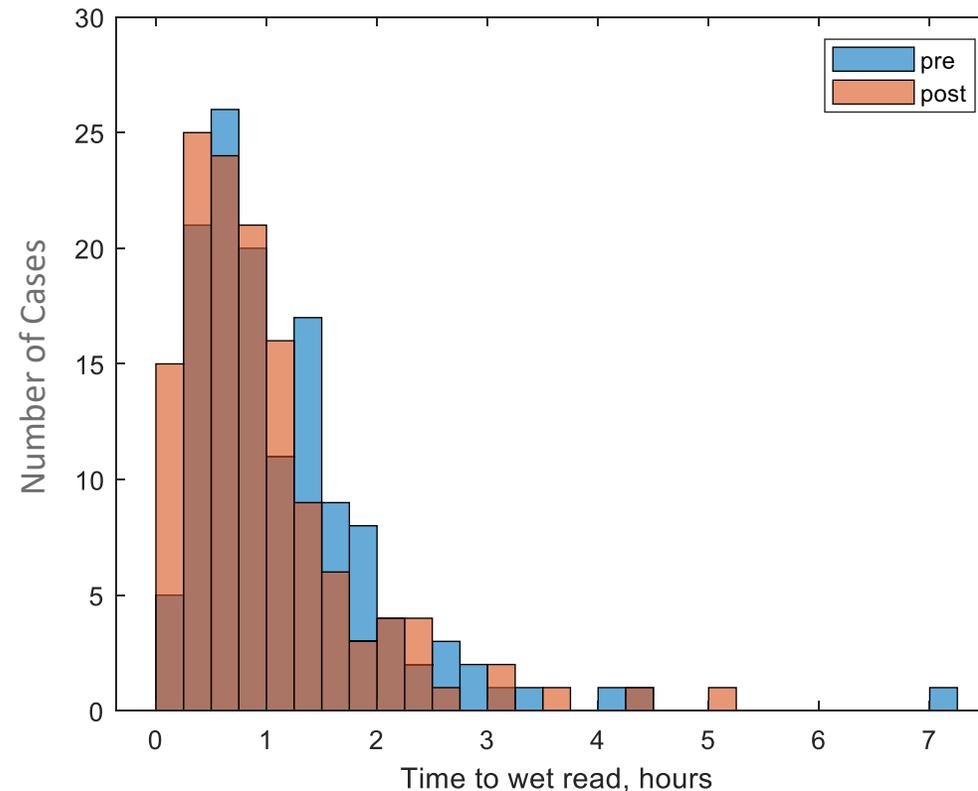
- The accuracy of on-call radiology residents' preliminary interpretations of spine MRI studies and their turnaround times were compared before and after implementation of the reporting template.
- Turnaround time was defined as the time between the last image acquired by the MRI scanner, and time at which the preliminary read was entered by the resident.
- Accuracy of the resident preliminary read was determined as any clinically significant change from the final Attending read (often issued the following day).

RESULTS

- Statistically significant reduction in turnaround times for preliminary interpretations of spine MRI studies after implementation of the reporting template with the median turnaround time of **47 minutes** after the implementation of the template versus **54 minutes** for the group prior to implementation of the template ($p = 0.032$).

RESULTS

- Preliminary reads on spine MRI's issued at 75 minutes or longer by On-Call Residents, were significantly more often for the group prior to implementation of the template ($p = 0.023$).



RESULTS

- Radiology residents correctly identified the absence or presence of SCC or CEC in nearly all the cases before and after implementation of the reporting template.

	Prior to Template	After Template
Total Number of Cases	133	133
Positive for SCC/CEC	27	33
Resident Preliminary Read True Positive	25	32
Resident Preliminary Read False Negative	2	1
Sensitivity	93%	97%
Specificity	100%	100%

CONCLUSION

- The structured reporting template allows quicker turnaround times of preliminary reports while maintaining the accuracy of radiology residents for the detection of spinal cord compression or cauda equina compression in the after-hours emergency room setting.

THANK YOU FOR YOUR ATTENTION!

Please feel free to contact us if you have any questions.

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