

Neuroradiology MRI Second Opinion Interpretations

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Introduction

- Neuroimaging MRI studies performed at outside facilities for patients who are subsequently transferred to BIDMC are often submitted to the Radiology department for second opinion interpretation.
- Through discussion with BIDMC referrers and review of reports from other centers, the ostensible benefits of this practice are several-fold, but appear to primarily revolve around 1) perceived increase in sophistication and accuracy of the read received, which may alter the management of the patient 2) documentation of imaging findings in BIDMC's electronic medical record, for purposes of justifying subsequent management and care decisions made here.
- Problems perceived from the neuroradiologist perspective is that the volume of these cases has been subjectively increasing over time, the quality of the MRI studies received is variable, and the actual versus perceived benefit to the patient/referrer is unclear.
- The scope of this project was to collect and describe recent data on second opinion MRI read requests and results in the department of Radiology's Neuroradiology division.

Aim and Methods

- Collect preliminary data on the departmental PACS on recent second opinion MRI requests in the division of Neuroradiology, including details such as the origin of the original interpretation
- Analyze rates of discrepancy of the initial interpretation as compared to the second interpretation performed at BIDMC
- Categorize any such discrepancies as "major" or "minor", and additionally note if there was a "missed diagnosis" or "misdiagnosis" on the initial interpretation
- Examples of major discrepancies included missed tumors or fractures, other missed diagnosis, misdiagnosis, missed incidental findings that would change management (e.g. large AAA which was unknown to care team seen on lumbar spine MRI). Examples of minor discrepancies include small (e.g. <5 mm) pulmonary nodules, adrenal adenomas (or other similar non-emergent but not-mentioned incidental findings) and clearly chronic findings that were not mentioned in original report (e.g. chronic lacunar infarcts).

References:

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- 2) Lysack JT, Hoy M, Hudon ME, et al. Impact of neuroradiologist second opinion on staging and management of head and neck cancer. *J Otolaryngol Head Neck Surg.* 2013;42:39.
- 3) Zan E, Yousem DM, Carone M, Lewin JS. Second-opinion consultations in neuroradiology. *Radiology.* 2010;255(1):135-41.
- 4) Briggs GM, Flynn PA, Worthington M, Rennie I, McKinstry CS. The role of specialist neuroradiology second opinion reporting: is there added value?. *Clin Radiol.* 2008;63(7):791-5.

Results and Discussion

- Over a 6-month period from September 2018 – March 2018, sixty-six (66) total neuroradiology second opinion interpretations were performed for MRI studies
- Of these 5 were excluded due to lack of availability of the original report
- Of the remaining 61, 13 reads (21%) were discrepant
- Of 13 discrepant reads, 4 (6.5%) were considered "major", and 9 (15%) were considered "minor"
- Of the 4 discrepant reads, one was a "misdiagnosis", the other 3 were "missed diagnoses"
- The rates of discrepancy seen in our review of recent data were similar to previously reported data at other centers (3, 4)
- Prior studies of more extensive data sets at other facilities utilizing confirmatory follow-up data, either imaging and/or pathologic data, have suggested that the second opinion subspecialty reads are of higher accuracy than original general radiology (non-subspecialty) reports (2, 3)

Future Interventions

- These results suggest that as has been found at other centers, there is a similar level of benefit to be derived from subspecialist re-interpretation here of neuroimaging studies performed elsewhere, however further study including confirmation with follow-up imaging and pathologic data may be of utility at our own center
- Data should also be collected on larger time-frames than the small initial sampling here, in order to confirm the findings of this small sample
- In addition, data on CT could be obtained and analyzed for similar trends
- Further sub-analysis of the CAQ (Neuroradiology sub-specialization certification) status of the original outside reader could be performed to explore the intuitive hypothesis that it is the subspecialty training, or lack thereof, of the reader that specifically correlates with the accuracy of the read as assessed by follow-up imaging and/or pathologic data

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