Change in Clinical Management as Influenced by Time and Finding Discrepancies Between Preliminary and Final Radiology Reports

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Authors and Disclosures

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Purpose

- The purpose of this project is to determine the impact on clinical care caused by changes in preliminary reports drafted by resident radiologists by board-certified attending radiologists providing over-reads.

Materials and Methods

- The Radiology Department at UF Health Jacksonville uses a quantitative system to grade resident reports for accuracy of findings. This grading system assigns resident reports a numeric value of one to four (1 - Concur with interpretation, 2 – Understandable miss, 3 – Finding should be made most of the time, 4 – Finding should always be made).

Materials and Methods

- Report data was reviewed between 4/2016 and 9/2016 and loaded into an Access database for analysis and sorting with reports receiving a 3 or 4 being further assessed for time of preliminary report, time of final report, and influence on clinical management.
- Differences in time between preliminary report and final report were calculated and mapped to a 24 hour clock for temporal analysis in correlation with discrepancy level.
- Change in clinical management was defined as a change in treatment by the clinical team directly resulting from the change in the radiology report.

Results

- 544 total cases were reviewed of which 100 reports (18.4%) equaled a level of 3 or 4.
- Of those 100, 76 were level 3 and 24 were level 4. 80 studies resulted in no change in management (61 level 3, 19 level 4) with an average time to finalization of 8.31 +/- 5.07 hours (range 0.12 - 22.93 hours). 20 studies resulted in a change in management (15 level 3, 5 level 4) with an average time to finalization of 8.24 +/- 3.86 hours (range 0.78 - 18.88 hours).

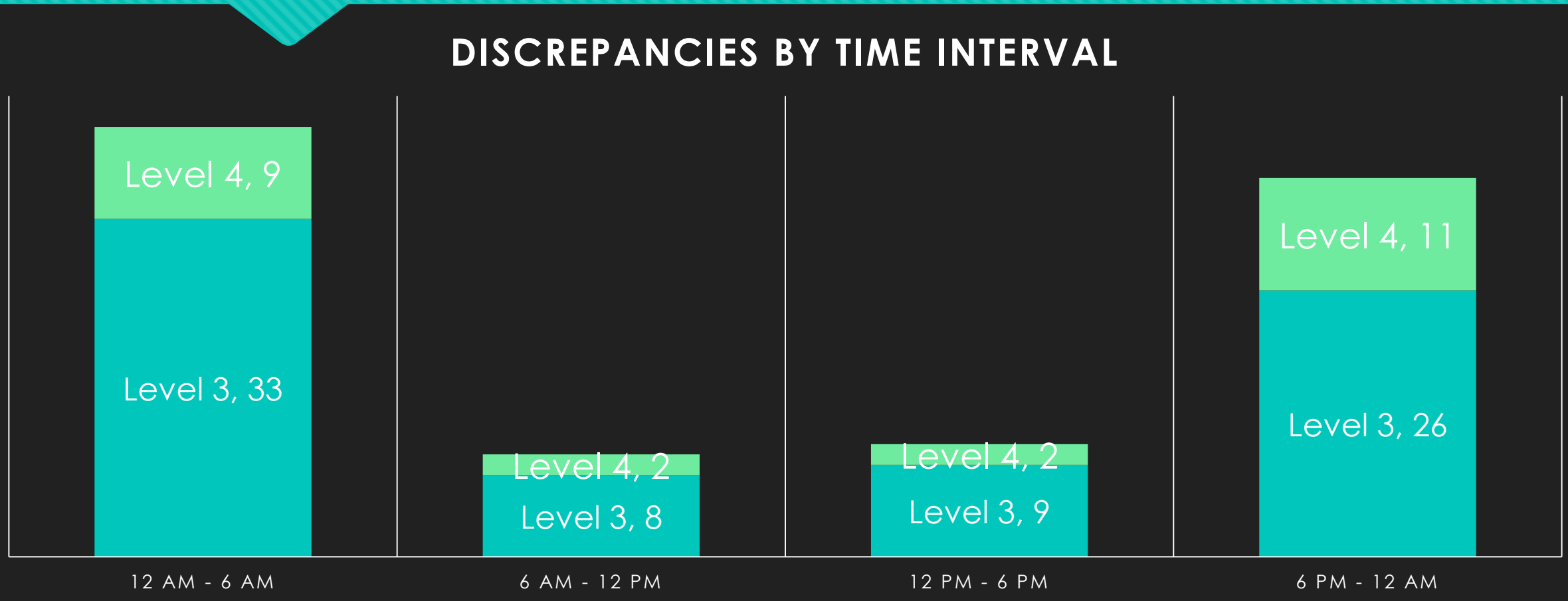
Results

- Of the obtained studies level 3 and 4 studies, average times were 8.02 +/- 4.78 (N=76, range 0.12 - 19.43 hours) and 9.17 +/- 5.0 hours (N=24, range 1.17 - 22.93 hours)
- 80 studies resulted in no change in management with an average time to finalization of 8.31 +/- 5.07 hours (range 0.12 - 22.93 hours). 20 studies resulted in a change in management with an average time to finalization of 8.24 +/- 3.86 hours (range 0.78 - 18.88 hours).

Results

- In combination of level and change in management:
- Level 3, no change – 8.02 +/- 4.94, N = 61, range 0.12 – 19.43 hours
- Level 3, change – 8.03 +/- 4.18, N = 15, range 0.78 – 18.88 hours
- Level 4, no change – 9.25 +/- 5.47, N = 19, range 1.17 – 22.93 hours
- Level 4, change – 8.86 +/- 2.95, N = 5, range 4.43 – 12.25 hours

Results



*Information Labels specified by Error Level and Number in that Level

Results

Sorted Descriptive Statistics Combinations by Change in Management and Discrepancy Level

Times and Samples Sizes by Discrepancy Level

Discrepancy Level	Average Hours to Finalization	Standard Deviation	Minimum Time	Maximum Time	Sample Size
3	8.02	4.78	0.12	19.43	76
4	9.17	5.00	1.17	22.93	24

Times and Samples Sizes by Change in Management

Change in Management	Average Hours to Finalization	Standard Deviation	Minimum Time	Maximum Time	Sample Size
No	8.31	5.07	0.12	22.93	80
Yes	8.24	3.86	0.78	18.88	20

Times and Samples Sizes by Change in Management and Discrepancy Level

Change in Management	Discrepancy Level	Average Hours to Finalization	Standard Deviation	Minimum Time	Maximum Time	Sample Size
No	**3**	8.02	4.94	0.12	19.43	61
No	**4**	9.25	5.47	1.17	22.93	19
Yes	**3**	8.03	4.18	0.78	18.88	15
Yes	**4**	8.86	2.95	4.43	12.25	5

Conclusion

- Based on results of 100 reports, there is evidence to suggest that meaningful clinical changes in management occur based on corrections to preliminary reports. These changes can be delayed by minutes or, in extreme cases, 20+ hours; however, in extreme cases of delay in time to finalization (>12 hours), these rarely resulted in change in management (N = 23).

Conclusion

- Most corrected resident reports were drafted during the hours of 12 AM and 6 AM (N = 42). While many factors may play a role in most misses occurring between 12 AM and 6 AM, resident fatigue/sleep deprivation could be a contributing cause.