SAFETY & QUALITY REVIEW OF A LARGE **CORPORATE HOSPITAL** RADIOLOGY UNIT

LEAR MEDICAL LIMITED

Contents

Introduction

Ensuring high standards of safety and quality in radiology is paramount for patient care. This case study presents the findings of a comprehensive review conducted by Lear Medical on the Radiology Department of a world-renowned hospital group. The review aimed to assess Safety, Productivity, Efficiency, and Quality (SPEQ) while identifying areas for improvement.

Background

Lear Medical partnered with the Hospital Group to conduct an independent, third-party review of its radiology department. The retrospective study examined 530 cases consisting of CT and MRI scans from a single unit, covering the period from December 1, 2022, to May 3, 2023. The review analysed critical safety and quality parameters using anonymized data, ensuring unbiased assessment.

Methodology

Lear Medical implemented a structured review methodology based on SPEQ metrics:

- **Safety:** Identification of discrepancies and compliance with best practices.
- **Productivity:** Radiologist workload and performance.
- **Efficiency:** Turnaround times and workflow effectiveness.
- **Quality:** Accuracy and consistency of radiology reports.

CAT 1	A significant discrepancy that will undoubtedly affect patient care
CAT 2	A moderate discrepancy that could affect patient care
CAT 3	A minor discrepancy or incidental finding that may not affect patient care
CAT 4	Grammatical error or minor discrepancy
CAT 5	No discrepancy

Findings

Safety (Score: 93%)

- 11.7% of reports had serious discrepancies (CAT 1-3).
- 7 CAT 1 discrepancies were identified, with failure to recognize critical findings in some cases.
- Abdomen/Pelvis scans, constituting 23% of cases, accounted for 37% of serious errors.
- 37% of cases lacked documented communication of critical findings to referring physicians.
- 42% of reports had inadequate conclusions.

Productivity (Score: 80%)

- Radiologists reported 74% of studies between 11:00 AM - 5:00 PM.
- No data on turnaround times (TAT) or resource utilization was available.

Efficiency (Score: 80%)

- Most reports were generated between 11:00 AM - 2:00 PM, suggesting peak workload pressures.
- Limited data availability restricted comprehensive efficiency assessment.

Quality (Score: 84%)

- Radiologists scored between 84%-85%.
- Images were of diagnostic quality in 99% of cases.
- 7% of reports lacked appropriate differential diagnoses.
- 6% of cases had inappropriate conclusions, many correlating with serious discrepancies.

Key Insights

- Communication Gaps: Critical findings were often not clearly conveyed to referring teams.
- Peak Workload Impact: The majority of discrepancies occurred during peak reporting hours.
- Specialty Training Needs: Abdomen and neuroimaging discrepancies indicate a need for focused training.
- Inadequate Report Conclusions: A high percentage of reports lacked comprehensive findings, contributing to discrepancies.

Recommendations

1. Enhance Communication Protocols: Implement a structured communication workflow ensuring all critical findings are documented and relayed to referring physicians.
2. Optimize Workflow During Peak Hours: Introduce additional quality control measures during peak reporting times (11:00 AM - 2:00 PM) to mitigate high error rates.
3. Specialized Training: Conduct targeted training sessions to improve accuracy for abdominal and neuroimaging interpretation.
4. Implement Continuous Quality Monitoring: Develop a robust internal review system to monitor reporting trends and discrepancies on an ongoing basis.
5. Increase Sample Review Size: Future reviews should include 24-hour reporting data to provide a more comprehensive assessment of department performance.

Conclusion

The Hospital Group's Radiology Department demonstrated strong performance in safety and quality, achieving an overall rating of 92% (4.7 stars). However, key areas such as communication, workload management, and report accuracy require targeted improvements. Implementing the recommended strategies will enhance patient safety, diagnostic accuracy, and operational efficiency.

This case study underscores the importance of continuous quality assurance and structured review processes in advancing radiology excellence.

References

1. Advisory Board. (2019). America performs far more CT and MRI scans than other countries. There's 'virtually no evidence' that's helpful, researchers say. Advisory Board: Retrieved from: https://www.advisory.com/daily-briefing/2019/01/23/scanning

2. Andel, C., Davidow, S, L., Hollander, M., Moreno, D, A. (2012). The Economics of Health Care Quality and Medical Errors. PubMed.gov, Retrieved from: https://pubmed.ncbi.nlm.nih.gov/23155743/

3. Barney, J. (1995). Looking Inside for Competitive Advantage. The Academy of Management Executive. 9(4): 49-61.

4. Bird, F, E., and Germain, G, L. (1969). Loss Control Management: "Practical Loss Control Leadership", Revised Edition, Det Norske Veritas (U.S.A.), 1996

5. Brady, A.P. (2017). Error and discrepancy in radiology: inevitable or avoidable? Insights Imaging 8, 171–182: Retrieved from: https://doi.org/10.1007/s13244-016-0534-1

6. Brady, A, P., Laoide, R, Ó., McCarthy, P., & McDermott, R. (2012). Discrepancy and Error in Radiology: Concepts, Causes and Consequences. National Library of Medicine: Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3609674/

7. Bruno, M, A., Walker, E, A., Abujudeh, H, H. (2015). Understanding and Confronting Our Mistakes: The Epidemiology of Error in Radiology and Strategies for Error Reduction. RSNA: Retrieved from: https://pubs.rsna.org/doi/full/10.1148/rg.2015150023

8. Goddard,P., Leslie, A., Jones, A., Wakeley, C., & Kabala, J. (2001). Error in Radiology. The British Institute of Radiology; 74: Retrieved from: https://www.birpublications.org/doi/epub/10.1259/bjr.74.886.740949

9. McMains, V. (2016). Johns Hopkins study suggests medical errors are third-leading cause of death in U.S. John Hopkins University: Retrieved from:https://hub.jhu.edu/2016/05/03/medical-errors-third-leading-cause-of-death/

10. NHS Resolution's Annual report and accounts 2019/2020. (2020). Retrieved from: https://resolution.nhs.uk/2020/07/16/nhs-resolutions-annual-report-and-accounts-2019-20/

11. Patient Safety Learning: Retrieved from:https://www.pslhub.org/learn/patient-safety-in health-and-care/diagnosis/diagnostic-error/white-paper-the-human-cost-and-financi al impact-of-misdiagnosis-2016-r2551/

12. Pinnacle Care. (2019). White Paper: The human cost and financial impact of misdiagnosis (2016): Retrieved from: https://www.pslhub.org/learn/patient-safety-in-health-andcare/diagnosis/diagnostic-error/white-paper-the-human-cost-and-financial-impact-of-misdiagnosis-2016-r2551/

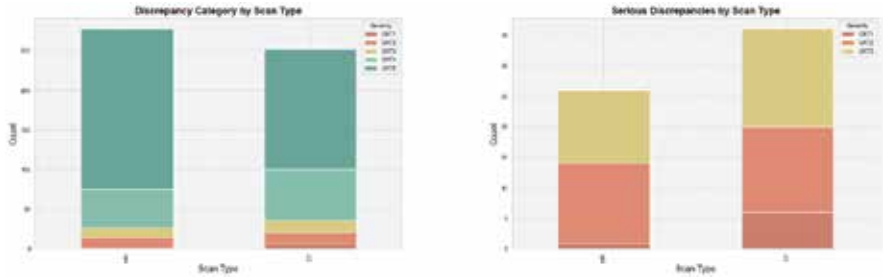
13. The Royal College of Radiologists. (2023). Clinical Radiology. UK Workforce Census 2022 Report. The RCR: Retrieved from:RCR Clinical radiology census report | The Royal College of Radiologists

14. The Royal College of Radiologists. (2018). Standards for Interpretation and Reporting of Imaging Investigations. The RCR: Retrieved from: https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr181_standards_for_interpretation_reporting.pdf

Appendices

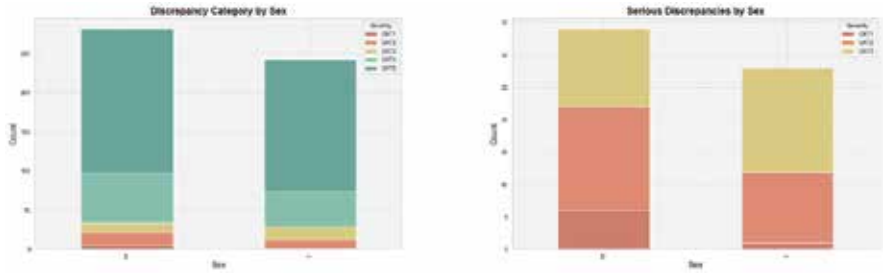
Appendix A: Supplemental Data (Review Results)

Modality (Per Lear Medical's request, we received a near 50/50 split of CT, MR cases)



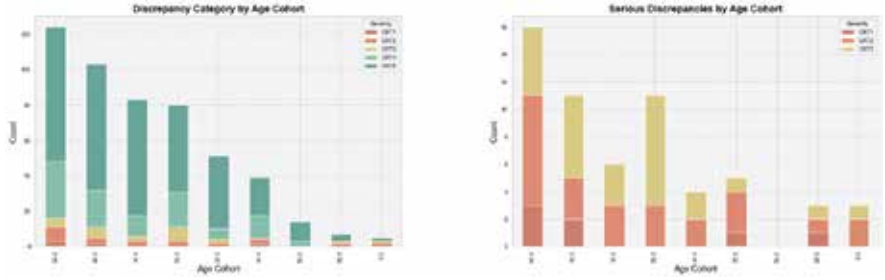
Modality Discrepancy Distribution

Patient



Gender Discrepancy Distribution

Age



Age Cohort Discrepancy Distribution

Appendix B:

Correlation of contributing factors to Serious Discrepancies

Correlation analysis was used to highlight the following questions that are statistically more likely to be graded negatively by Lear Medical's reviewers for serious discrepancies (CAT1 to CAT3). The closer a number is to 1, the stronger the correlation. Medium correlation starts at 0.5. The stronger a correlation, the darker the shade in the Correlation Heatmap below.

Factor	Correlation
Is the conclusion of the report inadequate?	0.77
Are important findings appropriately highlighted?	0.56
Have recommendations for further clinical management have been made?	0.60
Have appropriate differential diagnosis been included in the report?	0.55

Serious Discrepancies Correlation Factors