

Unveiling the diagnostic landscape: assessing the rate of positive findings in radiological imaging by the emergency department - A retrospective study (December 2022 – February 2023)

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Rationale:

Diagnostic imaging is vital for accurate diagnoses and timely treatment in the Emergency Department (ED). This retrospective study aimed to assess the rate of positive findings in ED-ordered radiology scans at NMC Royal Hospital, UAE, and to identify potential areas of overutilization.

Objectives:

The study seeks to develop a tool for judging scan appropriateness, using the rate of positive findings as a metric to evaluate imaging appropriateness. Secondary objectives included evaluating factors influencing imaging outcomes and providing recommendations to enhance patient care, reduce radiation exposure, reduce costs, and optimize resource utilization in the ED.

Methods:

Between December 2022 and February 2023, 25,343 ED visits were recorded, with 6,633 patients underwent imaging. Samples of 100 were randomly selected for each modality, X-ray, ultrasound, and CT scans, and 38 for MRI (due to limited data availability), totaling 338 samples. The study comprehensively analyzed patient clinical history, imaging requests, radiologist reports, and final diagnoses from the Electronic Medical Records (EMR) system. Only positive findings directly related to the symptoms presented by patients in the ED were considered, while incidental or non-relevant findings were excluded from the analysis.

Results:

Among the selected sample size, X-ray utilization was (4602)18.16%, CT (1507)5.95%, ultrasound (486)1.92%, and MRI (38)0.15%, representing an overall utilization rate of 26.18% (FIGURE 1).

The rates of positive findings were as follows: ultrasound showed the highest rate at (41)41%, followed by CT at (30)30%, MRI at (11)28.9%, and (28)X-ray at 28%. Overall, a rate of positive findings of 32.54% across all modalities was observed (FIGURE 2).

Discussion:

It is essential to note that the percentages of positive findings may vary depending on regional factors, patient demographics, and medical practices. Precise diagnostic imaging in the ED is crucial. Thorough and accurate documentation, which justifies the order of the imaging, along with clear communication and collaborative decision-making between ER physicians and radiologists, are essential. Seeking senior consultations for challenging cases and implementing quality assurance programs are suggested to enhance the diagnostic process.

Conclusion:

While the positive findings rate can serve as a tool for assessing scan appropriateness, it is crucial to note that judging appropriateness of scans should depend on adherence to international and local guidelines for scan indications. Implementing changes based on these findings enhances resource optimization in the ED.