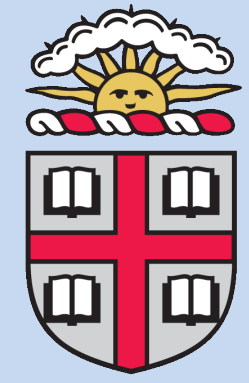
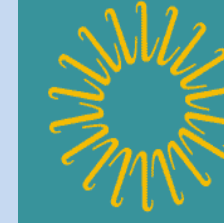


Distribution of Pediatric Imaging Acuity after Deploying Comprehensive Radiology Report Categorization System



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Background

Standardized terminology and structured reporting has become increasingly adopted by radiology departments as an effort to improve communication¹⁻⁵. Since October 2017, our 87-bed pediatric teaching hospital and associated outpatient facilities have developed and employed a unique comprehensive radiology report categorization system (RADCAT)⁶. One benefit of incorporating structured radiology reporting is its ability to foster large-scale data analysis.

RADCAT Category Definitions

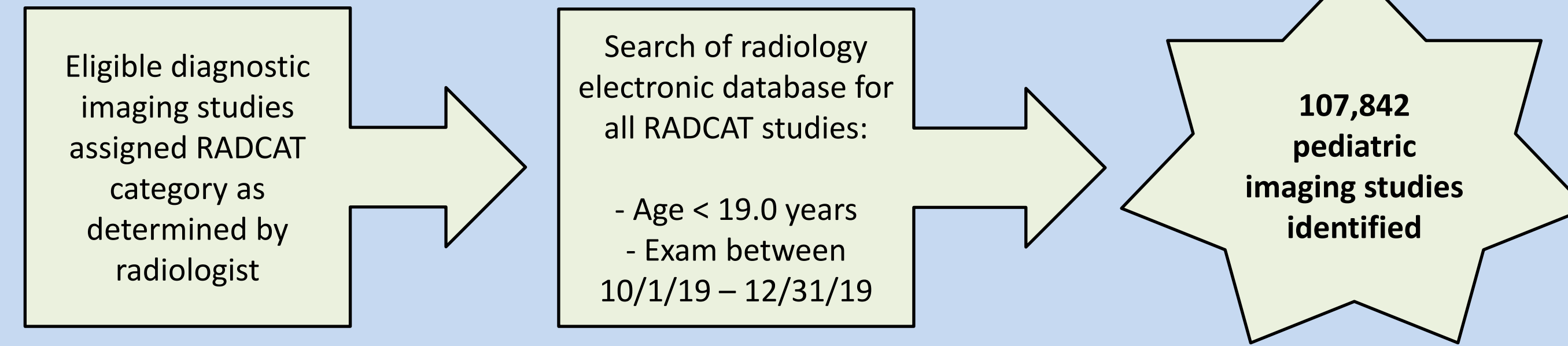
Category	Definitions
RADCAT-1: Normal result	Completely normal studies or studies with age-appropriate findings
RADCAT-2: Routine result	A) Findings unlikely to have acute clinical significance and/or B) Known significant, stable, or improving disease
RADCAT-3: Result with recommendation for non-urgent imaging follow-up	Significant but non-acute findings, for which the radiologist recommends non-urgent imaging follow-up
RADCAT-4: Priority Result	A) Findings likely to be of acute clinical significance and/or B) Findings that demonstrate progression of disease
RADCAT-5: Critical Result	Findings that our department have defined as critical, requiring immediate verbal communication and documentation of said communication within 1 hour
Combined RADCAT-3 & -4	Findings meet both RADCAT-3 and RADCAT-4 criteria
Combined RADCAT-3 & -5	Findings meet both RADCAT-3 and RADCAT-5 criteria

Table 1 Category definitions of the Radiology report categorization system (RADCAT) employed at our health system

Purpose

To evaluate and compare the acuity of imaging studies and frequency of follow-up imaging recommendations among pediatric imaging studies in the Emergency Department (ED), Inpatient, and Outpatient settings.

Methods



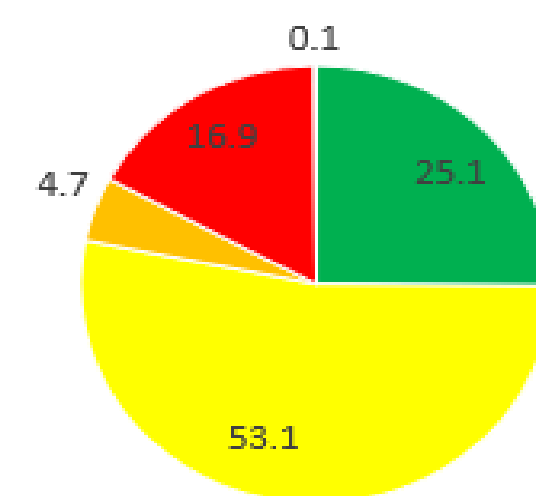
Results

RADCAT Category	Overall	Emergency Department	Inpatient	Outpatient
RADCAT-1	23828 (22.1%)	11641 (22.9%)	1081 (7.8%)	11106 (25.8%)
RADCAT-2	53374 (49.5%)	23051 (45.4%)	6846 (49.3%)	23477 (54.4%)
RADCAT-3	1939 (1.8%)	792 (1.6%)	123 (0.9%)	1024 (2.4%)
RADCAT-4	25929 (24.0%)	14226 (28.0%)	5301 (38.2%)	6402 (14.8%)
RADCAT-5	471 (0.4%)	167 (0.3%)	244 (1.8%)	60 (0.1%)
RADCAT-3 & -4	2301 (2.1%)	941 (1.9%)	299 (2.2%)	1061 (2.5%)
RADCAT-3 & -5	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total	107842	50818	18394	43130

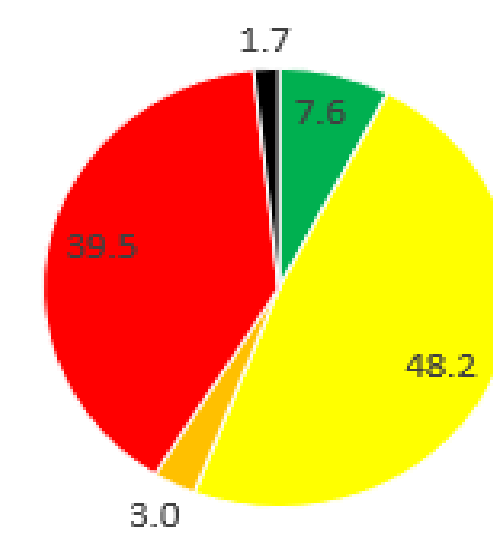
Table 3. Pediatric RADCAT assignment distribution data

RADCAT Category	Definition
1	Normal Study
2	Routine Study
3	Result with recommendation for non-urgent follow-up
4	Priority result
5	Critical Result

Emergency Department (%)



Inpatient (%)



Outpatient (%)

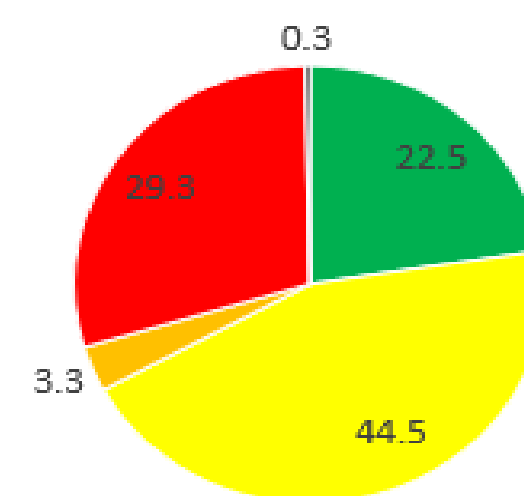


Figure 1. Distribution of pediatric RADCAT categories across clinical settings. Studies with two RADCAT grades counted towards both assigned categories

Discussion

- Overall, 3.9% of pediatric studies had recommendations for non-urgent follow-up imaging, with the highest rate among outpatient studies (4.7%).
- Overall, 0.4% of pediatric studies had critical results warranting immediate communication between the radiologist and clinical provider, with the highest rate among inpatient studies (1.7%).
- There were a greater proportion of high acuity studies (RADCAT-4 and RADCAT-5) among pediatric inpatient imaging compare to ED or outpatient imaging

Conclusions

Using our standardized radiology report categorization system, we performed data analysis regarding imaging result acuity and recommendations for follow-up imaging in over 100,000 pediatric studies across three clinical settings.

Acknowledgments

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