

Economic Impact of Imaging Associated with Dog Bites in Children's Hospitals, 2021-2022

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PURPOSE

Dog bites are a common patient presentation in pediatric emergency departments. Not only can dog bites result in devastating morbidity and/or mortality to a child, but they can also result in prominent healthcare costs. While imaging may not be required for all patients presenting with dog bites, imaging costs can contribute to emergency department cost. This study examines trends involved in dog bite related presentations to children's hospital emergency departments including the economic impact.

INTRODUCTION

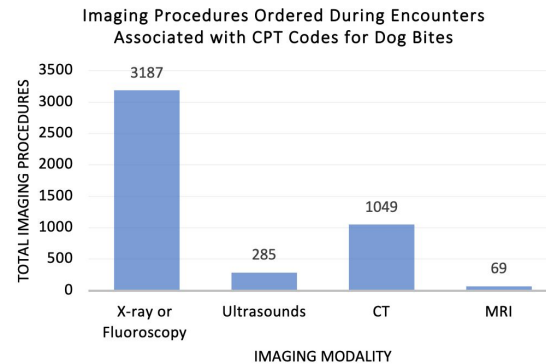
Pediatric patients presenting to the emergency department with dog bites may have a wide array of injuries that may require imaging. This can include, but is not limited to, soft tissue infections, fractures of the limbs, trunk, and skull, injury to the eyeball, and intracranial injury (1). Imaging may be essential to rapidly diagnose and treat patients.

MATERIALS AND METHODS

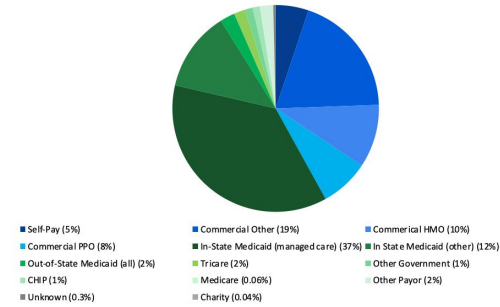
The Pediatric Health Information System database was utilized for this study. This is a database of participating Children's Hospital Association facilities. A search for procedures associated with the CPT code W54.0XXA from July 1, 2021 through June 30, 2022 was employed. Total cost of imaging related to these encounters was calculated, and the imaging modalities used were reviewed. Data was assessed for seasonality as well.

RESULTS

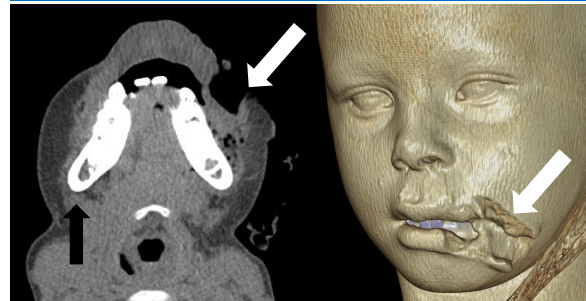
The demographics of the patients with this diagnosis code included 28% classified as Hispanic (with the US Census noting approximately 19% of the US as Hispanic), and 20% classified as African American. It was also noted that only 37% of patients had commercial health insurance (8% Commercial PPO, 10% Commercial HMO, and 19% Commercial Other), while 51% utilized Medicaid as the primary source of payment (37% In-State Medicaid (managed care), 12% In-State Medicaid (other), and 2% Out-of-State Medicaid). Using the imaging summary report, 4,887 imaging procedures were ordered during encounters associated with CPT codes for dog bites resulting in total charges of **\$5,546,159.68**. Total procedures included 3,187 x-ray or fluoroscopy procedures, 285 ultrasounds, 1,049 CT's, and 69 MRI's. There was no significant seasonality associated with the number or imaging procedures order for dog bite related encounters noted. The fewest imaging procedures were ordered in September (337) and January (338), and the most were ordered in June (475).



Primary Source of Payment



EXAMPLE



Axial CT with 3-dimensional reformat of a 6-year-old female who suffered a dog attack. Arrows indicate soft tissue defects due to the bite

EXAMPLE



Radiograph of a 7-year-old male who sustained multiple dog bites to the left lower leg. Black arrow indicates a puncture fracture of the upper right tibial diaphysis. White arrow shows a soft tissue laceration.

DISCUSSION

X-rays were the most commonly ordered imaging modality for dog bite related encounters, followed by CT, ultrasound, and MRI respectively. This may reflect the location as well as severity of injuries commonly sustained in dog bites. The economic impact of said imaging can be significant and thus it may be important for physicians to order imaging judiciously to prevent unnecessary costs to the patient as well as the hospital.

CONCLUSIONS

Imaging related to dog bites in children is a significant source of healthcare costs at children's hospitals. Dog bites treated at children's hospitals are disproportionately associated with Hispanic children compared to the US population, though this may reflect greater preponderance of Hispanic children at children's hospitals in general in light of the observed rate of associated commercial payers.

REFERENCES

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2. Borg BA, Kato PJ, Donoghue L, Shanti CM. Utilization of Imaging in the Management of Pediatric Dog Bites. *Pediatr Emerg Care.* 2022 Jan 1;38(1):e431-e435. doi: 10.1097/PEC.0000000000002317. PMID: 34986595.