

Oral Injuries and Child Abuse

LDI SUMMER HEALTH SERVICES RESEARCH FELLOWSHIP

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Please note this presentation contains content, including images, that may be triggering for some individuals. Please feel free to leave at any time, and take care of yourself!



PROJECT OVERVIEW

The Child Abuse Pediatrics Network (CAPNET) is a database that covers multiple hospitals across the US in which data is entered from the medical charts of children under 10 years old receiving a child abuse pediatrician (CAP) consult.¹

CAP consults are completed within 1 month of the suspected abuse episode and may be performed across multiple care settings and/or remotely.

1. Wood, Joanne N et al. "Child Abuse Pediatrics Research Network: The CAPNET Core Data Project." *Academic pediatrics* vol. 23,2 (2023): 402-409. doi:10.1016/j.acap.2022.07.001

SIGNIFICANCE OF CAPNET

Standardization

CAPNET standardizes data elements, definitions, and collection processes.

Variability

By collecting data across 10 different hospitals, CAPNET is able to identify rare forms of abuse and injuries that may not occur at a singular care site.

Additionally, data collection methods account for variability across sites and catching needed data by not solely relying on diagnostic and billing codes.

Research

CAPNET was developed to aid researchers in answering questions about child abuse with a wide variety of ages, types of injuries, care settings, and more.

PROJECT AIMS

- Aim 1: Elucidate the prevalence of oral injuries amongst children evaluated by a CAP
- Aim 2: Determine how, if at all, dental health care professionals (DHCPs) are involved in CAPNET
- Aim 3: Highlight the importance of child abuse and maltreatment training

METHODS

- Aims 1 and 2
 - Children < 10 years
 - Seen at a CAPNET participating hospital between 2/1/21 and 9/30/22
 - Consulted by a CAP in person or remotely
 - An encounter is defined as the abusive episode and roughly a month afterwards
 - CAPNET collects data on
 - Demographics
 - Reported, lack of, and/or changing trauma history
 - Presenting signs and symptoms from source of referral exam
 - CAP consult examination findings
 - Relevant laboratory and radiology results
 - Injury diagnosis and outcomes
- Aims 1, 2, and 3
 - Literature review conducted via PubMed
- Data analysis completed in Excel

CHILD ABUSE: AIM 1²

CPS involvement

68% of cases were referred to CPS prior to CAP evaluation, whereas only 12% were reported to CPS after CAP consult

Level of concern

43% of cases had no or low level of concern (1 or 2). 42.7% had a score of 3 or greater, reflecting mild concern to substantial evidence of an inflicted injury. 14.2% were classified as definite abuse.

Common

Bruises, fractures, and traumatic brain injuries most common, with TBIs diagnosed in nearly 1/3 of infants evaluated. The incidence of TBIs decreases with increasing age. Scalp swelling is also more frequently encountered.

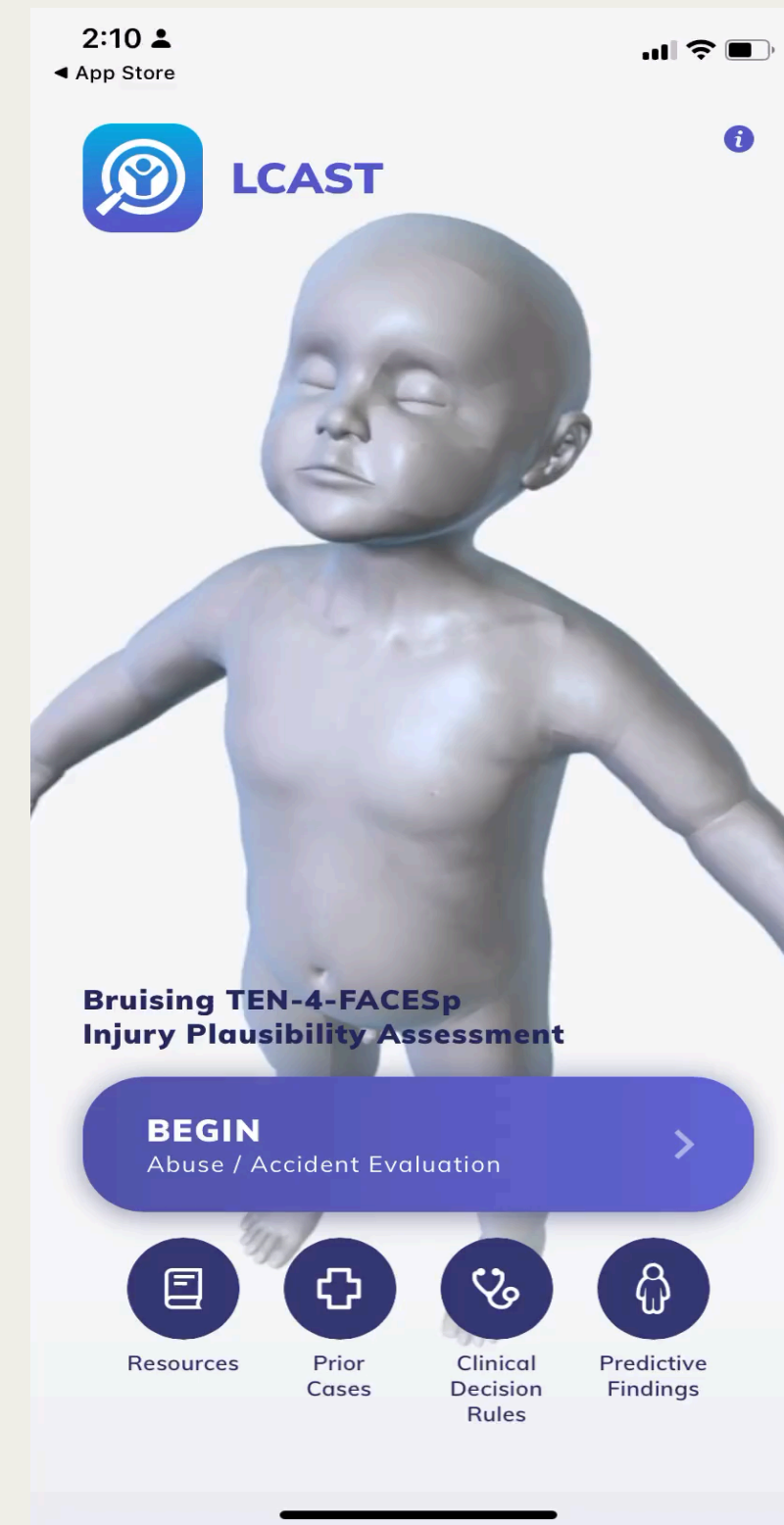
Uncommon

Burns, abdominal injuries, and spine injuries are uncommon.

². Wood, Joanne N et al. "Child Abuse Pediatrics Research Network: The CAPNET Core Data Project." *Academic pediatrics* vol. 23,2 (2023): 402-409. doi:10.1016/j.acap.2022.07.001

CHILD ABUSE: AIMS 1 AND 3

- Bruising clinical decision rule (BCDR)³
 - Infants and young children at highest risk
 - Bruising is commonly recognized as a sentinel injury
 - TEN-4-FACESp clinical decision rule
- Fractures⁴
 - Classic metaphyseal lesions (CMLs) are highly suggestive of abuse
 - 80% and 25% of fractures occur in children < 18 months and < 1 year, respectively

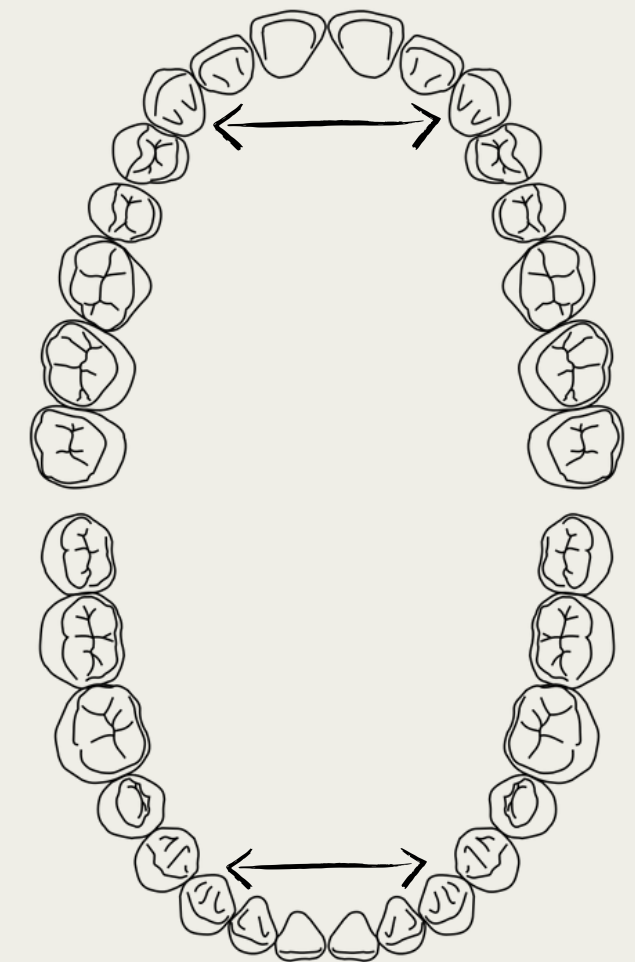


³.Flaherty, Emalee G et al. "Evaluating children with fractures for child physical abuse." Pediatrics vol. 133,2 (2014): e477-89. doi:10.1542/peds.2013-3793

⁴.Pierce, Mary Clyde et al. "Validation of a Clinical Decision Rule to Predict Abuse in Young Children Based on Bruising Characteristics." JAMA network open vol. 4,4 e215832. 1 Apr. 2021, doi:10.1001/jamanetworkopen.2021.5832

PHYSICAL ABUSE: AIM 1

- The mouth is a target for abuse because it is associated with the child's self, being, communication, and nutrition⁵
 - 50-75% of cases of child abuse involve craniofacial, face, and neck injuries⁶
 - Lips > oral mucosa > gingivae > tongue⁷
- Physical abuse⁸
 - Burns, lacerations, fractures, bite marks, and bruises
 - Teeth may appear darkened or non-vital on exam
 - Multiple residual roots or new malocclusion with no history for injury



⁵. Barbi, Wagisha et al. "Evaluation of the Orofacial Features in the Victims of Abuse and Neglect of 5-16-Year-old Age Children." *Journal of pharmacy & bioallied sciences* vol. 13, Suppl 2 (2021): S1705-S1708. doi:10.4103/jpbs.jpbs_230_21

⁶. Bsoul, Samer A et al. "Reporting of child abuse: a follow-up survey of Texas dentists." *Pediatric dentistry* vol. 25,6 (2003): 541-5.

⁷. Fisher-Owens, Susan A et al. "Oral and Dental Aspects of Child Abuse and Neglect." *Pediatrics* vol. 140,2 (2017): e20171487. doi:10.1542/peds.2017-1487

⁸. Jessee, S A. "Orofacial manifestations of child abuse and neglect." *American family physician* vol. 52,6 (1995): 1829-34.

Image from Human dental arches, https://commons.wikimedia.org/wiki/File:Human_dental_arches.svg. Accessed 9 Aug. 2023.

DENTAL NEGLECT: AIM 1

- Dental neglect⁹
 - Rampant or early childhood caries
 - Maxillary dentition > mandibular
 - Untreated pain, infection, or oral disease
 - Lack of continuity of oral health care
 - Uncorrected malocclusion
 - Adolescents at higher risk than young children
 - Neglect leads to pain, inflammation, frequent antibiotic usage, malnutrition, delays in speech development, and general impacts on life

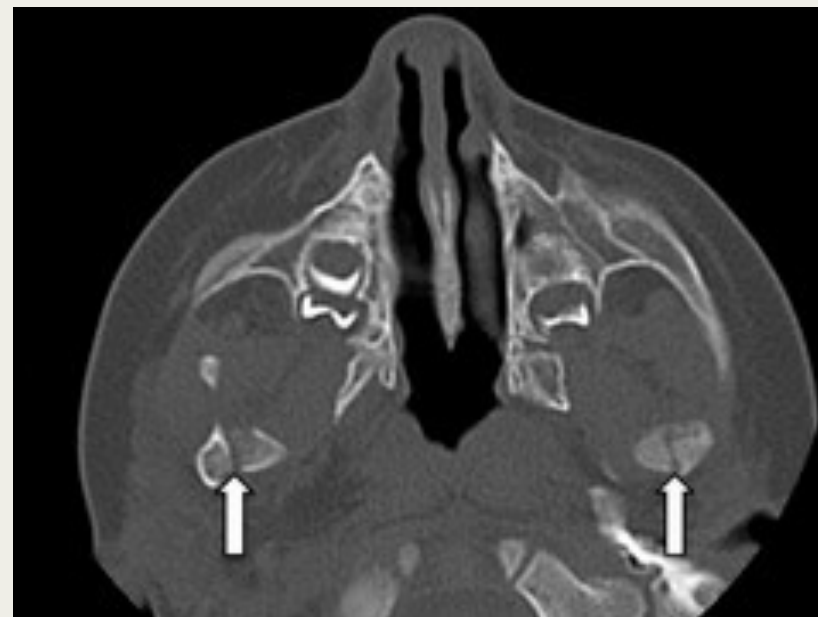


⁹ . . Kiatipi, Maria et al. "Dental Neglect in Children: A Comprehensive Review of the Literature." The journal of contemporary dental practice vol. 22,2 199-204. 1 Feb. 2021

Images from Oral and Ocular Manifestations of Child Maltreatment, downloads.aap.org/DOPu/Visual%20Diagnosis%20of%20Child%20Abuse%204e/data/visuallibrary/A6%20Oral%20Oracular%20Manifestations/index.html. Accessed 4 Aug. 2023.

SEXUAL ABUSE: AIM 1

- Sexual abuse¹⁰
 - Many have no obvious signs
 - Various STIs, such as gonorrhea, which is pathognomonic for abuse
 - Erythema and petechiae, especially at the junction of the hard and soft palate or the floor of the mouth
 - Frenula tears



¹⁰. Jessee, S A. "Orofacial manifestations of child abuse and neglect." American family physician vol. 52,6 (1995): 1829-34.

Aim 2: 50% of dentists reported at least 1 encounter of suspected child abuse, but only 25% reported it.¹¹

DENTAL REPORTING OF ABUSE: AIMS 2 AND 3

- The ratio of suspected abuse encounters to reports made has not changed over time¹²
- Reasons dentists do not report suspected child abuse¹³
 - Lack of confidence in diagnosis
 - Lack of knowledge about child abuse and dentists' role
 - No CODA standard for child abuse
 - 84% dentists surveyed recognized legal responsibility to report
 - Fear of damage to practice
 - Fear of litigation
 - Reluctance to confront parents
 - Lack of confidence in social service system

¹². Bsoul, Samer A et al. "Reporting of child abuse: a follow-up survey of Texas dentists." Pediatric dentistry vol. 25,6 (2003): 541-5.

¹³. Jessee, S A. "Orofacial manifestations of child abuse and neglect." American family physician vol. 52,6 (1995): 1829-34.

ENCOUNTERS 2/1/21-9/30/22: AIMS 1 AND 2



6,863

500

25

6,863 encounters total

The CAPNET database captured 6,863 individual encounters during this time period. 6,737 were unique patients.

500 encounters at CHOP

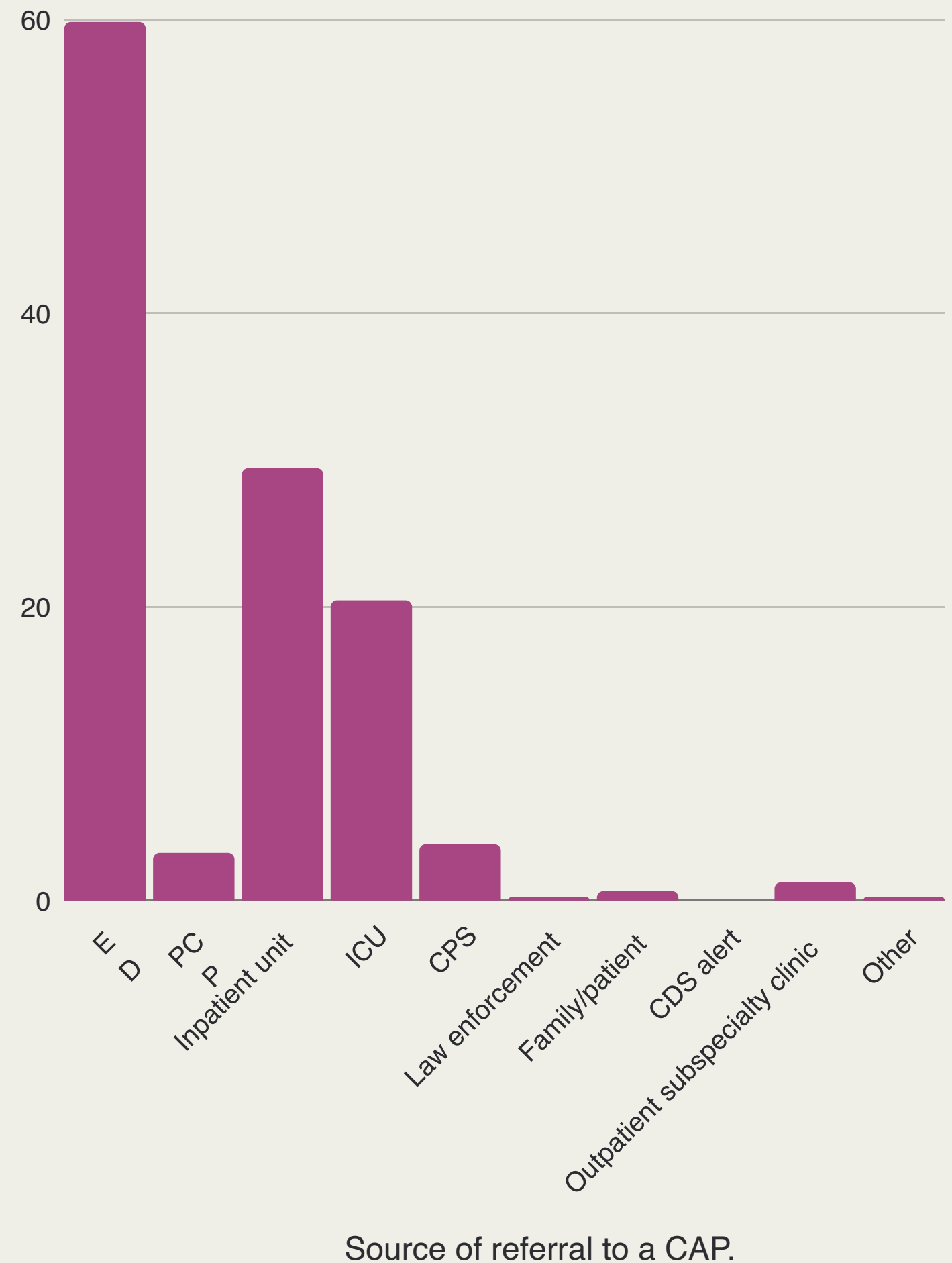
500 encounters in the database for this time period were done in a CHOP care facility. 494 were unique patients.

25 encounters with oral injury

Of the 500 encounters at CHOP, 25 of them included some form of oral injury found during the CAP evaluation.

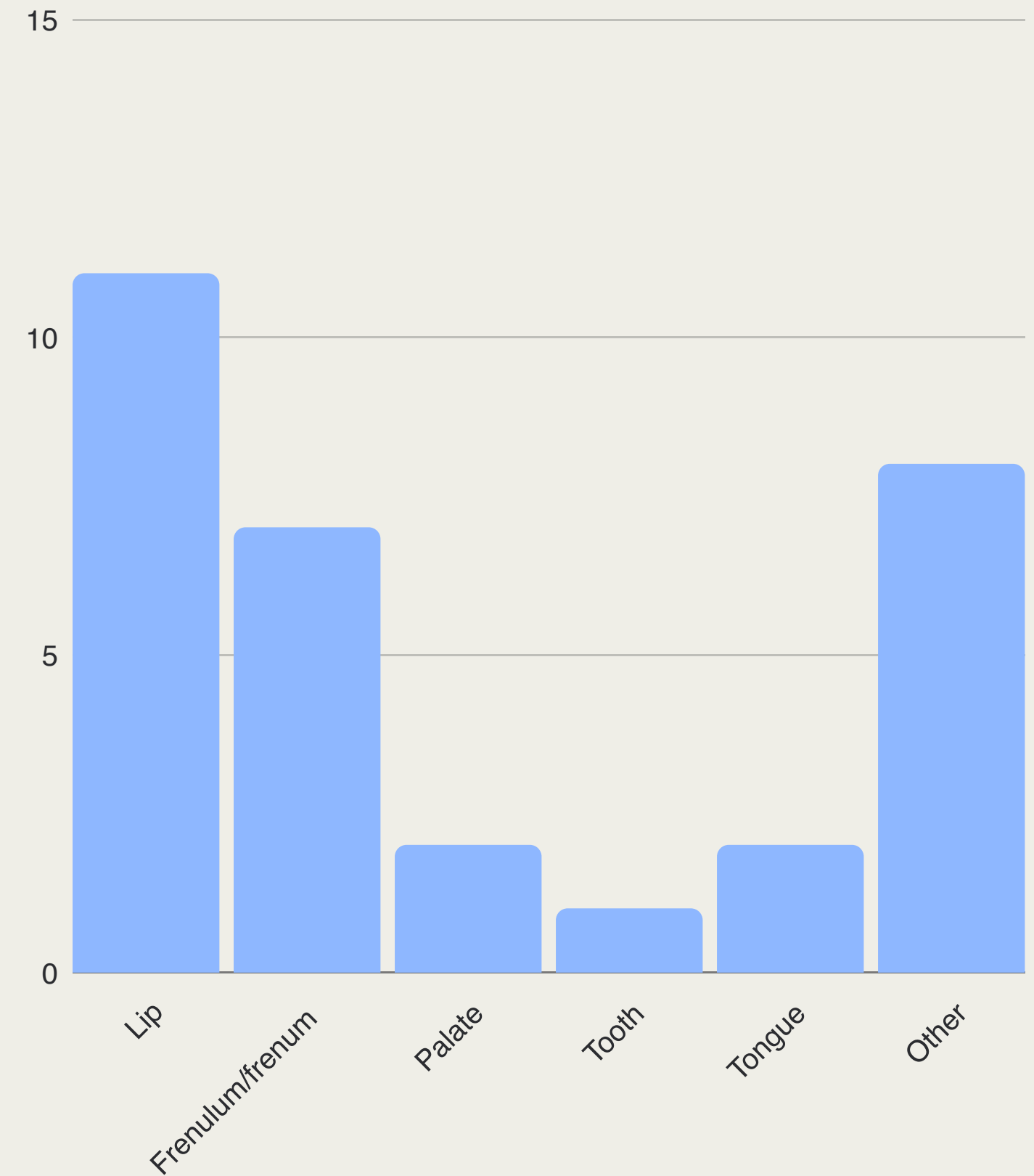
REFERRALS: AIM 2

Most encounters were referred to CAPs from the emergency department (59.8%), followed by various inpatient units and the ICU. The only "other" source of referral was one outpatient physician specializing in interventional radiology. Therefore, no DHCPs referred to CAPs.



ORAL INJURIES: AIM 1

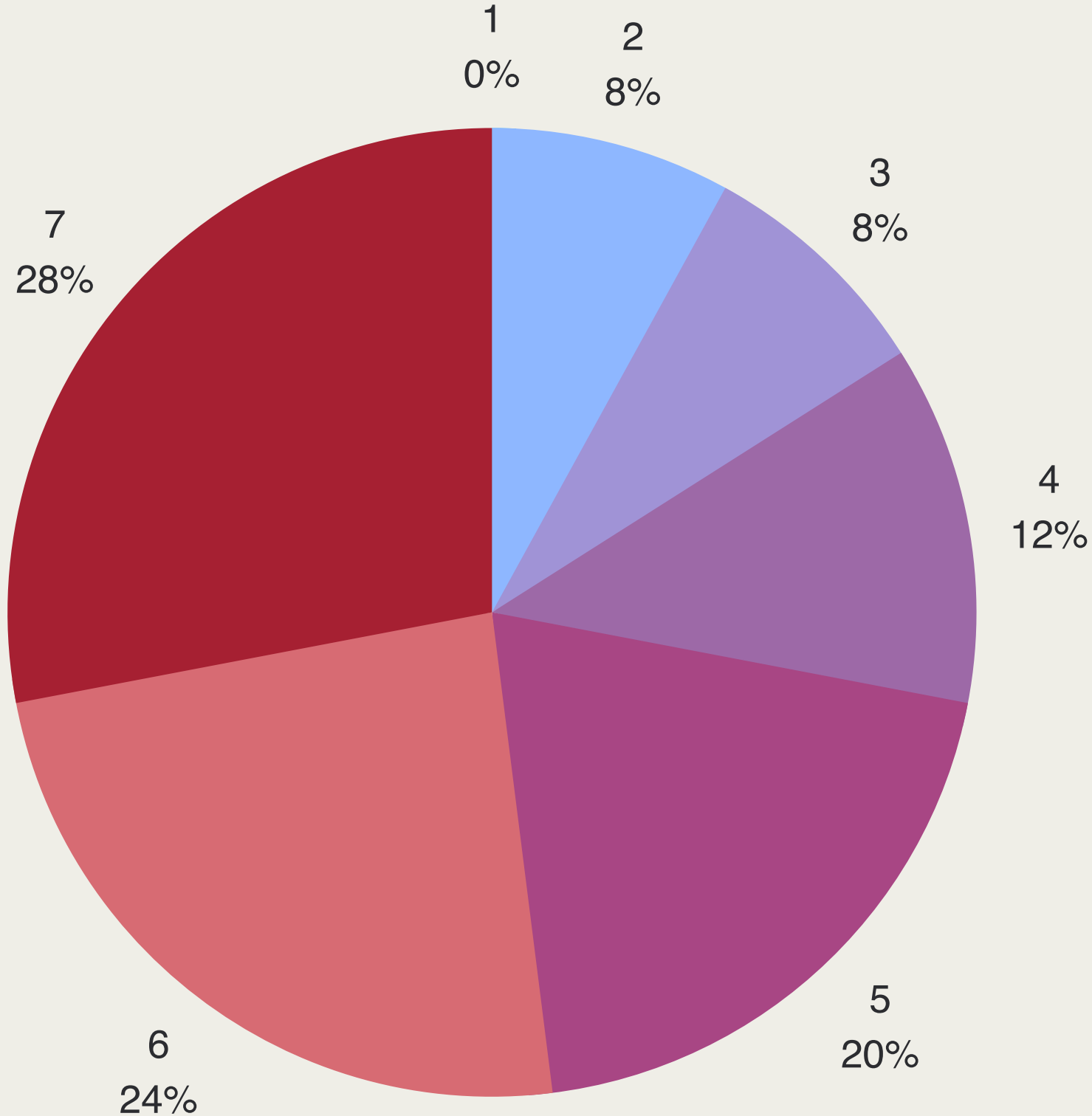
- 1.6% encounters presented with oral bleeding
- 7 encounters (1.4%) marked an oral injury as the reason for CAP evaluation
- Most oral injuries involved the lips, frenula, or other oral location
 - Gingiva
 - Blood in oropharynx
 - Abrasion and granulation tissue in oropharynx
 - Substantial caries
 - Mucosal bruising



Oral injuries by location.

ABUSE LIKELIHOOD: AIM 1

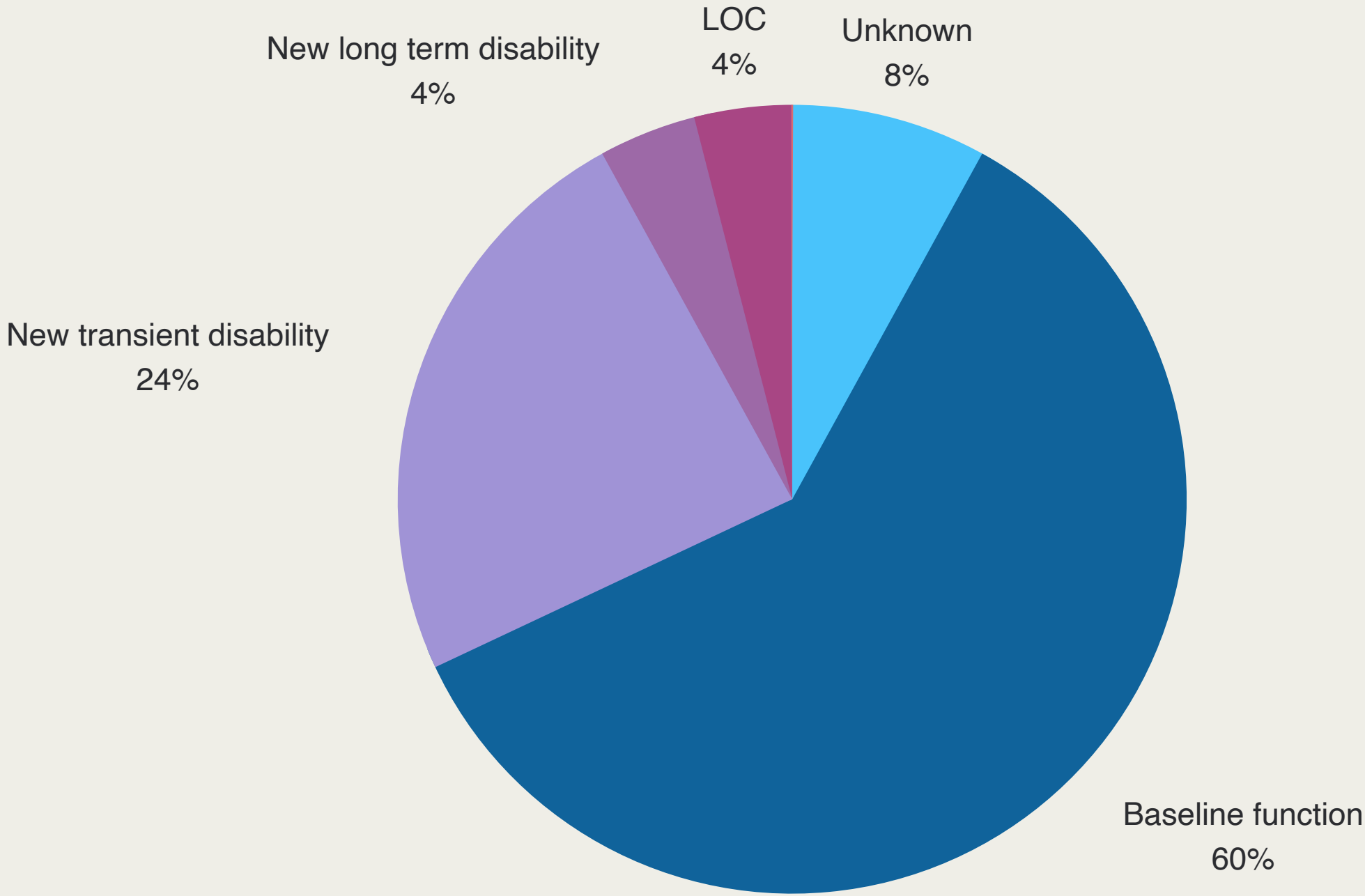
Of the 25 encounters of oral injury, none were deemed definitely not abuse (1). 72% of these encounters were given a likelihood of abuse score of 5 or higher, indicating serious concern for inflicted injury. A majority of these encounters were scored 7, reflecting definite abuse (28%).



1 = definitely not abuse; 2 = no concern for inflicted injury; 3 = mild concern; 4 = intermediate concern; 5 = very concerning; 6 = substantial evidence for inflicted injury; 7 = definite abuse

OUTCOMES: AIM 1

- 83.6% of all encounters included a skeletal survey
 - 11.5% of these identified previously unknown fractures
- Of all encounters, 15.6% were reported to CPS for physical abuse, and 4.4% for other maltreatment, such as sexual abuse, medical neglect, and more
 - 12% of encounters involving oral injuries were reported by a CAP for physical abuse
- Those with oral injuries mostly at baseline function (60%)



Medical outcomes for encounters with oral injuries. LOC = long term loss of consciousness

LIMITATIONS: AIM 2

- 1 DHCPs may not be aware of the CAP subspecialty or any local CAPs to refer to
- 2 DHCPs may be referring suspected child abuse cases directly to CPS, other medical providers, or other reporting agencies
- 3 DHCPs may find referring to CAPs difficult due to the lack of medical-dental integration
- 4 DHCPs may not be referring suspected child abuse cases

REMINDERS AND NEXT STEPS: AIM 3

- The goal of initiating a formal investigation into suspected child abuse is to help children as well as help their caregivers correct abusive habits
 - Take into consideration the child's developmental stage and reported or lack of trauma history when deciding if to report to CPS
- Medical-dental integration can improve the recognition and response to suspected child abuse as well as increase DHCP involvement in preventing and intervening in child abuse
- Take sentinel injuries seriously
- Take CE and train your team on domestic violence
- Screen every patient, every time for abuse

PROJECT ROLES AND LESSONS LEARNED



Epic chart review
Electronic health records (EHRs) of children evaluated by a CAP were thoroughly read, including notes from various medical providers, social workers, and more.



CAPNET data entry
Data from the EHRs was then entered into the CAPNET database platform, Research Electronic Data Capture (REDCap).



LDI
For this project, I conducted a literature review, analyzed the CAPNET data with the help of a CHOP data scientist, and composed the final project.



Lessons learned
I learned about the child abuse subspecialty of pediatrics, what to look for when screening patients of my own, and areas in which the dental field needs improvement.

SPECIAL THANKS

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Thank you!

QUESTIONS?



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