

## Introduction

- Dental treatment in the ED is costly and not a means for routine dental care, however, pain due to infection may prompt patients to present to the ED for emergency intervention<sup>1</sup>
- While dental trauma is typically unavoidable, odontogenic infection secondary to dental caries is preventable and could be managed by a dental home prior to reaching acuity.
- Objective: to determine the characteristics of children requiring primary tooth extraction for odontogenic infection under sedation in the ED setting.

## Methods

- Retrospective cross-sectional study conducted at a tertiary care children's hospital with a pediatric dentistry residency program
- Patients identified through dental resident procedure logs from March 2021 to June 2023
- Pediatric patients ages 1 to 13 years old presenting to the ED with facial swelling secondary to odontogenic infection requiring extraction of primary tooth were included in the study
- Demographic data, history of previous dental treatment, site of dental infection, and prior antibiotic use were recorded.

## Results

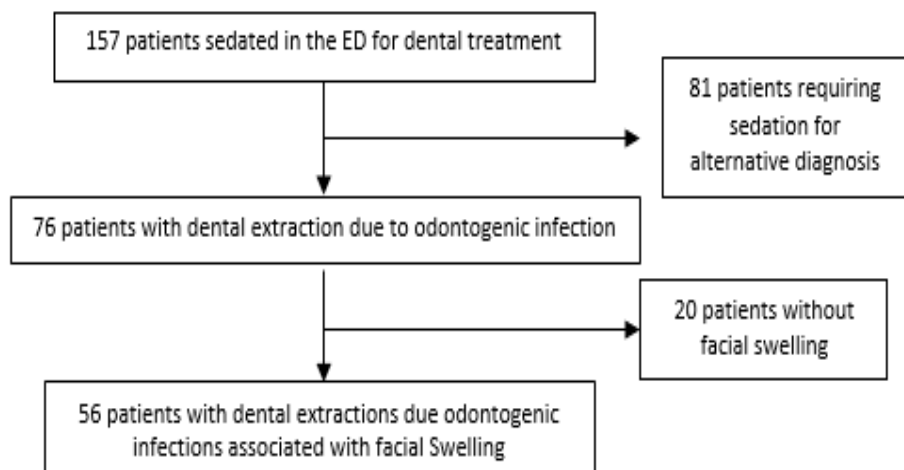


Figure 1: Study Patients Selection Criteria

## Results

**Table 1:** Patients requiring dental extraction in the ED for facial swelling due to odontogenic infection

	Patient Presenting for Facial Swelling due to Odontogenic Infection		
	Antibiotics (N=31)	No Antibiotics (N=25)	Overall (N=56)
<b>Age</b>			
3 years old & younger	4 (12.9%)	3 (12.0%)	7 (12.5%)
4 to 6 years old	17 (54.8%)	14 (56.0%)	31 (55.4%)
7+ years old	10 (32.3%)	8 (32.0%)	18 (32.1%)
<b>Gender</b>			
Male	18 (58.1%)	21 (84.0%)	39 (69.6%)
Female	13 (41.9%)	4 (16.0%)	17 (30.4%)
<b>Race</b>			
Caucasian	8 (25.8%)	16 (64.0%)	24 (42.9%)
Black/African American	14 (45.2%)	4 (16.0%)	18 (32.1%)
Other	9 (29.0%)	5 (20.0%)	14 (25.0%)
<b>Hispanic/Latino</b>			
Yes	7 (22.6%)	8 (32.0%)	15 (26.8%)
No	24 (77.4%)	17 (68.0%)	41 (73.2%)
<b>Medical Insurance Status</b>			
Insured	28 (90.3%)	25 (100%)	53 (94.6%)
Un-insured	3 (9.7%)	0 (0%)	3 (5.4%)
<b>Previous Treatment</b>			
Yes	8 (25.8%)	5 (20.0%)	13 (23.2%)
No	14 (45.2%)	12 (48.0%)	26 (46.4%)
Unknown	9 (29.0%)	8 (32.0%)	17 (30.4%)
<b>Day Presenting to the ED</b>			
Monday- Thursday	19 (61.3%)	14 (56.0%)	33 (58.9%)
Friday- Sunday	12 (38.7%)	11 (44.0%)	23 (41.1%)
<b>Source of Infection</b>			
Upper Including a Posterior Tooth	8 (25.8%)	11 (44.0%)	19 (33.9%)
Upper anterior Teeth only	6 (19.4%)	4 (16.0%)	10 (17.9%)
Lower Including a Posterior Tooth	17 (54.8%)	10 (40.0%)	27 (48.2%)

## Results

**Table 2:** Multivariable logistic analysis to identify variables associated with the presence of facial swelling without antibiotics

Variables	Odds Ratio	95% CI of odds ratio	p-value
<b>3 years old and younger</b>	<b>Reference Group</b>	-	-
4 to 6 years old	0.966	0.078 - 9.705	0.977
7+ years or older	1.355	0.111 - 15.311	0.804
<b>Male</b>	<b>Reference Group</b>	-	-
Female	0.199	0.038 - 0.864	0.04
<b>Caucasian</b>	<b>Reference Group</b>	-	-
Black/African American	0.175	0.034 - 0.756	0.025
Other	0.255	0.035 - 1.581	0.15
<b>Hispanic/Latino</b>	<b>Reference Group</b>	-	-
Not Hispanic/Latino	0.336	0.056 - 1.721	0.204
<b>History of Previous Treatment</b>	<b>Reference Group</b>	-	-
No History of Previous Treatment	2.809	0.392 - 23.92	0.316
Unknown Treatment History	2.496	0.35 - 19.924	0.366
<b>Monday- Thursday</b>	<b>Reference Group</b>	-	-
Friday- Sunday	1.274	0.32 - 5.139	0.728
<b>Upper Including a Posterior Tooth</b>	<b>Reference Group</b>	-	-
Upper Teeth Anterior Only	0.405	0.035 - 3.93	0.441
Lower Including a Posterior Tooth	0.292	0.051 - 1.4	0.138

## Discussion

- Nearly even distribution of patients presenting to the ED with facial swelling due to odontogenic infection with and without a previously prescribed antibiotic..
- African American children and female children were more likely to be on antibiotics for facial swelling related to dental infection, compared to their referent counterparts.
- The research supports the AAPD Guideline for Use of Antibiotic Therapy that for progressive facial swelling should receive immediate surgical intervention and medical management with intravenous antibiotics as the ideal treatment as almost half of the patients in the study presented with previous antibiotic use.
- Health inequities likely contribute to the significant difference in prior antibiotic use in Black/African American children presenting to the ED with facial swelling due to odontogenic infection
- Female patients have been identified in some literature to have greater anxiety surrounding dental procedures. This leads to infrequent/inconsistent dental care or inability to complete care with advanced dental management technique, which may explain the significant difference of odds in female patient presenting to the ED with facial swelling on antibiotics.<sup>2</sup>

## References

- Sun, B. C., Chi, D. L., Schwarz, E., Milgrom, P., Yagapen, A., Malveau, S., ... & Lowe, R. A. (2015). Emergency department visits for nontraumatic dental problems: a mixed-methods study. *American journal of public health, 105*(5), 947-955.
- Tickle, M., Jones, C., Buchanan, K., Milsom, K. M., Blinkhorn, A. S., & Humphris, G. M. (2009). A prospective study of dental anxiety in a cohort of children followed from 5 to 9 years of age. *International journal of paediatric dentistry, 19*(4), 225-232.