Pediatric Dental Treatment Patterns in the Primary and into the Early Permanent Dentition

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ABSTRACT

Purpose: To examine trends in primary and early permanent dentition treatment patterns and the relationships between them.

Methods: A secondary data analysis was performed on Medicaid claims from 2011-2022 for North Carolina children ages 0-12. Trends and expenditures of two primary dental treatment patterns were analyzed over time: early childhood caries (ECC), defined as treatment to primary maxillary incisors and/or first primary molars in 0–5-year-olds, and late childhood caries (LCC), which comprised treatment to the proximal surfaces of primary molars in 6-12-year-olds. Trends in four early permanent dentition restorative treatment patterns were analyzed over time: 1. mesial surfaces of the first permanent molars 2. Pits-and-fissures of the first permanent molars 3. maxillary anterior teeth and 4. maxillary anteriors and first permanent molars. No treatment to primary and permanent teeth was analyzed for comparison. The likelihood of children who had the listed restorative treatment to their early permanent dentition also having ECC and/or LCC treatment was investigated.

Results: The proportion of children with LCC treatment and the yearly treatment expenditure were consistently double of that associated with ECC treatment throughout the 12-year period. Each year, the most common early permanent dentition restorative treatment pattern was treatment to pits-and-fissures of first permanent molars. Children who had early permanent dentition restorative treatment were on average two times as likely to have had LCC treatment than ECC treatment.

Conclusion: Future prevention and education strategies should target LCC.

INTRODUCTION

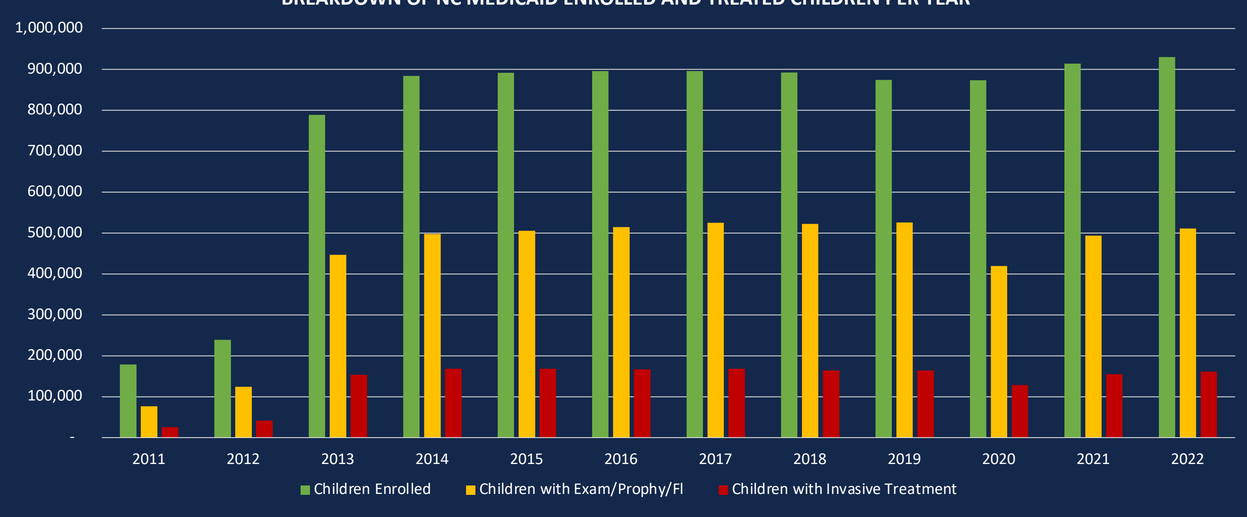
- Dental caries is the most common chronic disease of childhood [1,2,5]
- Approximately 25% of children between the ages of 2-5 in the US have experienced dental caries[1,2]
- Studies have reported that 51-55% of children ages 6-11 in the US have experienced dental caries in their primary teeth[3,4]
- The prevalence of untreated caries has almost halved during the past decade[1,6]
- More than 530 million children worldwide have untreated caries in primary teeth, with the prevalence of disease increasing with age[5]
- Limited data exists on caries experience in children ages 6-12
- Understanding caries in the primary dentition and how it transitions to the permanent dentition will allow us to develop better prevention and education strategies for pediatric patients and their families.
- We assessed **patterns of dental treatment** (as a surrogate for caries experience) in children insured by North Carolina Medicaid before and after age 6.
- **Our goal was to gain a better understanding of the relationship between ECC and LCC, and the trajectories of ECC and LCC into the early permanent dentition**

METHODS & MATERIALS

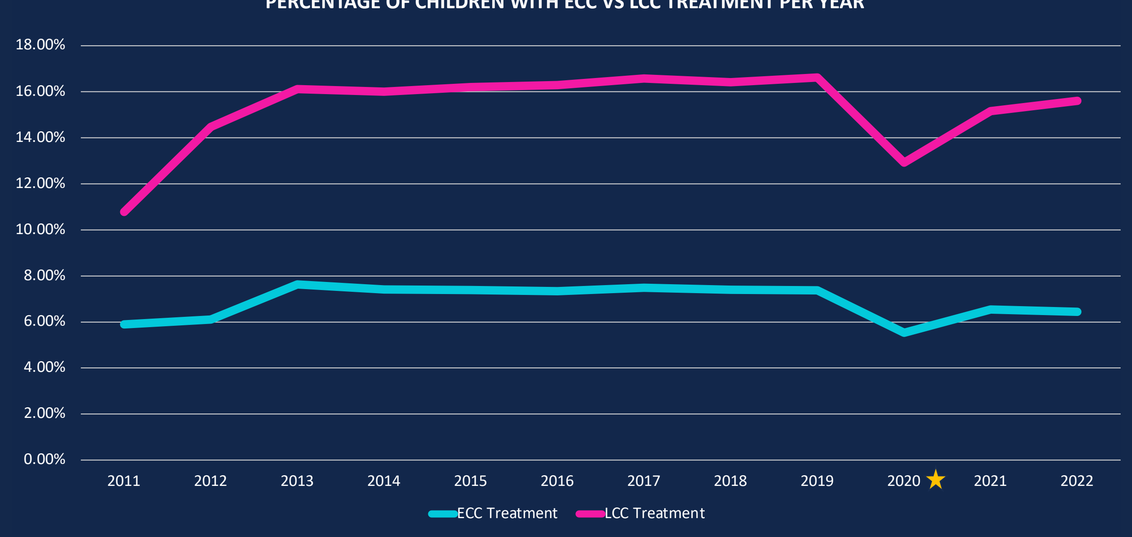
- Longitudinal time series study that involved secondary data analysis of NC Medicaid claims data.
- We examined dental treatment claims data from 2011-2022 from NC Medicaid-insured children, ages 0-12.
- Children needed to be enrolled in Medicaid for 180 consecutive days to be included in our study.
- The following treatment codes were examined in our study: Extractions (D7210, D7140), Resins (D2391, D2392, D2393, D2394, D2331, D2332, D2331, D2334, D2335), Amalgams (D2140, D2150, D2160, D2161), and Crowns (D2929, D2930, D2390).
- We examined trends in the dental treatment patterns over time
- We also examined how healthcare dollars are being spent on these primary diseases
- Two Primary Dental Treatment Patterns were examined
- Four Early Permanent Dentition Treatment Patterns were examined
- We looked retrospectively to determine the likelihood of children who belonged to the early permanent dentition treatment groups belonging to the ECC and/or LCC treatment groups

RESULTS

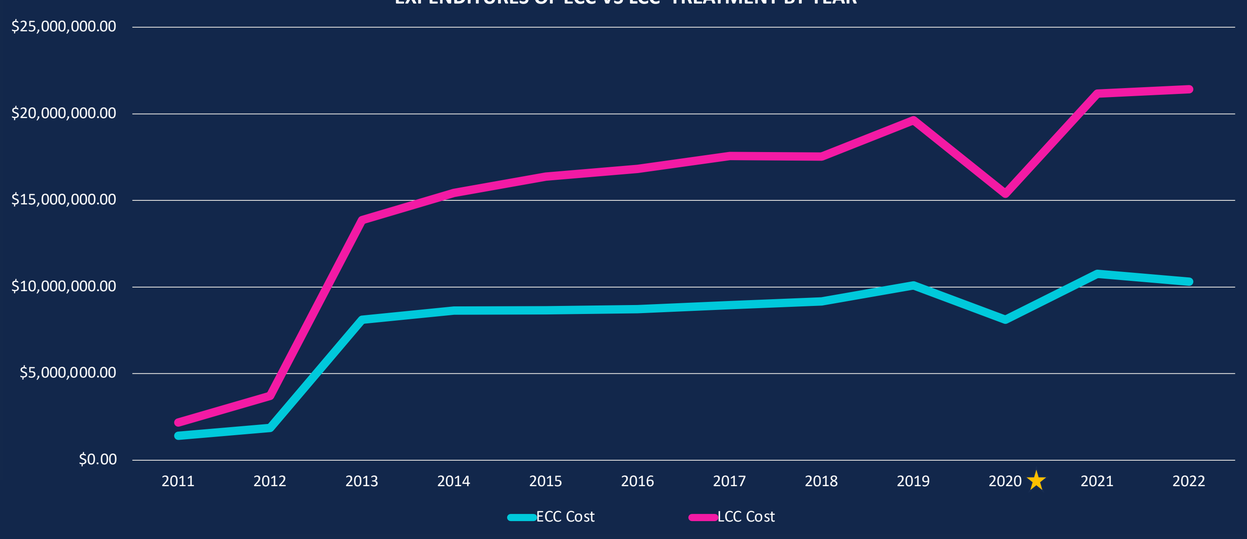
BREAKDOWN OF NC MEDICAID ENROLLED AND TREATED CHILDREN PER YEAR



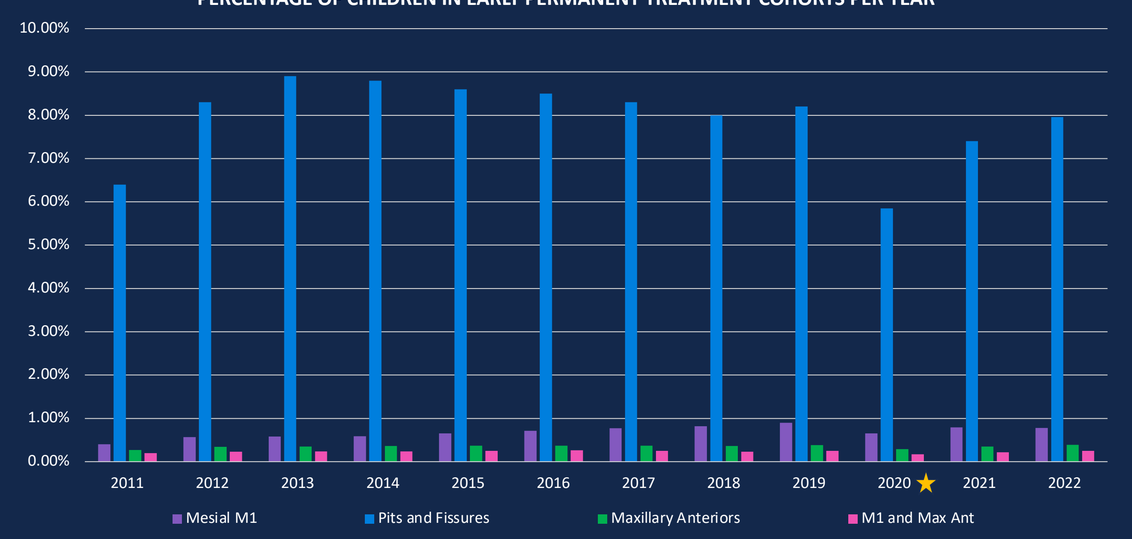
PERCENTAGE OF CHILDREN WITH ECC VS LCC TREATMENT PER YEAR



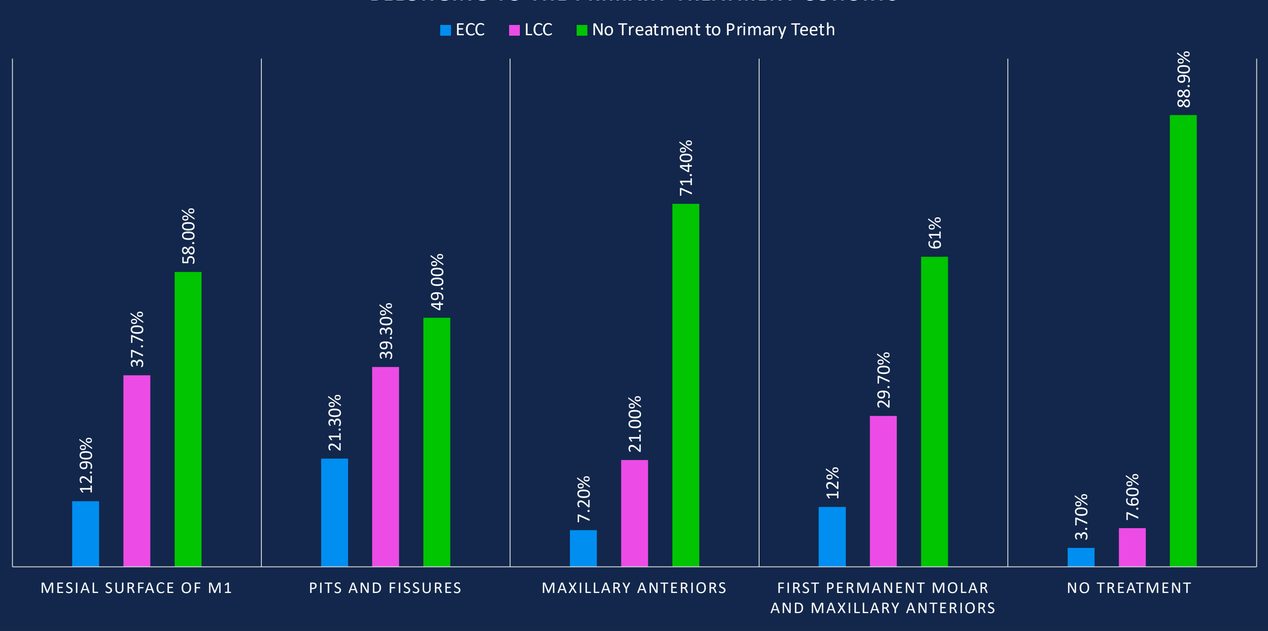
EXPENDITURES OF ECC VS LCC TREATMENT BY YEAR



PERCENTAGE OF CHILDREN IN EARLY PERMANENT TREATMENT COHORTS PER YEAR



PERCENTAGES OF CHILDREN IN THE 2019-2022 EARLY PERMANENT TREATMENT COHORTS BELONGING TO THE PRIMARY TREATMENT COHORTS



CONCLUSIONS

- Innovative strategies should be developed so that more children with NC Medicaid receive preventive care and establish a dental home
- Future prevention and education strategies should target LCC due to its increasing cost and relationship with future restorative treatment in the early permanent dentition
- Patients with primary dental treatment should be counseled and educated about their risk of developing caries in the permanent dentition
- More studies should focus on caries patterns in the early permanent dentition

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