

# Pediatric Dental Utilization Following Screening and Referral for Dental Caries

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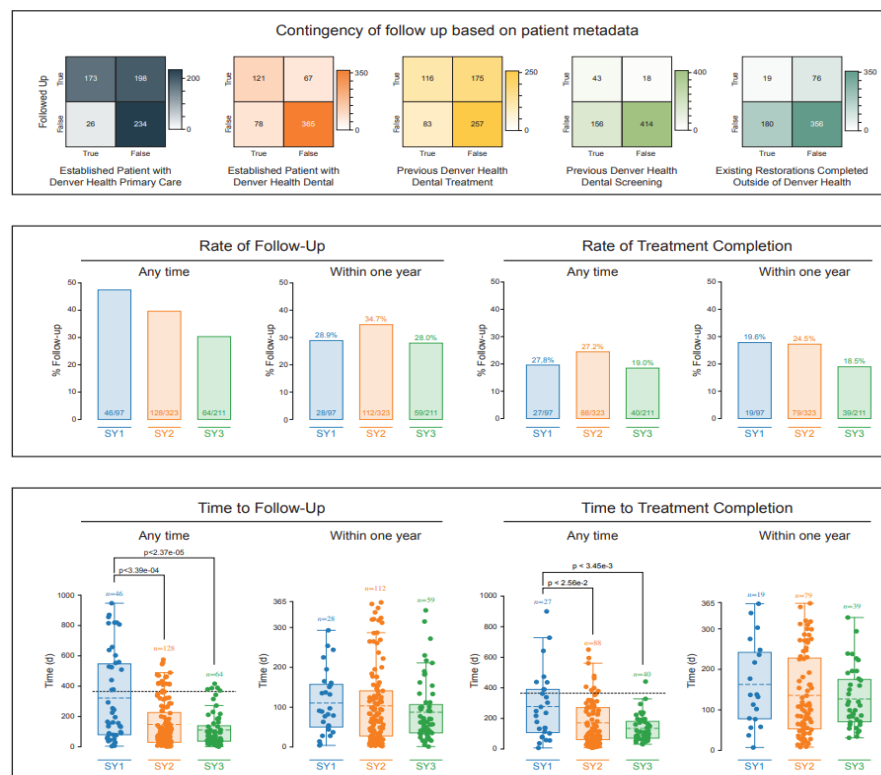
## Background

- In 2019, dental care was reported as the greatest unmet healthcare need for children aged 2-6 years. Untreated dental disease in early childhood can lead to pain, infection, and missed school days.
- School-based dental screenings are one strategy to improve access by identifying children with caries and referring them to a dental home. While school-based programs improve identification, there is limited data on the effectiveness.
- Referral alone does not guarantee follow-up or treatment completion

## Purpose

- This study evaluates the effectiveness of referrals for children with dental caries screened at school, focusing on dental utilization for routine exams and restorative dental treatment.
- We assessed the impact of five predictors on the likelihood of follow-up within one year at the dental clinic:
  - Established patient with Denver Health Primary Care
  - Established patient with Denver Health Dental
  - Previous Denver Health dental screening
  - Previous Denver Health dental treatment
  - Existing restorations completed outside of Denver Health
- Three differing referral methods were used over three school years:
  - Paper referral - School Year 1 (SY1): Fall 2021, Spring 2022
  - Telephone encounter - School Year 2 (SY2): Fall 2022, Spring 2023
  - Electronic referral (Epic) - School Year 3 (SY3): Fall 2023

## Results



- Patients **with established primary care** at Denver Health were significantly **more likely** to follow-up on their dental referrals ( $p < 4.47E-22$ ).
- Patients **with a dental NPE** at Denver Health were significantly **more likely** to follow up on their dental referrals ( $p < 1.95E-30$ ).
- Patients **with previous dental screening** care with Denver Health were significantly **more likely** to follow-up on their dental referrals ( $p < 4.55E-05$ ).
- Patients **without previous dental treatment** at Denver Health were significantly **less likely** to follow up on their dental referrals ( $p < 1.54E-11$ ).
- Patients **with existing restorations** from a clinic outside of Denver Health were significantly **less likely** to follow up on their dental referrals ( $p < 1.22E-2$ ).
- Rates of treatment completion and time to follow up were not significantly different between school year groups.
- Time to treatment completion and time to follow up **decreased significantly** by employing telephone referrals and electronic referrals, as compared to paper referrals. This was not significant when filtering for only those who followed up within 1 year.

## Methods

- A total of 561 patient encounters, aged 1-5 years, were screened for early childhood dental caries at preschools by a Denver Health dentist over three school years.
  - Most patients (496; 78.6%) were screened once.
  - Sixty patients (9.5%) were screened twice.
  - Five patients (<1%) were sampled three times.
- Data was collected via a retrospective chart review using Epic software and reviewed independently by two pediatric dental providers.
- Patient observations were assumed to be independent. To verify that patient-level variation did not significantly influence outcomes, fixed- and mixed-effects logistic regression models were compared for each covariate.
- Chi-square tests were used to assess the relationship between predictors and follow-up behavior.
- To compare groups, we assessed normality using the Shapiro-Wilk test; if either group deviated from normality ( $p < 0.05$ ), the Mann-Whitney U test was used, otherwise, the Welch's t-test was applied.
- This project was reviewed by the Colorado Multiple Institutional Review Board at the University of Colorado, Denver and was determined to be exempt from full IRB review.

## Conclusions

- Predictors of follow-up behavior identified in this study can help us identify children at high risk for not receiving care, enabling more intentional efforts to connect them with dental homes and necessary treatment.
- Employing additional referral methods reduced the total time for patients to complete restorative dental treatment.
- Further investigation is needed to explore and address barriers to follow-up on dental referrals from school-based screenings.

## References

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