Direct Costs and Time Spent on Pediatric Permanent Tooth Trauma

Sonnabend R[1,2], Peng J[3], Townsend JA[1], Meyer BD[1,2], Seiber EE[1], Azadani EN[1,2]

[1] Ohio State University, [2]Nationwide Children's Hospital, [3] Abigail Wexner Research Institute

PURPOSE

The aim of this study was to analyze the direct costs and time spent obtaining dental treatment for permanent tooth traumatic dental injuries in children.

BACKGROUND

Dental trauma is a common occurrence, with the worldwide prevalence of primary tooth trauma at 22.7% and permanent tooth trauma at 15.2%, with most of these injuries occurring in childhood.

METHODS

Inclusion Criteria

- Children who sustained a permanent tooth injury between 2015-2017 and sought treatment at Nationwide Children's Hospital (Columbus, Ohio).

Exclusion Criteria

- Those with special healthcare needs (ASD, cerebral palsy, intellectual disability, developmental delay, epilepsy).
- Injuries involving jaw fracture, posterior dentition, or hospitalization for concomitant injuries.
- Those who did not follow-up at least twice (once within 6 months and again within 18 months).

Direct Cost

- Two years of post-injury records were assessed to calculate dental trauma related treatment costs and the number of visits and time spent at healthcare facility (emergency department or dental clinic).

Transportation Time

- Transportation time spent for the post-op treatment sequela was calculated based on patient's zip code .
- Cumulative time spent procuring treatment (within healthcare facilities and for transportation) was assessed.

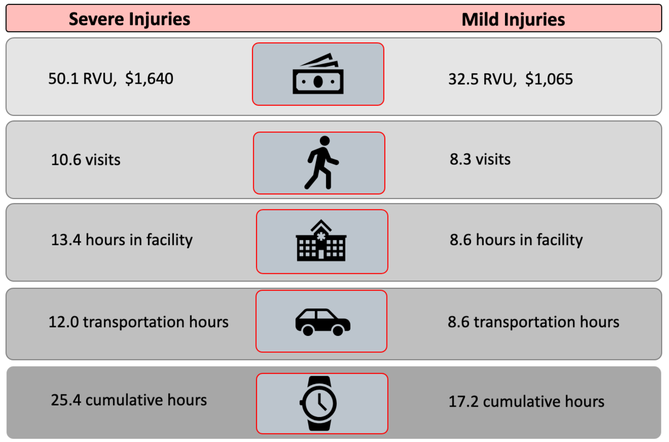
Severe vs. Mild Injuries

- Injuries were further categorized by severity ('severe injuries' are those involving pulp exposure or tooth displacement) with costs and time comparisons made.

RESULTS

- A total of 113 patients met the study criteria, with mean age of 10.2 years (SD=2.8), and gender composition of 69.9% male and 30.1 % female.

	Cost (RVU)	Cost (USD)	Visits	Facility Time (hours)	Transportation Time (hours)	Cumulative Time (hours)
Severe Injury (n=82)	50.1	$1,640	10.6	13.4	12.0	25.4
Mild Injury (n=31)	32.5	$1,065	8.3	8.6	8.6	17.2
Entire Group (n=113)	45.3	$1,482	9.9	12.1	11.1	23.2



Average dental treatment cost was **45.3 Relative Value Units (RVU) equaling $1,482** across an average of **9.9 treatment visits**.

The **average total facility time** spent was **12.1 hours** and the **average total transportation time** was **11.1 hours**, resulting in the **average cumulative time of 23.2 hours**.

Severe v. Mild Injury Comparisons

- **Severe injuries** incurred higher costs than mild injuries ($p<0.001$)
- Required more visits than mild injuries ($p=0.01$)
- Longer facility time than mild injuries ($p<0.001$)
- Higher transportation time than mild injuries ($p=0.055$)
- Greater cumulative time for treatment than mild injuries ($p=0.002$)

DISCUSSION

- This study calculated RVU values, which allows for more accurate cost comparisons between different geographical areas. Anterior root canal therapy (D3310) has an RVU value of 10.20. If this code were reimbursed according to the 2024 CMS reimbursement rate, it would total $334 USD. This dollar amount value is likely undervalued, when compared to what is typically paid out from private insurance or Medicaid Managed Care Plans.
- The average treatment costs and facility time tend to increase with the severity of the injury.
- Average transportation time was higher for severe injuries, but not significantly.

CONCLUSIONS

- Traumatic dental injuries carry tremendous financial costs and time. This information can better inform families about the treatment burden associated with such injuries.
- These findings may influence adherence to prevention measures as well as participation in high-risk activities.

REFERENCES