Understanding Emergency Medical Service Use by Children in Aotearoa New Zealand

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INTRODUCTION

- Internationally, children represent ~4-7% of Emergency Medical Service (EMS) workload
- Low paediatric case volume results in limited paramedic exposure to children
- Anatomical differences and unique injury patterns can increase paramedic stress and affect patient safety
- Little is known about children in Aotearoa New Zealand (NZ) requiring prehospital care, including their demographic profiles, clinical presentations, and geographic distribution patterns
- Children aged 0–14 years comprise 18.7% of the NZ population
- Understanding paediatric prehospital care patterns is essential for strategic planning, policy development, and resource allocation
- Current knowledge gaps limit optimisation of care delivery and targeted interventions for high-risk paediatric populations

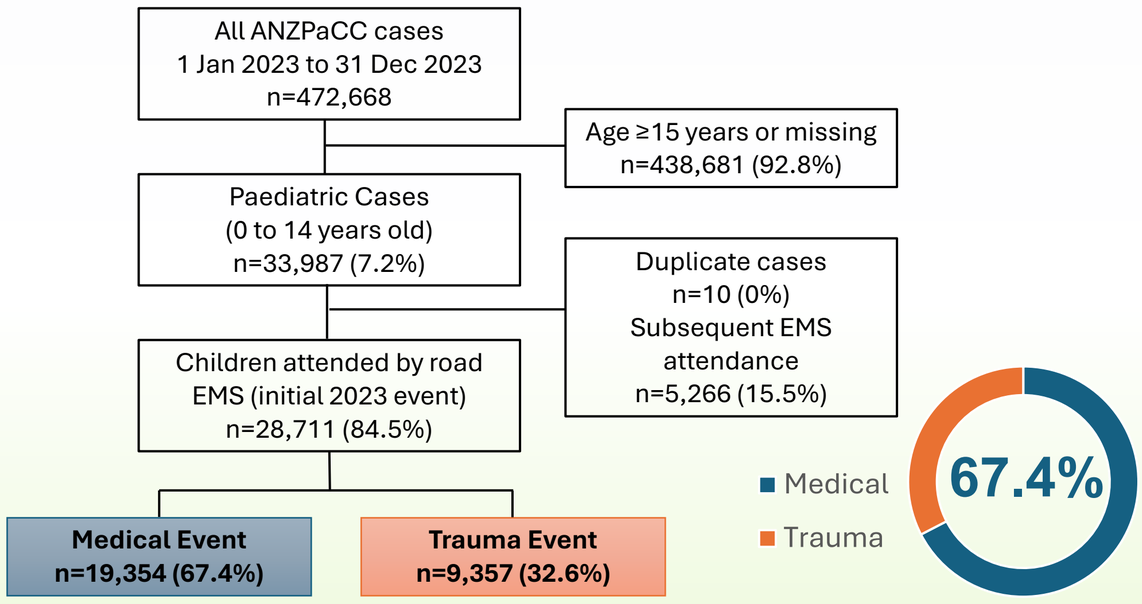
AIM

To describe the national cohort of children (0 to 14 years) attended by road-based EMS in Aotearoa New Zealand during 2023

METHODS

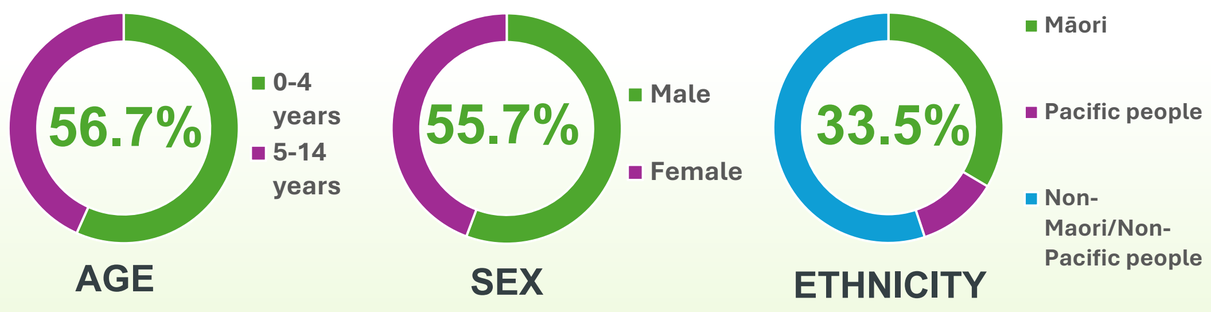
- The Aotearoa NZ Paramedic Care Collection (**ANZPaCC**) contains data from all road-based EMS in NZ (Hato Hone St John and Wellington Free Ambulance)
- Analysis focused on each child's first EMS presentation from 1/1/2023 to 31/12/2023
- Children were aged between 0-14 years (inclusive)
- Descriptive analyses were used to examine patient's demographics (age, sex, ethnicity, deprivation) and clinical characteristics (acuity & clinical impression)
- Medical or Trauma event type was selected by the attending clinician at the time of the incident
- Chi-square analyses were undertaken using SPSS (v30.0), with significance at $p < .05$
- This study was approved by the Northern B Health and Disability Ethics Committee (2022 FULL 13415), with locality approval from HHStJ and WFA

COHORT

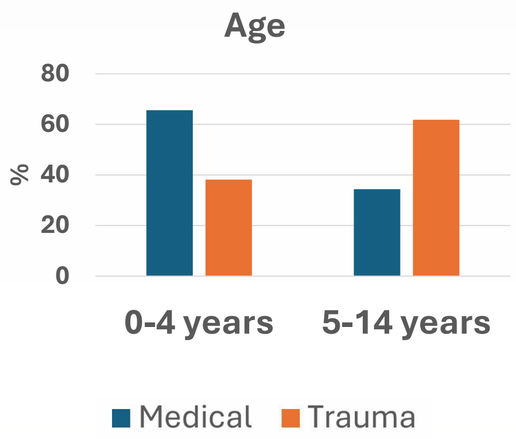


COHORT SUMMARY

28,711 children attended by EMS



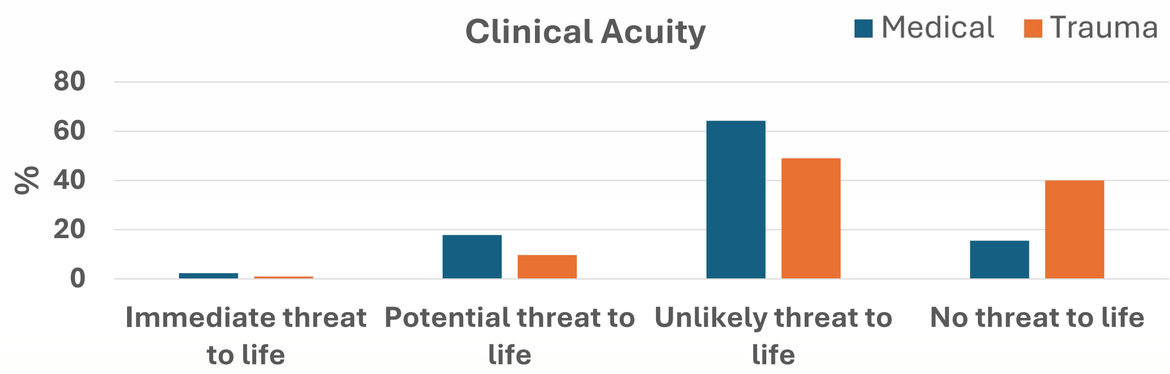
RESULTS

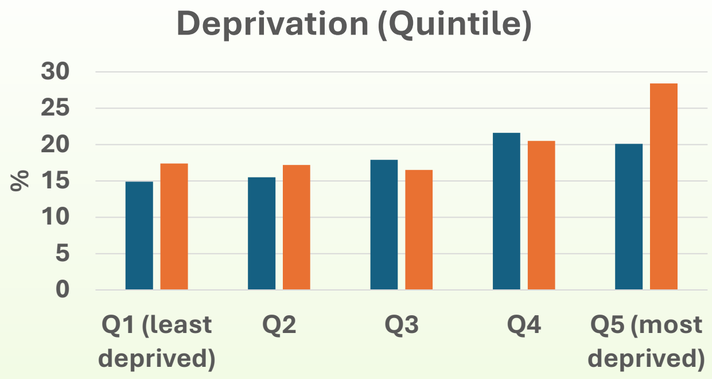


Preschool-aged children most frequently present with medical events
(65.6%, n = 12,688)

School-aged children more commonly present with trauma-related incidents
(61.8%, n = 5,778)

Children are mostly low-acuity cases. More medical-related patients are high-acuity compared to trauma patients (15.3% vs. 8.7%, $p<.05$).





Nearly 1 in 3 children presenting to EMS reside in NZ's most deprived areas
(Q5; 29.6%, n=8,271)

Half of medical presentations were attributed to infections. Trauma presentations were more varied, with skin, soft tissue, and brain injuries each contributing to approximately 8% of cases.

Table 1. Top clinical impressions for medical and trauma child presentations

Primary Clinical Impression (rank)	Medical (n=19,354)	Trauma (n=9,357)
#1	Infection (48.2%; n=9,330)	Fracture (n=13.9%; n=1,302)
#2	Respiratory (15.3%; n=2,956)	Fall (10.7%; n=997)
#3	Seizure (8.2%; n=1,591)	Pain (8.3%; n=777)

CONCLUSIONS

- This study reports the first national demographic and clinical profile of 28,711 child presentations to road-based EMS in NZ.
- There was a higher proportion of medical-related patients compared to trauma patients. Additionally, medical-related cases had a greater proportion of high-acuity patients.
- Over 15% of paediatric cases involved repeat ambulance attendances and were excluded from analysis. This substantial proportion of children requiring multiple ambulance visits in 2023 warrants further investigation.
- Our findings will highlight areas for continued clinical education and response preparedness, and strategic planning that focuses on the realities of EMS services for children in NZ.

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