

Surgical Centralisation in New Zealand - is Paediatric Appendicitis best managed by Paediatric Units?

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Background

Almost half of New Zealand's children live outside a city with a paediatric surgical service.¹ Therefore, appendicitis is commonly managed by adult-focused general surgical services. With ongoing discussion about the scope and centralisation of surgical services,² it is vital to have data on the national outcomes of this common surgical disease.

Aim

To prospectively describe outcomes of paediatric appendicitis between children who present at a paediatric surgical centre compared to a regional hospital.

Methods

A prospective, multicenter cohort study was undertaken by a trainee-led collaborative group between Feb - July 2020. Paediatric surgical centers were defined as Starship, Waikato, Wellington and Christchurch. A total of 208 children aged ≤16 years admitted to hospital with suspected appendicitis were recruited. This was a subset analysis of the RURAL Study which collected a broad range of clinical and socioeconomic data.



Figure 1: Location of the 14 participating hospitals.

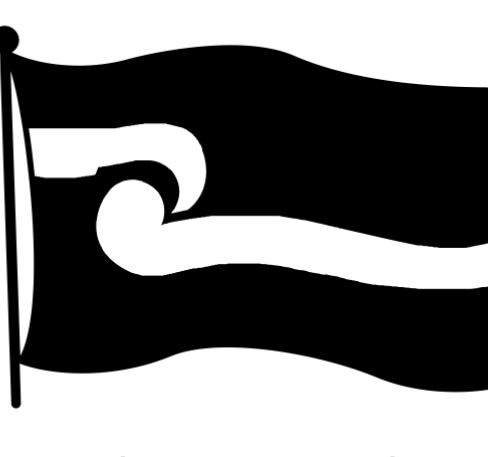
Results

182 children from 14 hospitals had proven appendicitis. Eighty-three children (45.6%) underwent surgery in a regional hospital and 99 (54.4%) in a paediatric surgical service.


Children who presented to a regional centre were more likely to:


Have a shorter travel distance
13.4km vs. 22.4km
(p=0.003)


Have a higher median age
12.0y vs. 10.9y
(p=0.0028)



Self-identify as Māori
33.7% vs 14.1%
(p=0.002)

There were **no** significant differences in:

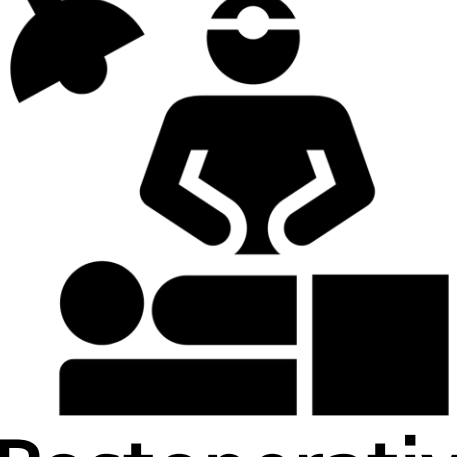

Prehospital Delay
26.9h vs. 26.7h


Time to Pre-op Antibiotics
4.5h vs. 5.0h


Time to Operation
13.1 vs. 12.8h


Perforation Rate
40.9% vs. 36.4%

Postoperative complication rates were **higher** in regional centres, but this wasn't associated with a longer median length of stay.


Postoperative Complications
32.5% vs. 18.2%
(p=0.02)


Length of Stay
48.2h vs. 46.6h
(p=0.81)

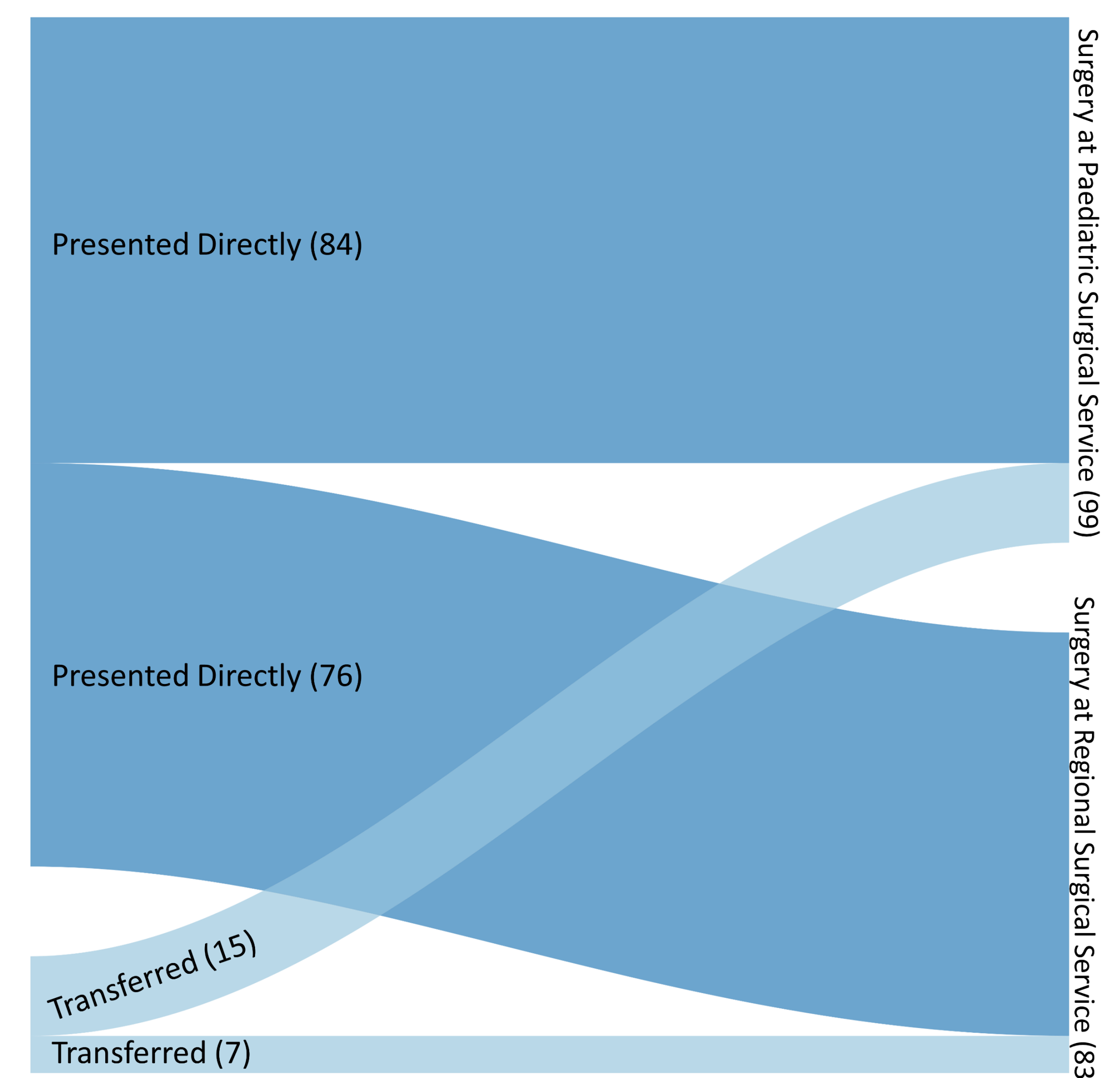


Figure 2: Presentation and prehospital transfer of participants.

Table 1: Distribution of significant complications between services.

Complication	Treating Service	
	Regional	Paediatric
Reoperation	3	0
Intra-abdominal abscess	6	3
30-day readmission	6	8
PICU/HDU admission	0	4

Conclusion

- A large number of children are safely treated in regional hospitals across New Zealand.
- There were no significant differences in rates of perforated appendicitis, access to theatre, or preoperative delay.
- However, there was a higher rate of postoperative complications, including reoperation.

References

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