

DO NEW ZEALAND CHILDREN WITH CANCER RECEIVE THE SAME HIGH QUALITY OF CARE REGARDLESS OF WHO THEY ARE AND WHERE THEY LIVE?

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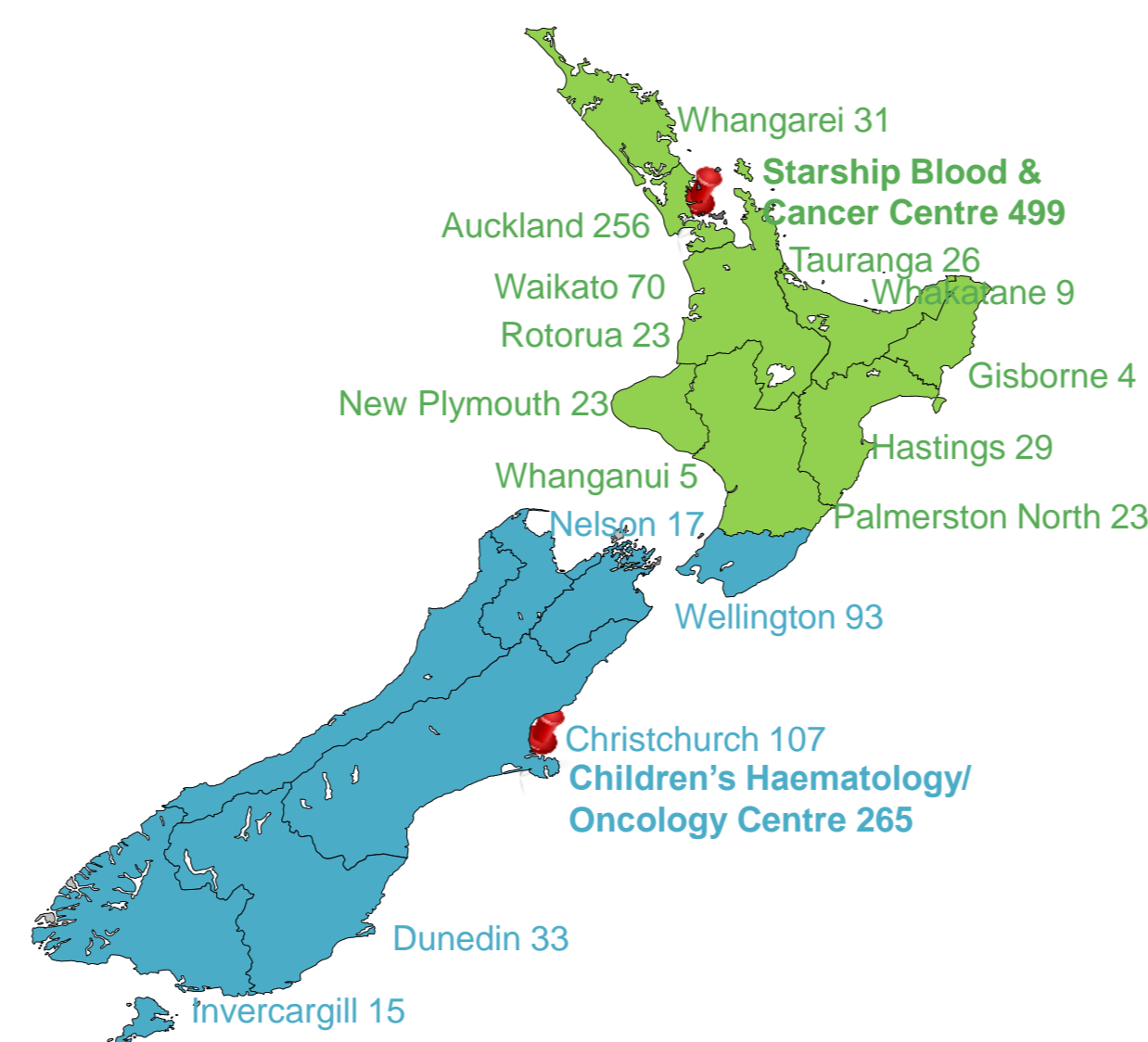
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Background / Objectives

New Zealand's relatively small population necessitates centralised child cancer services. Since 2010 all children with cancer have been referred to one of two specialist paediatric oncology centres – Starship Blood and Cancer Centre in Auckland for those residing in the upper and central North Island and the Children's Haematology Oncology Centre in Christchurch for children from the South and lower North Island. Clinicians at the two specialist centres work closely with their colleagues at 14 shared care centres so that children can, wherever possible, receive their cancer treatment closer to home. Of the approximately 150 New Zealand children diagnosed with cancer each year, over half must travel outside of their town/city in order to receive some or all of their cancer treatment.¹



Map showing the allocated specialist and shared care centres for the 764 children diagnosed with cancer between 2010 and 2014.

The National Child Cancer Network (NCCN) is funded by the Ministry of Health to bring together health professionals and stakeholder organisations to share information, knowledge and best practice across the country. Using New Zealand Children's Cancer Registry data, we produced updated survival estimates to assess whether the NCCN is meeting its overarching objective of ensuring that New Zealand children receive the same high quality of cancer care regardless of who they are and where they live.

There was no evidence of survival disparities according to sex or age group. Survival for children living in the most deprived areas (83.2%) was comparable to survival for those residing in the least deprived (83.9%). A non-statistically significant difference in survival was noted for Maori (82.3%) and Pacific Peoples (82.7%) compared to All Others (87%).

	n	3-year survival	95% CI
Sex			
Male	428	84.9	81.1 - 88.0
Female	336	86.1	81.9 - 89.5
Age group			
0-4 years	382	85.3	81.2 - 88.5
5-9 years	183	86.6	80.6 - 90.8
10-14 years	199	84.7	78.9 - 89.1
Deprivation Index (not stated n=1)			
Most deprived	205	83.2	77.2 - 87.7
Average	282	88.6	84.2 - 91.8
Least deprived	276	83.9	78.9 - 87.8
Prioritised Ethnicity			
Maori	187	82.3	76.0 - 87.1
Pacific Peoples	77	82.7	72.0 - 89.6
Non-Maori / non-Pacific Peoples	500	87.0	83.7 - 89.7
Place of Residence			
Auckland or Christchurch	363	86.4	82.4 - 89.6
Outside of specialist centres	401	84.6	80.6 - 87.8
Treatment Centre			
Starship Blood & Cancer Centre	498	85.6	82.2 - 89.5
Children's Haematology Oncology Centre	266	85.4	80.5 - 89.2

Materials and Methods

The New Zealand Children's Cancer Registry provided demographic and diagnostic data for 764 children aged 0-14 years diagnosed with cancer between 1/1/2010 and 31/12/2014 with follow up to 31/12/2017. Deprivation scores were assigned according to the child's domicile at time of diagnosis using the NZDEP2013 index, which combines census data to estimate the relative socioeconomic deprivation of an area. Children were assigned a single ethnicity according to a prioritised system – Maori, Pacific Peoples and All Others. Three-year relative survival estimates (with 95% confidence intervals) were calculated according to sex, age, deprivation index, prioritised ethnicity, residence, treatment centre and ICCG diagnostic group.

Results

Overall three-year relative survival was 85.5%, an increase of 2.4% from the 2000-2009 period.² Three-year survival for CNS tumours and soft tissue sarcomas remained around 70%. However, significant improvements in survival were seen for the diagnostic groups of malignant bone tumours (+11.9% to 84.3%), other epithelial neoplasms (+11.4% to 96.2%) and neuroblastoma (+14.2% to 83.6%).

	n	3-year survival	95% CI	Change from 2000-2009 ²
I Leukaemias	252	90.3	85.9 - 93.5	+2.7%
II Lymphomas	84	96.5	89.4 - 98.9	+3.6%
III CNS tumours	160	69.8	62.0 - 76.3	-4.5%
IV Neuroblastoma	56	83.6	70.6 - 91.2	+14.2%
V Retinoblastoma	28	100.1	-	No change
VI Renal tumours	33	93.9	77.5 - 98.6	-2.7%
VII Hepatic tumours	13	77.1	44.3 - 92.1	+7.7%
VIII Malignant bone tumours	45	84.3	69.7 - 92.2	+11.9%
IX Soft tissue sarcomas	44	72.1	56.0 - 83.2	-3.6%
X Germ cell tumours	22	95.6	72.0 - 99.5	-1.1%
XI Other malignant epithelial	26	96.2	75.7 - 99.5	+11.4%
TOTAL	764	85.5	82.7 - 87.8	+2.4%

There were no differences in survival according to specialist treatment centre and 3-year survival for the 363 children who resided in Auckland or Christchurch (86.4%) was comparable to survival for those 401 children who had to travel outside of their region for at least some of their cancer treatment (84.6%).

Discussion

New Zealand's overall three-year survival rate of 85.5% demonstrates that our children receive high quality care. Recent survival improvements for children diagnosed with malignant bone tumours and neuroblastoma reflects the benefit of national adoption of treatment protocols and equitable access to new treatment agents through both centres' participation in international collaborative trials.

Although it is pleasing to see equivalent survival for most variables measured, there are some indications that our recent survival improvements are not being seen for Maori and Pacific children.¹ Small annual numbers limit our ability to make ethnic comparisons at a diagnostic group level and explore potential differences in tumour biology. However, we note that three-year survival for the most common cancer, acute lymphoblastic leukaemia, remains consistent across the three ethnic groups.

Conclusion

Survival comparisons demonstrate that New Zealand is providing equitable and high-quality cancer care. The NCCN's development of national guidelines to harmonise treatment across the country allows children to receive as much of their treatment as close to home as possible without impacting survival.

Future qualitative and quantitative research will incorporate additional measures of quality of care and equity in our child cancer services including survivorship, access to psychosocial and allied health services, and the availability of culturally appropriate patient and family support.

References

¹ Ballantine K & the NZCCR Working Group (2017). Child cancer survival in New Zealand 2005-2014: A report from the New Zealand Children's Cancer Registry. Auckland: National Child Cancer Network.

² Sullivan, M & Ballantine, K. (2014) Childhood cancer survival in New Zealand 2000-2009: The first outcome analysis of the New Zealand Children's Cancer Registry. Auckland: National Child Cancer Network.