Summary of Childhood Cancer (Ages 0-14) in Australia

Incidence

- An average of 641 children aged 0-14 years old were diagnosed with cancer each year in Australia between 2005 and 2009, corresponding to an age-standardised rate of 157 cases per million children per year.
- Leukaemias were the most common type of cancer diagnosed among Australian children, accounting for around one third (33%) of all cases, followed by tumours of the central nervous system which are responsible for 22% of all diagnoses and lymphomas (10%).
- Boys were 16% more likely than girls to be diagnosed with cancer.
- Almost half (47%) of all cases of childhood cancer in Australia were aged 0-4 years old at diagnosis, with a median age of 5.
- The overall incidence rate of childhood cancer increased significantly until the mid-1990s, but has remained stable since then among both boys and girls.
- Incidence rates are continuing to increase slowly (<1% per year) for children aged 0-4 years old, while there has not been a significant change over recent years for children in the older age groups (5-14 years old).
- Significantly increasing trends in incidence rates were observed for leukaemias, lymphomas, hepatic tumours and germ cell tumours from 1983 to 2010. In contrast, incidence rates for the diagnostic group of other malignant epithelial tumours (which includes melanoma) peaked in 1993 and have been decreasing by an average of 4% per year since then.
- Children living in capital cities had higher rates of cancer overall compared to other children in Australia, with the main differences occurring within the diagnostic groups of leukaemias and lymphomas.[6]
- Indigenous children were 36% less likely to be diagnosed with cancer compared to non-Indigenous children.[8]

Survival

- Relative survival for all childhood cancers combined in Australia for the period 2002-2011 was 92% by the end of the first year, then decreased to 82% after 5 years and 80% after 10 years.
- There were no significant differences in overall 5-year relative survival by either sex or age at diagnosis.
- However, variation was observed in survival according to the diagnostic grouping. Almost all (98%) children who were diagnosed with retinoblastoma survived for at least 5 years. Survival rates also exceeded 90% for lymphomas, other malignant epithelial neoplasms and germ cell tumours. In contrast, 5-year relative survival was significantly lower (70-75%) for children with hepatic tumours, tumours of the central nervous system, soft tissue sarcomas, neuroblastoma or malignant bone tumours.
- Five-year relative survival for all childhood cancers combined improved from 76% for the period 1992-2001 to 82% for 2002-2011. Significant improvements in survival were found for the diagnostic groups of leukaemias, lymphomas and neuroblastoma. There has been little or no improvement in survival for several other types of childhood cancer over recent years, particularly hepatic tumours.
- Survival was worse for children with cancer who lived in more isolated parts of Australia. Most of this difference occurred among children with leukaemia.[5]
- Five-year relative survival for cancer was significantly lower for Indigenous children (75%) compared to non-Indigenous children (82%).[9] Differences in place of residence, socio-economic disadvantage and cancer diagnostic group only partially explain this survival disadvantage. Other reasons are yet to be determined.

Mortality

- While perinatal conditions were the most common cause of mortality among infants (aged under 1), cancer was the most common cause of disease-related death among children aged 1-14 years old in Australia between 2008 and 2010, accounting for 17% of all deaths in this age group. (Source: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737423340)
- Almost one in every five children diagnosed with cancer in Australia dies within 5 years of diagnosis, equating to an average of 94 deaths per year under the age of 15 due to cancer between 2005 and 2009.
- Tumours of the central nervous system account for the largest number of deaths (40%), followed by leukaemias (23%) and neuroblastoma (11%).
- Overall childhood cancer mortality rates decreased by an average of about 4% per year between 1998 and 2010.
- This reduction in mortality rates is mainly being driven by a large decreasing trend in deaths due to leukaemia (-9% per year). Smaller (non-significant) decreases were recorded for tumours of the central nervous system and other solid tumours.
- Children diagnosed with cancer were two times more likely to die from a non-cancer cause compared to other children. In particular, the excess risk of death before the age of 15 was more than 4 times higher within the 10-14 age group.[9]

Recent publications from the Australian Paediatric Cancer Registry

1. Youlden D, Baade P, Ward L, Valery P, Hassall T, Green A, Aitken J. *Childhood cancer incidence in Australia, 1983-2006*. Brisbane: Viertel Centre for Research in Cancer Control, Cancer Council Queensland and the Australian Paediatric Cancer Registry, 2009.
2. Youlden D, Baade P, Ward L, Valery P, Hassall T, Green A, Aitken JF. *Childhood cancer survival in Australia, 1995-2004*. Viertel Centre for Research in Cancer Control, Cancer Council Queensland and the Australian Paediatric Cancer Registry: Brisbane 2010.
3. Baade PD, Youlden DR, Valery PC, Hassall T, Ward L, Green AC, Aitken JF. Trends in incidence of childhood cancer in Australia, 1983-2006. *British Journal of Cancer* 2010;102(3):620-626.
4. Baade PD, Youlden DR, Valery PC, Hassall T, Ward L, Green AC, Aitken JF. Population-based survival estimates for childhood cancer in Australia during the period 1997-2006. *British Journal of Cancer* 2010;103(11):1663-1670.
5. Youlden DR, Baade PD, Valery PC, Ward LJ, Green AC, Aitken JF. Differentials in survival for childhood cancer in Australia by remoteness of residence and area disadvantage. *Cancer Epidemiology, Biomarkers & Prevention* 2011;20(8):1649-1657.
6. Youlden DR, Baade PD, Valery PC, Ward LJ, Green AC, Aitken JF. Area-based differentials in childhood cancer incidence in Australia, 1996-2006. *Pediatric Blood and Cancer* 2012;58(3):390-394.
7. Youlden DR, Baade PD, Valery PC, Ward LJ, Green AC, Aitken JF. Childhood cancer mortality in Australia. *Cancer Epidemiology* 2012;36(5):476-480.
8. Valery PC, Youlden DR, Baade PD, Ward LJ, Green AC, Aitken JF. Cancer Incidence and Mortality in Indigenous Australian Children, 1997-2008. *Pediatric Blood and Cancer* 2013;60(1):156-158.
9. Valery PC, Youlden DR, Baade PD, Ward LJ, Green AC, Aitken JF. Cancer survival in Indigenous and non-Indigenous Australian children: what is the difference? *Cancer Causes and Control* 2013;24(12):2099-2106.

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Data source: Australian Paediatric Cancer Registry, March 2014 extract (including data for 1983 to 2010 except for NSW and ACT where data was available for 1983 to 2009), unless otherwise specified.