National and International Childhood Cancer Incidence and Time Trends

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Childhood Cancer 2012
Childhood Cancer Incidence in the UK, 1996-2005

Age-standardized rate (ASR) 142 per million

Cumulative risk in first 15 years of life 1 in 484

Sex ratio (M/F) 1.2

Source: National Registry of Childhood Tumours
Annual Incidence by Single Year of Age
All Cancers, Great Britain, 1991-2000

Fig 3.1  All cancers

Source: National Registry of Childhood Tumours
Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality.* OUP, 2007
Contributions of the 12 Main Groups of ICCC-3* to Age-standardized Incidence, Great Britain, 1991-2000

*International Incidence of Childhood Cancer, Third Edition
(Stelianova-Foucher E et al. Cancer 2005, 103, 1457-1467)

Source: National Registry of Childhood Tumours
Stiller C (ed.) Childhood Cancer in Britain: Incidence, Survival, Mortality. OUP, 2007
Annual Incidence by Single Year of Age Lymphomas (ICCC-3 Group II), Great Britain, 1991-2000

Fig 3.14 Lymphomas and reticuloendothelial neoplasms

Source: National Registry of Childhood Tumours
Source: National Registry of Childhood Tumours
Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality.* OUP, 2007
Childhood Cancer Incidence in Europe, 1988-1997

British Isles: Ireland, UK
East: Belarus, Estonia, Hungary, Slovakia
North: Denmark, Finland, Iceland, Norway
South: Italy, Malta, Slovenia, Spain, Turkey
West: France, Germany, Netherlands, Switzerland

Source: Automated Childhood Cancer Information System (ACCIS)
Childhood Cancer Incidence in the Americas in the 1980s

Colombia: Cali
Costa Rica: national
Uruguay: national
USA: SEER registries

Childhood Cancer Incidence in the USA, 1999-2003

Source: 38 SEER & NPCR registries

Childhood Cancer Incidence in Asia & Oceania in the 1980s

Hong Kong, Israel, Australia: National
India: Bombay
Japan: 5 registries
Thailand: 4 registries

Childhood Cancer Incidence in Africa in the 1990s

Algeria: 4 registries
Tunisia: 3 registries
Nigeria: Ibadan
Uganda: Kyadondo County
Zimbabwe: Harare (Africans)

Ewing Sarcoma of Bone: Incidence in the 1980s

Australia, Germany, Hong Kong: National
UK: England & Wales
Japan: 5 registries
USA: SEER registries

# Adrenocortical Carcinoma in Southern Brazil

<table>
<thead>
<tr>
<th>Location</th>
<th>ASR per million</th>
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<tbody>
<tr>
<td>São Paulo (1969-1978)</td>
<td>1.5</td>
</tr>
<tr>
<td>Goiânia (1989-1994)</td>
<td>2.8</td>
</tr>
<tr>
<td>Curitiba (1998-2003)</td>
<td>3.5?</td>
</tr>
<tr>
<td>Other world regions</td>
<td>&lt;0.5</td>
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Malignant Melanoma: Incidence in the 1980s

- New Zealand non-Maori
- Australia
- UK
- USA White
- USA Black

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<thead>
<tr>
<th>Country/Region</th>
<th>ASR per million</th>
</tr>
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<tbody>
<tr>
<td>New Zealand non-Maori</td>
<td>4.5</td>
</tr>
<tr>
<td>Australia</td>
<td>3.5</td>
</tr>
<tr>
<td>UK</td>
<td>1.0</td>
</tr>
<tr>
<td>USA White</td>
<td>1.5</td>
</tr>
<tr>
<td>USA Black</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Australia, New Zealand: National
UK: England & Wales
USA: SEER registries

All Childhood Cancer, Great Britain, 1966-2005
Age-sex-standardized rates by 5-year period of diagnosis

Annual average % change (95% CI) 1.0 (0.9, 1.1)

Source: National Registry of Childhood Tumours
All Childhood Cancer, Great Britain, 1966-2005
Age-sex-standardized rates by 5-year period of diagnosis

Annual average % change (95% CI)

- Leukaemia (ICCC-3 I): 0.7 (0.6, 0.9)
- CNS tumours (ICCC-3 III, Xa): 1.3 (1.2, 1.5)
- All other childhood cancers: 1.0 (0.9, 1.1)

Source: National Registry of Childhood Tumours
Childhood Leukaemia in England and Wales, 1911-1960

Mortality at age 0, 1-4, 5-9, 10-14

Shah A, Coleman MP. Br J Cancer 2007, 97, 1009-1012
Acute Lymphoblastic Leukaemia in Europe, 1970-1999

West: Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Spain, Switzerland, UK

East: Belarus, Estonia, Slovakia, Slovenia, Turkey

Source: ACCIS

Primary Malignant Brain Tumours in the USA, 1973-1994

Age-standardized annual rates: Δ Incidence X Mortality

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<tbody>
<tr>
<td>No. of CT scanners</td>
<td>8</td>
<td>921</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of MRI units</td>
<td></td>
<td></td>
<td>10</td>
<td>108</td>
<td>371</td>
</tr>
</tbody>
</table>

Source: SEER Program
Childhood CNS Tumours in Great Britain, 1966-2005

Source: National Registry of Childhood Tumours

Wabinga HR et al. Br J Cancer 2000, 82, 1585-1592
Hepatocellular Carcinoma in Taiwan, 1981-1994
Incidence & mortality (age 6-14)

Hepatitis B mass vaccination began 1984

Thyroid Cancer Incidence in Children and Adolescents
Ukraine, 1989-2008

Regions classified by reconstructed $^{131}$I thyroid dose
High exposure: >35 mGy  Low exposure: ≤35 mGy

Fuzik M et al. Radiat Environ Biophys 2011, 50, 47-55
Cutaneous Malignant Melanoma in Children & Adolescents
Sweden, 1973-2002

ASR at age 0-19

Karlsson PM, Fredrikson M. *Int J Cancer* 2007, *121*, 323-328
Childhood Melanoma in Australia, 1983-2006

Observed incidence by year of diagnosis

Underlying trends
1983-1993 +8.4% per year
1993-2006 -8.5% per year

Neuroblastoma in Japan
Osaka Prefecture excluding Osaka City

Honjo S et al. Int J Cancer 2003, 103, 538-543
Neuroblastoma in Europe, 1988-1997

Incidence at age 0, 1-4, 5-9, 10-14
British Isles: Ireland, UK
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Source: ACCIS
Future Work

International Incidence of Childhood Cancer, Volume 3 (IICC-3)

ACCIS-2

• Calls for data have been issued

• Years of diagnosis to at least 2005

• Age 0-19 in both studies

• Increased geographical coverage, especially outside W Europe, N America and Australia / New Zealand
Future Trends

Most marked trends will probably occur in lower income countries

• Kaposi sarcoma in areas of high HHV8 expected to rise and fall with childhood HIV
• Hepatocellular carcinoma in areas of moderately high incidence should decline with uptake of hepatitis B vaccination
• Burkitt lymphoma may increase if geographical range of holoendemic malaria widens with climate change
• Recorded incidence of many other cancers may rise as populations become more affluent and availability of facilities for diagnosis and treatment increases