

Introduction to Cancer in Teenagers and Young Adults

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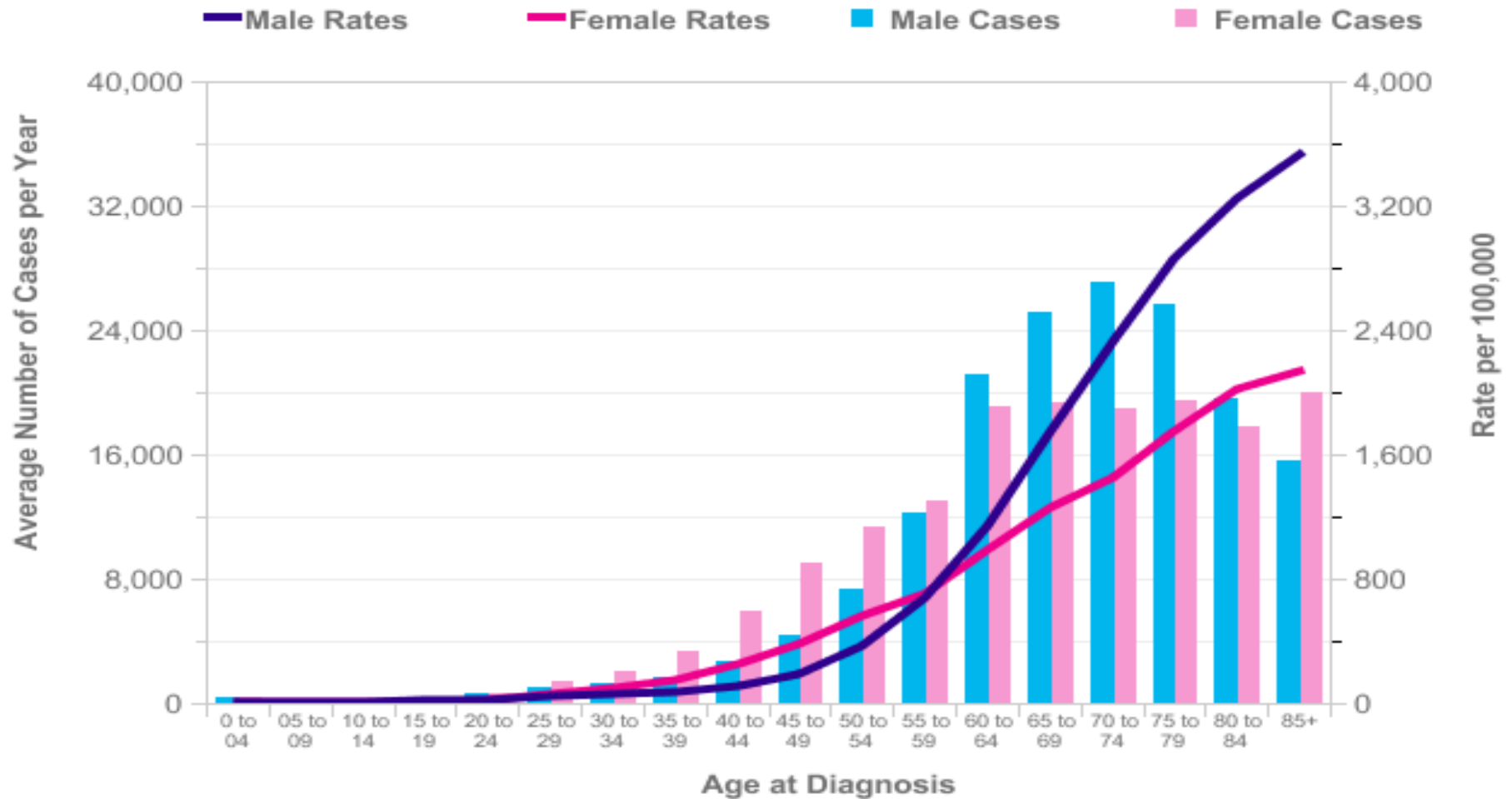
Objectives

1. To define the age range referred to as TYA and learn how and why this varies internationally
1. To explore the incidence and patterns of cancer in TYA
2. To consider current expectations for survival and explore how these vary by age, cancer type and geographical location
1. To review some of the current challenges in the delivery of TYA cancer services

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Who gets cancer? (UK)



Factors affecting the definition of TYA



Factors affecting the definition of TYA

Age

Developmental stage

Educational threshold

Cancer type

Existing service provision

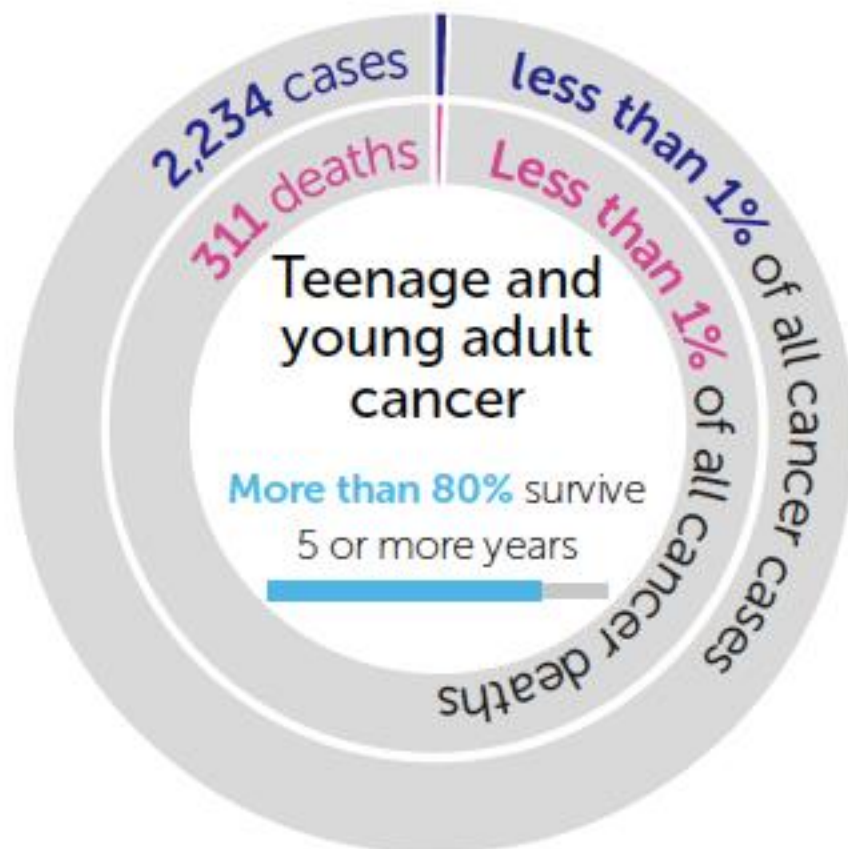
Country/region	Age range (year)	Terminology
UK	13-24	Teenagers/Young Adults (TYA)
Australia	15-24	Adolescents/Young Adults (AYA)
USA	15-39	Adolescents/Young Adults (AYA)
Eurocare	15-24	Adolescents/Young Adults (AYA)
Canada	15-29	Adolescents/Young Adults (AYA)

So why does it matter?

So why does it matter?

Cancer is the leading cause of death from disease in TYA in the UK

- Accounts for 9% of all deaths in males and 15% in females
- Approximately 300 – 320 TYA die from cancer each year in the UK
- Survival rates are high so life years ‘gained’ are proportionately large



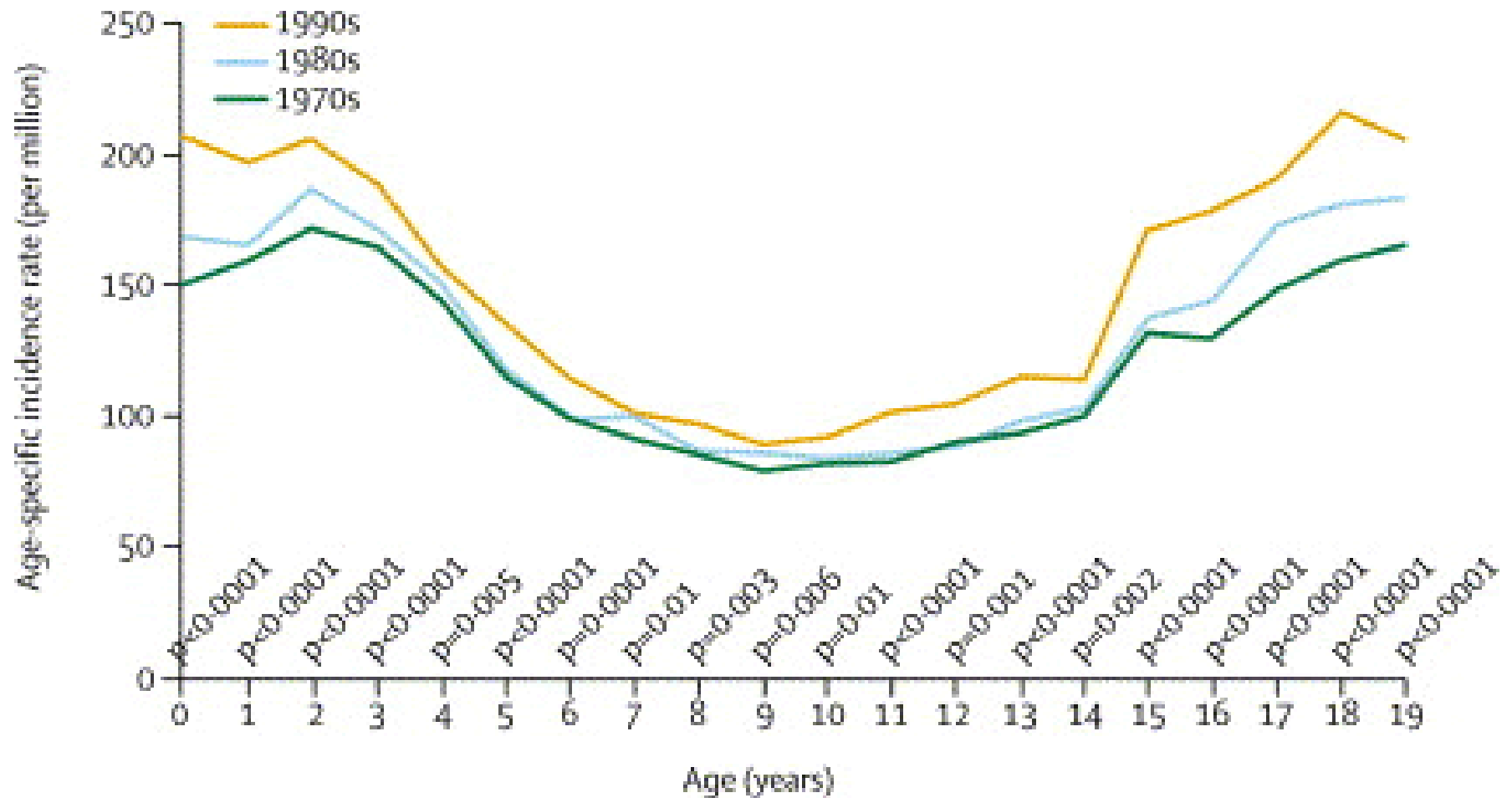
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What causes teenage and young adult cancer?

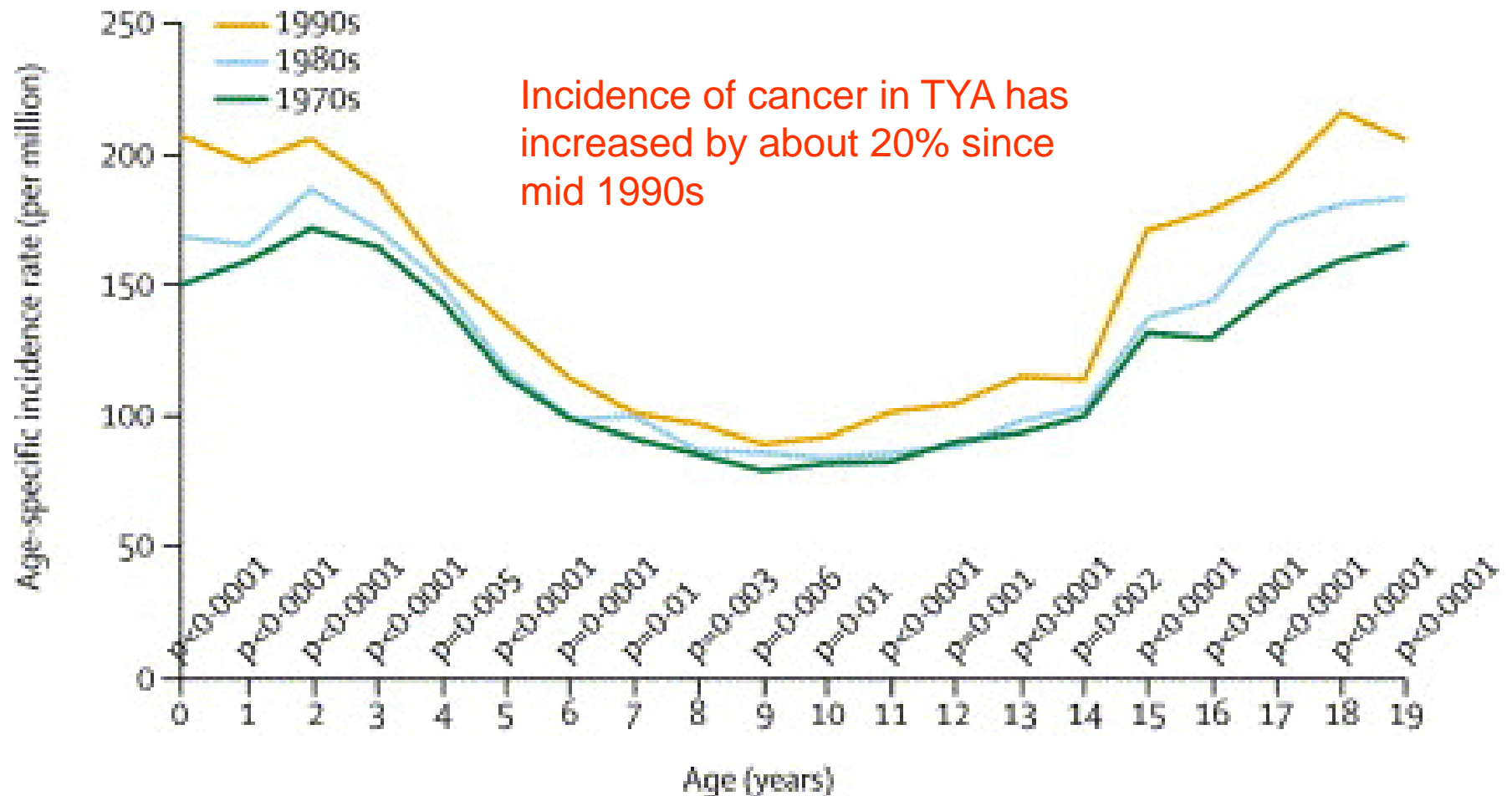
- Excessive exposure to ultraviolet radiation increases risk of melanoma in TYAs.
- Human papillomavirus infection nearly always precedes development of cervical cancer.
- TYAs who have undergone treatment for a previous cancer have a higher risk of developing a second cancer.
- Some TYA cancers are thought to be linked to growth and hormonal factors during puberty.
- Delayed exposure to common infections may be linked to Hodgkin lymphoma in TYAs.
- Some TYA cancers are linked to certain genetic syndromes, such as Li Fraumeni, familial adenomatous polyposis and neurofibromatosis type 1.

The incidence of cancer in children & young people is slowly rising



European data from ACCIS study, Eur J Cancer 2006

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European data from ACCIS study, Eur J Cancer 2006

Incidence of cancer (cases per million / year)

<u>Age range (years)</u>	<u>Incidence</u>
0 – 4	206
5 – 9	105
10 – 14	123
15 – 19	203
20 – 24	346
25 – 29	604

Ries LAG, et al
SEER Cancer Statistics Review, 1973–1998.
National Cancer Institute, 2001
http://seer.cancer.gov/Publications/CSR1973_1998/505.

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Evolving differences in diagnosis: children vs. younger TYA

European data (ACCIS study)

Stiller et al Eur J Cancer 2006, 42, 2006 - 18

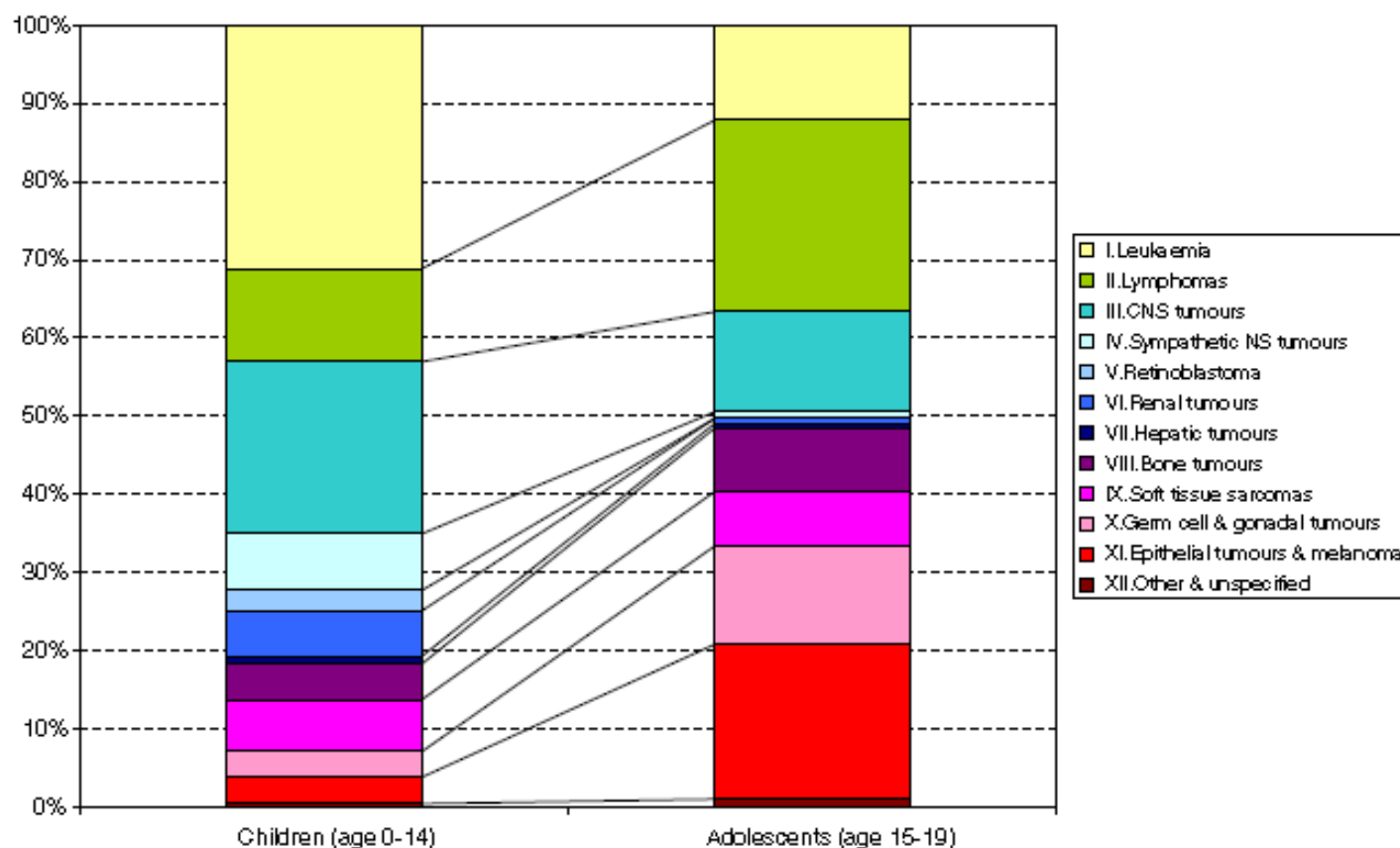
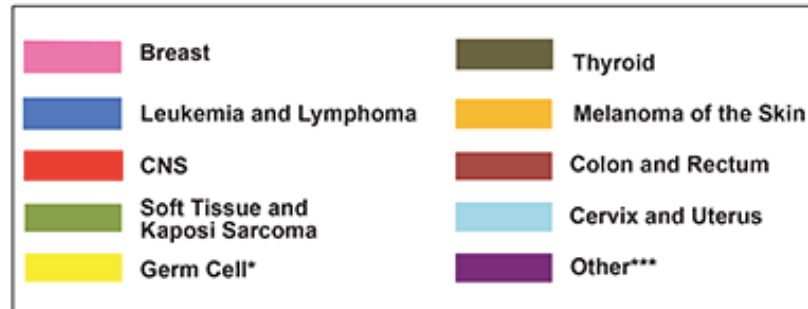
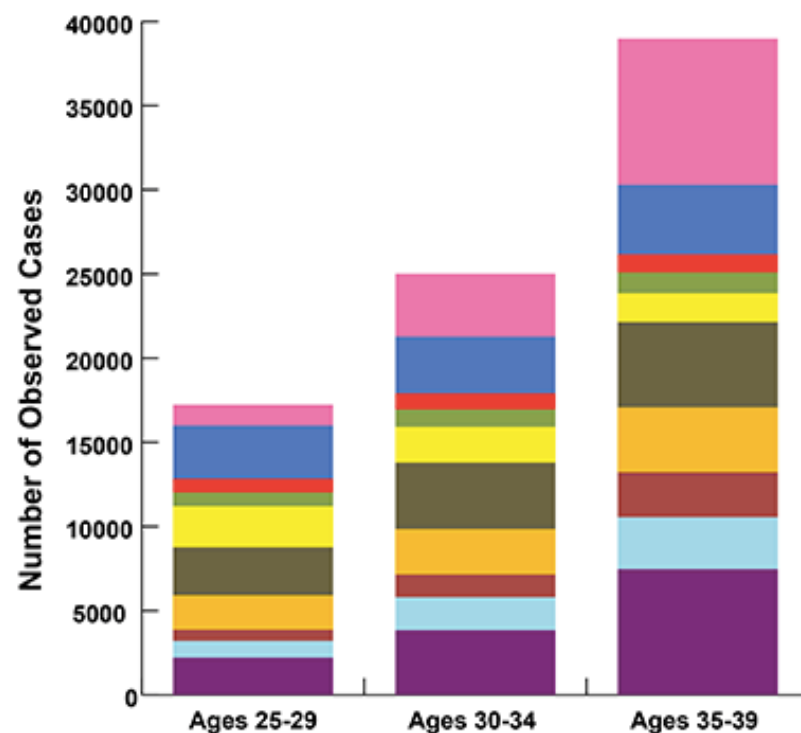
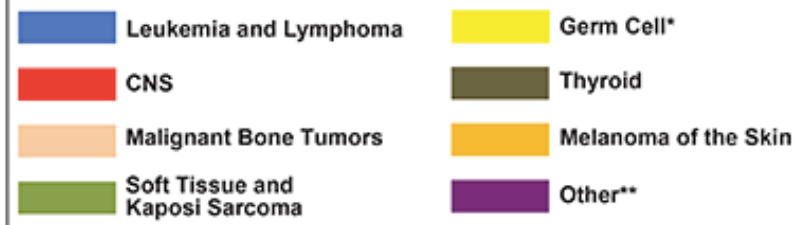
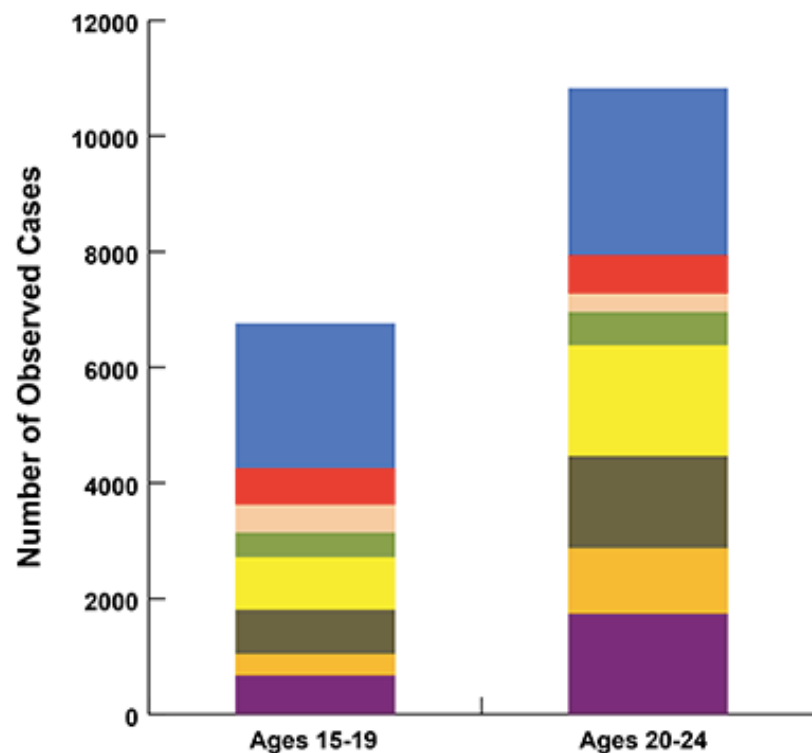


Fig. 2 – Relative frequencies (%) of the 12 diagnostic groups of ICCC among children and adolescents in Europe, 1988–1997.

Source: ACCIS.

Common Types of Cancer Affecting AYAs



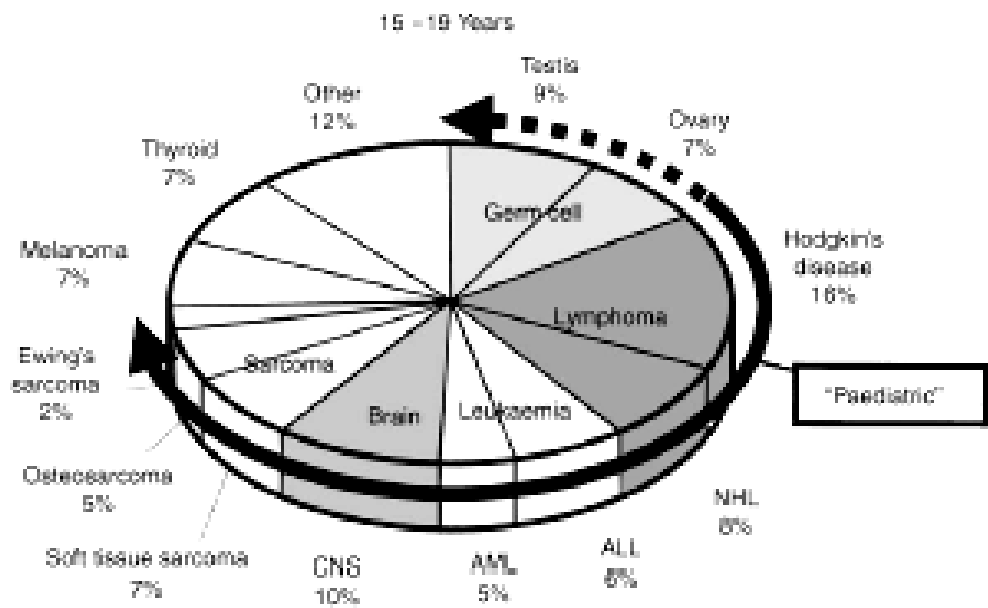
*includes testicular cancer

**includes breast, cervical, colon and other less prevalent cancers

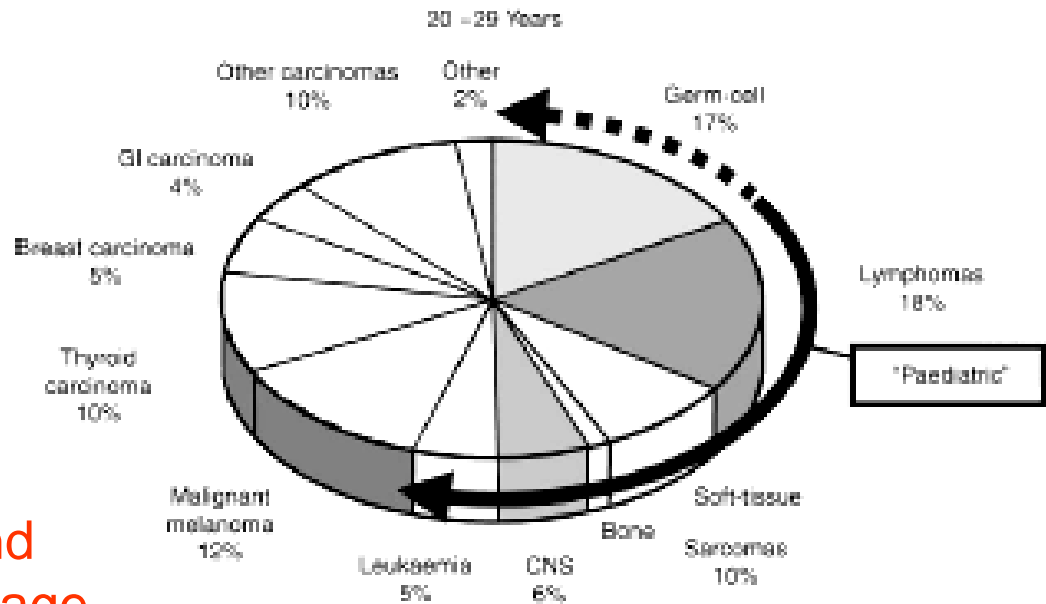
*** includes malignant bone tumors and other less prevalent cancers

Common cancer types

Age 15 – 19 years →

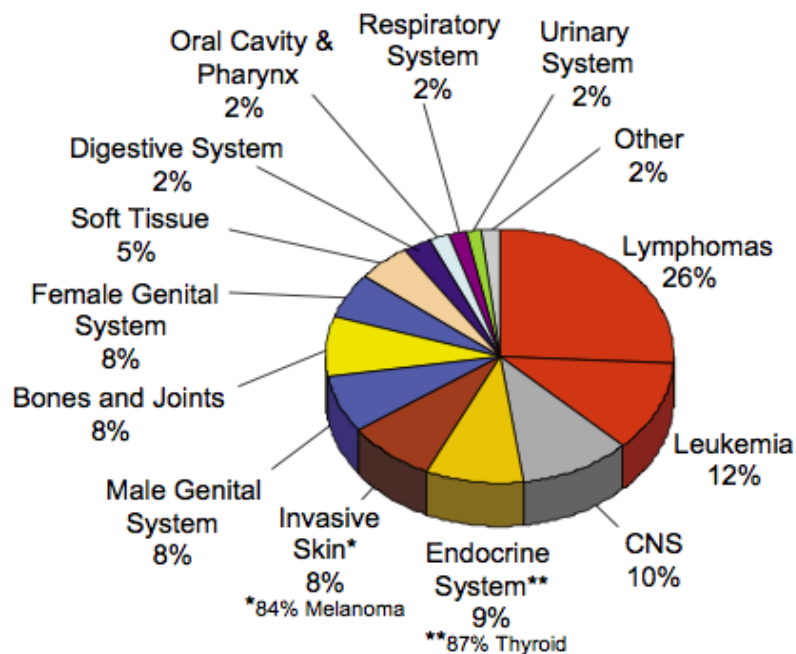


Age 20 – 29 years →

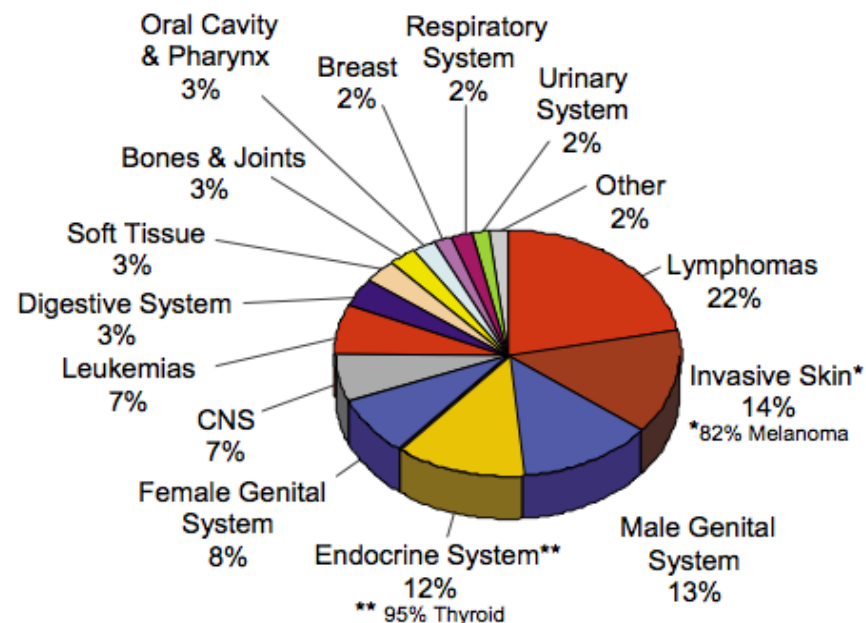


Showing the changing proportion of paediatric and adult type diagnoses with age

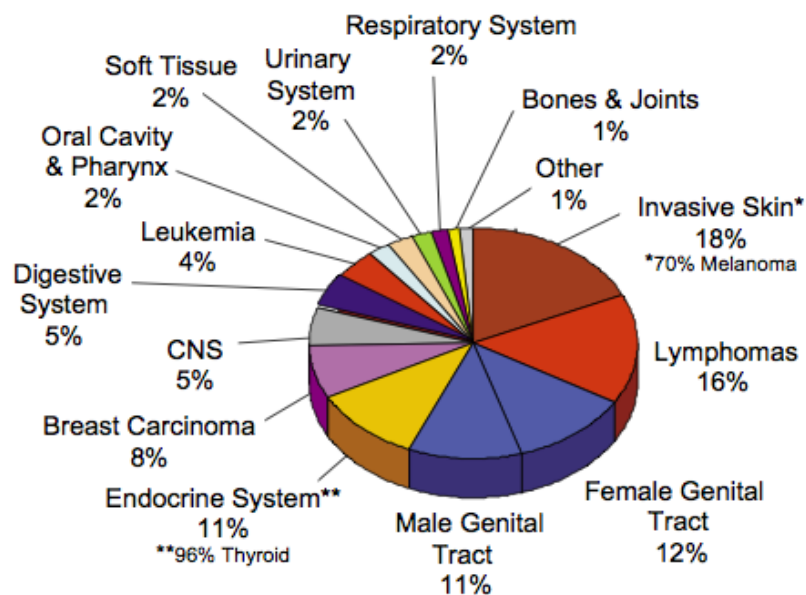
15- to 19-Year-Olds



20- to 24-Year-Olds



25- to 29-Year-Olds



Major cancer types for TYA services

Lymphoma

Leukaemia

Germ Cell

Sarcoma – bone and soft tissue

CNS

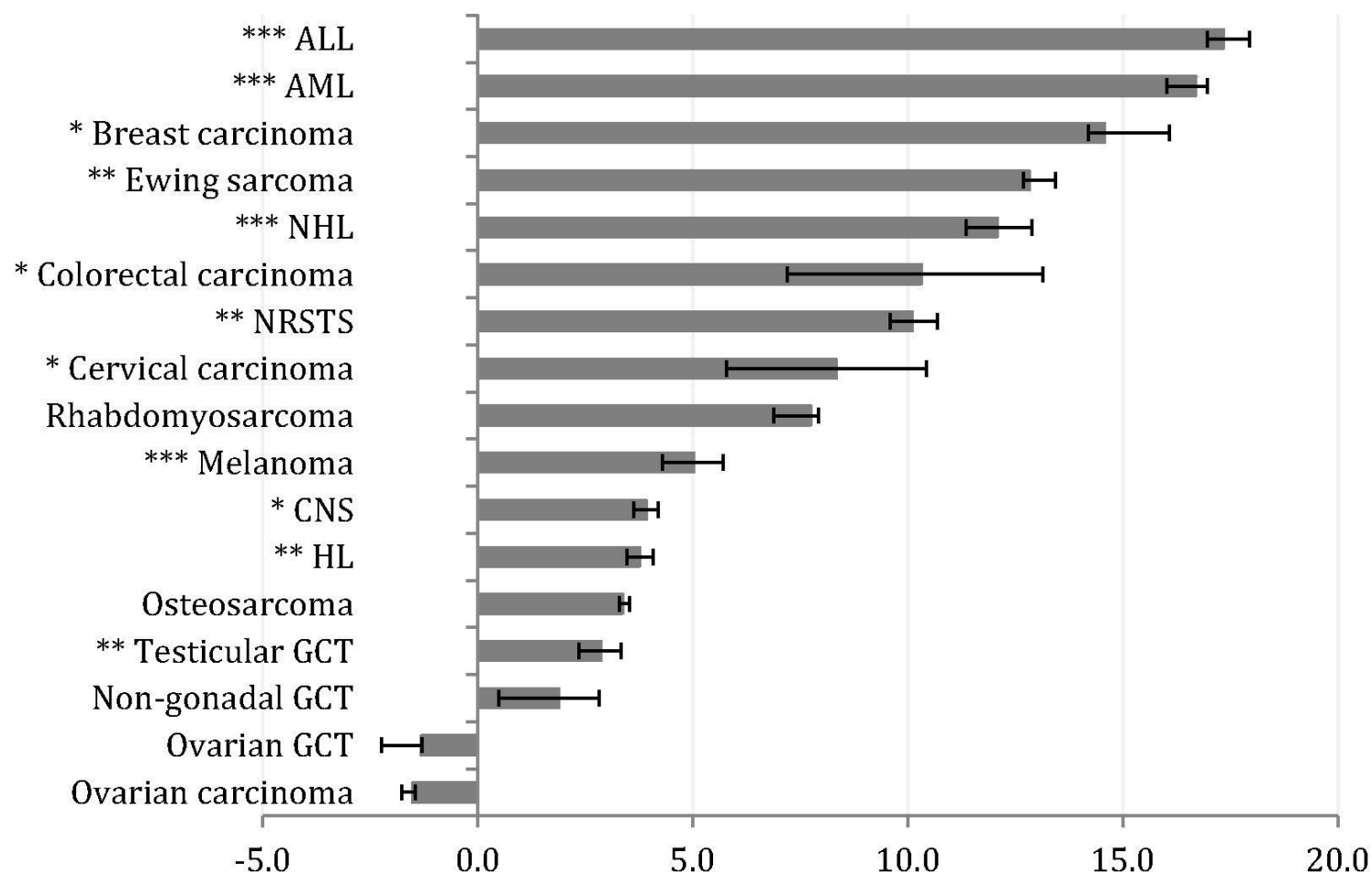
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Trends in survival for Teenagers and Young Adults with cancer in the United Kingdom 1992 – 2006. O'Hara et al. European Journal of Cancer (2015) 51, 2039– 2048

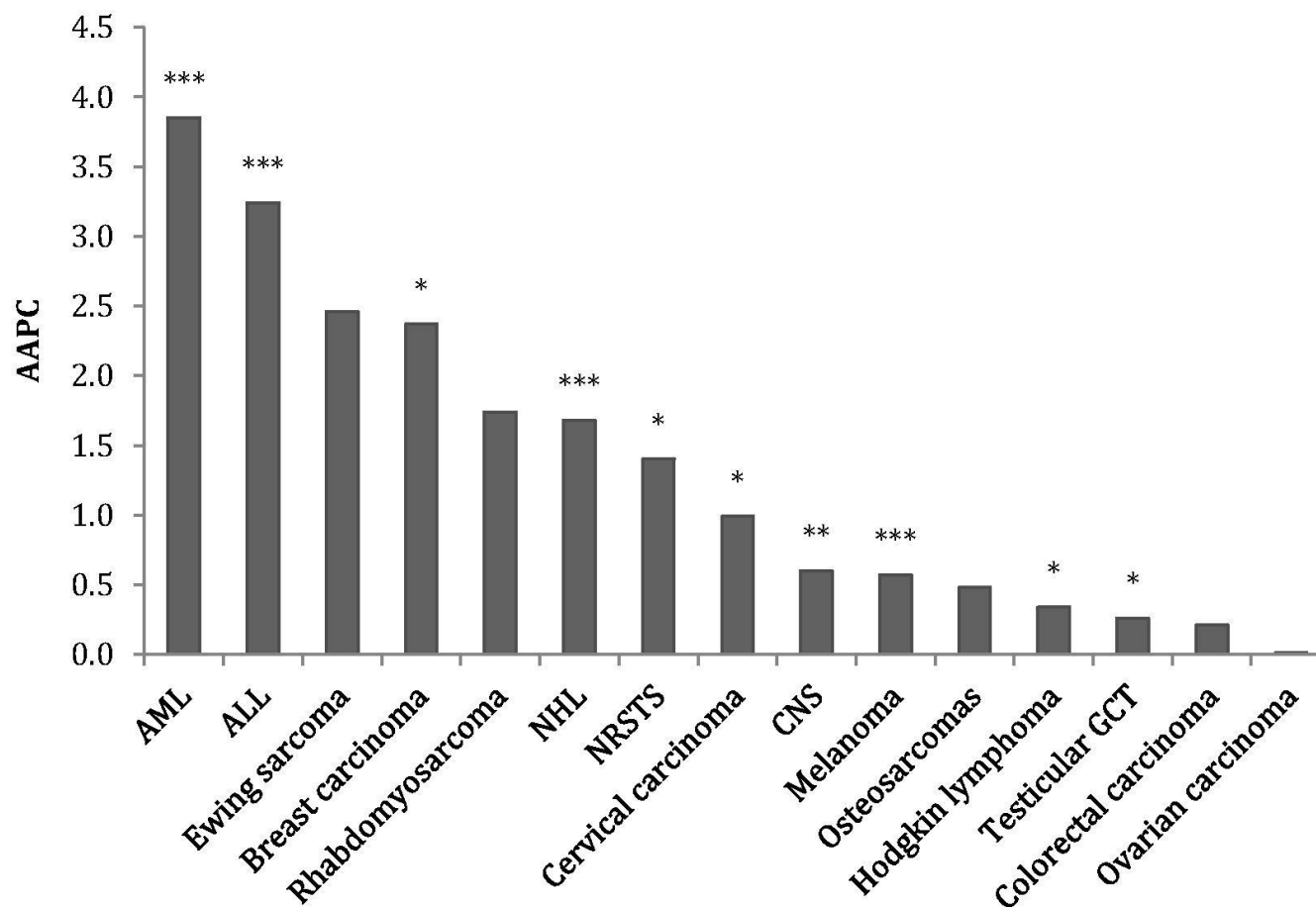
Diagnosis	Period			95% CI	<i>P</i> -value
		% Survival			
All cancers	1992–1996	75.7		74.8 76.6	
	1997–2001	78.6		77.7 79.5	<0.001
	2002–2006	82.2		81.4 82.9	<0.001

Trends in survival for Teenagers and Young Adults with cancer in the United Kingdom 1992 – 2006. O'Hara et al. European Journal of Cancer (2015) 51, 2039– 2048

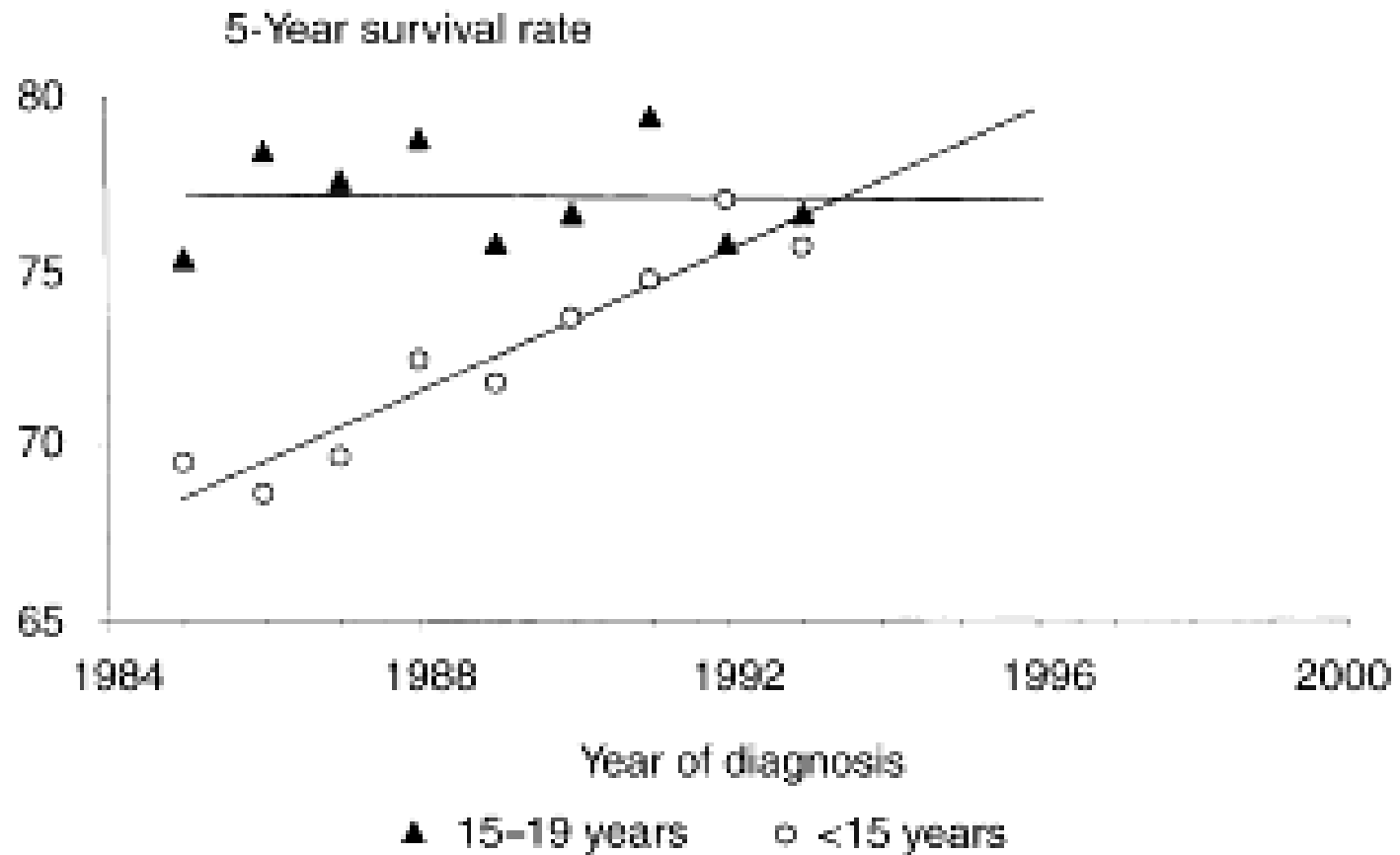


Differences in 5-year survival (%) for all persons between 1992–1996 and 2002–2006

Trends in survival for Teenagers and Young Adults with cancer in the United Kingdom 1992 – 2006. O'Hara et al. European Journal of Cancer (2015) 51, 2039– 2048



Annual average percentage change (AAPC) 1992–2006.



Change in 5 year survival rates by era of diagnosis for TYA and paediatric patients

Deficit in survival rates for TYA patients

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K. Albritton, W.A. Bleyer / European Journal of Cancer 39 (2003) 2584–2599

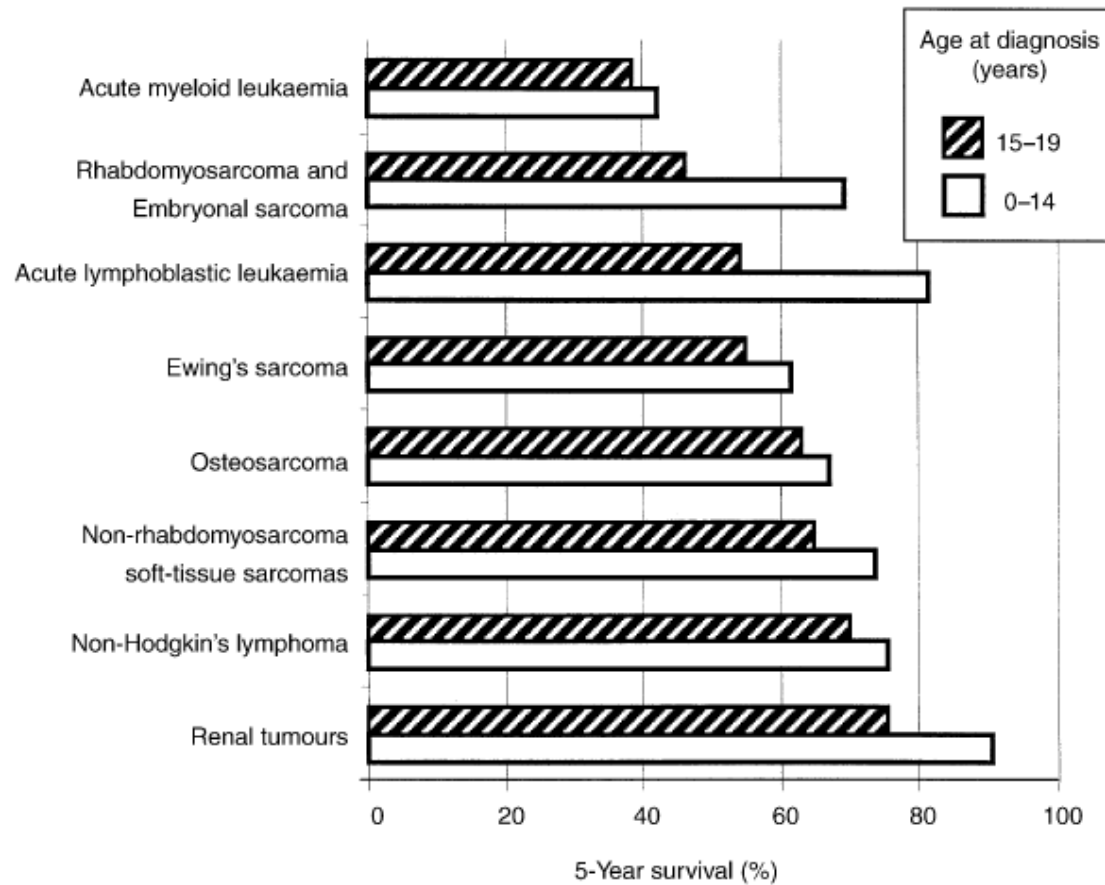


Fig. 4. Gap in survival rates for selected cancers in 15- to 19-year-olds versus <14-year-olds. Data from the U.S. SEER programme [3].

Relative improvement in survival (year on year) by age at diagnosis

Zebrack et al Cancer 2006, 107, 2915 - 23

2916 CANCER December 15, 2006 / Volume 107 / Number 12

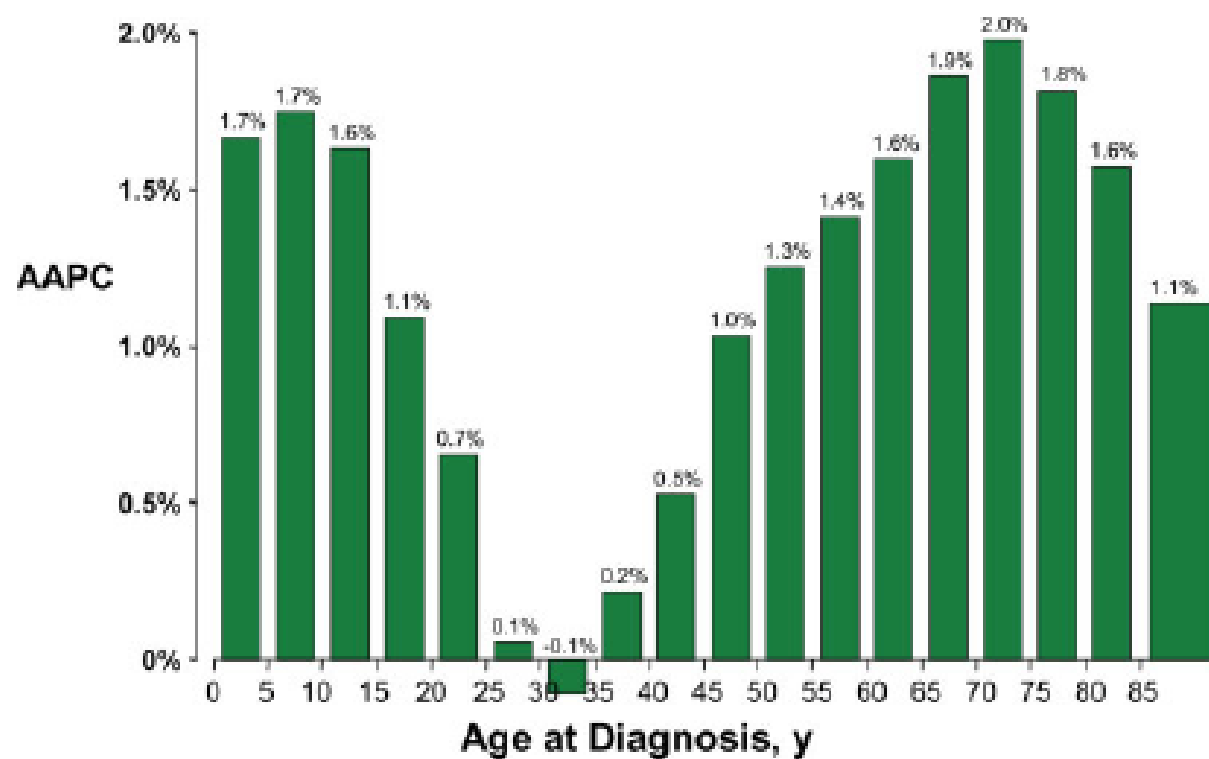
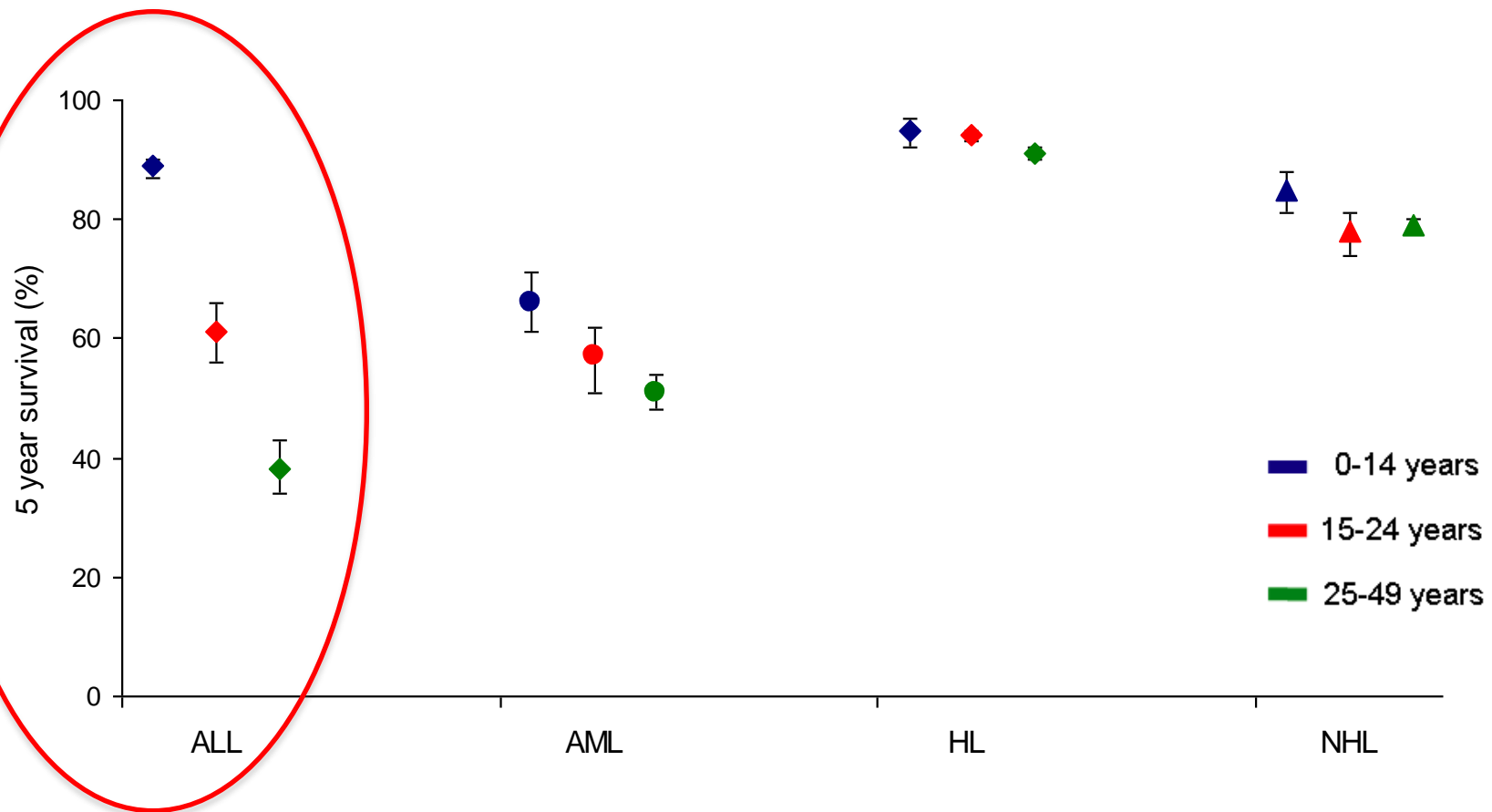


FIGURE 1. Average annual percentage change (AAPC) in 5-year relative survival of patients diagnosed with invasive cancer, 1975 to 1998 (United States statistics from the Surveillance, Epidemiology, and End Results Program). Relative survival refers to all deaths, regardless of cause. Updated and modified from Hampton T. Cancer treatment's trade-off. *JAMA*. 2005;294:167-168.²



Five-year survival by diagnosis and age for patients diagnosed in the UK 2001-2005.

So why do TYA do less well in some diseases.....?

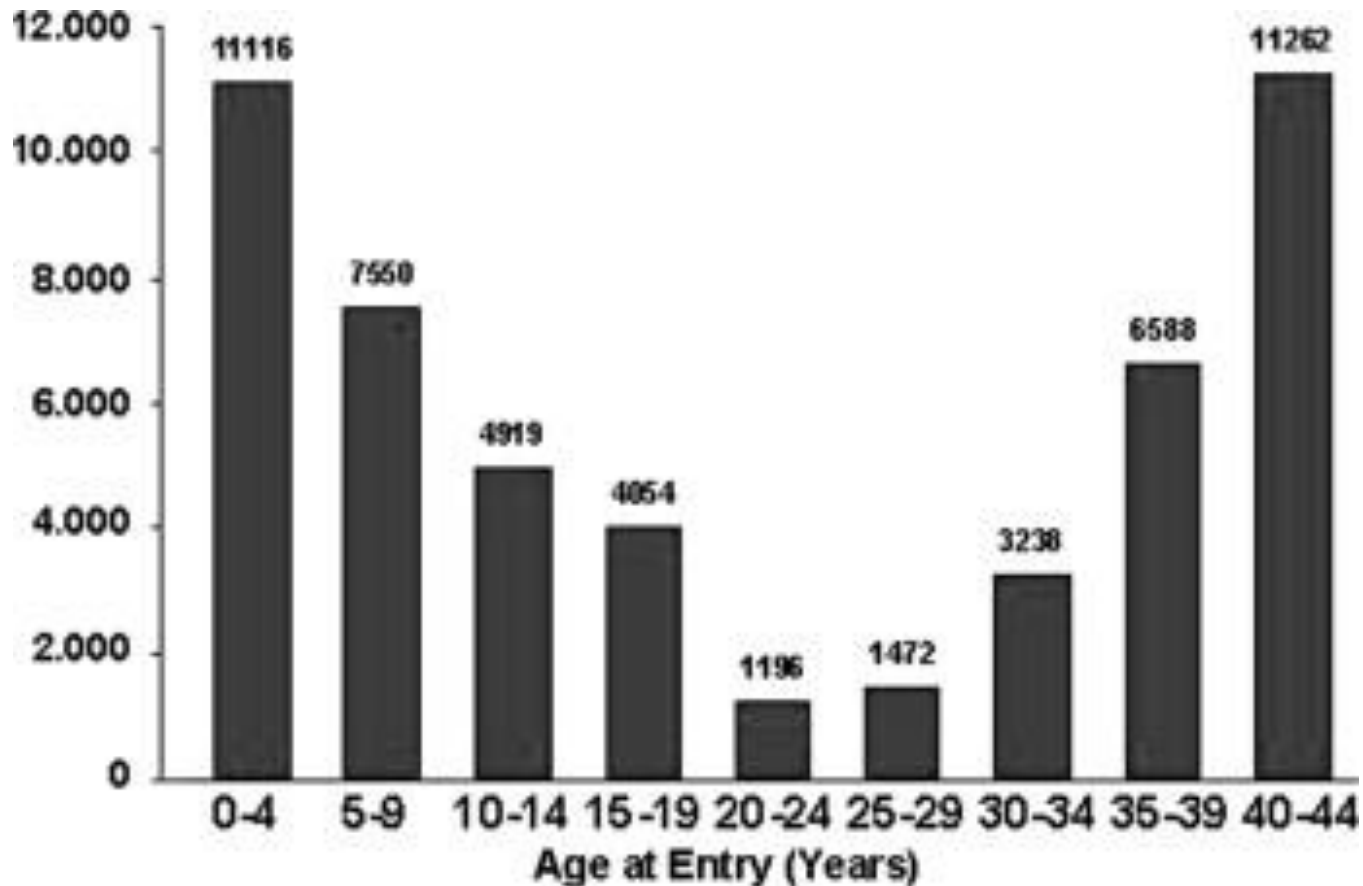
So why do TYA do less well in some diseases.....?

Disease related factors

Treatment related factors

Patient related factors

Entry of patients age < 45 years onto US National Cooperative Group treatment trials (1997–2003)



(Bleyer A, Budd T, Montello M. Adolescents and young adults with cancer: the scope of the problem and criticality of clinical trials. Cancer. 2006; 107(S7):1645–1655)

Deficit in clinical trial opportunity for TYA patients (USA data)

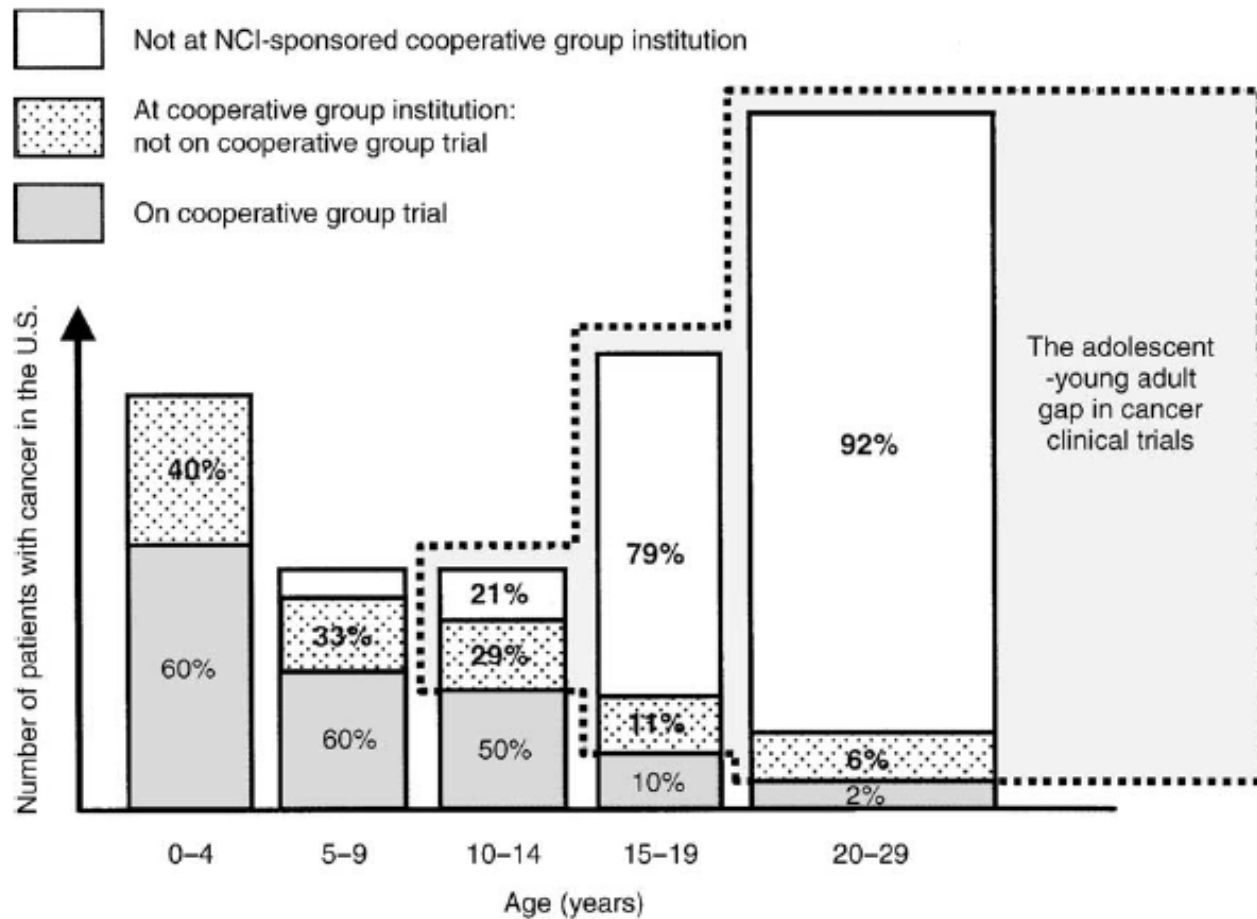
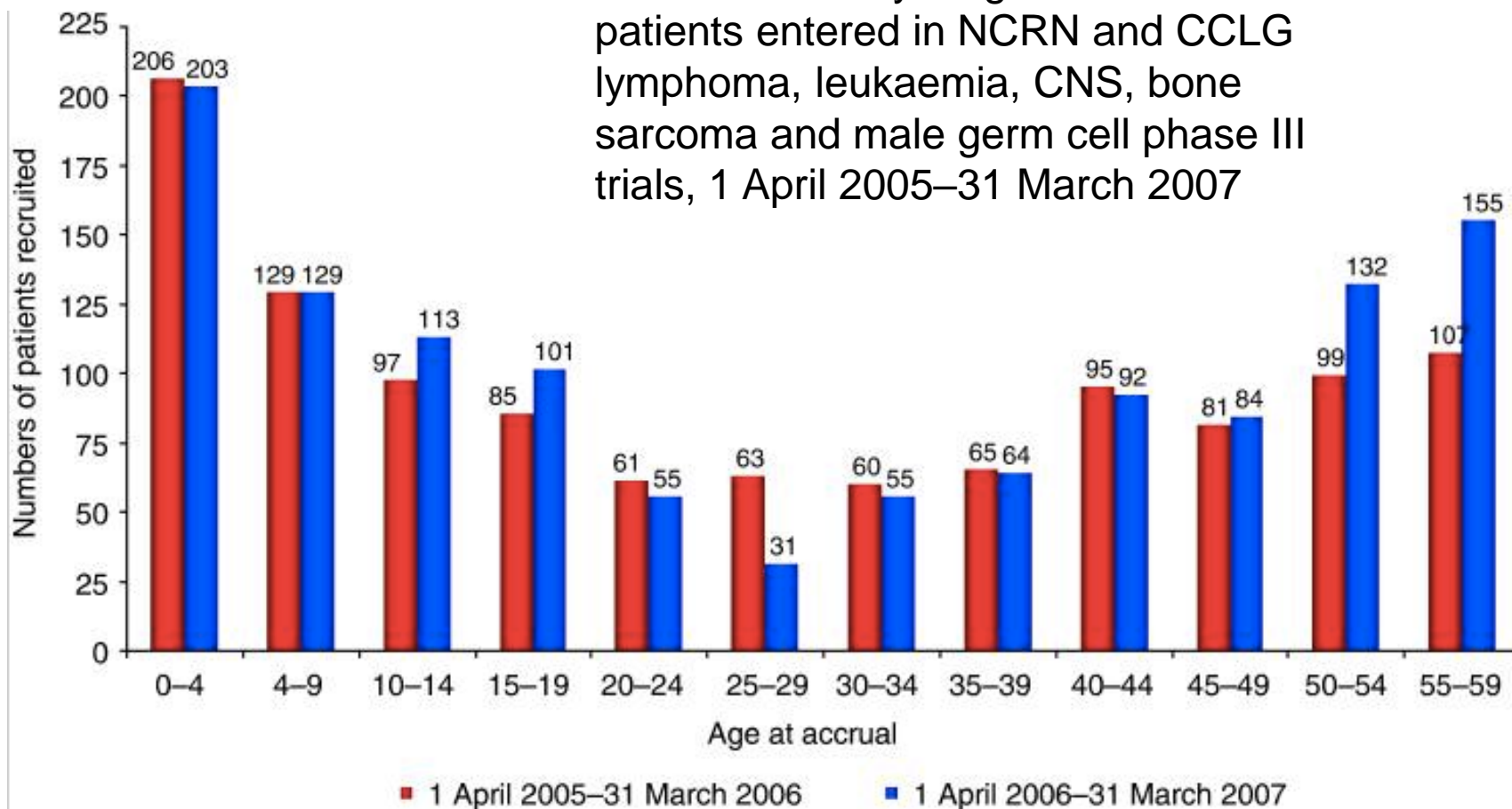


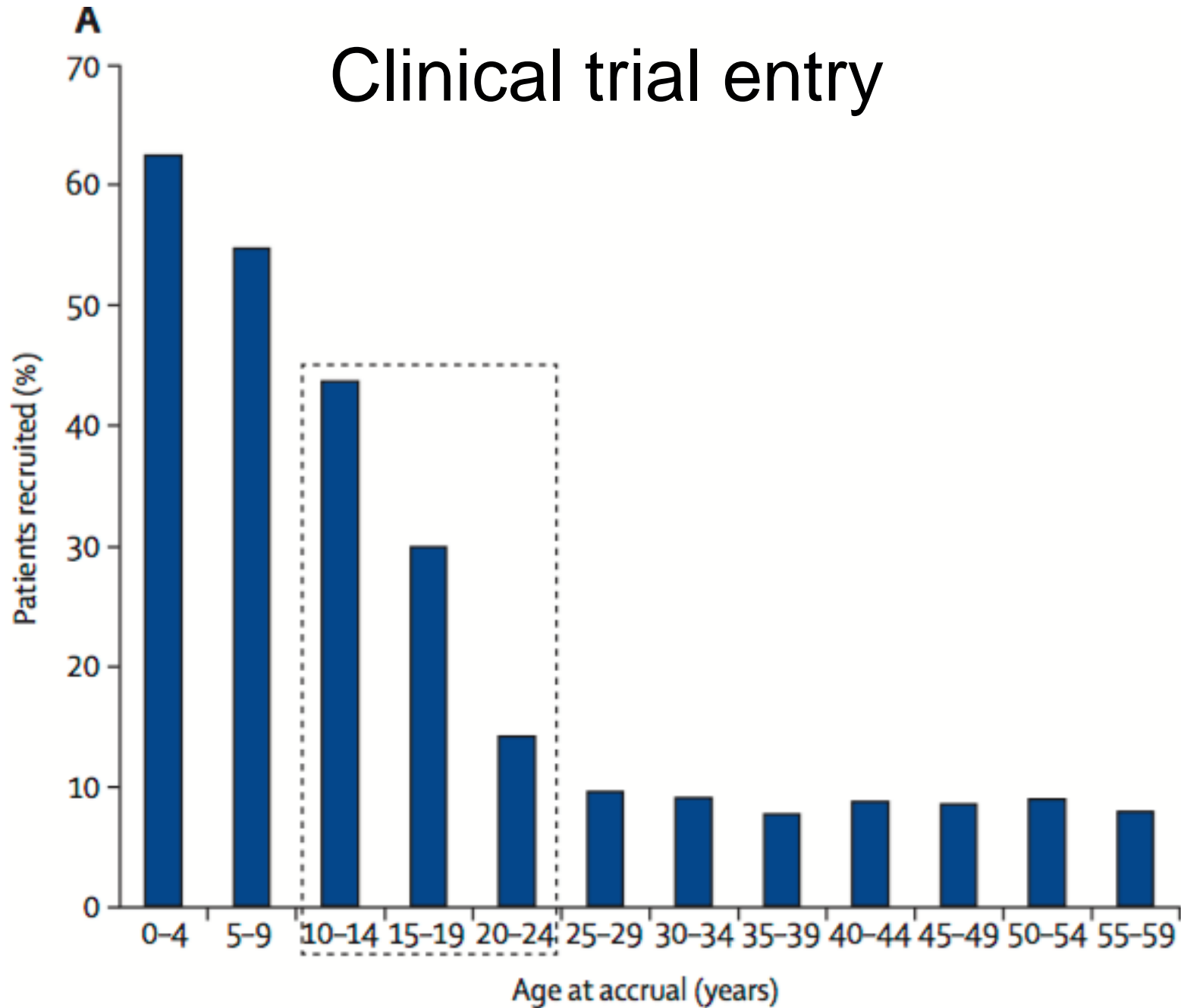
Fig. 5. The “adolescent and young adult gap” in cancer clinical trials [45,46].

Fern et al Br J Cancer 2008

Number of newly diagnosed cancer patients entered in NCRN and CCLG lymphoma, leukaemia, CNS, bone sarcoma and male germ cell phase III trials, 1 April 2005–31 March 2007



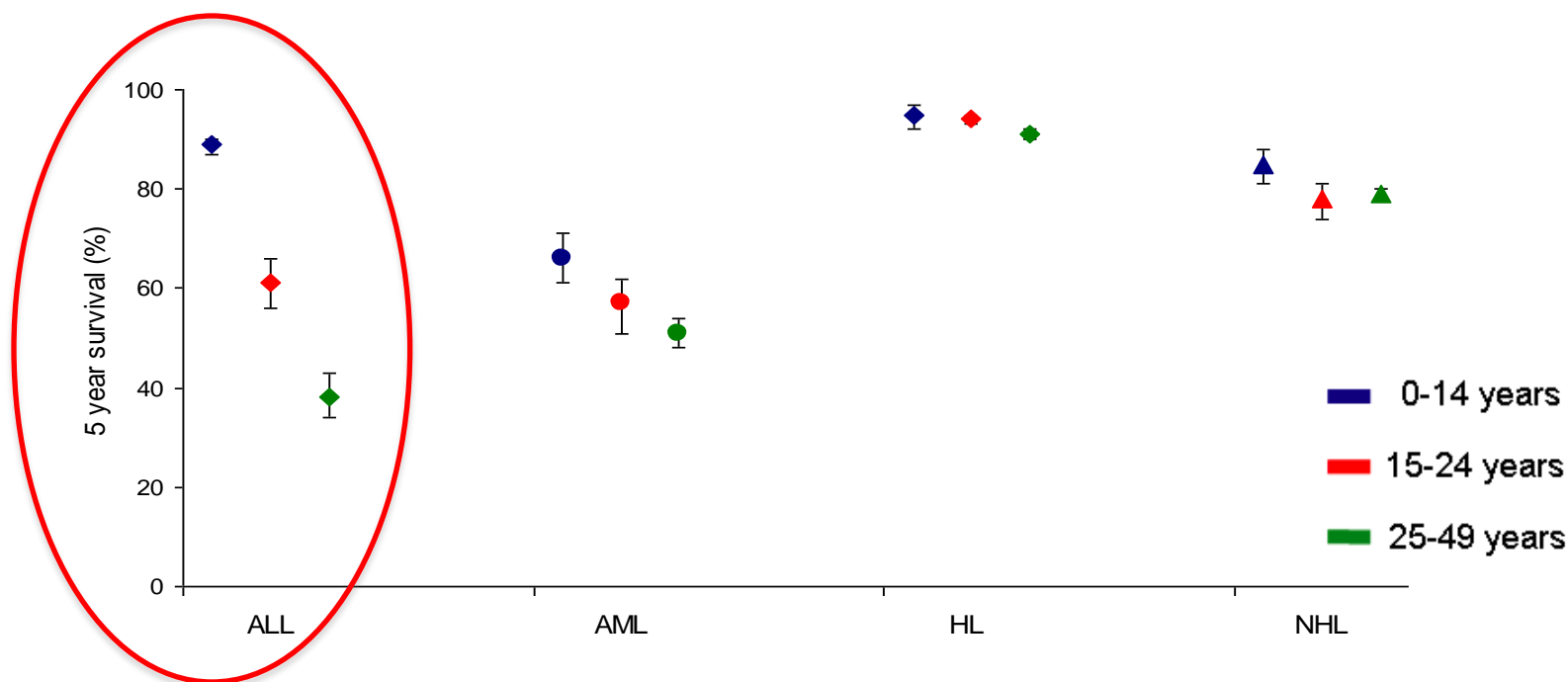
Clinical trial entry



Improving participation in clinical trials

- Awareness
- Available
- Appropriate
- Access
- Acceptable

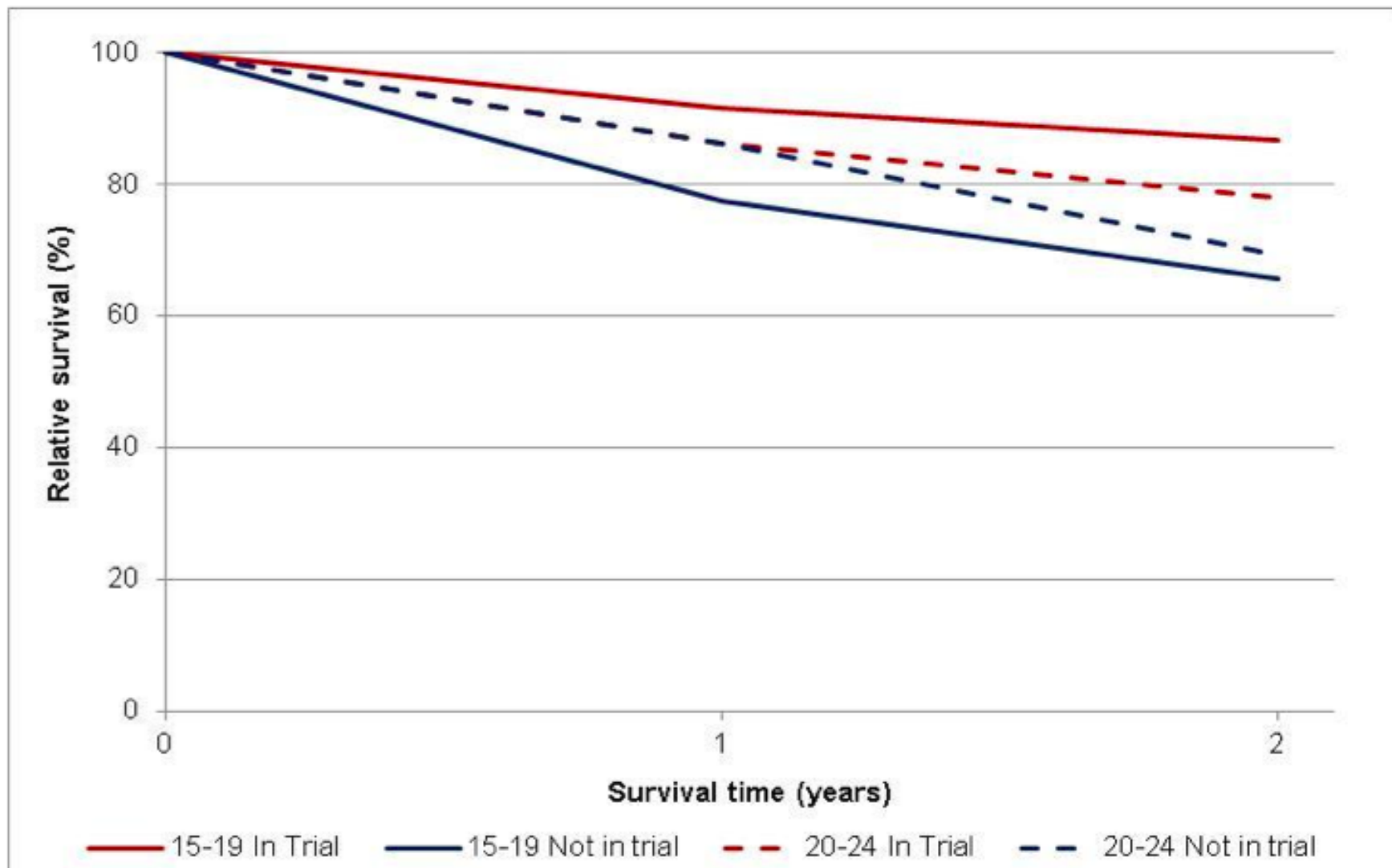
Clinical trial participation and outcomes in TYA in England with acute lymphoblastic leukaemia



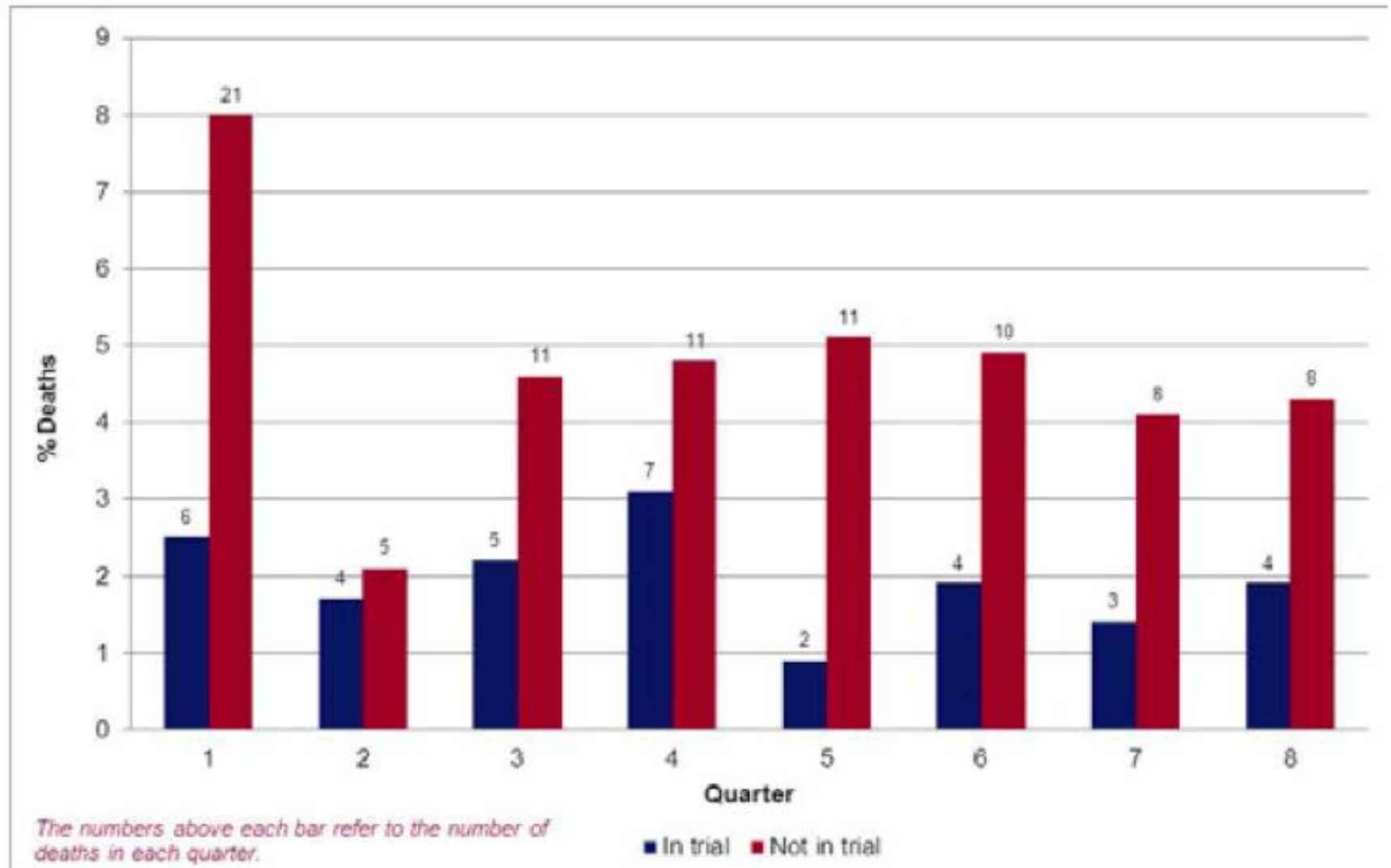
Number and percentage of study population recruited onto UKALL 2003 by year of diagnosis and age group

Year of diagnoses	15–17 years Proportion and percentage in trial		18–19 years Proportion and percentage in trial		20–24 years Proportion and percentage in trial	
2004	19/34	55.9%	0/6	0.0%	0/25	0.0%
2005	26/45	57.8%	0/20	0.0%	0/23	0.0%
2006	18/29	62.1%	9/26	34.6%	0/19	0.0%
2007	20/32	62.5%	8/14	57.1%	4/32	12.5%
2008	23/30	76.7%	16/18	88.9%	8/23	34.8%
2009	24/31	77.4%	13/20	65.0%	10/26	38.5%
2010	19/25	76.0%	8/11	72.7%	14/22	63.6%
2004–10	149/226	65.9%	54/115	47.0%	36/170	21.2%
2008–10	66/86	76.7%	37/49	75.5%	32/71	45.1%

One and two-year survival for 15–19 and 20–24 year olds with ALL diagnosed in 2004–10 by trial status



Number and % of deaths in 15-24 year olds with ALL by trial status for each quarter in the two years following



Trials

Biology

Compliance

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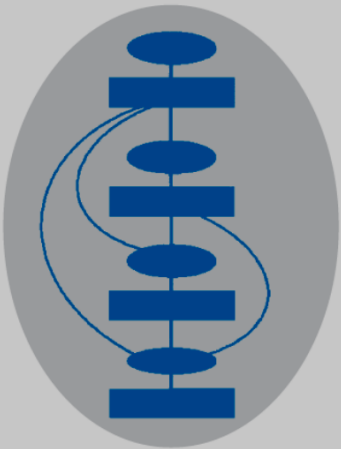
Characteristics of TYA Cancer

- Pathologically, not a 'speciality' in its own right - diagnoses are evolving from 'typically' paediatric to 'typically' adult
- Clinical needs cannot be met effectively by either paediatric or adult oncology services acting independently
- Evidence that outcome is less good than it should be
- Incidence of cancer in (children and) young people is slowly increasing

Guidance on Cancer Services

Improving Outcomes in Children and Young People with Cancer

The Manual



August 2005

Developed by the National Collaborating Centre for Cancer

Defined services for patients up to age 24 years

***“age-appropriate, safe and
effective services as locally as
possible, not local services as
safely as possible”.***

TYA care – IOG core principles

- All 16 – 24 year olds will be discussed both by a **TYA MDT** and by the relevant site specific MDT
- All 16 – 18 year olds will be treated at a designated TYA Primary Treatment Centre (**PTC**) (with or without shared care in age appropriate facilities)
- All 19 – 24 year olds will be offered **choice** of treatment at a TYA PTC

What should the TYA service do.....?

What should the TYA service do.....?

Add value

Advocate

Facilitate

Communicate

How should it be organised.....?

Age and aspects of care for newly diagnosed CTYA with cancer in the South West

