Public Health England

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# Comparison of teenage and young adult (TYA) cancer mortality rates in Great Britain with other countries

## National Cancer Registration and Analysis Service Data Briefing

### Key messages

- cancer mortality rates for 15-24 year olds in GB are higher than those in the Nordic countries, the Netherlands, Germany, Canada and Australia
- mortality rates for TYA male cancer patients are higher than for TYA female cancer patients across the six cancer types studied
- 41 fewer deaths in TYA patients with cancer would occur each year if GB had the same death rates as the Nordic countries, although the means by which this can be achieved cannot be inferred by the presented data

### Background

Cancer is the most common cause of death from disease in teenagers and young adults (15 to 24 year olds). The aim of the study was to determine if cancer deaths in this age group were more common in Great Britain (England, Wales and Scotland) compared to Australia, Canada, USA and nine other European countries.

### Methods

Cancer mortality and population data were downloaded from the World Health Organization (WHO) mortality database for the period of 2007-2011. The countries selected were those with at least 100 deaths in TYA cancer patients of either sex during the time period, with at least 50 deaths in each gender in the 15-19 and 20-24 age groupings: Australia, Canada, France, Germany, Italy, the Netherlands, the four largest Nordic countries combined (Denmark, Finland, Norway and Sweden), Spain and USA. Age-specific mortality rates per 1,000,000 population and excess number of deaths due to cancer were calculated for 15-19, 20-24 and 15-24 year olds for males and females for all cancers combined, and separately for diagnostic groupings from which at least 100 deaths occurred in TYA cancer patients during 2007-2011 in Great Britain (GB): bone tumours, central nervous system (CNS) tumours, lymphoid leukaemia, myeloid leukaemia, non-Hodgkin lymphoma (NHL) and soft tissue tumours (STT). Site specific comparisons were confined to countries with a population similar to, or larger than, GB: France, Germany, Italy and USA.



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## Results

During 2007-2011, approximately 317 15-24 year olds died from cancer each year in GB. For all cancers combined for 15-24 year olds of either sex GB had higher mortality rates than the Nordic countries, the Netherlands, Germany, Canada and Australia, and lower mortality than Italy and Spain. The USA and France had higher rates for males (Table 1a) and lower rates for females (Table 1b) compared with GB.

Table 1a: Mortality rankings and rates per 1,000,000 population (with 95% confidence intervals) for all cancers combined for 2007-2011: males

| Rank Order | MALE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 15-19 | | | 20-24 | | | 15-24 | | |
| 1 | Nordic | 31.4 | (20.6 - 46.0) | Australia | 41.4 | (28.7 - 57.9) | Australia | 38.3 | (29.2 - 49.2) |
| 2 | Canada | 34.5 | (24.6 - 47.0) | Nordic | 46.5 | (32.6 - 64.1) | Nordic | 38.7 | (29.8 - 49.6) |
| 3 | Australia | 34.9 | (22.9 - 50.9) | Germany | 47.6 | (39.5 - 57.0) | Germany | 42.0 | (36.3 - 48.2) |
| 4 | USA | 35.3 | (31.9 - 39.0) | GB | 50.0 | (40.9 - 60.4) | Canada | 43.0 | (35.0 - 52.3) |
| 5 | Netherlands | 35.3 | (21.0 - 55.7) | Canada | 51.3 | (39.2 - 66.1) | Netherlands | 44.6 | (32.6 - 59.5) |
| 6 | Germany | 35.6 | (28.3 - 44.3) | Spain | 52.6 | (41.1 - 66.3) | GB | 45.3 | (39.0 - 52.3) |
| 7 | GB | 40.2 | (31.8 - 50.1) | Netherlands | 53.9 | (35.6 - 78.2) | USA | 46.3 | (43.5 - 49.2) |
| 8 | France | 41.1 | (32.7 - 50.9) | USA | 57.6 | (53.2 - 62.3) | France | 51.0 | (44.2 - 58.5) |
| 9 | Italy | 51.8 | (41.0 - 64.6) | France | 61.0 | (50.6 - 72.9) | Spain | 54.8 | (46.0 - 64.7) |
| 10 | Spain | 57.3 | (44.4 - 72.9) | Italy | 68.0 | (55.8 - 82.1) | Italy | 60.1 | (51.8 - 69.4) |

Table 1b: Mortality rankings and rates per 1,000,000 population (with 95% confidence intervals) for all cancers combined for 2007-2011: females

| Rank Order | FEMALE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 15-19 | | | 20-24 | | | 15-24 | | |
| 1 | Canada | 23.5 | (15.3 - 34.5) | Nordic | 31.5 | (20.2 - 47.0) | Germany | 29.0 | (24.3 - 34.4) |
| 2 | USA | 25.4 | (22.5 - 28.6) | Germany | 32.1 | (25.4 - 40.1) | Nordic | 29.9 | (21.9 - 39.9) |
| 3 | Germany | 25.6 | (19.2 - 33.3) | France | 34.9 | (27.1 - 44.2) | Canada | 30.3 | (23.5 - 38.4) |
| 4 | France | 27.4 | (20.5 - 35.9) | Netherlands | 35.0 | (20.5 - 55.7) | USA | 31.1 | (28.8 - 33.6) |
| 5 | Nordic | 28.3 | (17.8 - 42.7) | Australia | 36.4 | (24.2 - 52.6) | France | 31.2 | (25.9 - 37.3) |
| 6 | Netherlands | 28.4 | (15.5 - 47.7) | Canada | 36.9 | (26.5 - 49.9) | Netherlands | 31.7 | (21.6 - 44.9) |
| 7 | GB | 29.1 | (21.9 - 38.0) | USA | 36.9 | (33.3 - 40.8) | Australia | 33.1 | (24.5 - 43.7) |
| 8 | Australia | 29.4 | (18.3 - 44.9) | Spain | 38.4 | (28.5 - 50.6) | GB | 34.1 | (28.6 - 40.5) |
| 9 | Spain | 35.1 | (24.9 - 48.2) | GB | 38.8 | (30.6 - 48.4) | Spain | 36.9 | (29.6 - 45.4) |
| 10 | Italy | 41.1 | (31.3 - 53.1) | Italy | 44.0 | (34.1 - 55.8) | Italy | 42.6 | (35.5 - 50.7) |

If mortality rates for GB were the same as those for the Nordic countries, there would be 41 fewer deaths each year for those aged 15-24 years: 25 in males and 16 in females (Figure 1a and 1b). If mortality rates for GB were the same as those for males in Australia


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and females in Germany, there would be 28 and 19 fewer deaths, respectively. There would be 94 extra deaths if mortality rates in GB were the same as those for Italy.

Figure 1a: Excess number of deaths per year due to cancer in Great Britain when compared with other countries for 15-19 and 20-24 year olds: males

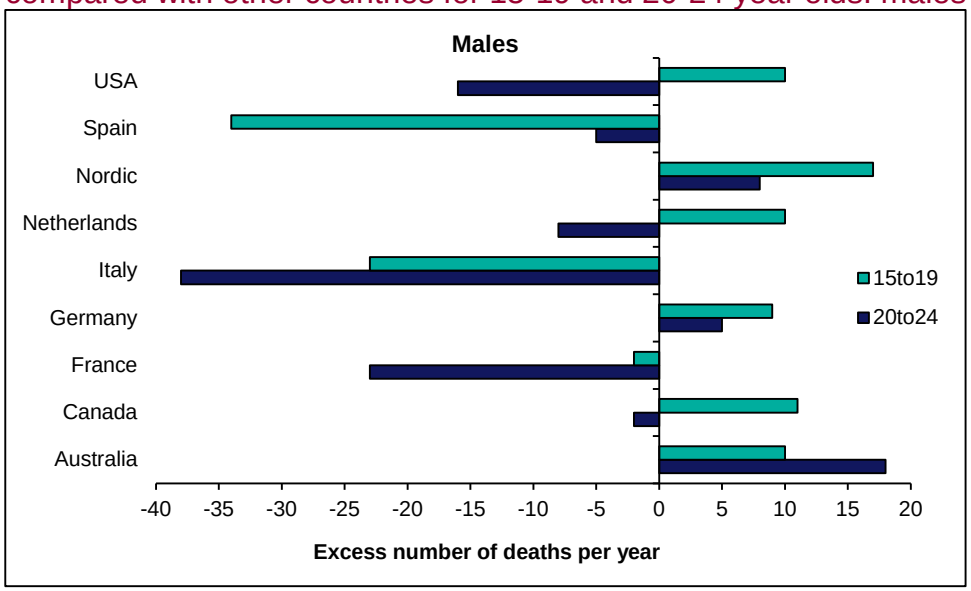
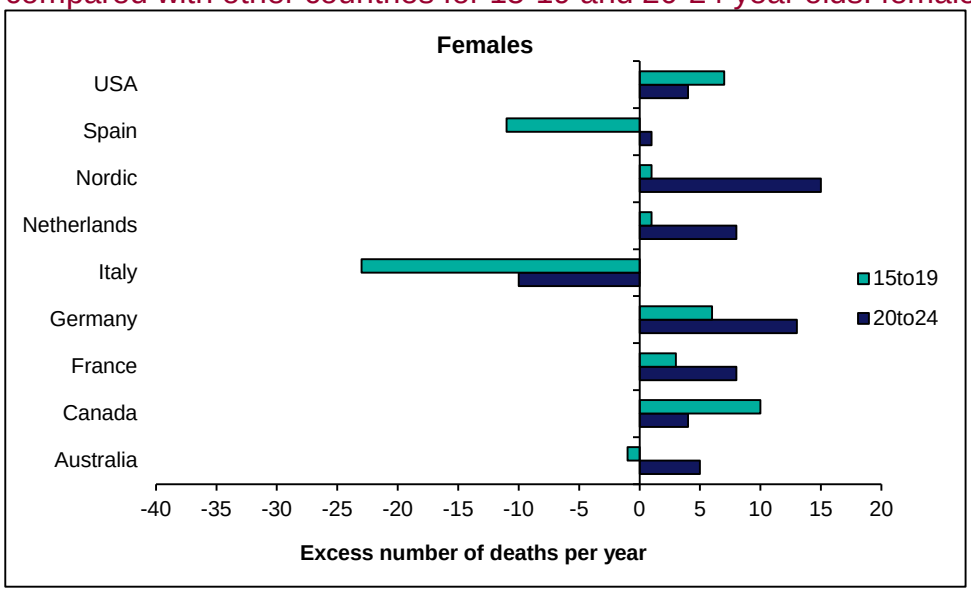



Figure 1b: Excess number of deaths per year due to cancer in Great Britain when compared with other countries for 15-19 and 20-24 year olds: females




Mortality rates were higher for males than females across all six cancer types studied, with the largest difference seen in bone tumours and lymphoid leukaemia (Figure 2a and 2b). GB had higher mortality rates than in Germany and USA for CNS and bone tumours for both males and females.


PHE publications gateway number: 2016375
Published: October 2016

Figure 2a: Age-specific mortality rates per 1,000,000 population by cancer type for 15-24 year olds in France, GB, Germany, Italy and USA: males

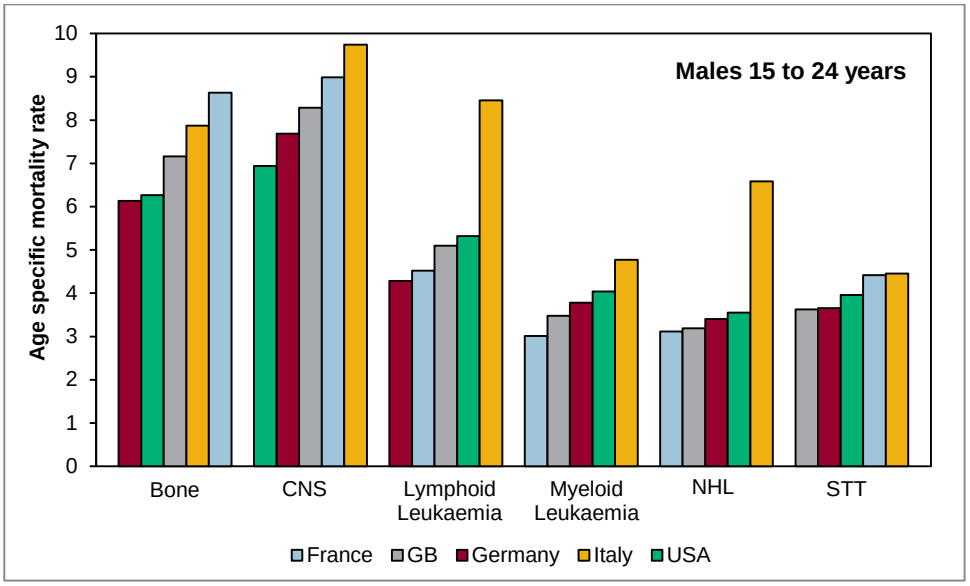
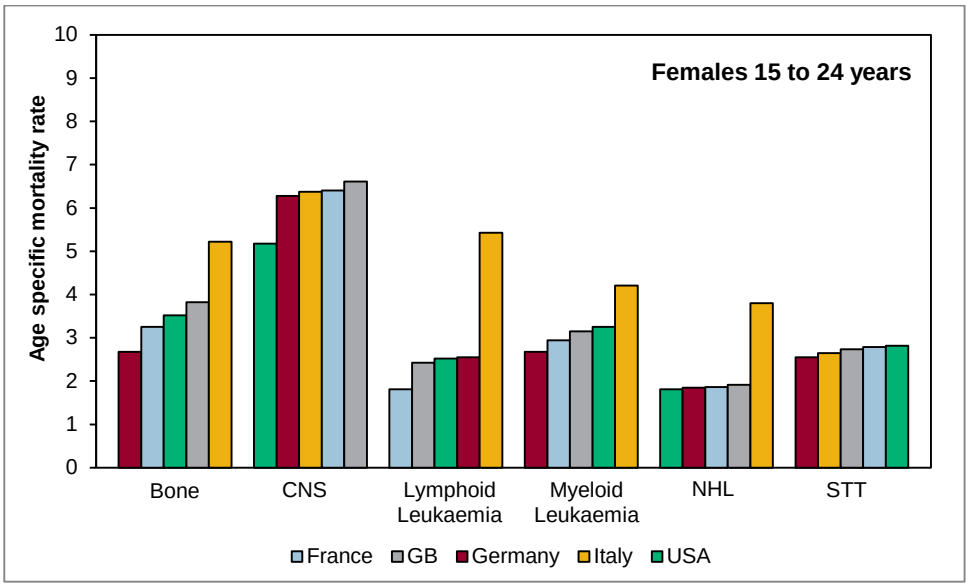



Figure 2b: Age-specific mortality rates per 1,000,000 population by cancer type for 15-24 year olds in France, GB, Germany, Italy and USA: females



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## Summary


- cancer mortality rates for 15-24 year olds in GB were higher than those in the Nordic countries, Germany, the Netherlands, Canada and Australia but lower than Spain and Italy. However, overall the variation in mortality between the countries compared was relatively small (less than 2-fold)
- for six cancer types, mortality rates were higher for males than for females
- GB had higher mortality rates than Germany and USA for CNS and bone tumours in both sexes
- there would be 41 fewer teenage and young adult deaths each year if GB had the same cancer mortality rates as the Nordic countries, though how to achieve such reductions is uncertain
- a number of factors may contribute to the observed differences in mortality between countries. These could include potential differences in registration practice, genetic or environmental factors affecting incidence, or variation in stage at diagnosis and subsequent treatment


## Find out more

**Other useful resources:**
What cancer statistics are available and where can I find them?
www.ncin.org.uk/publications/reports/


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