**Tumori, 94: 658-668, 2008**

# Life tables for world-wide comparison of relative survival for cancer (CONCORD study)

Paolo Baili[1], Andrea Micheli[1], Roberta De Angelis[2], Hannah K Weir[3], Silvia Francisci[2], Mariano Santaquilani[2], Timo Hakulinen[4], Manuela Quaresma[5], Michel P Coleman[5], and the CONCORD Working Group[6]

*[1]Descriptive Epidemiology and Health Planning Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy; [2]Istituto Superiore di Sanità, National Center of Epidemiology, Surveillance and Health Promotion, Cancer Epidemiology Unit, Rome, Italy; [3]Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; [4]Finnish Cancer Registry, Helsinki, Finland; [5]Cancer Research UK Cancer Survival Group, Non-Communicable Disease Epidemiology Unit, London School of Hygiene and Tropical Medicine, London, UK; [6]Members of the CONCORD Working Group (see p 667)*

ABSTRACT

**Background.** The CONCORD study compares population-based relative survival from cancer using data from cancer registries in five continents. To estimate relative survival, general mortality life tables are required. Available statistics are incomplete, so various approaches are used to construct complete life tables. This article outlines how the life tables were constructed for CONCORD; it compares life expectancy at birth between 101 populations covered by cancer registries in 31 countries and compares the impact of two approaches to the deployment of life tables in relative survival analysis.

**Methods.** The CONCORD approach, using specific mathematical methods, produced complete (single-year-of-age) life tables by sex, cancer registry area, calendar year (1990-1999) and race (only in the USA). In order to study the impact of different approaches, we compared relative survival in the USA using the US national life table, centered on the relevant census years, and the CONCORD approach. We estimated relative survival in each American participating cancer registry for patients diagnosed with breast (women), colorectal or prostate cancer during 1990-1994 and followed up to 1999.

**Results.** Average life expectancy at birth during 1990-1999 varied in CONCORD cancer registry areas from 64 to 78 years in males and from 71 to 84 years in females. It increased during the 1990s more in men than in women. In the USA, it was lower in blacks than in whites. Relative survival in American populations was lower with the CONCORD approach, which incorporates trends and geographic variation in background mortality, than with the USA census life tables.

**Conclusions.** International variation in background mortality by geographic area, calendar time, race, age and sex is wide. We suggest that in international comparisons of cancer relative survival, complete life tables that are specific for cancer registry area, calendar year and race should be used.

***Key words:*** CONCORD, life tables, mortality, relative survival.

*Correspondence to:* Paolo Baili, Descriptive Epidemiology and Health Planning Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, via Venezian 1, 20133 Milan, Italy. Tel +39-02-2390-2867-3527; fax +39-02-2390-3528; e-mail lifetable@istitutotumori.mi.it

*Acknowledgments:* We are grateful for financial support from EUROCHIP-3 (European Cancer Health Indicator Project), funded by the Health and Consumer Protection Directorate-General of the European Commission. The Cancer Survival Group in the London School of Hygiene and Tropical Medicine has been funded by Cancer Research UK (grant no. C1336/A5735).

*Disclaimer:* The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the US Centers for Disease Control and Prevention.

Received July 10, 2008; accepted July 17, 2008.