

Survival of adolescent and young adult cancer patients in Europe: updates from EURO CARE-6

Paolo Lasalvia¹, Alice Bernasconi¹, Laura Botta¹, Annalisa Trama¹, Magdalena Bielska-Lasota², Adela Cañete-Nieto³, Otto Visser⁴, Elena Demuru⁵, Rafael Macos-Gragera⁶, Claudia Vener¹, Ben Spycher⁷, Kaire Innos⁸, Alexander Katalinic⁹, Keiu Paapsi⁸, Marcela Guevara¹⁰, Charles Stillier¹¹, Philip Went¹², Seyed Mohsen Mousavi¹², Andrea Eberle¹³, Marcel Blum¹², Diego Serraino¹⁴, EURO CARE-6 WG*

¹Fondazione IRCCS Istituto Nazionale dei Tumori, Milan ²National Institute of Public Health-National Institute of Hygiene-National Research Institute, Warsaw ³Spanish Childhood (RETI-SEHOP) CR ⁴The Netherlands CR ⁵Istituto Superiore di Sanità, Rome ⁶Girona CR ⁷Switzerland National Childhood CR ⁸Estonia National CR ⁹Schleswig-Holstein CR ¹⁰Navarra CR, CIBERESP ¹¹UK-England National CR ¹²Graubünden and Glarus CR, Eastern Switzerland CR ¹³Bremen CR ¹⁴Centro di Riferimento Oncologico, IRCCS, Aviano for the Friuli Venezia Giulia CR

Background and Objectives

Adolescent and young adult (AYA, 15-39 years) cancer patients are a heterogeneous group that shares cancers histologically and anatomically similar to those in other age groups, with unique genetic and biological features. Overall their survival is good (79% EURO CARE-5) and improving over time. EURO CARE provided comparison of AYA (aged 15–24 years) cancer survival across European countries updated to 1995.

Against this background we aim at:

- Updating survival of AYA cancer patients in Europe
- Describing differences in survival between countries and over time

Methods

We used the EURO CARE-6 data (108 cancer registries; 29 European countries). We analysed 700,000 AYAs with cancer diagnosed in 2000-2013 (follow-up at 2014). AYA cancers were defined according to the new classification proposed by Barr in 2020 (Figure 1). We focused the analysis on the 16 most commonly diagnosed tumours in AYAs. We analysed 5-year relative survival (RS) in Europe, differences in 5-year RS by country (2010-2014) and over time (2004-06 vs. 2010-14) using period analysis. We used funnel plots to identify relevant survival differences between countries.

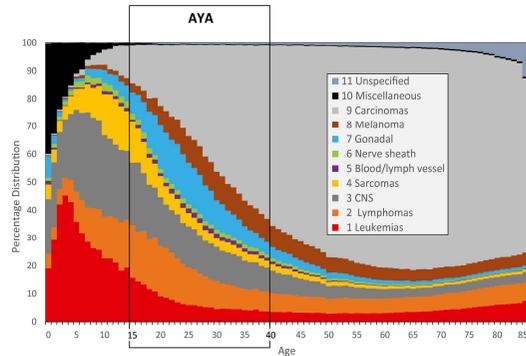


Figure 1: The percentage distribution of adolescent and young adult (AYA) classification categories by single year of age. Barr. et al. Cancer 2020.

Results

The 5-year RS (2010-2014) for AYA tumours was 84% overall and exceeded 80% for many of the 16 cancers analysed (RS by cancer type in Figure 2). We found differences in survival between countries for all of the 16 selected cancers except ovarian and thyroid cancer. The funnel plots confirmed that lowest survival was mainly observed in Eastern and Southern European countries for most of the 16 cancers. Time trend analysis showed that survival improved from for all AYA tumours, especially for Acute lymphoblastic leukemia and Acute myeloid leukemia, up to 9% (Figure 3).

Conclusions

This is the first time that survival for 16 AYA cancers has been reported across 29 European countries. We showed differences in survival between countries most likely due to differences in stage at diagnosis (e.g. uterine cervix), access to treatment/expertise (e.g. sarcomas), misdiagnosis (e.g. central nervous system). Our data confirm that cancer registry data are important to monitor and support ongoing efforts (ESMO-SIOPE AYA WG, Joint Action on Network of Expertise) to reduce survival differences between countries.

*EURO CARE-6 WG: Austria: M. Hackl (National CR); Belgium: E. Van Eycken; N. Van Damme (National CR); Bulgaria: Z. Valerianova (National CR); Croatia: M. Sekerija (National CR); Cyprus: V. Scoutellas; A. Demetriou (National CR); Czech Republic: L. Dušek; D. Krejci (National CR); Denmark: H. Storm (National CR); Estonia: M. Mägi; (National CR); Finland: J. Pitkaniemi (National CR); France: M. Velten (Bas Rhin CR); X. Troussard (Basse Normandie, Haematological Malignancies CR); A.M. Bouvier; V. Jooste** (Burgundy, Digestive CR); A.V. Guizard (Calvados, General CR); G. Launo (Calvados, Digestive CR); S. Dabakuyo Yonli (Cote d'Or, Gynaecological (Breast) CR); M. Maynadié (Cote d'Or, Haematological Malignancies CR); A.S. Woronoff (Doubs CR); J.B. Noussebaum (Finistere, Digestive CR); G. Coureau (Gironde, General CR); A. Monnerreau** (Gironde, Haematological Malignancies CR); I. Baldi (Gironde, Central Nervous System CR); K. Hammam (Haut-Rhin CR); B. Tretarre (Haut-Rhin CR); M. Colonna (Isere CR); S. Plouvier (Lille Area CR); T. D'Almeida (Limousin CR); F. Molinié; A. Cowppli-Bony (Loire-Atlantique/Vendée CR); S. Bara (Manche CR); A. Debreuve (Marne-Ardennes, Thyroid CR); B. Lapôtre-Ledoux (Somme CR); P. Grosclaude; L. Daubisse-Marliac (Tarn CR); Germany: S. Luttmann (Bremen CR); R. Stabenow (Common CR of 4 Federal States (Brandenburg, Mecklenburg-West Pomerania, Saxony-Anhalt, Thüringen)); A. Nennecke (Hamburg CR); J. Kieschke (Lower Saxony CR); S. Zeisig (Rhineland-Palatinate CR); B. Holletzke (Saarland CR); Iceland: H. Birgisson (National CR); Ireland: D. Murray; P.M. Walsh (National CR); Italy: G. Mazzoleni; F. Vittadello (Alto Adige CR); F. Cuccaro (Bari-Crotone CR); R. Galasso (Basilicata CR); G. Sampietro (Bergamo CR); S. Rosso (Biella CR); C. Gasparotti; G. Maifredi (Brescia CR); M. Ferrante; R. Ragusa (Catania-Messina-Enna CR); A. Suter Sardo (Catanzaro CR); M.L. Gambino; M. Lanzoni (Province of Varese and Como CR); P. Ballotari; E. Giacomazzi (Cremona and Mantova CR); S. Ferretti (Ferrara CR); A. Caldarella; G. Manneschi (Firenze-Prato CR); G. Gatta**; M. Sant**; P. Baili**; F. Berrino**; R. Lillini; S. Bonfanti; F. Didoné; G. Del Monaco; L. Buratti; G. Tagliavini (Fondazione IRCCS Istituto Nazionale dei Tumori, Milan); L. Dal Maso (Centro di Riferimento Oncologico, IRCCS, Aviano for the Friuli Venezia Giulia CR); R. Capocaccia** (Epidemiologia & Prevenzione Board); R. De Angelis**; C. Di Benedetto; S. Rossi**; M. Santaquiliani; S. Venanzi; M. Tallon (Istituto Superiore di Sanità, Rome); L. Boni (Genova CR); S. Iacovacci (Latina CR); A.G. Russo; F. Gervasi (Province of Milan and Lodi CR); V. Spagnoli (Modena CR); L. Cavallieri d'Oro (Monza and Brianza CR); M. Fusco; M.F. Vitale (Napoli 3 South CR); M. Usala (Nuoro CR); W. Mazzeo (Palermo CR); M. Michiara (Parma CR); G. Chiranda (Piacenza CR); L. Mangone (Reggio Emilia CR); F. Falcini (Romagna CR); R. Cavallo (Salerno CR); D. Piras (Sassari CR); A. Maleddu; F. Bella (Siracusa CR); A.C. Fianetti (Sondrio CR); S. Minerba (Taranto CR); G. Candela; T. Scuderi (Trapani CR); R.V. Rizzello (Trento CR); F. Stracci (Umbria CR); M. Ruggie (Veneto CR); A. Brustolin (Verba CR); Latvia: S. Pildava (National CR); Lithuania: G. Smalyte (National CR); Malta: M. Azzopardi (National CR); Norway: T.B. Johannesen** (National CR); Poland: J. Didkowska; U. Wojciechowska (National CR); Portugal: A. Pais (Central Portugal CR); M.J. Bento; P.Silva (Northern Portugal CR); A. Lourenco (Southern Portugal CR); Spain: C. Sánchez-Contador Escudero ; P. Franck Sureda (Balearic Islands, Mallorca CR); A. Lopez de Munain; M. De-La-Cruz (Basque Country CR); M.D. Rojas; A. Aleman (Canary Islands CR); A. Vizecano (Castellon CR); A. Sanvisens (Girona CR); M.J. Sanchez (Granada CR); M.D. Chirlaque; A. Sanchez-Gil (Murcia CR); E. Ardanz (Navarra CR, CIBERESP); J. Galceran; M. Carulla (Tarragona CR); Switzerland: Y. Bergeron (Fribourg CR); C. Bouchardy (Geneva CR); A. Bordini (Ticino CR); The Netherlands: H. Karim-Kos (National CR); UK-England: S. Stevens ; J. Broggio (National CR); UK-Northern Ireland: A. Gavin**; D. Bennett (National CR); UK-Scotland: D. Morrison (National CR); UK-Wales: D. W. Huws** (National CR). **EURO CARE Steering Committee.

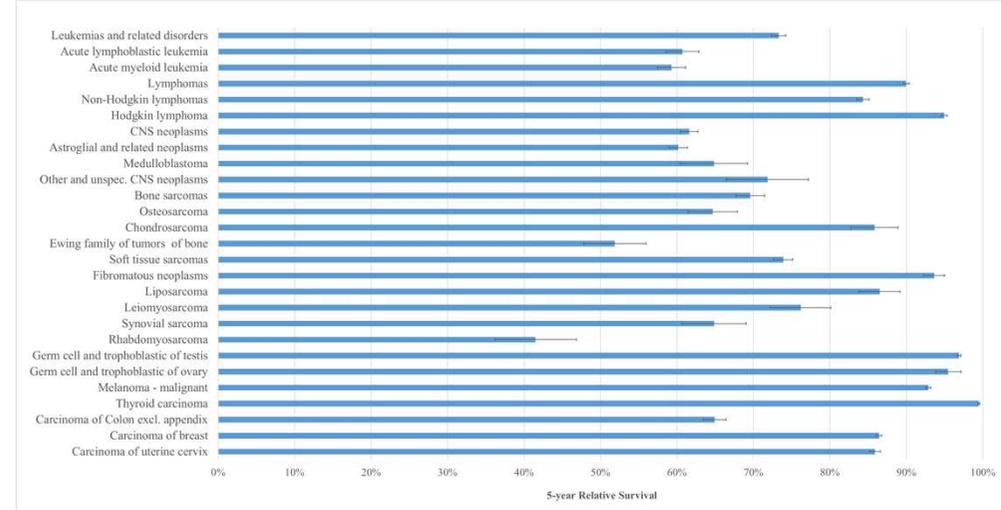


Figure 2: AYA 5-year Relative Survival (RS) for the period 2010-2014 reported with 95% Confidence Intervals

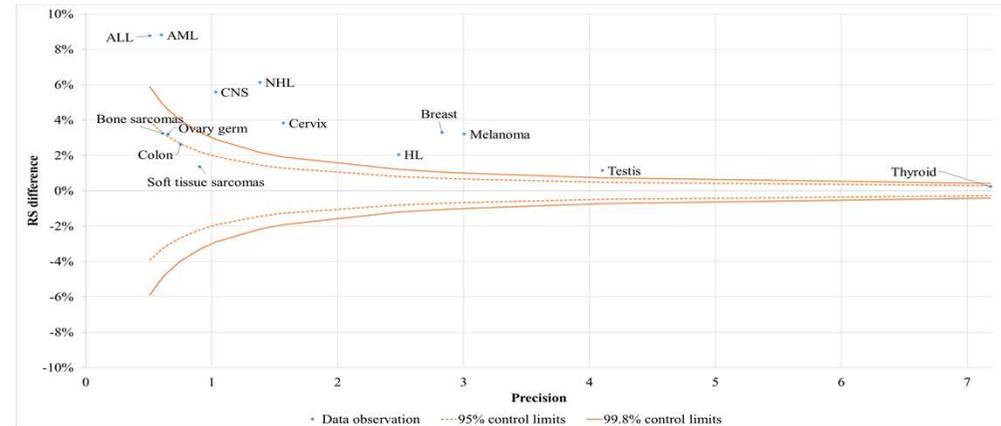


Figure 3: Relative Survival (RS) changes between 2010-2014 (cohort diagnosed 2006-2013) and 2004-2006 (cohort diagnosed 2000-2006) periods