Treatment Approvals in Oncology and Relationship with Improvement in 5-Year Relative Survival for Cancer Patients Europe

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OBJECTIVES

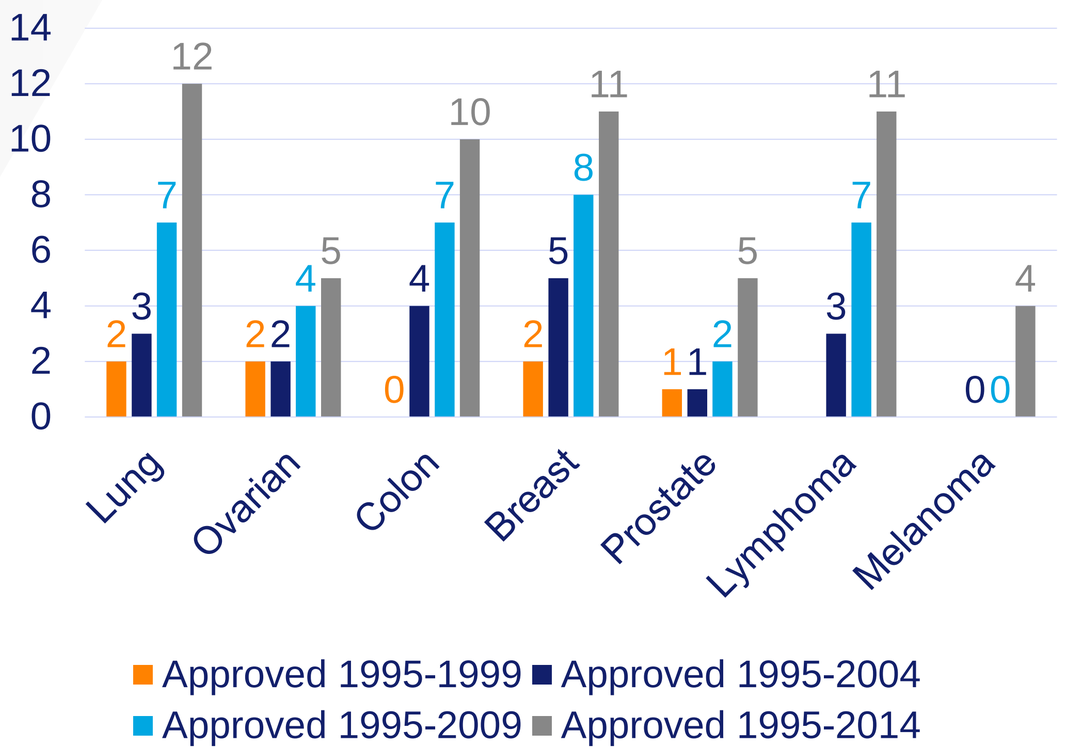
In the past two decades, Europe approved numerous new cancer treatments, but their influence on the 5-year survival of patients between 1995 and 2014 remains unclear. This study aims to determine their impact.

METHODOLOGY

Analyses examined the relationship between new treatment approvals and relative survival at 5-year intervals.

Cancer treatment approvals in Europe were extracted from the European Public Assessment Report (EPAR). The approved indications were limited to *Breast Neoplasms, Lung Cancer, Lymphoma, Leukemia-Lymphoma, Ovarian Neoplasms, Colorectal Neoplasms, Prostatic Neoplasms, and Melanoma*. The products were then sorted by date of marketing authorization and grouped into 4 time periods: 1995-1999, 2000-2004, 2005-2009, and 2010-2014.

Cumulative EMA Drug Approvals by Cancer Type



RESULTS

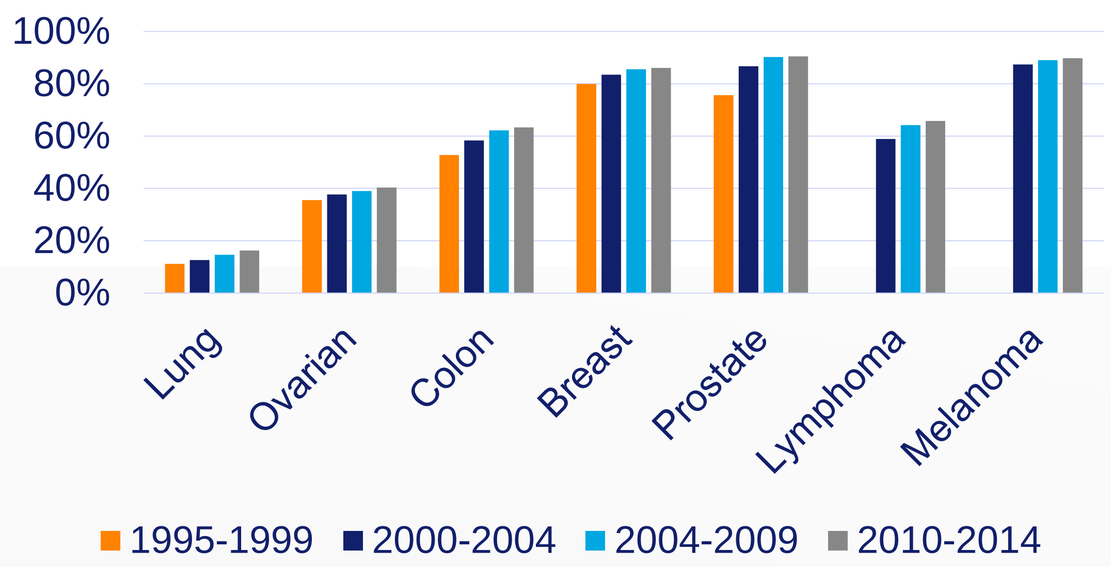
A total of 59 cancer drugs were approved by the European Medicines Agency (EMA) between 1995 and 2014. Across the 7 oncology areas examined in this study, a significant relationship between the number of drug approvals and the relative survival over the same 5-year period was found for lung (p = 0.0280) and colon cancer (p = 0.0231). In contrast, no significant relationship was found for breast, prostate, melanoma, lymphoma, and ovarian cancer (p = 0.0508, p= 0.4090, p = 0.4750, p = 0.1673, p = 0.0969 respectively).

Cancer Type	Data pairs	P level
Lung	4 (1995-2014)	P = 0.0280*
Ovarian	4 (1995-2014)	P = 0.0969**
Colon	4 (1995-2014)	P = 0.0231*
Breast	4 (1995-2014)	P = 0.0508**
Prostate	4 (1995-2014)	P = 0.4090
Lymphoma	3 (2000-2014)	P = 0.1936
Melanoma	3 (2000-2014)	P = 0.4750

- Across all cancer types in the Europe, there were gains in relative survival for the periods measured.
- After results were calculated, the number of drugs approved in the Europe was found to be significantly linked to the average relative survival at the $p < 0.05$ level for both lung ($p = 0.0280$) and colon cancer ($p = 0.0231$).
- The number of drug approvals was also significantly linked to ovarian ($p = 0.0969$) and breast cancer ($p = 0.0508$) at the $p < 0.10$ level.
- The link between the number of drug approvals and relative survival in prostate cancer was not found to be significant ($p = 0.4090$). This suggests that the relative survival gains between 1995 to 2014 are linked to other factors, such as improvement in diagnosis or non-drug-related care.
- This study did not investigate the impact of non-drug-related care improvements (e.g., surgical procedures, improved diagnostics) on relative survival. In anticipation of the publications of the new EUROCARE-6 and CONCORD-4 studies, a lack of availability of more recent cancer survival data beyond 2014 is limiting the current analysis.

The 5-year relative survival rates in European countries from 1995 to 2014 were derived from global surveillance studies, CONCORD-2 and CONCORD-3. These studies calculated relative survival per cancer type across 30 European countries. Our analysis calculated an average European relative survival rate for each cancer type using data from countries that have been in the European Union or following EMA guidelines from 1995. The contribution of each country to the average European relative survival rate was weighted by their population size. Countries in scope were Austria, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK.

Relative Survival by Cancer Type and Time Period



CONCLUSION

This analysis suggests that the increasing approval of cancer treatments in Europe is linked to the gains in relative survival. Expanding this research with data beyond 2014 and accounting for the impact of non-drug related care and better detection would highlight the importance of continued therapeutic innovation for improved patient outcomes in oncology.

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