RESEARCH

Each country and locality needs cancer research tailored to local disease burdens and knowledge gaps to improve population health.

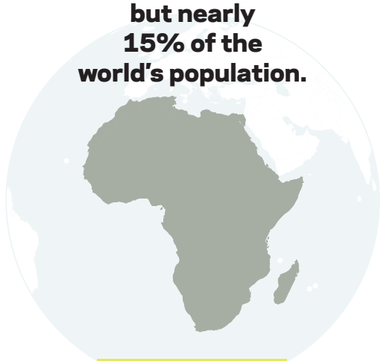
For national or regional cancer control programs, research is an essential component of planning, implementation, and monitoring the program's effectiveness. In addition, research improves patient outcomes and creates national wealth through innovation. However, bibliometrics reveal a large disparity in research activities across countries. **FIGURE 34.1, 34.2** The United States and a few wealthy European countries account for the majority of publications.

Barriers to development of strong, sustainable cancer research output in low-income countries include lack of funds, competing disease priorities, weak infrastructure, and work load and protected time to do research. For example, expenditure on science and technology research represents less than 1% of gross domestic product in many low-income countries, compared to over 2.5% in several high-income countries. **FIGURE 34.3** However, there is renewed commitment from private and public institutions in high-income countries to help build sustainable research capacity in low-income countries through north-south partnerships.

In addition to regional variation in publication output, there is a mismatch between cancer research output/funding and societal cancer burden. Some common cancer sites, such as pancreas and lung in the United States and Europe, are under-funded and under-studied compared to less common cancers. **FIGURE 34.4** Further, in many countries the bulk of research funding is allotted to basic science, with very little to cancer prevention and control research.

Increased cancer research tailored to local disease burdens and knowledge gaps is needed for continuous improvement of population health in each country and locality. In low- and middle-income countries, research should focus on identifying local, common risk factors (for example, local alcoholic brews), evaluating preventive interventions, and conducting implementation and operational research. Research in high-income countries should also focus on implementation research as well as biological markers and precision medicine.

Africa accounts for less than 1% of worldwide research publications, but nearly 15% of the world's population.

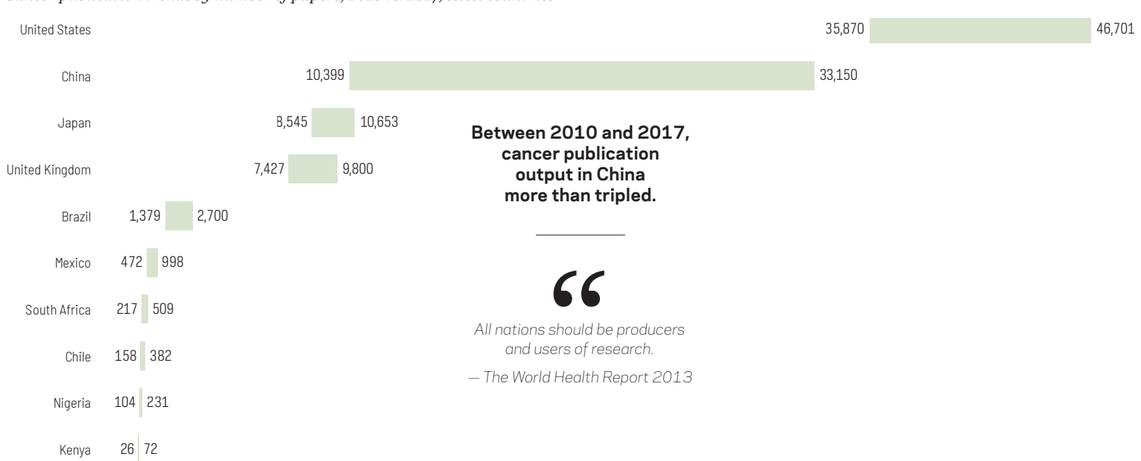


ACCESS CREATES PROGRESS

International research collaborations such as the African Research Group for Oncology, a partnership between hospitals and universities in Nigeria, the United States, and the United Kingdom, can advance cancer knowledge and provide evidence and data for making health policy decisions.

FIGURE 34.1

Cancer publication trends by number of papers, 2010 vs. 2017, select countries



Between 2010 and 2017, cancer publication output in China more than tripled.

"All nations should be producers and users of research."

— *The World Health Report 2013*

FIGURE 34.2

Cancer publications (2002-2013) compared with gross domestic product (GDP) for 31 European countries

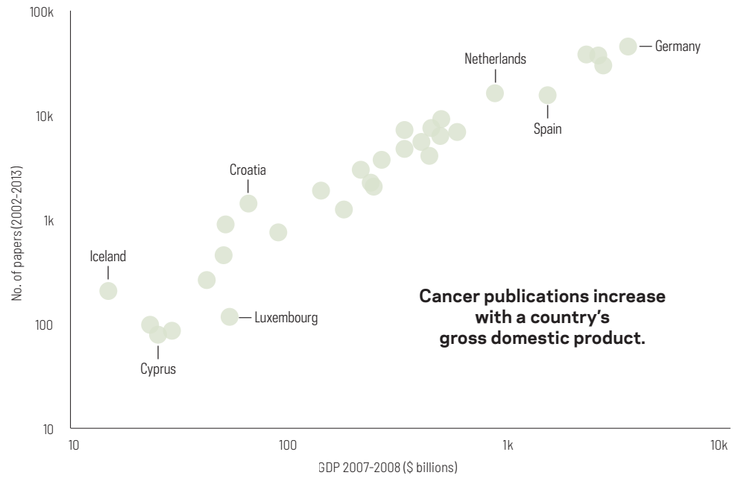


FIGURE 34.4

Research priorities by cancer site in number of publications, proportion of US National Cancer Institute (NCI) funding (2012), and disability-adjusted life years (DALYs, 2011)*

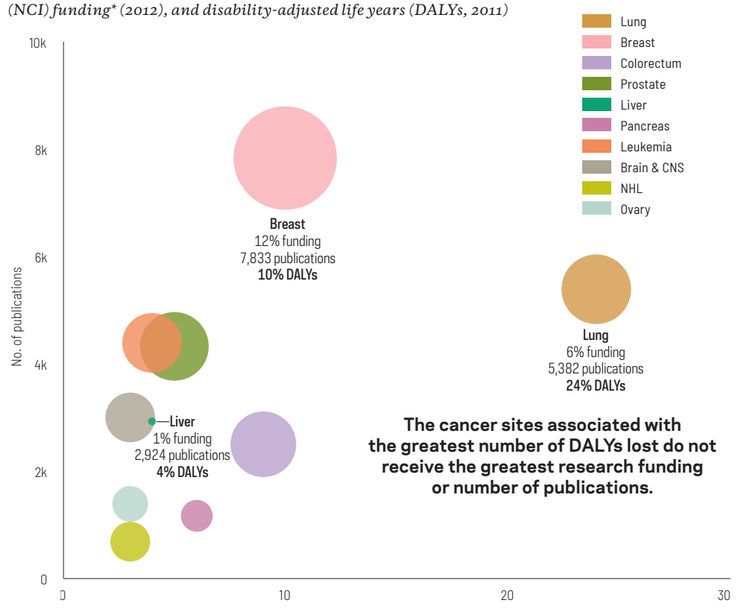


FIGURE 34.3

Percent (%) of gross domestic product (GDP) spent on research, 2016 estimates, select countries