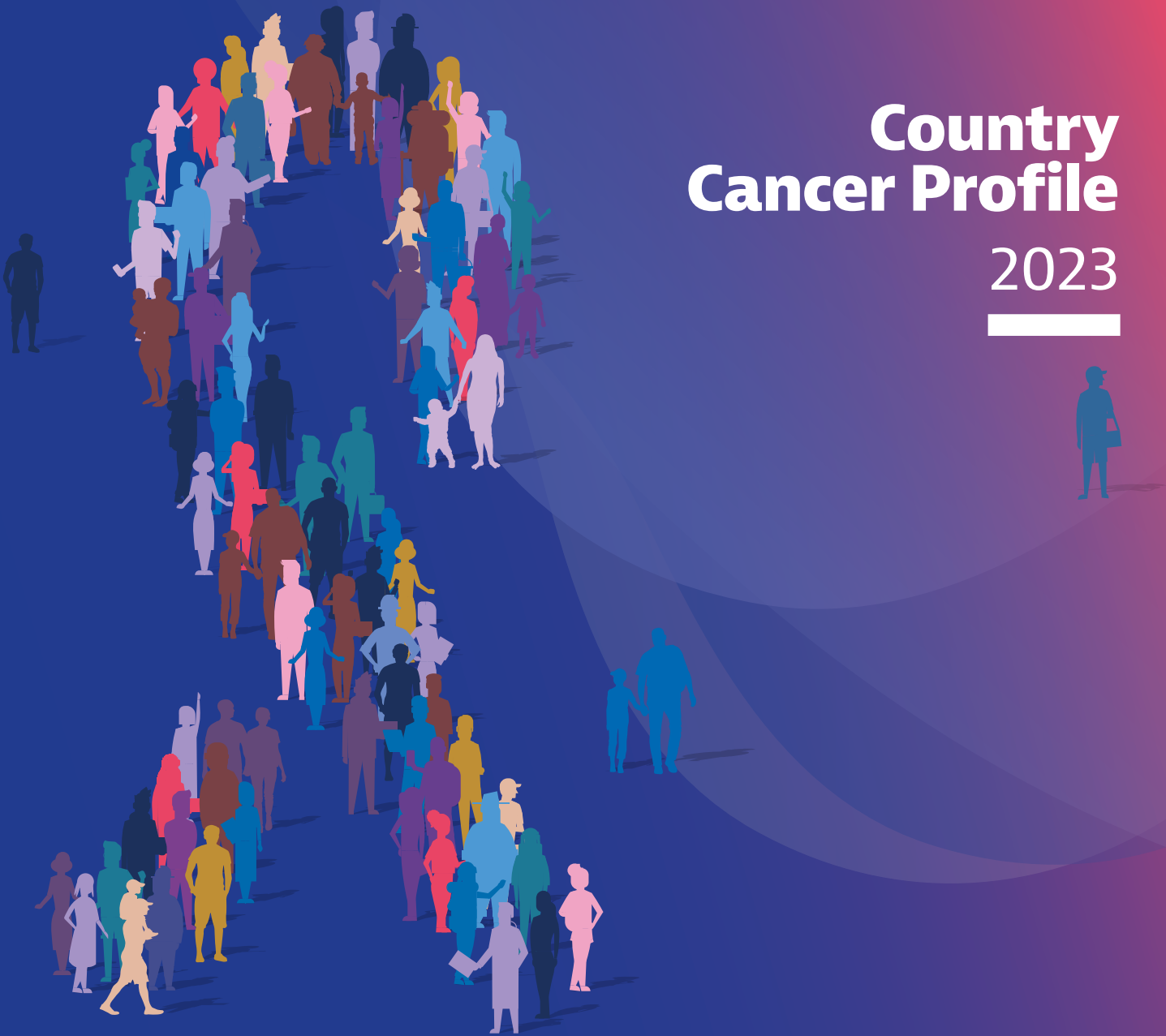




BULGARIA

Country Cancer Profile

2023



The Country Cancer Profile Series

The European Cancer Inequalities Registry is a flagship initiative of the Europe's Beating Cancer Plan. It provides sound and reliable data on cancer prevention and care to identify trends, disparities and inequalities between Member States and regions. The Country Cancer Profiles identify strengths, challenges and specific areas of action for each of the 27 EU Member States, Iceland and Norway, to guide investment and interventions at the EU, national and regional levels under the Europe's Beating Cancer Plan. The European Cancer Inequalities Registry also supports Flagship 1 of the Zero Pollution Action Plan.

The Profiles are the work of the OECD in co-operation with the European Commission. The team is grateful for the valuable inputs received from national experts and comments provided by the OECD Health Committee and the EU Expert Thematic Group on Cancer Inequality Registry.

Data and information sources

The data and information in the Country Cancer Profiles are based mainly on national official statistics provided to Eurostat and the OECD, which were validated to ensure the highest standards of data comparability. The sources and methods underlying these data are available in the Eurostat Database and the OECD Health Database.

Additional data also come from the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), the International Atomic Energy Agency (IAEA), the Institute for Health Metrics and Evaluation (IHME) and other national sources (independent of private or commercial interests). The calculated EU averages are weighted averages of the 27 Member States unless otherwise noted. These EU averages do not include Iceland and Norway.

Purchasing Power Parity (PPP) is defined as the rate of currency conversion that equalises the purchasing power of different currencies by eliminating the differences in price levels between countries.

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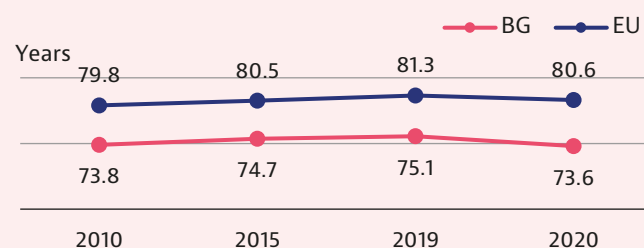
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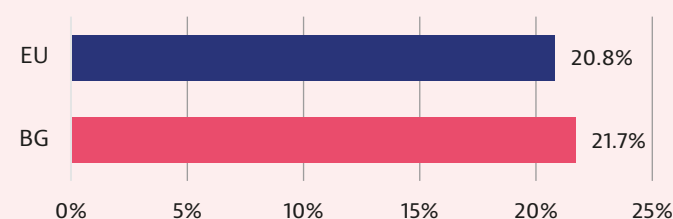
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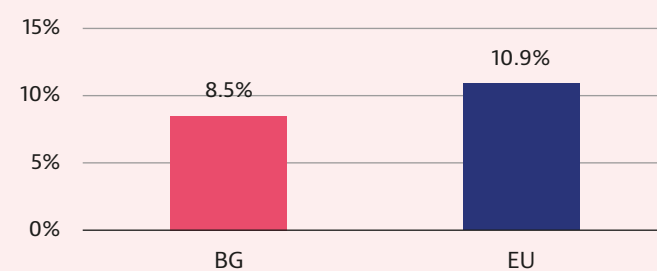
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SHARE OF POPULATION AGED 65 AND OVER (2021)

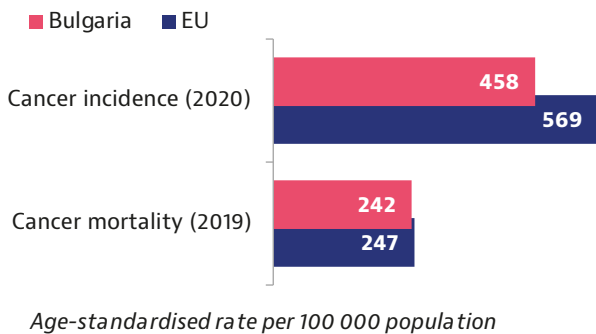


HEALTH EXPENDITURE AS A % OF GDP (2020)



Source: Eurostat Database.

1. Highlights

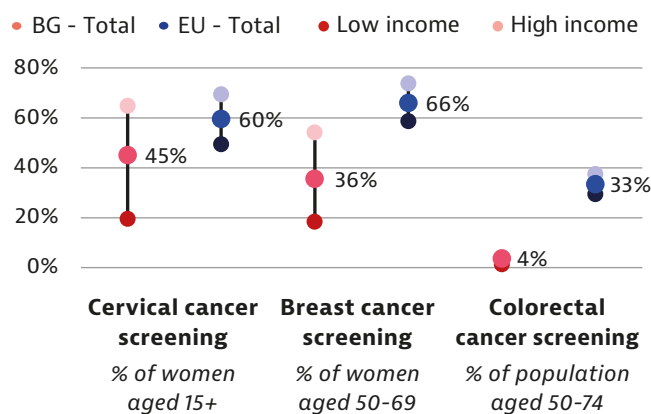
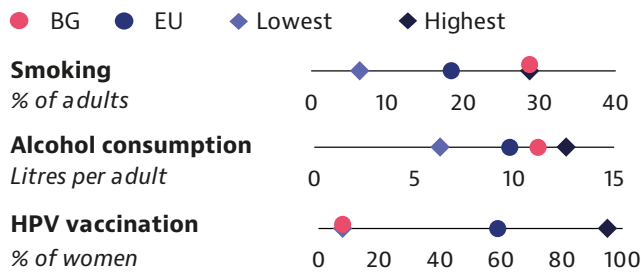


Cancer in Bulgaria

Bulgaria has the lowest estimated age-standardised cancer incidence in the EU, but this is most likely a result of important levels of underdiagnosis and under registration of new cancer cases. Cancer mortality is just below the EU average, but Bulgaria is the only country that has reported rising mortality trends for both men and women during the past 10 years. Bulgaria is one of the few EU countries that has not yet adopted a national cancer plan.

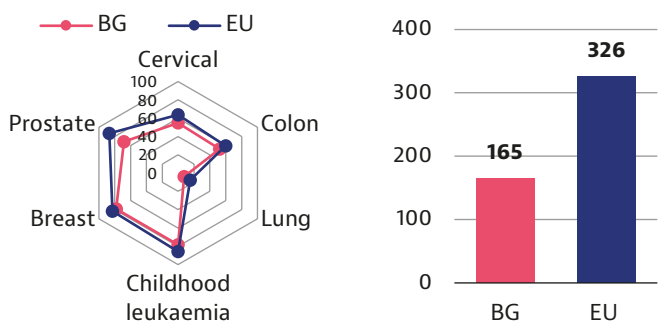
Risk factors and prevention policies

For most cancer-related risk factors, such as smoking, alcohol consumption and overweight and obesity, Bulgaria reported more risky patterns than most other EU countries. This might be explained in part by mixed results for some existing preventive and health promotion policies, coupled with limited resources for public health interventions. In addition, many deaths could be avoided through higher rates of human papillomavirus (HPV) vaccination



Early detection

Bulgaria has no national programme for population-based cancer prevention and early detection of breast, colorectal and cervical cancers; this is reflected in the country's low screening rates. Bulgaria is among the EU countries with the lowest breast, cervical and colorectal cancers screening rates, along with very high socioeconomic disparities in screening participation rates for cervical and breast cancers.



Cancer care performance

Bulgaria remains among the EU countries with the lowest five-year survival rates for the main cancer sites, despite improvements during 2000-2014. Quality and safety indicators are still not developed and monitored. Despite a substantial increase in recent decades, cancer expenditure in Bulgaria remains among the lowest in the EU. One of the main drivers of the rise was the sharp increase in spending on new cancer medicines

Five-year net survival rate by cancer site, 2010-14

Total cost of cancer (EUR per capita PPP), 2018

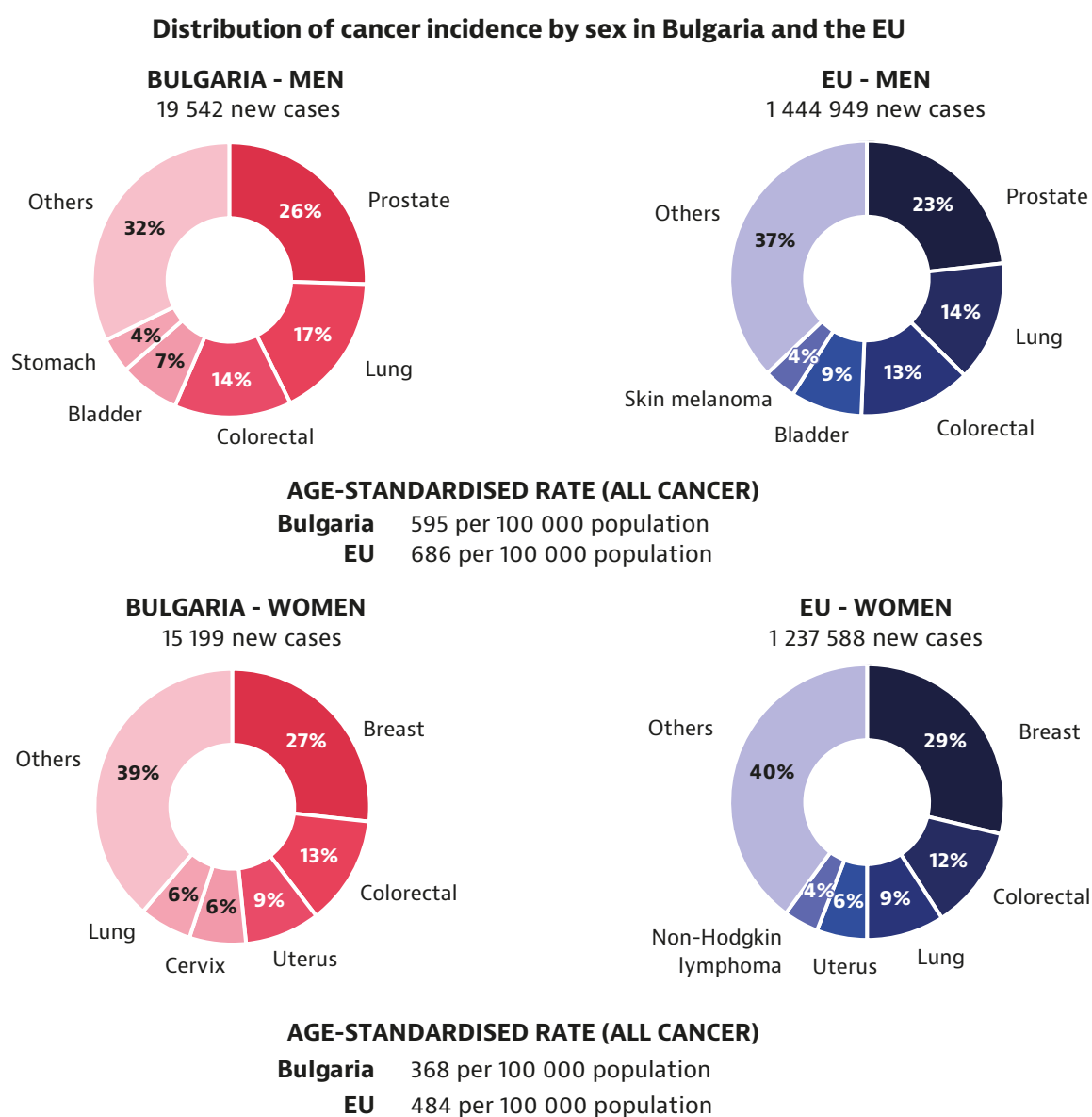
2. Cancer in Bulgaria

Cancer incidence is lower in Bulgaria than in most other EU countries

According to European Cancer Information System (ECIS) of the Joint Research Centre based on incidence trends from pre-pandemic years, around 35 000 new cancer cases were expected in Bulgaria in 2020 (Figure 1). The age-standardised cancer incidence rate for all cancers that year was expected to be lowest in Bulgaria (458 new cases

per 100 000 population) among EU countries. While this is a positive note, it should be interpreted with care, considering other indicators – such as cancer mortality and five-year survival rates – and in the light of availability of and access to preventive, diagnostic and screening services for the Bulgarian population. There are also problems with cancer registration data in Bulgaria. The lack of clear and precise regulation and methodology for funding

Figure 1. Around 35 000 new cancer cases were expected in 2020 in Bulgaria



Note: Corpus uteri does not include cancer of the cervix. These estimates were created before the COVID-19 pandemic, based on incidence trends from previous years, and may differ from observed rates in more recent years.

Source: European Cancer Information System (ECIS). From <https://ecis.jrc.ec.europa.eu>, accessed on 09/05/2022. © European Union, 2022.

of cancer registration activities mean that data on cancer in the country are incomplete and of poor quality.

Age-standardised incidence in 2020 was expected to be 595 per 100 000 among men and 368 per 100 000 among women (Figure 1). Of the 35 000 newly registered cancer cases expected in 2020, 56 % (19 542 cases) were in men. It is notable that Bulgaria is the only country in the EU in which the total number of newly diagnosed cases is likely to decrease slightly (-2.5 %) by 2040. This is explained in part by expected negative population growth.

The main types of newly diagnosed cancers among men were expected to be prostate (26 % of the total), lung (17 %), colorectal (14 %), bladder (7 %) and gastric (stomach) (4 %) (Figure 1). This matches the pattern seen across the EU as a whole. For women, the most common cancer types for newly diagnosed cases were expected to be breast (27 % of the total), followed by colorectal (13 %), uterus (9 %), cervix (6 %) and lung (6 %) cancer. The share of uterine and cervical cancer is much greater

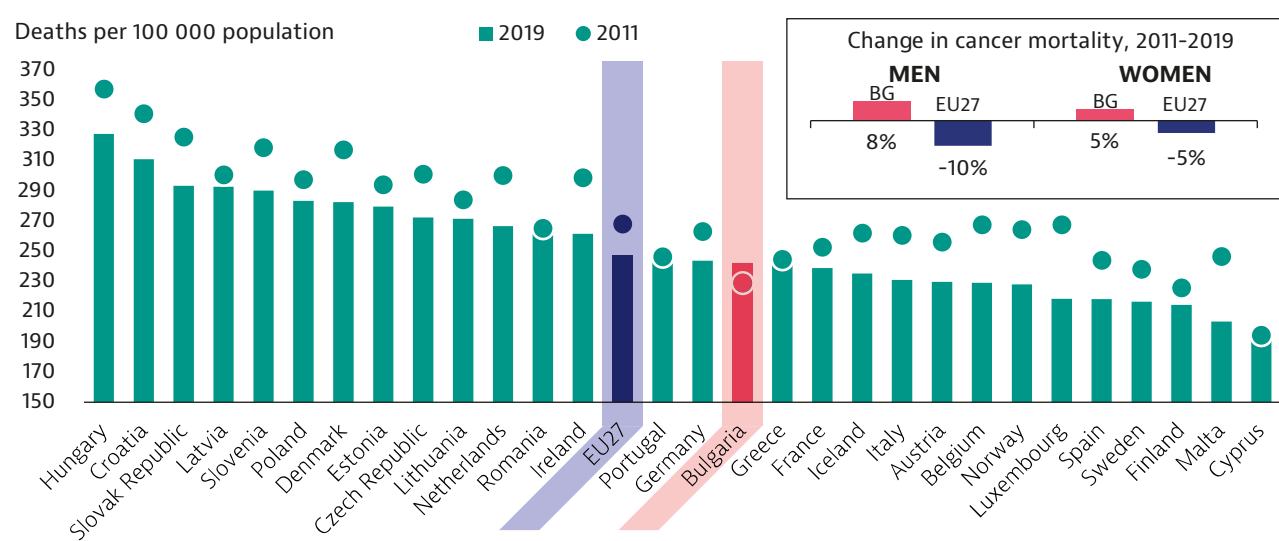
among Bulgarian women than their European counterparts, reflecting the country's low rates of screening (smear testing) and HPV vaccination (see Sections 3 and 4).

Skin melanoma was expected to constitute 2 % of new cancer cases in both men and women for 2020. For paediatric cancer, the age-specific cancer incidence rate in children under 15 years in 2020 was 14 per 100 000, which is similar to the EU average. In 2013, the estimated number of new rare cancer cases in Bulgaria was 9 496.

Cancer mortality in Bulgaria is on the rise

Bulgaria is the only country in the EU reporting an increasing rate of cancer mortality. It grew from 229 cancer deaths per 100 000 population in 2011 to 242 cancer deaths per 100 000 in 2019 (Figure 2). The increase was higher for men (+8 %) than for women (+5 %).

Figure 2. Cancer mortality in Bulgaria is close to the EU average but has increased in recent years



Note: The EU average is weighted (calculated by Eurostat for 2011-2017 and by the OECD for 2018-2019). Source: Eurostat Database.

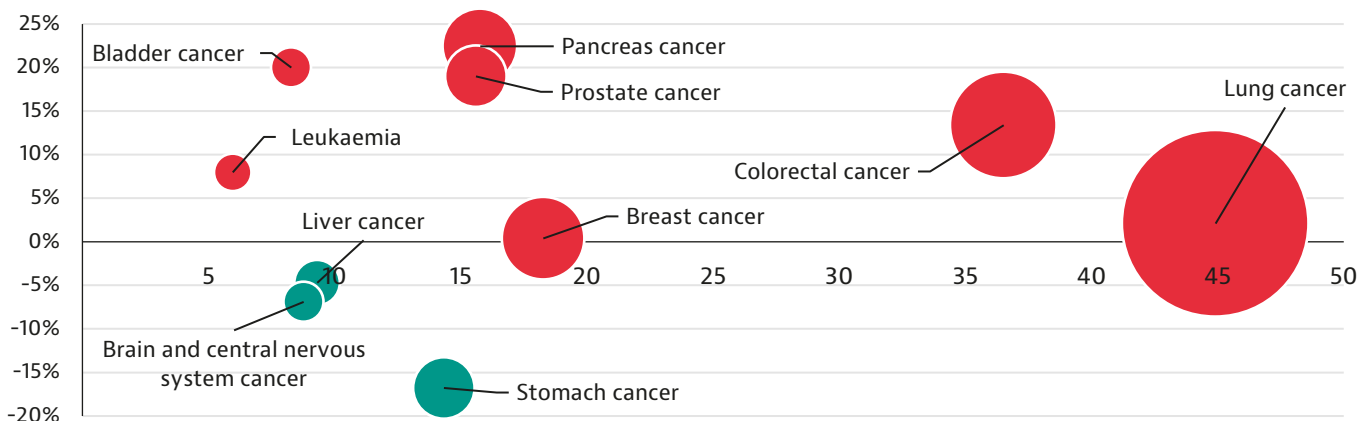
Lung, colorectal and breast cancer are major drivers of cancer mortality in Bulgaria

The cancers responsible for the biggest shares of overall cancer mortality in Bulgaria in 2019 were lung, colorectal, breast, pancreas, prostate and gastric (stomach) cancers (Figure 3). Those that exhibited the greatest increase in age-standardised mortality in the past 10 years were pancreas (+22 %), bladder (+20 %), prostate (+19 %) and colorectal (+13 %) cancers. A decline in mortality was reported in gastric (stomach) (-17 %), brain

(-7 %) and liver (-5 %) cancers, while lung and breast cancers did not experience particular changes in mortality over the period.

Figure 3. Mortality from most cancers has been increasing in recent years in Bulgaria

Change in cancer mortality, 2011-2019 (or nearest year)



Age-standardised mortality rate per 100 000 population, 2019

Note: Red bubbles signal an increase in the percentage change in cancer mortality during 2011-2019; green bubbles signal a decrease. The size of the bubbles is proportional to the mortality rates in 2019. The mortality of some of these cancer types is low; hence, the percentage change should be interpreted with caution. Bubble sizes for mortality rates are not comparable between countries. Source: Eurostat Database.

Overall, despite low incidence rates, high and premature cancer mortality rates are responsible for the significant cancer burden in Bulgaria (46 914 disability-adjusted life-years per 100 000 for 2019: the highest reported in the EU).

Bulgaria is one of the few EU countries that has not yet adopted a national cancer plan

In June 2021, by order of the Bulgarian Minister of Health, a working group was established at the Ministry of Health tasked with preparing a national cancer plan to align with the Europe’s Beating Cancer Plan (European Commission, 2021). The group involves representatives of national health institutions, the Bulgarian Scientific Oncological Society and the Association of Cancer Patients in Bulgaria, as well as other interested governmental and non-governmental organisations. The draft

Bulgarian national cancer plan has been criticised for not presenting important information on recent levels of and trends in cancer indicators. It also lacks a vision and concrete implementation plans for the future of the National Screening Registry and for a nationwide cancer screening strategy, as a continuation of the positive experience and results of the national Stop and Go for a Check Up campaign sponsored by the European Commission.

As a result, despite these efforts, as of 2022 Bulgaria is one of the few EU countries without an officially approved national cancer plan. However, the National Recovery and Resilience Plan for Bulgaria planned specific reforms in the health care sector, including investment in cancer prevention (Council of Ministers of the Republic of Bulgaria, 2021).

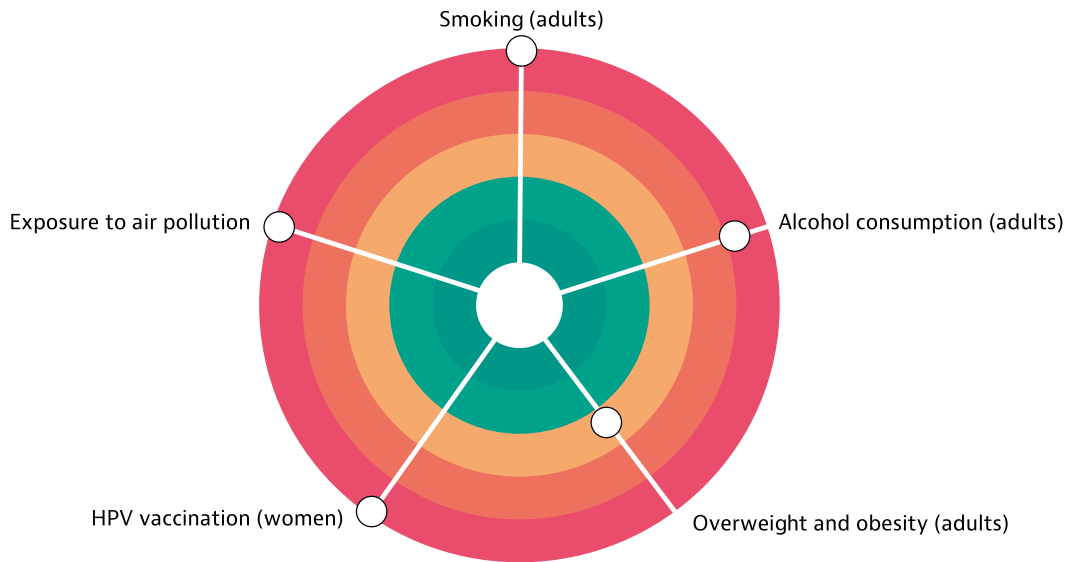
3. Risk factors and prevention policies

Bulgaria’s population trails EU averages on most cancer risk factors

For most cancer-related risk factors – such as smoking, alcohol consumption, overweight and obesity, and exposure to air pollution – Bulgaria reported more risky patterns than most other EU countries in 2019 (Figure 4). Mixed results for some

existing preventive and health promotion policies, coupled with relatively limited resourcing for public health, have contributed to this situation.

Figure 4. Smoking, alcohol and low levels of human papillomavirus vaccination are major risk factors



Note: The closer the dot is to the centre, the better the country performs compared to other EU countries. No country is in the white "target area" as there is room for progress in all countries in all areas.
 Sources: OECD calculations based on the European Health Interview Survey (EHIS) 2019 for smoking and overweight/obesity rates, OECD Health Statistics 2022 and WHO Global Information System on Alcohol and Health (GISAH) for alcohol consumption (2020), WHO for HPV vaccination (through the WHO/UNICEF Joint Reporting Form on Immunization) (2020), and Eurostat for air pollution (2019).

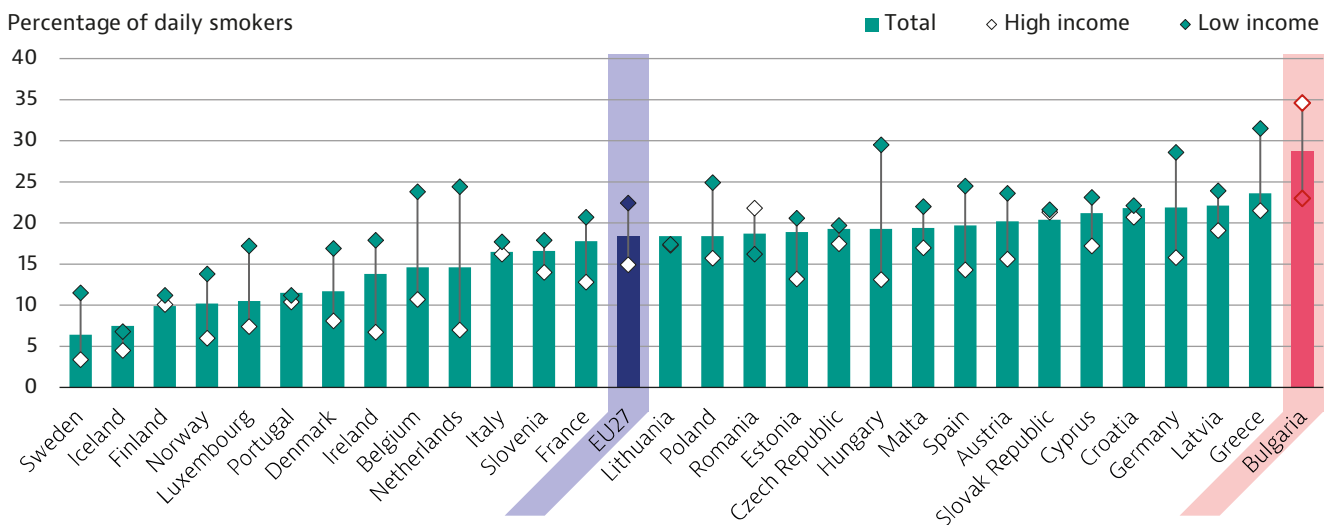
Bulgaria has the highest proportion of daily cigarette smokers in the EU

In 2019, Bulgaria had the highest rate of daily smokers of cigarettes among EU countries, at 29 % compared to the average EU rate of 18 %. It is among the few EU countries reporting an increasing trend of smoking prevalence over the last decade. The prevalence of smoking among men in Bulgaria (38 %) is almost double the EU average rate of 22 %, and six times higher than in Sweden (6 %), which has the lowest rate among EU countries. There is also a major gender gap in

smoking rates: the rate among men in Bulgaria is almost twice as high as that among women (21 %).

Unlike in most EU countries, education disparities in the prevalence of daily smoking in Bulgaria are not observed. With a prevalence of 24 %, Bulgarians have the highest rate of daily smokers among highly educated populations in EU. Also, unlike the trend in most EU countries, high income in Bulgaria is related to higher smoking rates than the average in the population. One in three higher earners is a smoker (35 %), giving Bulgaria the highest rate in the EU (Figure 5).

Figure 5. People on high incomes smoke more frequently than the rest of the population in Bulgaria



Note: The EU average is weighted (calculated by Eurostat).
 Source: Eurostat Database (EHIS). Data refer to 2019.

Alcohol consumption is a greater problem for younger age groups and those with lower education levels

Alcohol consumption among adults in Bulgaria in 2020 (11.2 litres of pure alcohol on average per year and per capita) was higher than the EU average (9.8 litres) and has increased over the past decade. Around 2 % of the population reported hazardous alcohol drinking, but with substantial disparities across groups. For instance, the percentage of the population classified as hazardous drinkers in the age group 15-64 years (1.8 %) was twice that among those aged over 65 years (0.9 %). Also, the rate of alcohol abuse among the population with low education levels (1.7 %) was more than double the rate for those with higher levels of education (0.7 %).

New cancer cases attributable to alcohol drinking were estimated to be around 10 per 100 000 population in 2020, and rates for men (15 per 100 000) were about three times higher than those for women (6 per 100 000) (Rumgay et al., 2021).

Exposure to air pollution is higher in Bulgaria than in the EU

In 2019, exposure to PM₁₀¹ in Bulgaria reached 30.4 µg/m³, the second highest concentration among EU countries and almost 50 % higher than the EU average (20.5 µg/m³). Bulgaria also had the highest concentration of PM_{2.5} among EU countries, reaching 19.6 µg/m³ (compared to 12.6 µg/m³ in the EU). According to the Institute for Health Metrics and Evaluation, ozone and PM_{2.5} exposure accounted for an estimated 9 % of all deaths in Bulgaria in 2019, the highest proportion among EU countries.

Many deaths could be avoided through better prevention of human papillomavirus infections

HPV vaccination coverage is of special relevance in the Bulgarian context since the age-standardised rates of female cervical cancer incidence (26 per 100 000 in 2020) and mortality (8 per 100 000 in 2019) are among the highest in the EU. The National Programme for Primary Prevention of Cervical Cancer 2012-2016 was approved and financed by the Bulgarian Government in response to this public health priority, and was continued during 2017-2020 and 2021-2024. Bulgaria was the twenty-fourth country in the EU to provide public funds for HPV vaccination, and two vaccines are licensed in the country. In its first year, the Programme achieved 24 % coverage with three doses, but in the following years coverage dropped

significantly. As a result, Bulgaria reports the lowest proportion of girls aged 15 years receiving the recommended doses of HPV vaccine in the EU (only 8 % in 2019: seven times lower than the 60 % EU average). Vaccination in boys is currently not under discussion in the country.

Overweight and obesity are increasing, with higher rates for those with lower education levels

The prevalence of overweight and obesity among adults in Bulgaria was 55 % (64 % in men and 46 % in women) in 2019. This rate has shown a steady increase in recent years, and was slightly higher than the EU average of 53 % in 2019. The increasing prevalence of overweight and obesity among people with both lower and higher education levels in most EU countries over the period 2014-2019 was also observed in Bulgaria, but it was more significant among those with lower education levels (rising from 52 % to 58 %) than higher education levels (rising from 47 % to 48 %).

Poor nutrition is usually considered to be the main contributory factor to being overweight and obese. Consumption of fruit among adults in Bulgaria was very low in 2019 (the third lowest among all EU countries), and three in five adults do not consume at least one piece of fruit each day. Less than half (49 %) do not eat vegetables daily. Physical activity among adults is also low: only 58 % engage in at least moderate physical activity every week, which is lower than the EU average of 64 %.

Prevention of cancer-related risk factors in Bulgaria has had a limited impact

Over the last 20 years, legislative measures have been taken to ban smoking in public places and workplaces, and on public transport. European legislative restrictions have also been introduced on the production, supply, advertising, sponsorship and sales of tobacco products, as well as specific requirements for warning labels and images on packaging. To restrict smoking and prevent its harmful effects in adolescents, providing and selling of tobacco products to those under 18 years is prohibited. Other preventive activities aimed at young people have focused on promoting healthy lifestyles and on the prevention of risky behaviours (unhealthy diet, low physical activity and alcohol abuse).

Further activities governed by the National Programme for the Prevention of Chronic Non-Communicable Diseases 2014-2020, extended until 2024, target risk factors for cancer and

¹ Particulate matter (PM) is classified according to size: PM₁₀ refers to particles less than 10 micrometres in diameter; PM_{2.5} to particles less than 2.5 micrometres in diameter.

include a National Population Health Risk Factor Survey conducted in 2020. Free-of-charge consulting rooms for problems related to weight and smoking cessation have been opened in most regional health inspectorates (the regional units of the Ministry of Health). Another programme encompassing the control of risk factors for chronic non-communicable diseases (including cancers) at the regional level was the WHO Countrywide Integrated Non-communicable Diseases Intervention Programme, which included nine demonstration zones from Bulgaria.

Despite the existence of cancer risk factor prevention policies and various health promotion initiatives, the overall impact has been limited.

The main obstacles to meeting the targets of the prevention programmes include the limited involvement of representatives from all stakeholders (national and regional health policy makers, the health insurance fund, the cancer registry, medical professionals, patient organisations, teachers and community mediators); the lack of a comprehensive cancer health strategy – especially among vulnerable populations (such as migrants, people with low education levels or low socioeconomic status and people with disabilities); and limited funding (in 2020, health prevention represented only 2.8% of total health spending in Bulgaria compared to 3.4% on average in the EU).

4. Early detection

A national programme for population-based cancer screening is lacking in Bulgaria

The organisation of cancer screening in Bulgaria does not ensure a systematic approach, national coverage or equal access; as a result, effective early cancer detection is impaired. There is no population-based programme offering screening to a specific at-risk target population, which is reflected in the low screening rates described below. There is also a lack of specific national policies targeting higher-risk groups or groups with limited access to health services. The Bulgarian population is currently left with opportunistic screening opportunities provided by the basic health insurance package of the National Health Insurance Fund (NHIF). However these activities are not fulfilling the European guidelines for high quality, population-based cancer screening programmes.

In practice, preventive services related to early detection of different types of cancer in Bulgaria are among the responsibilities of primary and specialised outpatient health care providers. Each citizen with health insurance is entitled to a yearly general prevention exam, which includes specific screening tests based on their age and individual risk profile. The tests covered by the NHIF are mammography for women aged 50 years and over (every second year), prostate-specific antigen test for men aged 50 years and over, and yearly visits

to a gynaecologist and cervical smears for women aged 30-40 years.

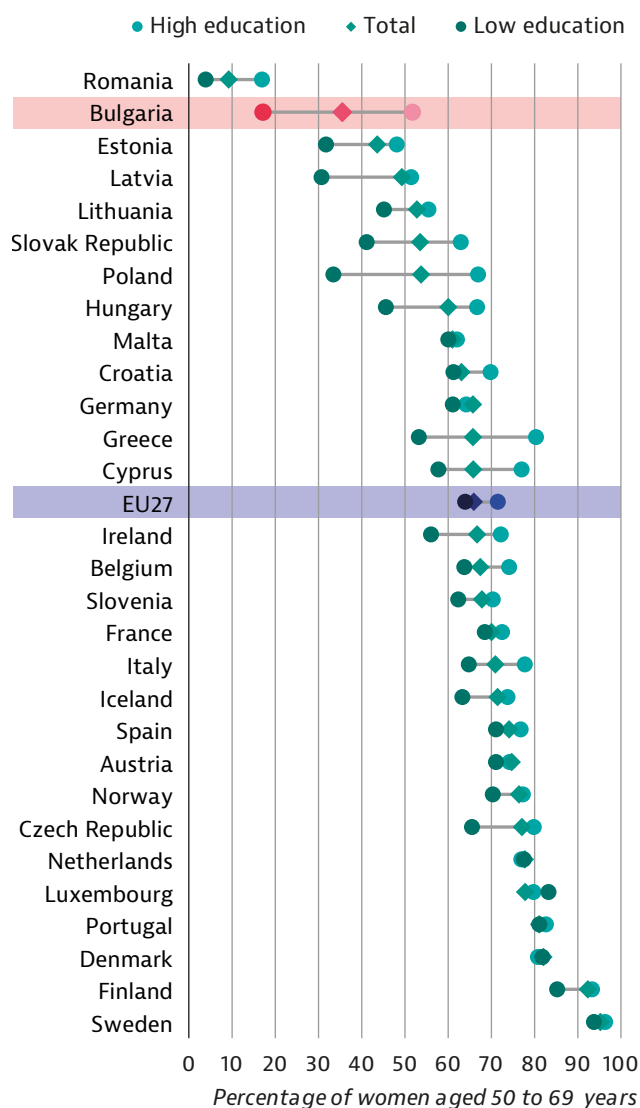
Each year, various sporadic screening initiatives are set up (more often at the regional level), some of which target oncological diseases. However, these rarely collect systematic and continuous information on positive cases, and all related activities are frequently stopped at the end of the initiative.

Breast cancer screening participation rates are lower in Bulgaria than the EU average, with stark income disparities

Bulgaria is among the EU countries with the lowest self-reported breast cancer screening rates. The lack of nationwide screening is, however, compensated for in part by regional screening initiatives offered by municipalities, hospitals, outpatient health centres and even individual medical specialists. For example, since 2015 the municipality in the capital city of Sofia has been providing funding for breast cancer screening for women working in specific sectors (including schoolteachers, those working for cultural or social services institutions and public transport workers). However, such regional initiatives are mostly available in the big urban centres, and do not reach the whole population. As a result, only 36 % of Bulgarian women aged 50-69 years reported receiving a mammogram in the past two years preceding the 2019 EHIS survey (Figure 6).

Major inequalities in screening rates are also reported. Bulgarian women with high education levels had much greater screening coverage (52 %) than those with low education levels (17 %) in 2019, leading to the highest gap among all EU countries. Inequality in access to breast cancer screening by income and place of residence is also much greater in Bulgaria than in most EU Member States. The proportion of Bulgarian women on high incomes reporting that they received breast cancer screening within the past two years is 54 % compared to only 18 % of women on low incomes.

Figure 6. Educational disparities in rates of breast cancer screening in Bulgaria are the highest in the EU

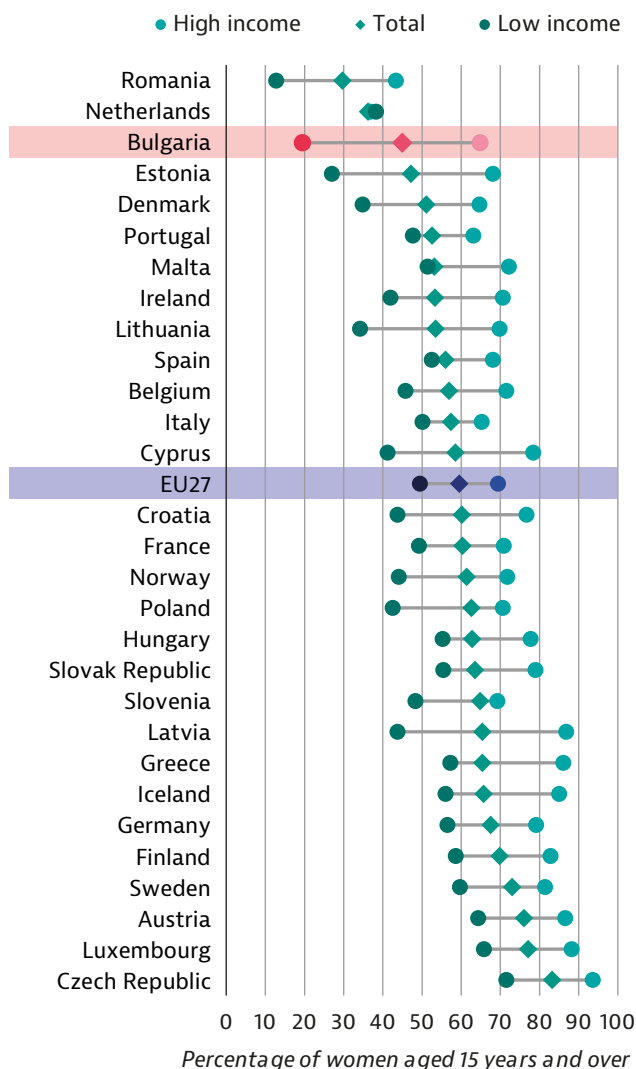


Note: The EU average is weighted (calculated by Eurostat). The figure reports the percentage of women aged 50 to 69 years who reported receiving a mammogram in the past two years. Source: Eurostat Database (EHIS). Data refer to 2019.

Screening rates for cervical and colorectal cancer in Bulgaria are among the lowest in the EU

Bulgaria is among the EU countries with lowest cervical screening coverage. In 2019, only 45 % of Bulgarian women above 15 years of age reported having a cervical smear test in the last three years, and the difference between women on high (65 %) and low (20 %) incomes was the highest in the EU (Figure 7). The low uptake of cervical cancer screening is even more problematic when considering the high age-standardised mortality from cervical cancer in the country (Bulgaria has the third highest rate in the EU; see Sections 2 and 3).

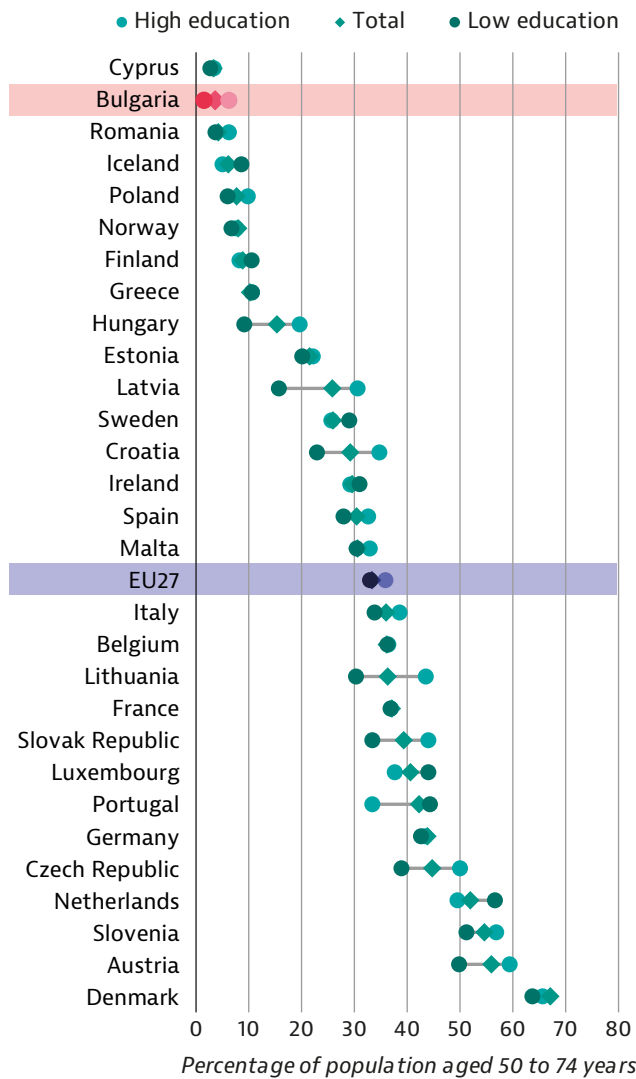
Figure 7. Bulgaria has low levels of cervical cancer screening, with major income disparities



Note: The EU average is weighted (calculated by Eurostat). The figure reports the percentage of women aged 15 years and over who reported having a cervical smear test in the past three years. Source: Eurostat Database (EHIS). Data refer to 2019.

Colorectal screening is a challenge for all countries: the average proportion of targeted population screened within the last two years across the EU is only 33 %, but Bulgaria also ranks among the lowest for this indicator. In 2019, only 4 % of the Bulgarian population aged 50 to 74 years reported having a faecal occult blood test in the past two years (Figure 8).

Figure 8. Bulgaria reports the second lowest level of colorectal cancer screening in the EU



Note: The EU average is weighted (calculated by Eurostat). The figure reports the percentage of population aged 50 to 74 years who reported having a faecal occult blood test in the past two years.

Source: Eurostat Database (EHIS). Data refer to 2019.

Public understanding of and political support for national cancer screening are lacking

A nationwide project called “Stop and Go for a Check Up”, supported by the European Commission, ended in 2014. Its main objective was to raise public awareness about the nature and benefits of cancer screening. However, despite wide-scale information campaigns, only 14 % of the 400 000 planned cancer screening tests (including breast, cervical and colorectal screening) were performed. The main achievement of the project was the establishment of a National Cancer Screening Register, but difficulties maintaining its activities arose once the project was over.

Steps have been taken in Bulgaria to develop and regulate a national population screening register (for more than cancer). A 2016 ordinance of the Ministry of Health on preventive examinations and dispensarisation details the regulatory framework of population screening services in the country. According to this, the state is responsible for developing and maintaining a system for organised screening of the population. When fully operational, the National Cancer Screening Register should be managed by the National Centre for Public Health and Analysis. It should contain personal data of individuals who have been screened; details of the medical institutions carrying out screening tests; results of the examinations conducted; and other necessary data. The Register should provide the opportunity to identify population groups eligible for specific screening and those who have undergone an examination, as well as keeping an electronic record of each person. This Screening Register should work in close collaboration with the Bulgarian National Cancer Registry.



5. Cancer care performance

5.1 Accessibility

The National Health Insurance Fund covers cancer care and services, but major coverage gaps exist

Financial accessibility to cancer services in Bulgaria is strongly dependent on coverage by the compulsory health insurance system, as all elements of cancer diagnostic and therapeutic care are fully provided for by the NHIF. All citizens with health insurance have the right to access the necessary diagnostic and therapeutic cancer procedures, with no co-payment for outpatient or hospital treatment or cancer-related medicines. However, according to the latest available data, 12.4 % of the Bulgarian population did not have health insurance in 2020, which in practice constitutes a major barrier to access for this group.

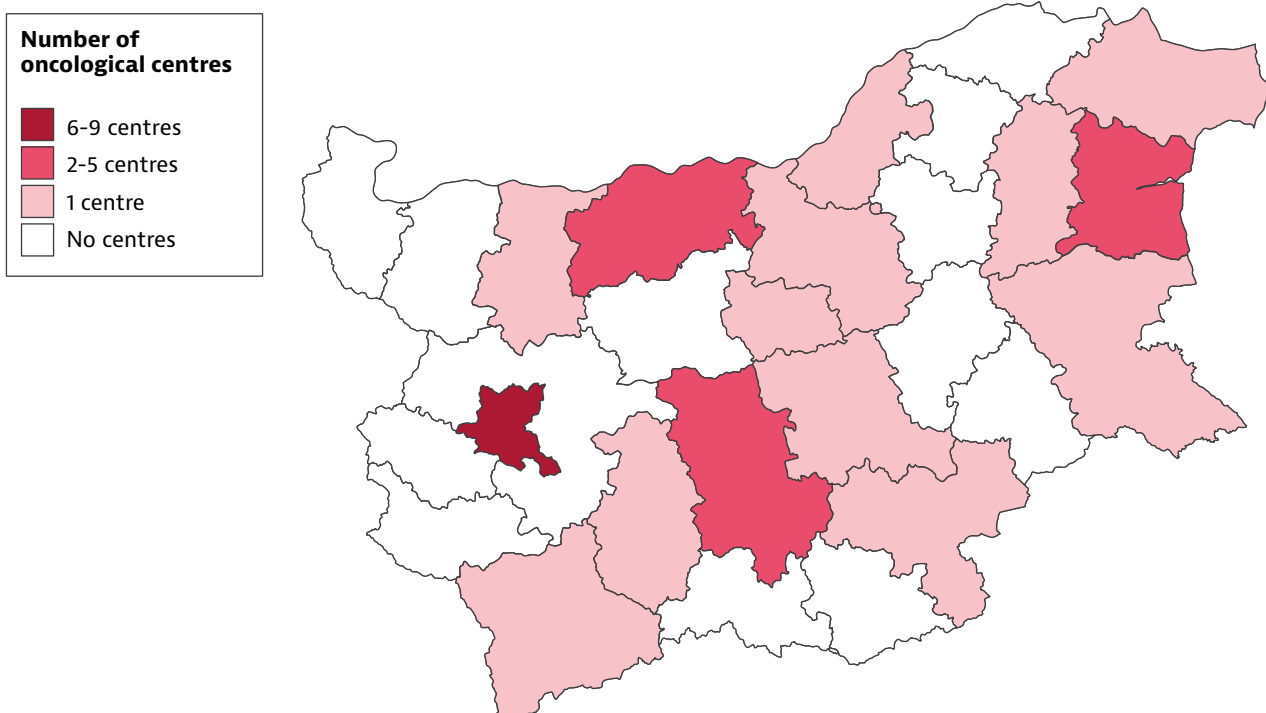
Provision of cancer services is regulated by the Health Act and Regulation No. 2/2016 of the Ministry of Health, which defines the cancer care activities package covered by the NHIF for insured individuals. Services for patients with oncological

diseases are covered within two clinical pathways for complex oncological treatment, with specific content depending on the age of the patient (below and above 18 years).

Concentration of services in cities limits access to cancer care in remote and rural areas

Bulgaria has an established national oncological network, consisting of 20 public and 6 private specialised oncological hospital centres offering full range of diagnostic and therapeutic services. These centres are situated in 14 cities of the country (Figure 9), with clear concentration of services in the capital city and three university centres – Plovdiv, Varna and Pleven. Five of the public oncological hospitals and four of the private hospitals (i.e. one third of all specialised oncological hospitals) are situated in the capital city Sofia, serving less than a quarter of the total population. Overall, people living in rural areas and remote regions do not have the same geographical access to oncological care as those in the big urban and main university centres.

Figure 9. The oncological centres providing diagnostic and treatment services are unevenly distributed



Source: Authors based on data from the Bulgarian Cancer Scientific Society, the National Cancer Registry and the International Atomic Energy Agency (IAEA).

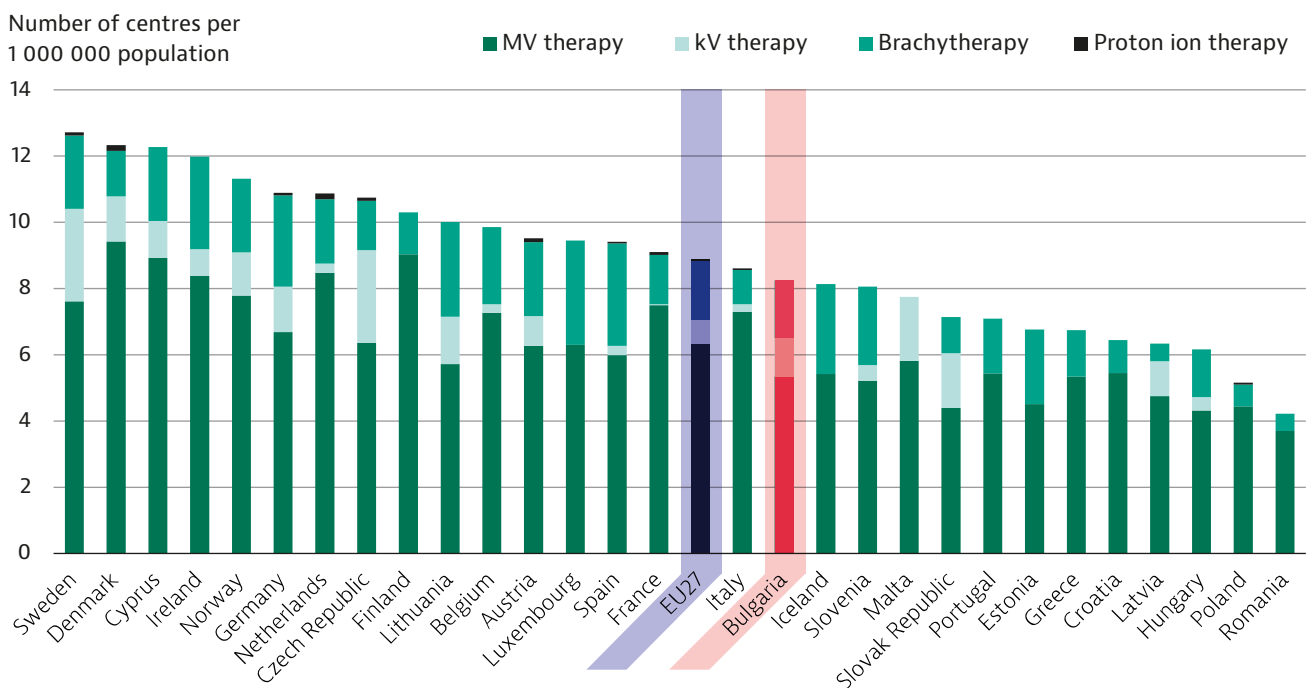
Bulgaria has high availability of equipment for cancer detection and treatment

From a technological standpoint, the oncological centres in Bulgaria are relatively well equipped for diagnostic and treatment services (Figure 10). Availability in Bulgaria is very close to the EU average for particle therapy centres, megavolt (MV) therapy and brachytherapy, while the number of kilovolt (kV) therapy centres is above the EU average for 2022 (or latest available year). As a result, once a diagnosis is made, access to treatment is usually provided without delay. In addition, availability of computerised tomography (CT) scanners in Bulgaria is 60 % above the average in the EU, although availability of magnetic resonance imaging (MRI) scanners is slightly lower.

The high provision of technological equipment (such as CT scanners) is related not only to the high number of well-equipped hospitals but also to the big number of private ambulatory medico-diagnostic centres offering modern diagnostic services directly to the population.

The main political decisions in the field of treatment of oncological diseases in recent years have mostly aimed to increase diagnostic and radiotherapy equipment and ensure their distribution across the country. Overall, the high levels of technological equipment protect Bulgarian citizens from delays in access to cancer diagnostic and treatment procedures.

Figure 10. Bulgaria is close to the EU average in terms of particle therapy centre availability



Note: MV stands for megavolt and kV stands for kilovolt. The EU27 average is unweighted (calculated by the OECD). Source: International Atomic Energy Agency.

Health workforce shortages are a major barrier to accessing cancer care in Bulgaria

Unlike the availability of physical equipment, a serious shortage of specialist health professionals – both doctors and nurses specialising in oncology and palliative care – impairs access to cancer care in Bulgaria. Availability of oncologists (1.95 per 100 000 inhabitants in 2016 according to the latest available data) is among the lowest in the EU. According to the latest data from the Bulgarian National Statistical Institute, the number of doctors specialists in medical oncology in the country was 276 or 0.4 per 10 000 population in 2021. Shortages of specialists are also reported across and affect the whole chain of treatment

of oncological diseases (including pathologists, anaesthesiologists, rehabilitation professionals and specialists in imaging, palliative care and so on). Palliative care does not exist as a separate specialty for health care professionals including doctors and nurses. Planning for and investment in education, training and motivation of young professionals for specialisation in these areas is an important element to develop in the country.

Over the past decade availability of new cancer drugs in Bulgaria has improved substantially

Investment in medical treatments has increased significantly in recent years in Bulgaria, and particular attention has been paid to provision

of oncological medicinal products for systemic treatment. Since 2015 significant progress has been made on the availability of cancer medicines in the country, and the NHIF has added many innovative medicines to the positive drug list. Payments by the NHIF for oncology medicines increased from EUR 72.5 million in 2012 to EUR 127.5 million in 2015, and payments for medical activities – including clinical procedures and clinical pathways in oncology – grew from EUR 40 million in 2012 to EUR 56.5 million in 2015 (ARPharm, 2016). Cancer drugs (including antineoplastic and pain relief) that are centrally approved by the European Medicines Agency and included in the national positive drug list are 100 % reimbursed by the NHIF. They are accessible once an oncological expert committee has confirmed that they are needed for the patient.

Access to palliative care in Bulgaria remains a major problem in the cancer care pathway

Palliative care for cancer patients in Bulgaria remains uneven, uncoordinated, insufficient and not well integrated across the health care system, mainly as a result of limited public investment and low service capacity. In total, 25 hospitals in Bulgaria have signed a contract with the NHIF for provision of palliative care for patients with oncological diseases (Ministry of Health, 2021a). Some progress has been made over the past few years, and the number of activities and financial resources for palliative care services have increased. Palliative patient days rose from 18 000 in 2018 to 20 600 in 2019, and the funds paid by the NHIF for these services almost doubled.

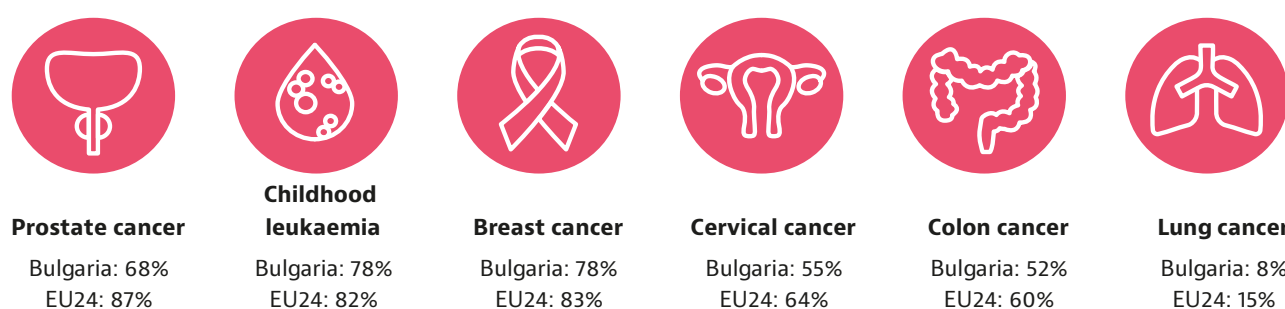
However, these positive developments have been insufficient, as estimates show that only 4.7 % of all terminally ill cancer patients in Bulgaria received end-of-life care in 2020. It is well recognised by experts and the Ministry of Health that public funds for palliative care are inadequate, and that the number of hospital beds needed is much larger than the number available. In the Global Atlas of Palliative Care (WHPCA, 2020), Bulgaria is defined as belonging among the lowest 25% of countries in terms of development of palliative care activities in several locations, with growth of local support in those areas; multiple sources of funding; availability of morphine; several hospice palliative care services from a range of providers; and provision of some training and education initiatives by hospice and palliative care organisations.

5.2 Quality

Cancer survival rates in Bulgaria are among the lowest in the EU for the main cancer types

Five-year survival rates in Bulgaria for the main cancer types – lung, prostate, colon, breast and cervical cancer and childhood leukaemia – improved gradually during 2000-2014, but the country remains in the lowest quartile among EU countries in terms of survival for all cancer types. The five-year survival rate in Bulgaria is lowest for lung cancer, compared to other cancers (Figure 11).

Figure 11. Bulgaria's five-year survival rates are lower than the EU average for many cancers



Note: Data refer to people diagnosed between 2010 and 2014. Childhood leukaemia refers to acute lymphoblastic cancer. Source: CONCORD Programme, London School of Hygiene and Tropical Medicine.

Low cancer survival rates are associated with shortcomings in early detection and access to screening

The proportion of cancers diagnosed in advanced stages 3 and 4 (due to poor access to population screening) can partly explain the low survival

rates in Bulgaria. According to the latest available data, in 2014 more than a quarter (27 %) of prostate cancers in Bulgarian men were diagnosed at an advanced stage. The same applies to cervical cancer (29 % of cases) and breast cancer (28 %) among women, and colon cancer (42 %) and lung cancer (66 %) for both sexes.

Cancer care services are delivered by accredited institutions

Health services for patients with oncological diseases in Bulgaria are provided by a national network of public and private for profit specialised hospitals for oncological care. These are accredited health care facilities, fulfilling the requirements of the national medical oncology standard for provision of complex specialised services for cancer patients (including outpatient and hospital care, rehabilitation, registration and so on) (Ministry of Health, 2018). A hospital institution is eligible for a contract with the NHIF and expenditure reimbursement only if it fulfils the requirements of this clinical standard and the clinical pathway for provision of each separate part of the complex process of cancer treatment. The requirements do not relate to volume of activity but to equipment and presence of specialist staff. In Bulgaria, cancer care centres are not accredited through the Organisation of European Cancer Institutes.

Data infrastructure to monitor the burden of cancer and outcomes of care is not fully operational

An important pillar of the cancer ecosystem in Bulgaria is the National Cancer Registry (BNCR), which was established in 1952. Its role is to register all new cases of malignant neoplasms throughout the country and to report the most important indicators related to oncological diseases among the population – incidence, prevalence, stage of the disease at diagnosis, mortality and survival. The information is collected from 13 regional cancer registries, which are linked with the specialised hospitals for treatment of oncological diseases (Valerianova et al, 2015).

Information on each newly diagnosed cancer case is entered and stored in the regional databases, and is sent periodically to the National Cancer Registry, where it is checked for accuracy, completeness and coherence. Each year a report is published on the state of oncological diseases in Bulgaria. The information on each case is categorised into more than 100 fields and includes patient data and data on the malignancy, treatment and development of the disease.

The national and regional cancer registries have operated through a dedicated information system – CancerRegBG – since 2011. This is in compliance with European and international rules and requirements regarding cancer registration. Quality of data registration is assessed using indicators of comparability, completeness and validity. In 2013 direct assessment methods

showed 94.5-96.0 % completeness for registration in men and 91.1-93.6 % in women. The National Cancer Registry is included in international projects and collaborations involving provision of information, including the EUROCHIP, EUROCARE, EUROCOURSE, RARECARENet, EPAAC and CONCORD programmes. The Bulgarian National Cancer Registry has been a member of the European Network of Cancer Registries and the International Association of Cancer Registries since 2000 (Valerianova et al, 2015).

However, the functioning of this important part of the national oncological network is not secured with earmarked budgets in part due to a poor understanding of the usefulness of the BNCR in cancer control. This hinders both widening the scope of registered data and the timeliness of outcome reports. The cancer registries do not collect relevant genomic information or detailed follow-up care information including patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs). Although reports on cancer stage information are produced regularly, based on registered data, they are not analysed to monitor quality and inform policy decision making.

Measurement of patient-reported outcomes and experiences is not widely implemented

Apart from the requirements of the national medical oncology standard, no other nationwide requirements are in place on monitoring of compliance of cancer care with clinical guidelines and reporting of cancer care quality indicators. Measurement of patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs) is left to the independent decision of the management of individual institutions. A recent study analysed adherence to European Society of Breast Cancer Specialists (EUSOMA) recommendations for diagnosis and treatment of breast cancer diseases in Bulgaria (Vasileva, 2021). Data from the National Cancer Registry indicate low adherence to EUSOMA recommendations, low overall survival outcomes for the 6 700 women studied with single-sided invasive breast cancer, and significant differences in survival between subgroups, with results in favour of patients who received the required treatment and had known tumour characteristics.

5.3 Costs and value for money

Cancer expenditure in Bulgaria is among the lowest in the EU

The two main components of total cancer costs are direct and indirect costs. Direct costs indicate resource consumption arising directly from the disease, which relates to expenditure borne by the health care system. The direct cancer costs in Bulgaria for 2018, adjusted for purchasing power parity, are estimated at EUR 90 per capita; they are the third lowest in the EU after Romania and Latvia. It is notable that despite the substantial rise in direct cancer costs in Bulgaria during 1995-2018 (an almost four-fold increase from EUR 24 to EUR 90 per capita) they remain about three times lower than the highest costs in EU, and well below the EU average (EUR 200 per capita). Direct cancer costs in Bulgaria for 2018 represented approximately 7 % of the total health expenditure in the country, which is more than the average EU share of 6.2 %.

Rising expenditure on cancer medicines is the main driver of increasing direct cancer costs

Various factors contribute to the growing direct cancer costs in EU, such as the increasing number of cancer patients and improved cancer survival rates. However, one of the main drivers of this rise is the sharp increase in expenditure on cancer medicines (including increasing use of target molecules and immunotherapies, as well as a broadening of their indications). On average, expenditure on cancer medicines in Bulgaria grew by 20 % during 2008-2018 (the highest growth reported in the EU). As a result, expenditure on cancer medicines as a share of total direct cancer

costs in Bulgaria was 68 % in 2018, which is the highest proportion in the EU and well above the 31 % EU average. The inelastic prices of cancer therapies in EU combined with a lower level of overall health expenditure on cancer care explain in part why cancer medicines represent such an important share of the total cancer costs in Bulgaria.

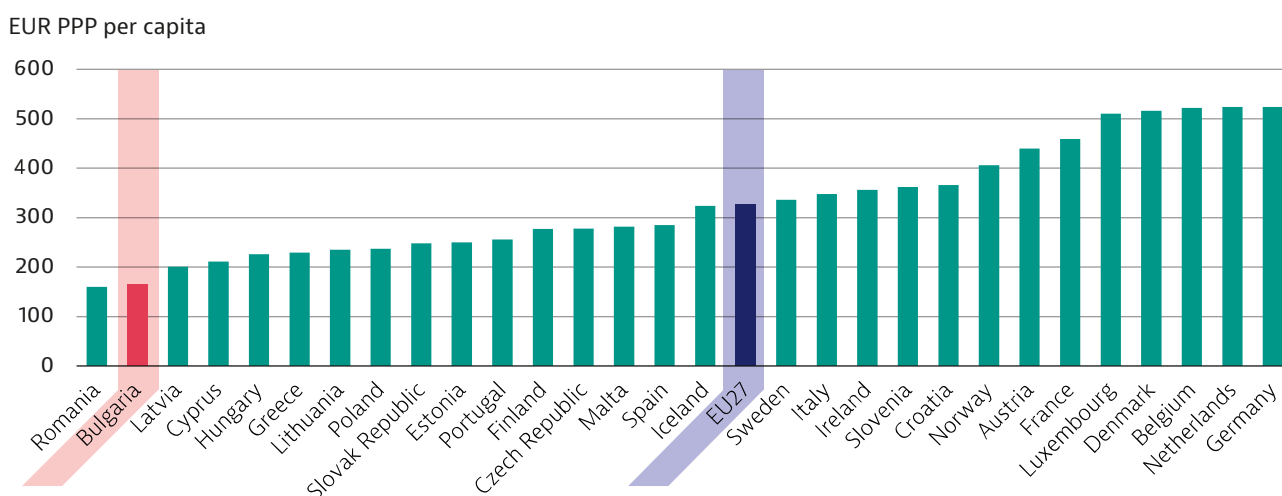
To increase efficiency and transparency of the reimbursement process in Bulgaria, health technology assessment (HTA) was introduced in 2015 as a mandatory procedure for inclusion of medicines in the benefits package. The National Centre for Public Health and Analysis, an institution within the Ministry of Health, performs HTA activities in the country. Despite the adoption of a broad set of measures since 2011, however, HTAs have not managed to control pharmaceutical spending or to enhance drug therapy efficiency and effectiveness.

Indirect cancer costs remain stable in Bulgaria

Indirect costs – referring to the cost of productivity loss arising from the disease – have remained stable in Bulgaria while slightly decreasing in the EU during 2008-2018. Indirect costs from premature deaths of working-age people caused almost one third (30 %) of the total cancer costs in the country for 2018. This share is much higher than productivity loss from morbidity (only 8 %).

Overall, Bulgaria's total cancer expenditure is among the lowest in the EU, at EUR 165 per capita, adjusted for purchasing power parity (PPP), compared with the EU average of EUR 326 (Figure 12).

Figure 12. Total cancer costs in Bulgaria are the second lowest in the EU



Note: The EU27 average is unweighted (calculated by the OECD).
Source: Hofmarcher et al. (2020).

5.4 COVID-19 and cancer: building resilience

Data are limited on the impact of the COVID-19 pandemic on cancer care in Bulgaria

A precise assessment of the effect of COVID-19 on cancer care relies strongly on the availability of a functioning, integrated, person-centred health information system that provides timely, high-quality data. The public health emergency made the timeliness of data needs even more obvious. This is an issue of particular concern in Bulgaria, as owing to a limited budget (see Section 5.2) it is not possible to collect data on cancer outcomes, survival and mortality – in total and by specific location – from the National Cancer Registry. Instead of a uniform, integrated, functioning national health information system, partial, unintegrated and institutionally separate databases coexist, providing fragmented, incomplete, untimely data. It is therefore often impossible to access individual-level (anonymised) information in formats that facilitate further analysis. Given the limited data to date, it remains difficult to discover the full impact of the COVID-19 pandemic on cancer care in Bulgaria.

The COVID-19 pandemic had a negative effect on primary prevention and early detection of cancer

With the confirmation of the first COVID-19 cases in early March 2020, while their number was still very low, the government implemented a strict lockdown to contain the spread of the virus. This first and the following periods of lockdown had a negative effect on all primary prevention and screening activities, including those for cancer.

In 2020, a 10 % decline was seen in the number of preventive check-ups for children up to 18 years compared with the previous year, and a 15 % decline in the adult population (Ministry of Health, 2021b). This had a negative effect on the number of newly registered cancer patients. The total reported cancer incidence rate (for all types) declined by 8 %, but the decline for specific cancer types was very high: 26 % for thyroid cancer, 19 % for melanoma and 14 % for bone cancer, among others.

The pandemic led to a serious decline in outpatient and hospital services for cancer patients

Ordinance RD 09313 of 16 March 2020 of the Director of the NHIF at the very beginning of the pandemic directly requested medical institutions providing hospital care to patients with cancer to

maintain provision of services for this population, while observing the established new organisation and implementing the recommendations of the National Operational Headquarters to Combat COVID-19.

Despite this, the absolute number of hospitalisations for cancer in Bulgaria declined by 620 000 in 2020 compared to 2019, corresponding to a 13 % drop in hospitalisation rates for patients with oncological diseases between 2019 and 2020. These results may not be an effect of service closures but rather a reflection of official and media messages advising people to limit their contacts and interactions. The effect of this COVID-19 impact on access to and use of cancer services is still to be revealed and measured in terms of changed stages at diagnosis and effects on cancer survival and mortality.



6. Spotlight on inequalities

Bulgarian citizens with health insurance have access to all needed diagnostic and therapeutic cancer services free of charge with no copayment. However, more than 12 % of the population remain uninsured, which prevents them from receiving needed cancer care. There are marked inequalities in cancer prevention, screening rates and access to technologically advanced diagnostic or therapeutic oncological centres.

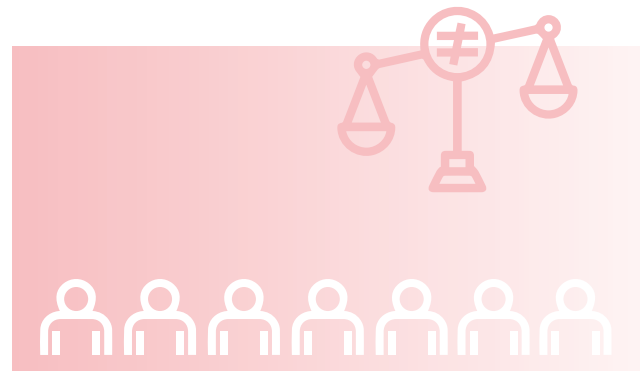
- For most cancer-related risk factors – such as smoking, alcohol consumption and overweight and obesity – Bulgaria reported more risky patterns than most other EU countries. Bulgaria has the highest prevalence in the EU of daily smokers, and the trend has been increasing over the past 10 years. Alcohol consumption is also a major risk factor – particularly for younger age groups and people with lower education levels.
- No population-based cancer screening programmes are in place in Bulgaria. The current system does not ensure a systematic approach, national coverage, equal access or effective early cancer detection. As a result, Bulgaria is among the EU countries with the lowest breast, cervical and colorectal cancer screening rates. In addition, substantial social inequalities persist in the uptake of cancer screening. The difference between cervical and breast screening rates by income, education and place of residence is much greater in Bulgaria than in most EU Member States. The proportion of Bulgarian women on high incomes reporting breast cancer screening within the past two years and cervical cancer screening in the last three years is 3 times higher compared to women on low incomes.
- The country has a network of technologically advanced diagnostic and therapeutic oncological centres, but these are not evenly distributed geographically, limiting access for some segments of the population, such as those living in rural areas and remote regions.

Although five-year cancer survival rates have improved gradually over the last two decades, Bulgaria reports the lowest survival rates among EU countries for lung and prostate cancer, and the second lowest survival rate for cervical cancer. These relatively low rates can be attributed in part

to shortcomings in screening programmes and a paucity of health system resources dedicated to early detection and diagnosis.

As in most countries, the COVID-19 pandemic led to a serious decline in outpatient and hospital services for patients with oncological diseases. Outpatient monitoring check-ups of cancer patients declined by 16 % in 2020 compared to 2019, and hospitalisation rates for patients with oncological diseases dropped by 13 %.

Specific national policies targeting high-risk groups or those with limited access to health services are lacking in Bulgaria. Adoption of a national cancer plan revealing existing trends and inequalities, and offering a comprehensive and sustainable cancer care strategy – including care quality monitoring to inform policy decision-making – is an urgent priority for the country.



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Country abbreviations

Austria	AT	Denmark	DK	Hungary	HU	Luxembourg	LU	Romania	RO
Belgium	BE	Estonia	EE	Iceland	IS	Malta	MT	Slovak Republic	SK
Bulgaria	BG	Finland	FI	Ireland	IE	Netherlands	NL	Slovenia	SI
Croatia	HR	France	FR	Italy	IT	Norway	NO	Spain	ES
Cyprus	CY	Germany	DE	Latvia	LV	Poland	PL	Sweden	SE
Czech Republic	CZ	Greece	EL	Lithuania	LT	Portugal	PT		

European Cancer Inequalities Registry

Country Cancer Profile 2023

The European Cancer Inequalities Registry is a flagship initiative of the Europe's Beating Cancer Plan. It provides sound and reliable data on cancer prevention and care to identify trends, disparities and inequalities between Member States and regions. The Registry contains a website and data tool developed by the Joint Research Centre of the European Commission (<https://cancer-inequalities.jrc.ec.europa.eu/>), as well as an alternating series of biennial Country Cancer Profiles and an overarching Report on Cancer Inequalities in Europe.

The Country Cancer Profiles identify strengths, challenges and specific areas of action for each of the 27 EU Member States, Iceland and Norway, to guide investment and interventions at the EU, national and regional levels under the Europe's Beating Cancer Plan. The European Cancer Inequalities Registry also supports Flagship 1 of the Zero Pollution Action Plan.

The Profiles are the work of the OECD in co-operation with the European Commission. The team is grateful for the valuable comments and suggestions provided by national experts, the OECD Health Committee and the EU Expert Thematic Group on Cancer Inequality Registry.

Each Country Cancer Profile provides a short synthesis of:

- the national cancer burden
- risk factors for cancer, focusing on behavioural and environment risk factors
- early detection programmes
- cancer care performance, focusing on accessibility, care quality, costs and the impact of COVID-19 on cancer care.

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