

Additional Information to the Press Release

DIGESTIVE CANCERS: A CHALLENGE FOR HEALTHY LIFESTYLE, SCREENING PROGRAMMES AND ORGANISATION OF CANCER CARE

Summary of information on digestive cancers in the Czech Republic, with a particular emphasis on colorectal cancer

- **High number of patients.** Each year in the Czech Republic, almost 86,000 persons are diagnosed with cancer and about 27,000 persons die from cancer; at present, there are almost 542,000 persons with a history of cancer in the Czech population. Colorectal cancer is one of the most commonly diagnosed cancers in the Czech Republic: each year, approximately 8,000 persons are diagnosed with this disease. After lung cancer, colorectal cancer is the 2nd most common cause of cancer deaths, followed by another digestive cancer – pancreatic cancer, which is responsible for about 2,000 deaths in the Czech Republic each year and, unfortunately, this number has been still rising. Furthermore, thousands persons in the Czech Republic die from malignant tumours of the stomach, liver, gallbladder and oesophagus each year. It is therefore obvious that the prevention, early detection and treatment of digestive cancers is a top priority for the public health.
- **Worldwide, the Czech Republic is still one of the countries with the highest burden of colorectal cancer.** Each year in the Czech Republic, approximately 8,000 persons are diagnosed with colorectal cancer and about 3,500 persons die from this disease. Stabilisation of incidence rates and decreasing mortality rates are good news; however, these trends lead to growing numbers of patients to be treated and colorectal cancer survivors who must be followed up. At present, there are almost 60,000 persons with a history of colorectal cancer in the Czech Republic.
- **Cancers diagnosed too late.** The situation is aggravated by the fact that less than 50% of newly diagnosed cases of colorectal cancer are diagnosed in earlier clinical stages 1 or 2, which have the highest chance of cure. Patients diagnosed in later stages (3 or 4) require a more complex treatment, including specialised care in comprehensive cancer centres.
- **Existing screening programme (www.kolorektum.cz).** Each Czech citizen aged over 50 is entitled to faecal occult blood test (FOBT); moreover, people aged over 55 are entitled to primary screening colonoscopy. Any person from the eligible population can enter the screening programme by visiting his/her GP (or gynaecologist, for women). The screening test is reimbursed from the public health insurance: the citizens do not have to pay any additional fees for their participation in the screening programme.
- **Low participation rates have significantly increased after the launch of a project of personalised invitations.** The project of personalised invitations of citizens to cancer screening programmes was launched in 2014, with the support from the EU funds. Invitations are sent to citizens who do not participate in cancer screening. These citizens in particular need to be encouraged to make use of the invitation as an opportunity to prevent colorectal cancer. The project has led to a significant increase in colorectal cancer screening

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coverage: from 26% in 2013 to more than 32% in 2015. Nevertheless, a slight decrease in screening coverage in 2016 confirmed that the education campaign must continue.

- **Czech problem to be solved – strengthening prevention in general.** The Czech Republic has to catch up on measures strengthening prevention in general. Data from an OECD survey (Health at a Glance, Europe 2014) show that alcohol consumption, obesity rates and tobacco consumption in the Czech Republic far exceed the average of other developed countries.
- **Good news – longer survival of patients.** According to national and international studies, the Czech Republic is closing the gap on the European average in terms of cancer care results, and significantly exceeds the average of Eastern Bloc countries. This also applies to colorectal cancer in particular.

Cancer epidemiology in the Czech Republic

The Czech Republic is one of the countries with a significant burden of cancer. Each year in the Czech Republic, tens of thousands of people are diagnosed with cancer, and other tens of thousands die from it (**Table 1**). Digestive cancers account for a large proportion of newly diagnosed cancer cases as well as cancer deaths: in particular, colorectal cancer and pancreatic cancer are among the leading causes of cancer deaths in the Czech Republic (**Figures 1 and 2**).

Table 1: Cancer epidemiology (C00–C97) in the Czech Republic

	Men	Women	Both sexes
INCIDENCE (2015)¹⁾			
Absolute number	45,838	39,912	85,750
Rate per 100,000 population	884.9	744.3	813.3
Men-to-women ratio		1,19 : 1	
MORTALITY (2015)²⁾			
Absolute number	14,826	12,026	26,852
Rate per 100,000 population	286.2	224.3	254.7
Men-to-women ratio		1,28 : 1	
PREVALENCE (on 31 Dec 2015)¹⁾			
Absolute number	238,870	302,699	541,569
Rate per 100,000 population	4,611	5,645	5,137
Men-to-women ratio		0,82 : 1	

Source: 1) Czech National Cancer Registry, Institute of Health Information and Statistics of the Czech Republic; 2) Czech Statistical Office

Incidence = number of newly diagnosed cancer cases in a monitored period. It is either expressed as an absolute number or recalculated per 100,000 persons (men or women).

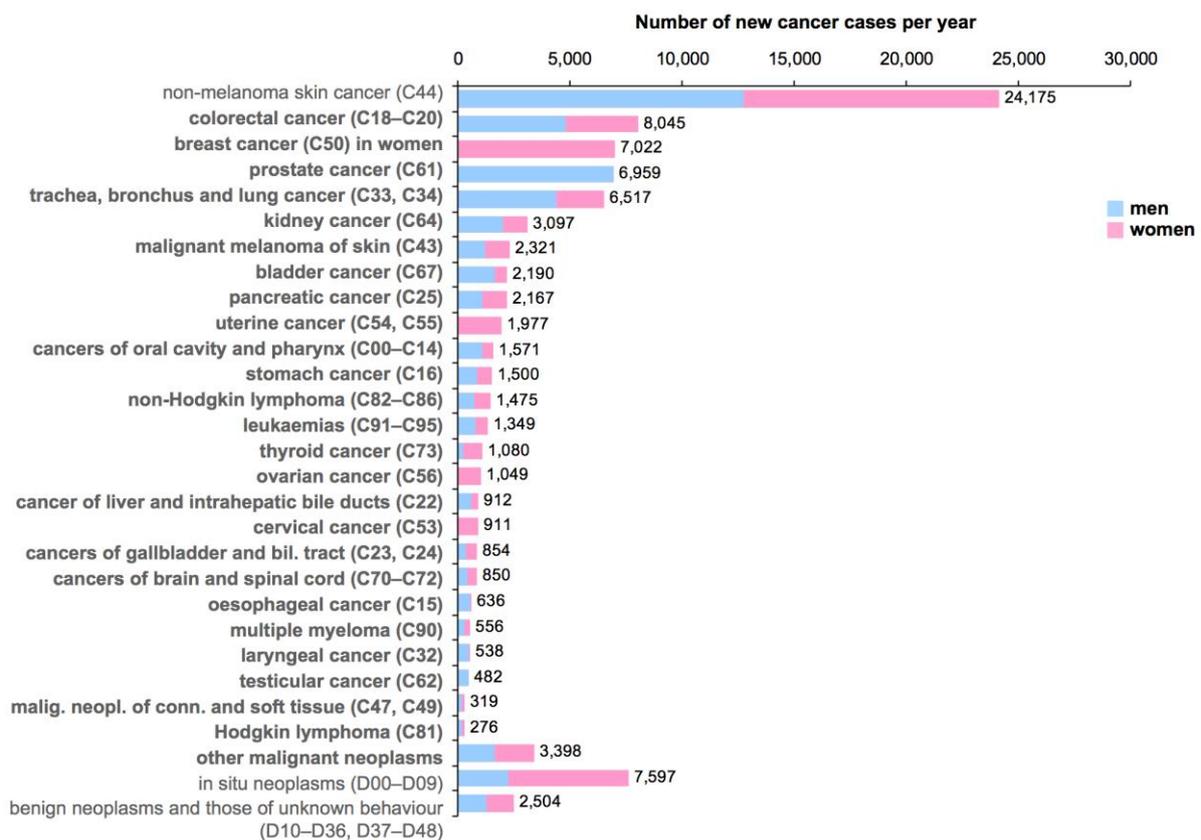
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Mortality = number of cancer deaths in a monitored period. It is either expressed as an absolute number or recalculated per 100,000 persons (men or women).

Prevalence = number of persons alive on the last day of 2015 who were diagnosed with cancer anytime in the past. It is either expressed as an absolute number or recalculated per 100,000 persons (men or women).

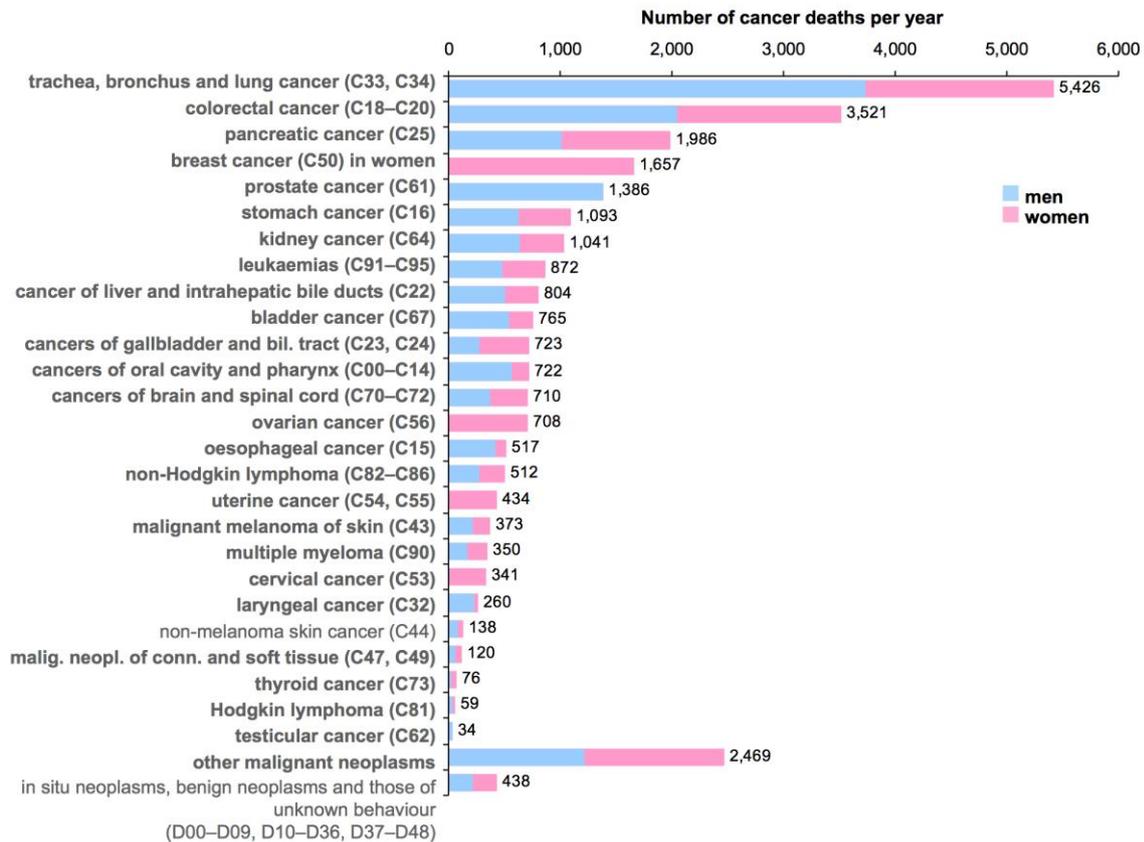
Figure 1: Cancer incidence in the Czech Republic in the period 2011–2015. Data source: Czech National Cancer Registry (CNCR), Institute of Health Information and Statistics of the Czech Republic (IHIS)



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Figure 2: Cancer mortality in the Czech Republic in the period 2011–2015. Data source: Czech Statistical Office (CZSO)



Colorectal cancer – one of the most common cancers worldwide and in Europe

Colorectal cancer (CRC) is among the most commonly diagnosed cancers worldwide and also one of the most common cancer deaths in developed countries. CRC is the 3rd most common cancer worldwide (apart from non-melanoma skin cancer) and the most common cancer in Europe (again, apart from non-melanoma skin cancer). In 2012, according to GLOBOCAN estimates, there were more than 1.3 million new CRC cases and almost 700,000 CRC deaths worldwide. In Europe in the same year, there were almost 450,000 new CRC cases and almost 215,000 CRC deaths. More detailed data on CRC incidence and mortality are shown in [Table 2](#).



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Table 2: Epidemiology of colorectal cancer worldwide and in Europe. Data source: Ferlay et al., 2013

		Men	Women	Both sexes
World	Incidence – number of new cases	746,298	614,304	1,360,602
	Incidence – Czech Republic ranking	4th	16th	6th
	Mortality – number of deaths	373,639	320,294	693,933
	Mortality – Czech Republic ranking	6.	31st	11th
Europe	Incidence – number of new cases	241,813	205,323	447,136
	Incidence – Czech Republic ranking	3rd	10th	5th
	Mortality – number of deaths	113,246	101,620	214,866
	Mortality – Czech Republic ranking	6th	20th	9th

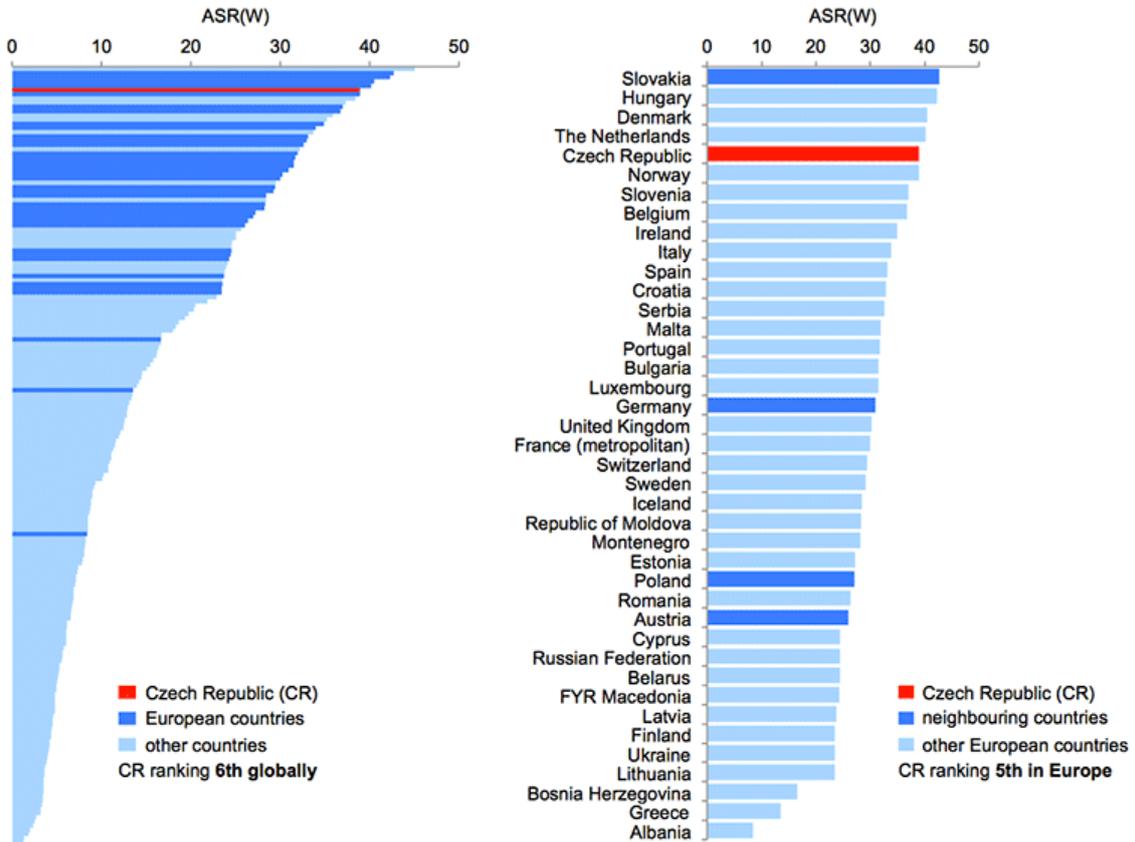
Note: Rank of the Czech Republic is based on the age-standardised (world) incidence and mortality rates (ASR-W).

The Czech Republic has one of the highest rates of colorectal cancer worldwide: Czech CRC incidence rates (i.e. the number of newly diagnosed CRC cases) in men rank 4th worldwide and 3rd in Europe, while women's rates rank 16th worldwide and 10th in Europe; when taking into account both sexes, the Czech Republic ranks 6th worldwide and 5th in Europe (**Table 2, Figure 3**). International statistics document that CRC typically occurs in Central and West European countries, and that CRC is more common among men than women.

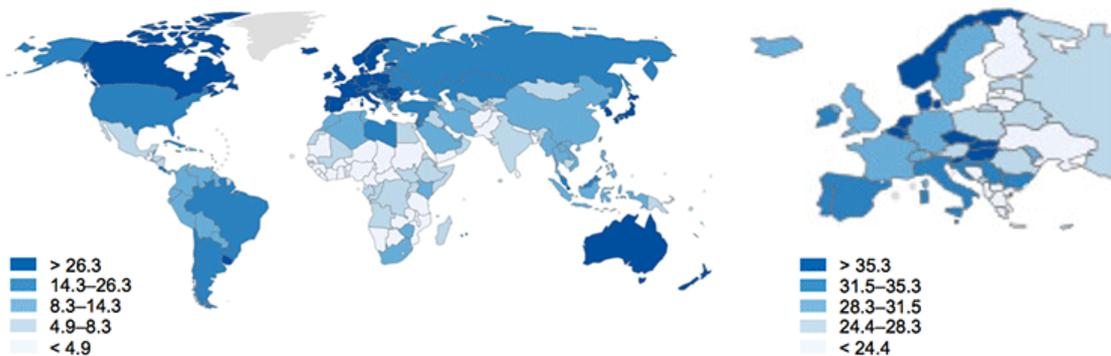
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Figure 3: Incidence of colorectal cancer worldwide (left) and in Europe (right). Data source: Ferlay et al., 2013



Source: Ferlay, J., Soerjomataram, I., Ervik, M., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D.M., Forman, D., Bray, F.: GLOBOCAN 2012 v1.0. Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [online]. International Agency for Research on Cancer. Lyon (France) 2013. Available from: <http://globocan.iarc.fr>.



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Thousands of people die from colorectal cancer in the Czech Republic each year

Each year in the Czech Republic, about 8,000 people hear the diagnosis of colorectal cancer and about 3,500 people die from the disease (most recent data from 2015 are shown in **Table 3**). Colorectal cancer thus accounts for a significant proportion of the overall cancer burden of the Czech population: it is the 3rd most common cancer in both sexes – after non-melanoma skin cancer and prostate cancer (in men) or breast cancer (in women). Although CRC is typically diagnosed in older people, it also affects people of working age: about one in five patients are under the age of 60.

Table 3: Most recent overview of colorectal cancer epidemiology (C18–C20) – year 2015. Data source: Czech National Cancer Registry (CNCR), Institute of Health Information and Statistics of the Czech Republic (IHIS); mortality: Czech Statistical Office (CZSO)

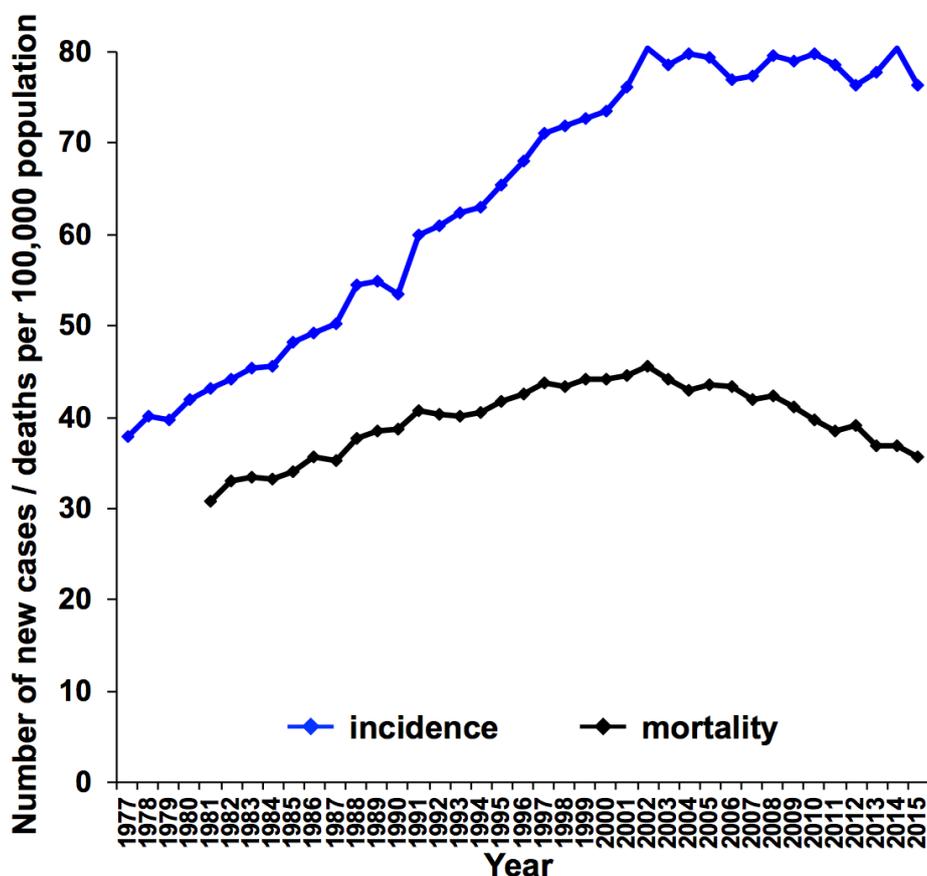
	Men	Women	Both sexes
INCIDENCE (2015)			
absolute number	4,722	3,150	7,872
rate per 100,000 population	91.2	58.7	74.7
MORTALITY (2015)			
absolute number	2,039	1,436	3,475
rate per 100,000 population	39.4	26.8	33.0
PREVALENCE (on 31 Dec 2015)			
absolute number	31,750	24,537	56,287
rate per 100,000 population	612.9	457.5	533.9

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The Czech National Cancer Registry (CNCR) makes it possible to analyse long-term trends in cancer incidence and mortality (**Figure 4**). As regards colorectal cancer, incidence has stabilised and mortality has slightly decreased in recent years. Although this trend can be thought of as a positive one, the increasing gap between incidence and mortality inevitably leads to an increase in prevalence rates, i.e. a higher number of living patients with a history of colorectal cancer. At the end of 2015, there were over 56,000 patients living with CRC or with a history of CRC in the Czech Republic, and this number is expected to increase further in future. The overall epidemiological burden of the Czech population is further aggravated by the incidence of colorectal cancer cases as subsequent (second or even third) primary cancers in the same patient: in other words, new cases of colorectal cancer are diagnosed in patients who were treated with another cancer in the past. Both of the above-mentioned facts (i.e. the increasing prevalence and the incidence of subsequent primary cancers) lead to ever increasing demands not only on cancer care facilities, which must tend to these patients, too, but also on the entire healthcare system, which reimburses cancer care.

Figure 4: Long-term trends in colorectal cancer incidence and mortality in the Czech Republic. Data source: Czech National Cancer Registry (CNCR), Institute of Health Information and Statistics of the Czech Republic (IHIS)



Late diagnosis = lower chance of cure

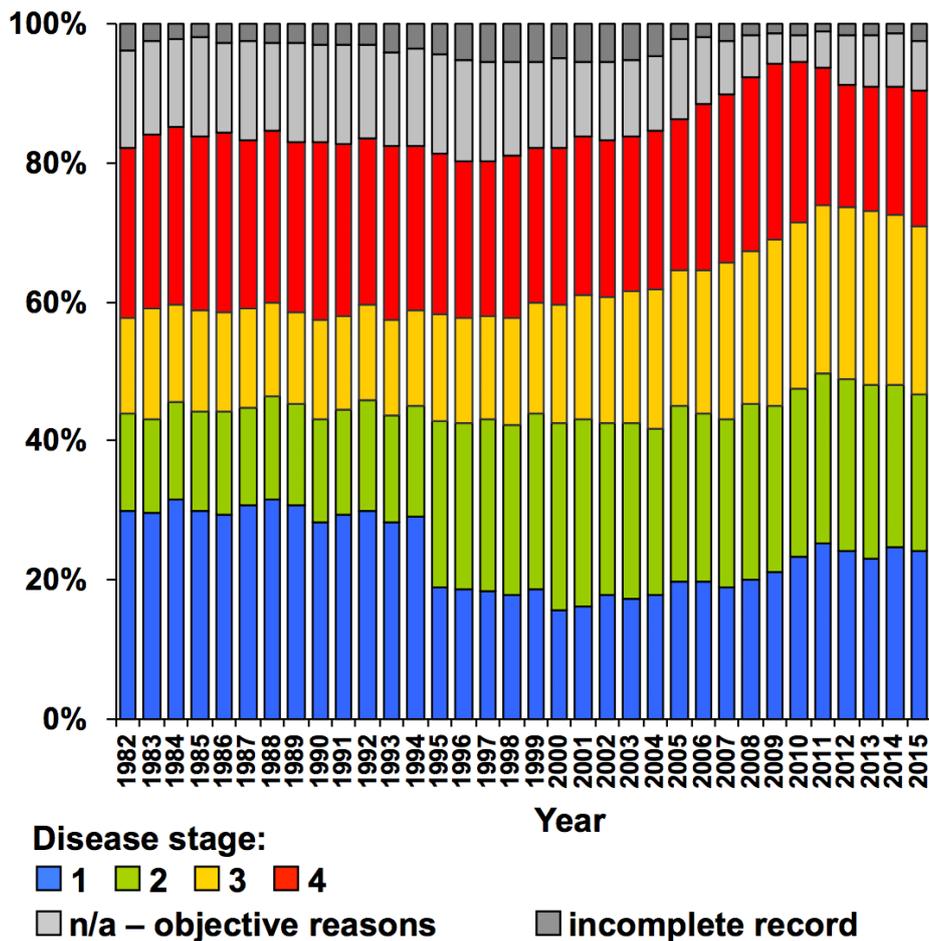
It is widely known that a cancer diagnosed at an early stage (or even at the stage of precancerous changes) is much more likely to be treated successfully and that the chance of survival in such cases

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is much higher. Available population-based data on colorectal cancer epidemiology in the Czech Republic, however, describes a rather gloomy situation. **Figure 5** shows that less than 50% of newly diagnosed cases of colorectal cancer are diagnosed in earlier clinical stages 1 or 2. Moreover, the situation has not much improved over time: even the most recent data from 2015 do not suggest a significant change in the trend. This inevitably leads to markedly poorer treatment results, let alone related costs, which are highest for advanced stages of CRC.

Figure 5: Proportion of clinical stages of CRC at the time of diagnosis. Data source: Czech National Cancer Registry (CNCR), Institute of Health Information and Statistics of the Czech Republic (IHIS)



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In spite of that, recent studies suggest a significantly growing success rate of cancer treatment in the Czech Republic, both over time and in comparison to other European countries. The 5-year relative survival (i.e., the percentage of patients with a disease that are alive five years after their disease is diagnosed, related to the general population without that disease) is a standard benchmark of treatment success. Analysis of data from the Czech National Cancer Registry, performed by the Institute of Biostatistics and Analyses of the Masaryk University, has confirmed that survival rates of Czech CRC patients have improved. On the other hand, there are still huge differences in the chances of survival between patients who were diagnosed at early stages of the disease and those who were diagnosed at advanced stages: the 5-year survival of patients diagnosed with CRC at stage I is almost 90%, whereas the 5-years survival of patients diagnosed at an advanced stage of IV is only about 10%. These numbers clearly demonstrate how important it is to detect cancers at early stages, when there is a real chance of cure.

The European study EUROCARE-5 analysed data from cancer registries of 29 countries in order to compare 5-year survival rates of more than 9 million cancer patients in the period 2000–2007. The study confirmed that results of the Czech cancer care have been catching up with the European average, and that in a large majority of cancers, including colorectal cancer, survival rates of Czech cancer patients are much better than those in other Eastern Bloc countries (**Table 4**).

Table 4: Five-year relative survival of CRC patients according to the EUROCARE-5 study in the period 2000–2007 (De Angelis et al., 2014)

	Colon cancer (%)	Rectal cancer (%)
Northern Europe	59.0	59.5
UK and Ireland	51.8	53.7
Central Europe	60.5	60.1
Southern Europe	58.5	55.4
Eastern Europe	49.4	44.6
Czech Republic	52.5	48.7
European average	57.0	55.8

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An opportunity for change – invitations of citizens to screening programme

The term “screening” refers to regular preventive check-ups of persons from the defined target group that do not show any symptoms of a given disease. If someone reports blood in the stools, frequent constipation, diarrhoea, or other symptoms possibly linked to CRC, then the examination of such person is not referred to as screening, but as a diagnostic examination, potentially revealing a disease of the gastrointestinal tract. Similarly, if bowel cancer or another bowel condition has occurred relatively frequently in the family history of a given patient, then this patient is considered to be at a higher risk of CRC, and should undergo preventive check-ups even more frequently than the standard recommended interval between screening examination.

The colorectal cancer screening programme in the Czech Republic is available for all citizens of the Czech Republic aged above 50, and involves two types of examination:

- Faecal occult blood test (**available at GPs' and gynaecologists' practices**)
- Screening colonoscopy (performed by specialised gastroenterology facilities, their list is available at www.kolorektum.cz, for example; **a client is referred to this examination by his/her GP or gynaecologist**)

The screening programme is divided into two categories, according to age groups of the target population (**Figure 4**). A client aged 50–54 is entitled to have a free-of-charge faecal occult blood test (FOBT) each year, provided by his/her registering GP or gynaecologist. In case of a negative result (no blood in the stools), FOBT is performed again after one year. In case of a positive result (blood in the stools detected), the client is referred to a facility performing screening colonoscopy. If no cancer is detected by colonoscopy, the screening programme will be suspended for 10 years for this client. A client aged over 55 can choose between FOBT (once per two years) and primary screening colonoscopy. The subsequent process is similar to that in the younger age group: colonoscopy follows after a positive result of FOBT, and another colonoscopic examination is performed 10 years after a negative result of colonoscopy.

The Czech screening programme is organised, which means that there is a system guaranteeing its effectiveness and safety. The Czech Ministry of Health and its Colorectal Cancer Screening Committee are the main guarantors of the programme. The Committee involves representatives of the participating medical specialties (gastroenterologists, GPs, gynaecologists, oncologists), the Czech Ministry of Health, and health insurance companies. The programme effectiveness and safety is monitored using data provided by the Czech National Reference Centre (data from health insurance companies) and by individual facilities performing screening colonoscopies. Evaluation of this data is performed by the Institute of Health Information and Statistics of the Czech Republic (IHIS) in cooperation with the Institute of Biostatistics and Analyses at the Faculty of Medicine of the Masaryk University (IBA FM MU).

Partly due to discussions and conclusions of the first two years of the European Colorectal Cancer Days, a project of personalised invitations of citizens to cancer screening programme has been under way since the 1 January 2014. This step converted the Czech screening programme into a population-based one, ensuring the highest level of organisation according to criteria defined by the International Agency for Research on Cancer (IARC). Each insured person aged over 50, who has not participated in preventive check-up over the last few years, will obtain an invitation with detailed

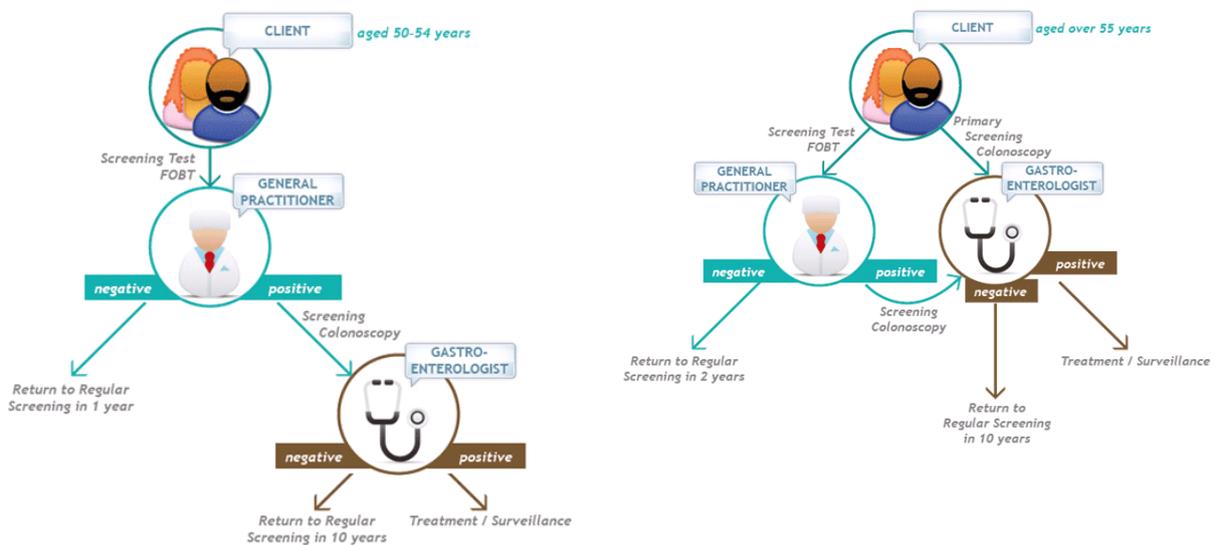
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instructions on what he/she should do, and what examinations are performed as part of the screening programme. The objective of personalised invitations is to increase the insufficient participation rates in cancer screening programmes, particularly in colorectal cancer screening, where the participation rate only reached 26% before the introduction of personalised invitations. In order to achieve a drop in mortality rates from colorectal cancer on the population level, this proportion should be at least doubled. In the first few years, the project was accompanied by an education campaign that explained the importance and benefits of preventive examinations to target groups of the population.

In the period from January 2014 to December 2016, health insurance companies sent out 3.7 million invitations to screening examinations for an early detection of colorectal cancer. It is obvious from Figure 5 that sending out personalised invitations led to a significant increase in coverage by colorectal cancer screening, exceeding 32% of the target population. However, a slight decrease in 2016, when individuals who positively reacted in 2014 were not re-invited, documents that centralised invitations cannot be the only way to promote screening, and that its support at all levels must not be dropped.

Figure 4: Schematic representation of CRC screening process in the Czech Republic for clients aged 50–54 years (on the left), and those aged 55 and above (on the right). Source: www.kolorektum.cz

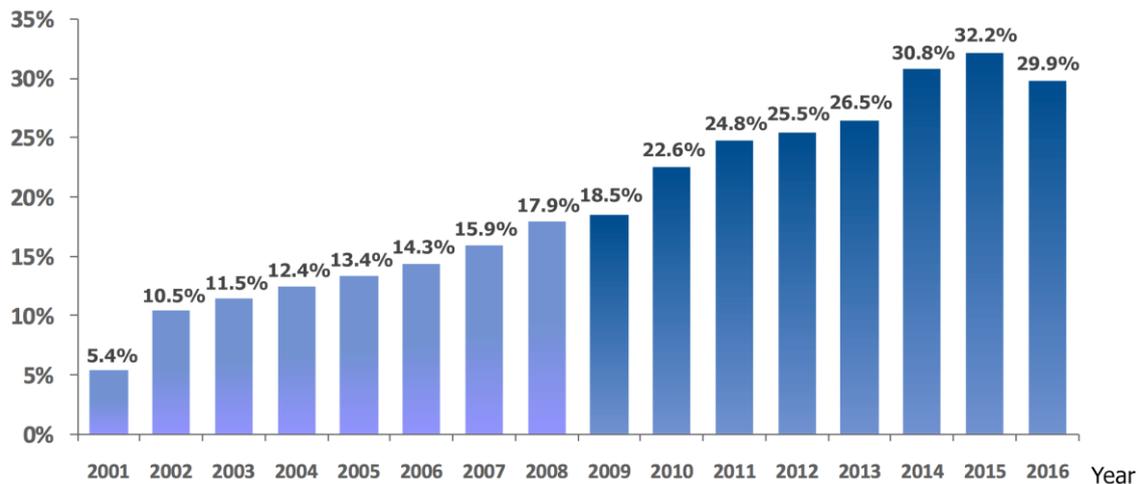


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Figure 5: Coverage of the target population by colorectal cancer screening (faecal occult blood test), development in the period 2001–2016. Data source: health insurance companies

Overall coverage of the target population
(men and women aged over 50)



Care for patients must be early, comprehensive, multidisciplinary ... and available, above all

Physicians of various specialties contribute to colorectal cancer diagnosis and treatment: GPs, gynaecologists and gastroenterologists are involved in CRC diagnosis, while oncologists, surgeons and radiotherapists participate in CRC treatment. The maximum benefit for the patient can be only achieved if these specialists cooperate effectively. Treatment of cancers, particularly the advanced ones, is concentrated to 13 Comprehensive Cancer Centres all across the Czech Republic; other health care facilities in the individual regions should cooperate with them closely. Despite the existence of cancer centres, there is much space for improvement in cancer care. Late diagnosis of CRC is not only the result of a low awareness of the general public, but also a consequence of insufficient activity of the primary care network: there are still huge differences among individual regions in the coverage of the target population by screening. The same phenomenon has been documented in the availability of care: a large proportion of patients at advanced stages of the disease have no access to specialised treatment in the network of Comprehensive Cancer Centres, whether it be surgical treatment or therapy by innovative drugs. Available data also point out a massive migration of patients among individual health care facilities, even in the course of treatment. Reimbursements for care, however, do not migrate with the patients; this complicates the situation for specialised centres, which are particularly burdened with patient migration. The motto "Right treatment for the right patient at the right time and in the right place" of the Czech National Cancer Control Programme, which was adopted by the Czech Society for Oncology in 2003 (and revised in 2013), has therefore not been satisfactorily fulfilled yet.

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Primary prevention is key

Risk factors for cancer, including colorectal cancer, are generally known. Apart from factors that can only hardly be influenced by an individual (such as the genetic predisposition or environmental contamination), the risk factors involve smoking, excessive consumption of red meats, processed meats and alcohol, lack of physical exercise, and other typical features of the so-called "Western" lifestyle. This is one of the reasons why the highest CRC incidence rates have been repeatedly reported in Europe and North America. Comparison of individual countries based on the population health (and health care systems) is regularly performed by the Organisation for Economic Co-operation and Development (OECD) in the publication "Health at a Glance". When compared to international statistics, the Czech Republic has rather gloomy outlooks: the consumption of alcohol per capita is one of the highest among the OECD countries, the prevalence of obesity has seen a significant rise, and smoking rates have actually increased in the past decades, in contrast to other European countries.

In the context of the above-mentioned facts, and taking into account ageing of the Czech population, a further rise in the prevalence of cancer patients can be expected, with inevitable social and financial consequences.

Information sources on colorectal cancer

- www.kolorektum.cz – Czech National Colorectal Cancer Screening Programme
- www.onconet.cz – Czech National Cancer Control Programme
- www.linkos.cz – Czech Society for Oncology
- www.svod.cz – cancer epidemiology in the Czech Republic online
- Ladislav Dušek a et al. Epidemiologie, prevence a léčba kolorektálního karcinomu dle dostupných českých a mezinárodních dat. (Colorectal cancer epidemiology, prevention and treatment according to available Czech and international data.) [publication in Czech language] Prague: University Hospital in Motol, 2012. 204 pp. ISBN 978-80-87347-07-2. Available from WWW: <http://www.rektum.cz/res/file/educacni-materialy/dusek-epidemiologie-prevence-a-lecba-crc-optim.pdf>

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