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Swiss Cancer Report 2015

Current situation and developments

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Foreword

At some point in our lives, each and every single one of us is confronted with cancer: four out of ten people develop cancer themselves and many people know someone in their family or in their circle of friends and acquaintances who has been diagnosed with cancer. 38,000 new cases of cancer occur every year – an increasing trend due to the rising number of older people.

Not only is there an increase in the number of cases, but the number of people who survive cancer thanks to advances in diagnosis and treatment is also on the rise. Around 300,000 people living in Switzerland today have been diagnosed with cancer – twice as many as 25 years ago.

Our society is confronted with the fact that cancer has become a chronic illness. This means a lot of suffering and substantial financial and staffing challenges for the health system.

The Confederation and cantons have responded to this with the 2014–2017 National Strategy against Cancer. This sets out the most important action areas in prevention, care and research. The Federal Council has made the fight against cancer an important aim among its health policy priorities as part of "Health2020".

For effective prevention and early recognition, to assess advances made in diagnosis and to organise appropriate health provision, regular statistical processing of cancer data is indispensable. This second cancer report from the Federal Statistical Office (FSO), the National Institute for Cancer Epidemiology and Registration (NICER) and the Swiss Childhood Cancer Registry (SCCR) is an important instrument here. An additional one will be added to this with the new Federal Act on Cancer Registration to ensure that data are recorded consistently and with high completness throughout Switzerland and that they are internationally comparable.

We still know too little about cancer such as why it occurs, how it can be detected as early as possible and how coordinated patient provision can best be organised. This means that constant improvement of the data basis is imperative.

Bern, January 2016

Alain Berset
Federal Councillor
Head of the Federal Department of Home Affairs

Around 40% of the Swiss population will be diagnosed with cancer in their lifetime and every year around 17,000 people die from the consequences of this disease. For this reason, national cancer monitoring – including nationwide, comprehensive registration of cancers in Switzerland – is of major importance to health policy and society. To make evidence-based decisions on cancer prevention and therapy, policy makers, the medical profession and professional organisations must have access to this epidemiological data.

Currently, 23 cantons collect and register cancer data, which is compiled by the National Institute for Cancer Epidemiology and Registration (NICER) for analysis. Nationwide cancer registration is planned for 2018, when national legislation on the Registration of Cancers will come into force. This Act has been prepared by the Federal Department of Home Affairs and is currently the subject of discussion in parliamentary commissions. The new Act will help to modernise cancer registration in Switzerland. The draft Act envisages adding information about the history and treatment of the disease to the current epidemiological data from the cancer registry. This means that in future, cancer registry data can be used for quality control in oncology and that reliable data will be collected in order to improve cancer treatment as well as patients' quality of life.

This report is based mainly on data from the cantonal cancer registries, from the Federal Statistical Office (FSO) and the Swiss Childhood Cancer Registry (SCCR). NICER would like to take this opportunity to thank those involved for their cooperation. The next step will be to incorporate the results in the "National Strategy against Cancer 2014–2017" on which NICER is working closely with its partners.

Zurich, January 2016

Prof. Dr. med. Giorgio Noseda
NICER President

Cancer can appear at any age, from newborn to old age. Although childhood cancer is not common, some 190 new cases are diagnosed every year in Switzerland. While the majority of these patients can be cured, cancer deaths are still the second most common cause of death in this age group.

Childhood cancers differ in many ways to adult cancers; not only in their frequency but particularly in their type, their behaviour in the body and their response to treatment. In addition, children's bodies are still developing and growing and the response to certain treatments can be especially sensitive. The disease and its treatment often lead to despair, uncertainty and stress, posing a major challenge to the family and the child's wider social environment. Comprehensive treatment and support from dedicated specialists from various disciplines are, therefore, indispensable.

Only with the nationwide registration of epidemiological data such as age, type of cancer, treatment, progress, place of residence and many other important details, can precise assertions be made on the frequency of specific types of cancer and the chances of recovery. In order to have a positive, long-term influence on the incidence and success of curative treatments, we must be able, to examine and analyse possible external causes as well as the long-term effects of the disease and its treatment. The Swiss Childhood Cancer Registry (SCCR), a national, population-based registry for cancers in children in Switzerland, registers all new cases of cancer, documents treatment and long-term follow-up. As a result, is makes an important contribution to the registration of causes of cancer, prevention, improved treatment and prevention of long-term effects.

Zurich, January 2016

Prof. Dr. Felix Niggli
President of the Swiss Paediatric Oncology Group SPOG

Overview

The number of cancer cases is increasing…

In the period 2008–2012, the number of new cases was approximately 21,000 for men and 17,500 for women each year. Compared with the period 2003–2007, this was an increase of 2000 new cases per gender. For 2015 around 42,000 new cancer diagnoses are expected; 23,000 in men and 19,000 in women.

… because the population is getting older

The main reason for the increase in the incidence of cancer is the significant ageing of the population, since the risk of developing any type of cancer remained practically unchanged between 1998 and 2012: the standardised rates, i.e. figures adjusted for population ageing, have been increased by only 1% for women and decreased by 4% among men.

Half of all new cases due to four cancer types

In men, 53% of new cases each year can be assigned to prostate, lung and colon cancer. In women 51% are for breast, lung and colon cancer. The other types of cancer each account for less than 7% of new cases every year. This report contains extensive data on 22 types of cancer and for the first time information on other, less common types of cancer.

The risk of developing cancer varies depending on the type of cancer

In the period 1998–2012, the incidence rates for melanoma and for thyroid cancer increased for both sexes. The same applies to lung cancer in women. In contrast, the incidence rates of cancer of the larynx and stomach cancer fell considerably, as did the incidence rate of cervical cancer in women.

Mortality is decreasing for most types of cancer

The age-standardised mortality rates fell in the period 1983–2012 by 27% among women and by 36% among men. Mortality rates have fallen since 1998 in particular for laryngeal, stomach, cervical, colon, breast and prostate cancer as well as for non-Hodgkin's lymphoma. The mortality rate for lung cancer is now declining for men; in women it continues to rise steadily.

Some 16,000 people die each year from cancer

Each year, 9000 men and 7000 women die from cancer. In Switzerland, 30% of male deaths and 23% of female deaths are due to cancer. Among men, 22% of cancer deaths are caused by lung cancer, 15% by prostate cancer and 10% by colon cancer. Among women, breast cancer is responsible for 19% of cancer deaths, lung cancer for 15% and colon cancer for 10%. Overall, lung cancer is the most common cause of cancer death, with 3000 deaths.

In European comparison, Switzerland has average incidence rates and low mortality rates

In European comparison and taking all tumours into account, Swiss incidence rates are average for men and low for women. Melanoma is an exception, as it has a high incidence rate in Switzerland. Mortality rates for melanoma, however, are very low: in men Switzerland shows the second lowest mortality rate and in women the lowest in European comparison.

Good chances of survival for many types of cancer

The chances of survival depend not only on the type of cancer but also on access to medical examinations, early recognition and treatment as well as the effectiveness of the latter. The survival rate five years after diagnosis is highest (more than 80%) for testicular cancer, melanoma, thyroid and prostate cancer as well as Hodgkin's lymphoma and breast cancer. In contrast, fewer than 20% of patients with liver and lung cancer, pancreatic cancer, mesothelioma or acute myeloid leukemia are still alive five years after diagnosis. Overall, Switzerland's five-year survival rates are among the highest in Europe.

In Switzerland, 317,000 people are living with a cancer diagnosis

Some 170,000 women and 147,000 men living in Switzerland have been diagnosed with cancer. 55,000 people were diagnosed in the past two years and need intensive medical treatment and care. For 60,000 people, the diagnosis was made 2 to 5 years ago. These people continue to need after-care and follow-up checks. Although the 200,000 people who were diagnosed more than 5 years ago are considered to be cured, many of them suffer from organ damage and have a higher risk of secondary cancers.

Childhood cancers are rare but are the second most common cause of death in children

Around 190 children are diagnosed with cancer each year and 28 die from it. The most common are leukaemia (34%), tumours of the central nervous system (21%) and lymphomas (11%). The chances of being cured have improved considerably and have now reached 80%. Switzerland belongs to those countries with the best treatment results for children with cancer.

Many types of cancer can be attributed to behavioural and environmental factors

The risk factors – when known – are mostly connected to life style, consumption habits (e.g. smoking, excess alcohol consumption and unhealthy eating habits) as well as exposure to pollution and radiation at work and in the environment. Smoking, air pollution with fine particles and radon contribute considerably to the risk of lung cancer. The damaging effect of alcohol consumption and eating large amounts of red or processed meat has been demonstrated to increase the risk of colon cancer. Skin melanoma are caused by too much exposure to sunlight.

Prevention is possible

The prevention of many types of cancer consists in avoiding as far as possible risk factors; the main one being smoking. Eating fresh fruit and vegetables and physical exercise is good for one's health and diminishes the likelihood of cancer. Certain medical measures can also have a preventive effect: these include vaccinations against Hepatitis B (risk factor for liver cancer), against the human papillomavirus (HPV: risk factor for cervical cancer).

The data basis is still incomplete

This report was written on the basis of data on incidence and prognosis in adults from twelve cantonal or regional cancer registries. They represent all French-speaking cantons (FR, VD, VS, GE, NE, and JU), the Ticino and some of the German-speaking cantons (ZH, LU, GL, BS, BL, AR, AI, SG and GR). Altogether, these twelve registries cover 62% of the Swiss population. Meanwhile, population-based cancer registration was expanded. With the new Act on Cancer Registration coming into force, case notification shall be made comprehensively over all Swiss cantons. Childhood cancers are documented with 100% coverage by the Swiss Childhood Cancer Registry.

1 Introduction

Current situation and objectives: Every year around 38,500 people are confronted with the diagnosis of cancer and more than 16,000 die every year from cancer. Among causes of death, cancer is the disease responsible for the most years of life lost before the age of 70.

This second Swiss Cancer Report provides the latest figures on cancer in Switzerland, with nationwide estimates on the risk of incidence and mortality as well as regional comparisons.

Data sources: The report is based on data from the cause of death statistics, data recorded in the cantonal cancer registries from 1970 onward and from the Swiss Childhood Cancer Registry introduced in 1976.

The data from the cause of death statistics provide comprehensive information on deaths in the Swiss resident population. The cancer registries data used in this report cover 62% of the Swiss population. Since 2006 the coverage in French-speaking Switzerland and in Ticino has been complete. This means that today we can estimate annual incidence rate for French-speaking Switzerland and Ticino as well as for German-speaking Switzerland and extrapolate the rate to the whole of Switzerland. Cancer registry data and cause of death statistics complement one another but direct conclusions cannot be made between the incidence rate and the mortality rate.

This report is the result of cooperation between the Federal Statistical Office (FSO), the National Institute for Cancer Epidemiology and Registration (NICER) and the Swiss Childhood Cancer Registry (SCCR).

Structure of the Report: Chapter 2 outlines the main content from the separately published methodology report: it describes the data sources, data quality, survey methods as well as the indicators used. Chapter 3 provides a general overview of cancer in Switzerland, presenting incidence and mortality data and trends. The data is completed with results on cancer survival and risk factors.

Chapter 4 provides a description of the 22 most common types of cancer (sites). Each sub-chapter contains brief information on the International Classification of Diseases (ICD-10) codes as well as on the organs and tissues affected by each type of cancer. Incidence rates per sex are then presented as well as age-dependent and regional differences. Trends in incidence and mortality rates and survival rates are also described. Where possible, the number of patients living with the disease is also indicated (prevalence). At the end of each sub-chapter is a list of behavioural and environmental risk factors known from the scientific literature. The last section of chapter 4 provides a short overview of rare types of cancer.

Cancer predominantly affects older people and is relatively rare in childhood. Nevertheless, cancer is the second most cause of death in children. For this reason, chapter 5 describes the situation of cancer in this age group.

Chapter 6 acknowledges the results of the report with regard to its relevance for public health and patient care. The chapter finishes with a look at the national cancer strategy and the planned federal act on cancer registration.

References and further information: Bibliographical references appear as numbered notes at the end of each chapter. Explanations on the text appear as alphabetical footnotes at the bottom of each page. A bibliography, a list of abbreviations and a glossary can be found at the end of the report.

The tables with all data on which the report is based can be found at the following links:

BFS – www.cancer.bfs.admin.ch
NICER – www.nicer.org
SCCR – www.childhoodcancerregistry.ch

2 Explanations of data and methodology

2.1 Data sources and data quality

This report contains data on cancer in Switzerland and on developments and trends in incidence and mortality in the period 1983–2012. The data on new cancer cases come from the regional and cantonal cancer registers (see map) and are compiled by the National Institute for Cancer Epidemiology and Registration (NICER). The cancer registers of French-speaking Switzerland and Ticino cover 100% of the population for the period 2008–2012. Coverage is 45% for the registers of German-speaking Switzerland in the reporting period until 2012.

This report has been prepared in 2015. At the beginning of the year, cancer registry data were available up to the observations 2012. The latency results from the time-consuming process of registration, plausibility control and integrity completeness check. Amongst others, a comparison with the mortality statistics is necessary for it. Their data for 2012 were available from early summer 2014.

Since 1976, childhood cancers have been comprehensively registered by the Swiss Childhood Cancer Register (SCCR). Coverage is also complete for the mortality data taken from the Federal Statistical Office's (FSO) cause of death statistics. Population data required for the calculation of various key figures (e.g. incidence and mortality rates) is also provided by the FSO. Information on risk factors is taken from the scientific literature. Further information on the data sources and data quality can be found in the separate methodology report, available in German and French (Schweizerischer Krebsbericht 2015. Methoden; www.krebs.bfs.admin.ch.

2.2 Presentation of content

In principle, results are presented in the same format and order in each chapter. Key figures are described and presented in the form of graphics. At the end of each chapter a table presents other key figures. The figures are given for men and women separately, as various types of cancer can develop differently in men and women.

Definitions in boxes

A box at the start of each chapter contains a brief explanation of the type of cancer and its code in the International statistical Classification of Diseases and related health problems (ICD-10). This makes it possible to know which cases should be included in comparisons where other sources are used. For childhood cancers, the International Classification of Childhood Cancers Revision 3 (ICCC-3) is used due to the varying types of cancers.

Presentation of incidence and mortality

Current situation

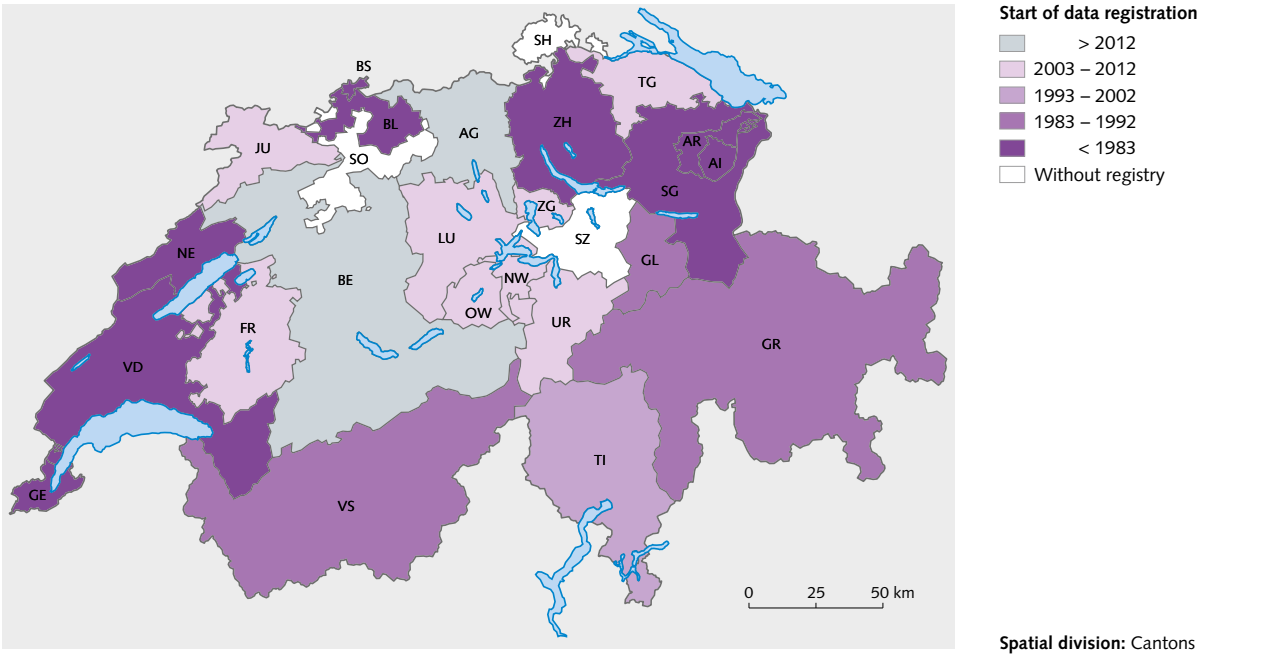
Annual averages: First, the frequency of each type of cancer is illustrated by the number of men and women diagnosed with that cancer, and the number of people who die from it. These are the annual average number of new cases (incidence) and deaths (mortality) in the most recent five-year period (2008–2012). This keeps in check random variations from year to year in the number of new cases and deaths. An estimate is made of the number of new cases and deaths expected in 2015.

Proportion of all cancers: The epidemiological importance of the different types of cancer are illustrated by their proportion of all cancers.

Male/female comparison: In order to compare the incidence and mortality rates of men and women, standardised rates are compared. This will show if one of the sexes has a higher risk of developing cancer.

Standardised rates: For temporal comparisons or comparisons between two different populations (regions or countries) age-standardised rates are used because incidence and mortality rates vary with age. They depend on the age structure of the population at a given time. Standardised rates are based on the conversion of rates in the population under consideration to the age structure of a reference population.

Cantons with cancer registration, 2015 **M 1**



Spatial division: Cantons

Source: NICER, CCR

Cancer risk: The lifetime risk indicates how many people in the course of their lifetime will develop a certain type of cancer or die from it. It is calculated with the assumption of an average life expectancy of 80 years for men and of 85 years for women. In the tables the risk of developing cancer or dying from it until the age of 70 is presented additionally.

Age-specific rates: Age-specific rates are calculated by dividing the number of cases in an age group by the number of people in that age group and converting it to 100,000 persons. This key figure shows which age groups are most affected. With most types of cancer, the rates increase considerably with age. The specific rates by age show whether a type of cancer is more likely to appear earlier (e.g. testicular cancer) or later (e.g. prostate cancer) in life.

The median age is the age, above or below which half of new cases or deaths appear due to a particular type of cancer and shows whether this cause affects mainly younger or older people.

Regional and international comparisons

Standardised rates enable comparisons to be made between French and Italian-speaking Switzerland and German-speaking Switzerland. Data from French and Italian-speaking cantons comprises the cantons of Geneva, Vaud, Fribourg, Neuchatel, Jura, Valais and Ticino. German-speaking Switzerland covers the other cantons with a cancer register (see map).

Standardised rates also enable Switzerland to be compared with other countries. For the comparison group, nine countries were selected, which are comparable with Switzerland in terms of standard of living, lifestyle and environment. When differences are established, a correlation with individual risk factors can often be detected (e.g. difference in degree of tobacco or alcohol consumption). When comparing data at international level, it should be borne in mind that different methods of data collection can also influence figures.

Trends in incidence and mortality

Rates were analysed for the past 30 years, i.e. for the period 1983 to 2012. Trends were also examined separately for the three ages groups: 20 to 49 year-olds, 50 to 69 year-olds and 70 year-olds and older. Trends that differ in individual age groups from the general trend are mentioned in the text.

Presentation of survival rates and number of cancer patients in the population

The observed (or absolute) survival rate indicates the likelihood that a cancer patient will still be alive five years after diagnosis. The relative survival rate takes into account the risk of dying from another illness within this five-year period. The smaller the percentage of survival, and the smaller the difference between the absolute and relative survival rates, the greater the probability of dying from this specific type of cancer. Depending on how fast a type of cancer progresses until death, survival is presented in terms of 1 year, 5 year or 10 year survival rates. Survival rates are shown for the periods 1998–2002 and 2008–2012 in order to demonstrate any improvements in treatment in these time periods.

Due to the availability of data from international sources, the comparison of Switzerland with the nine European countries selected is based on the years 2000–2007.

For ten types of cancer, information is also provided on the number of patients living in Switzerland who have survived 2, 5 or 10 or more years after diagnosis (prevalence), for the years 2000, 2005 and 2010. For 2015 an estimate has been made. Prevalence depends on the survival rate. Information on prevalence is useful for health care planning.

Risk factors

The texts on risk factors are based mainly on three scientific papers from recognised institutions, i.e. the International Agency for Research on Cancer (IARC), the World Cancer Research Fund and the American Institute for Cancer Research (AICR). They summarise the latest knowledge on the risk factors involved in each type of cancer.

Other key figures presented in the tables at the end of each localisation chapter

Years of potential life lost (YPLL)

The tables present the number of years of potential life lost through death before 70 years of age. A high YPLL number indicates a cancer that occurs relatively early in life or that is relatively common.

Estimate of expected new cases and deaths in 2015

An estimate is made of the number of new cases and deaths in 2015. The estimate is based on projected rates and the estimate of population growth until 2015 by five-year classification, sex, nationality, and year and according to the medium population growth scenario (FSO, Demography and Migration Section).

Mean annual change in rates (crude rates, age-standardised rates), 2003–2012

The mean annual change in crude and standardised rates is based on the past 10 years.

Cumulative risk before the age of 70, 2008–2012

This indicator shows the risk of a newborn child developing a certain type of cancer at a given point in time until the age of 70. Incidence and mortality rates are used for this calculation, under the assumption that these rates remain constant throughout the newborn's life.

3 Cancer in Switzerland

3.1 New cases and mortality

Current situation

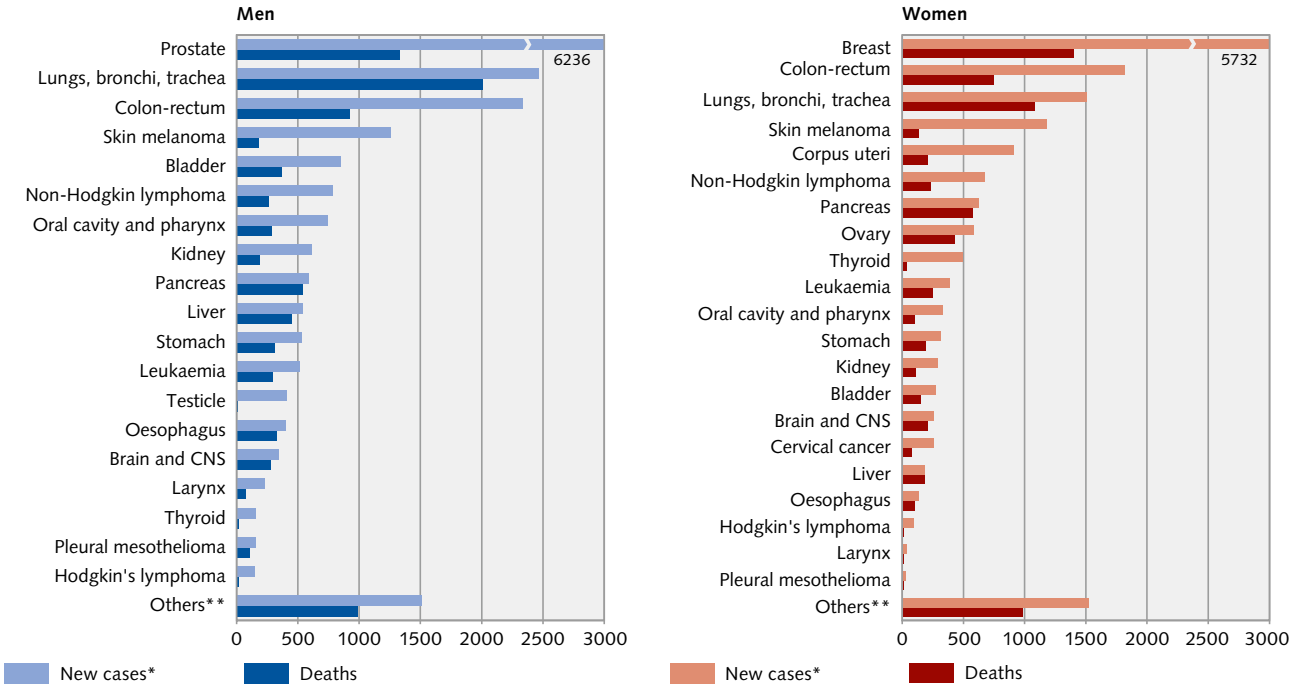
Between 2008 and 2012 some 20,800 men and 17,650 women were diagnosed with cancer (T 3.1). Just over half of all cases were for cancer of the prostate (6200 cases), mammary glands (5700) colon (4200) and lung. (4000) (G 3.1). For 2015, due to demographic ageing, a total of 22,600 new cases are expected among men and 19,100 among women (T 3.1).

Cancer can occur at any age but the risk increases with age. The risk of developing cancer before the age of 70 is 25% in men and 21% in women. Currently almost every second man (47%) and 38% of all women can expect to be diagnosed with cancer during their lifetime. One out of four men and one out of five women die of cancer (T 3.1).

Cancer is the general name for a large group of diseases, which can affect any part of the body. Other terms commonly used are malignant tumours and neoplasms. A determining characteristic of cancer are abnormal cells, which grow beyond the normal tissue or organ boundaries and invade or spread to other, sometimes distant organs (metastasis). This chapter describes the general situation for all cancer sites, which means, all cancer sites are both presented in a comparative form and analysed as a whole.

New cases and deaths by cancer site, 2008–2012 **G 3.1**

Average number per year



* New cases estimated on the basis of cancer registry data
** New cases excl. non-melanoma skin cancer

Sources: NICER – New cases; FSO – Deaths

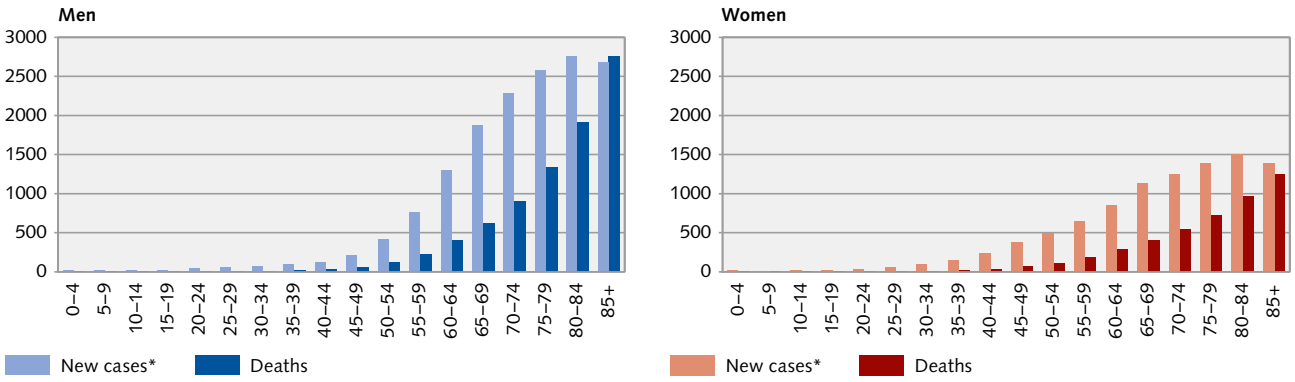
The relationship between cancer incidence and age varies between men and women (G 3.2). Women under the age of 55 have a higher incidence rate than men of that age. The ratio changes in the older age groups: incidence rates among 65 year-olds are almost twice as high for men as they are for women.

In the period 2008–2012, some 16,000 people died every year from cancer, 9000 of them were men and 7250 women. A total of 17,000 cancer related deaths are expected for 2015.

Lung cancer is the most common cancer related death in men (G 3.1). Every year 2000 men die from lung cancer (22% of all cancer deaths), 1300 from prostate cancer (15%) and 920 from colon cancer (10%). Breast cancer is the most common cancer-related cause of death among women, with 1400 deaths every year (19%), followed by lung cancer with 1080 deaths (15%) and colon cancer with 745 deaths (10%) (G 3.1).

Cancer by age, 2008–2012 — G 3.2

Age-specific rate per 100,000 inhabitants

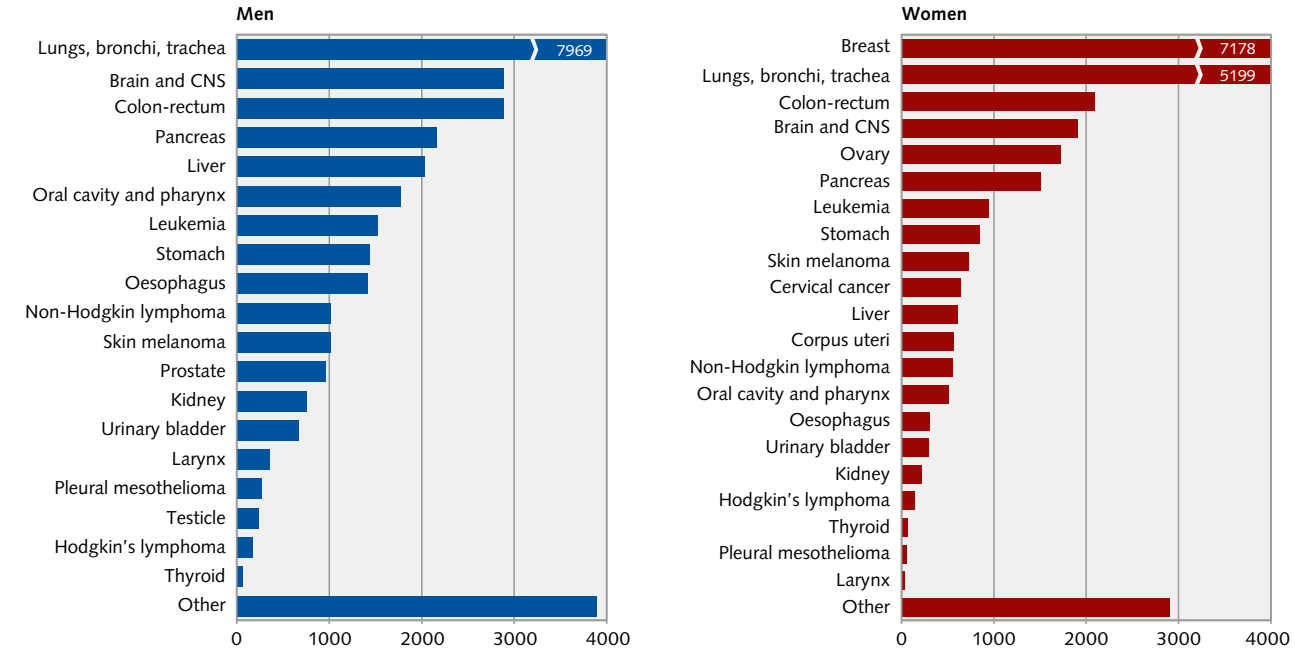


* New cases estimated on the basis of cancer registry data; excl. non-melanoma skin cancer

Sources: NICER – New cases; FSO – Deaths

Years of potential life lost (YPLL) by cancer site, 2008–2012 — G 3.3

YPLL before age 70, average number per year



Source: OFSO – Death

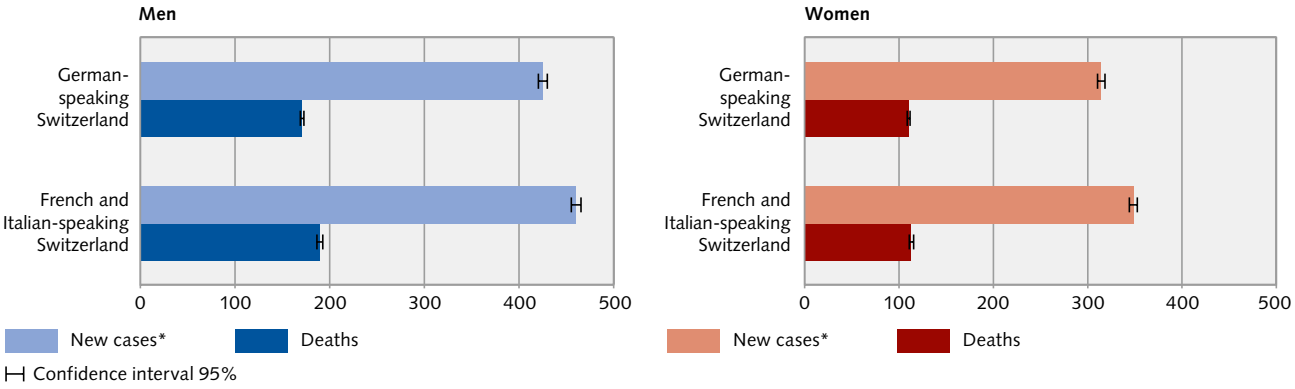
However, the number of deaths gives no indication of the age at death and the number of potential years of life lost (YPLL). YPLL is the difference (in number of years) between the age at death and a theoretical life expectancy of 70 years. It highlights diseases associated with a high mortality rate in particular in younger age groups. Cancer is the disease from which most years of life are lost before the age of 70 (a total of 62,500 lost years of life per calendar year, a long way ahead of accidents and other external causes of death (43,300 YPLL) and cardiovascular diseases (26,400 YPLL)).[1] Although common tumours such as lung, breast and colon cancer are among the leading causes for YPLL, one also finds tumours that occur in young years and that are associated with a poor prognosis, such as brain tumours. Brain tumours present the second most YPLL in men and the fourth most YPLL in women (G 3.3).

Regional and international comparisons

Overall, men and women in French and Italian-speaking Switzerland are more frequently diagnosed with cancer than in German-speaking Switzerland (G 3.4). These differences are particularly apparent in tumours associated with the consumption of alcohol and tobacco. In addition to differences in alcohol and tobacco consumption, possible differences in the health care utilisation should also be discussed as a cause for varying incidence rates. In the case of varying incidence rates for breast cancer (G 4.11.2) for example, the mammography screening in French-speaking Switzerland that has taken place across the region for several years should also be taken into account. The mortality rate shows less marked regional differences.

Cancer in regional comparison, 2008–2012 **G 3.4**

Rate per 100,000 inhabitants, European standard



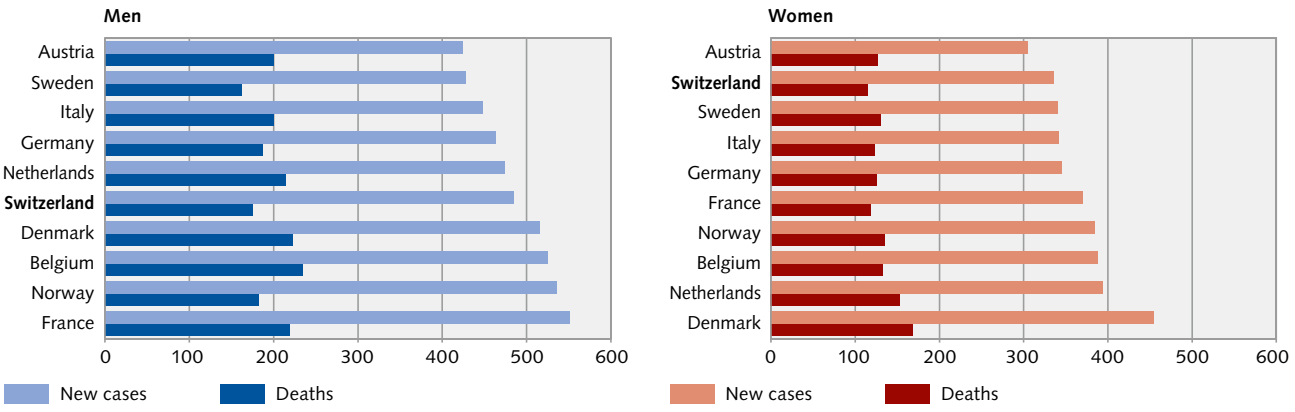
Confidence interval 95%

* New cases estimated on the basis of cancer registry data; excl. non-melanoma skin cancer

Sources: NICER – New cases; FSO – Deaths

Cancer in international comparison, 2012 **G 3.5**

Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

In international comparison, Switzerland's incidence rates for men are comparable to European rates; for women, Switzerland has the lowest incidence rates after Austria (G 3.5). Switzerland's mortality rates in international comparison are the second lowest for men and the lowest for women.

Trends over time

In the past 30 years, age-standardised mortality rates have fallen by 27% among women and by 36% among men. Incidence rates, in contrast, show a slight increase within the same time period. However, in the latest period (2008–2012), a slight decline in incidence rates compared with previous years has been observed, at least among men, whereas incidence rates for women appear to be stagnating (G 3.6).

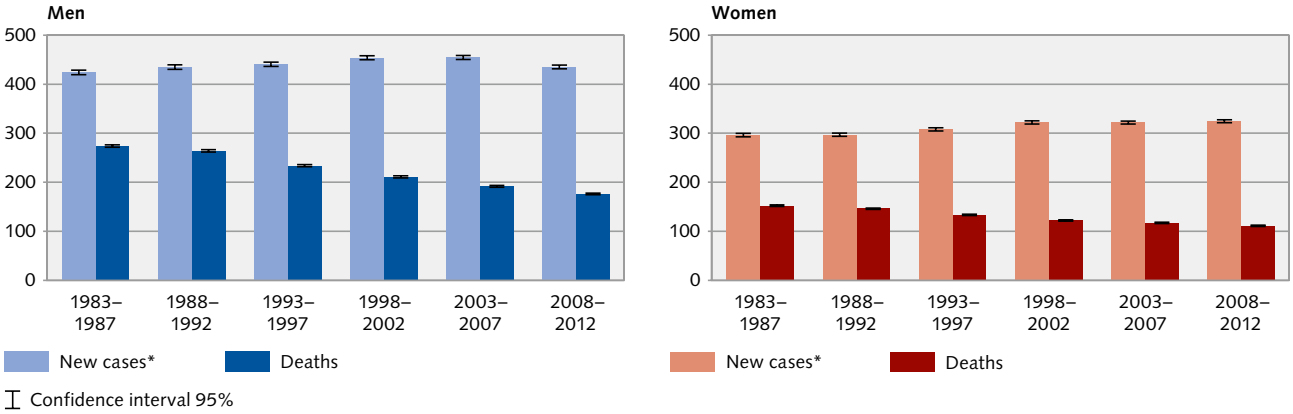
Trends in incidence and mortality between 1998 and 2012 show different patterns for various cancer sites. For both sexes there is a noticeable increase in the incidence rates for thyroid cancer and melanoma (G 3.7). Whereas the rising incidence rates for melanoma probably reflect an increase in the risk of developing this type of cancer as well as increased detection thanks to heightened awareness, the surge in thyroid cancer incidence rates is more likely due to improved screening methods and the resulting earlier detection of the disease, as mortality have fallen in the same time period by 24% (men) and 37% (women).

3.2 Survival rates and number of cancer survivors

In the period 2008–2012 roughly 57% of male patients and 62% of female patients survived at least five years after having been diagnosed with cancer (observed survival rate). Taking into account the risk of dying from other causes, the five-year survival rate across all cancer types is 65% among men and 68% among women (relative survival rate; G 3.8). Compared to the period from 1998 to 2002 (men: 56%, women: 62%, this is an increase of 9% and 6% respectively. The increase is chiefly due to earlier detection of tumours (e.g. breast cancer) and improved treatments (incl. introduction of antibody treatments for certain tumours, hormone therapy for breast cancer).

Cancer: Trends over time **G 3.6**

Rate per 100,000 inhabitants, European standard

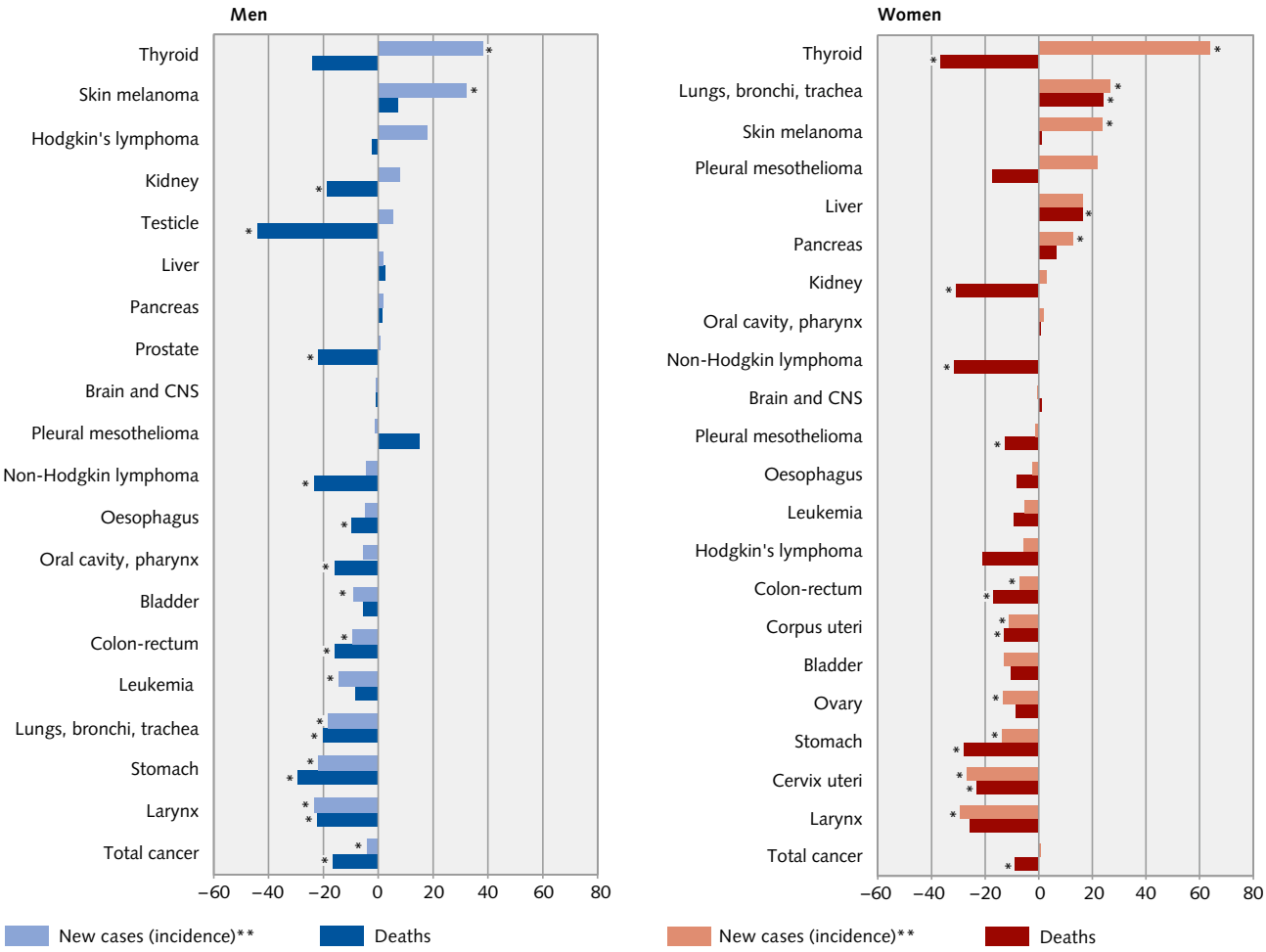


* New cases estimated on the basis of cancer registry data; excl. non-melanoma skin cancer

Sources: NICER – New cases; FSO – Deaths

Trends in incidence and mortality rates by cancer site G 3.7

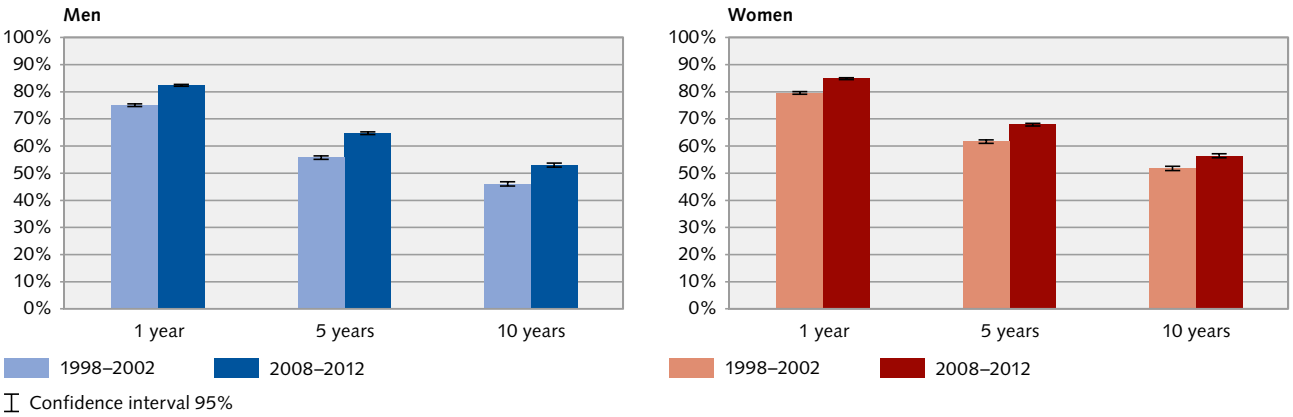
Percentage change in age-standardised rates, average 2008–2012 vs 1998–2002



* Statistically significant change (p<0.05%)
** New cases estimated on the basis of cancer registry data; excl. non-melanoma skin cancer

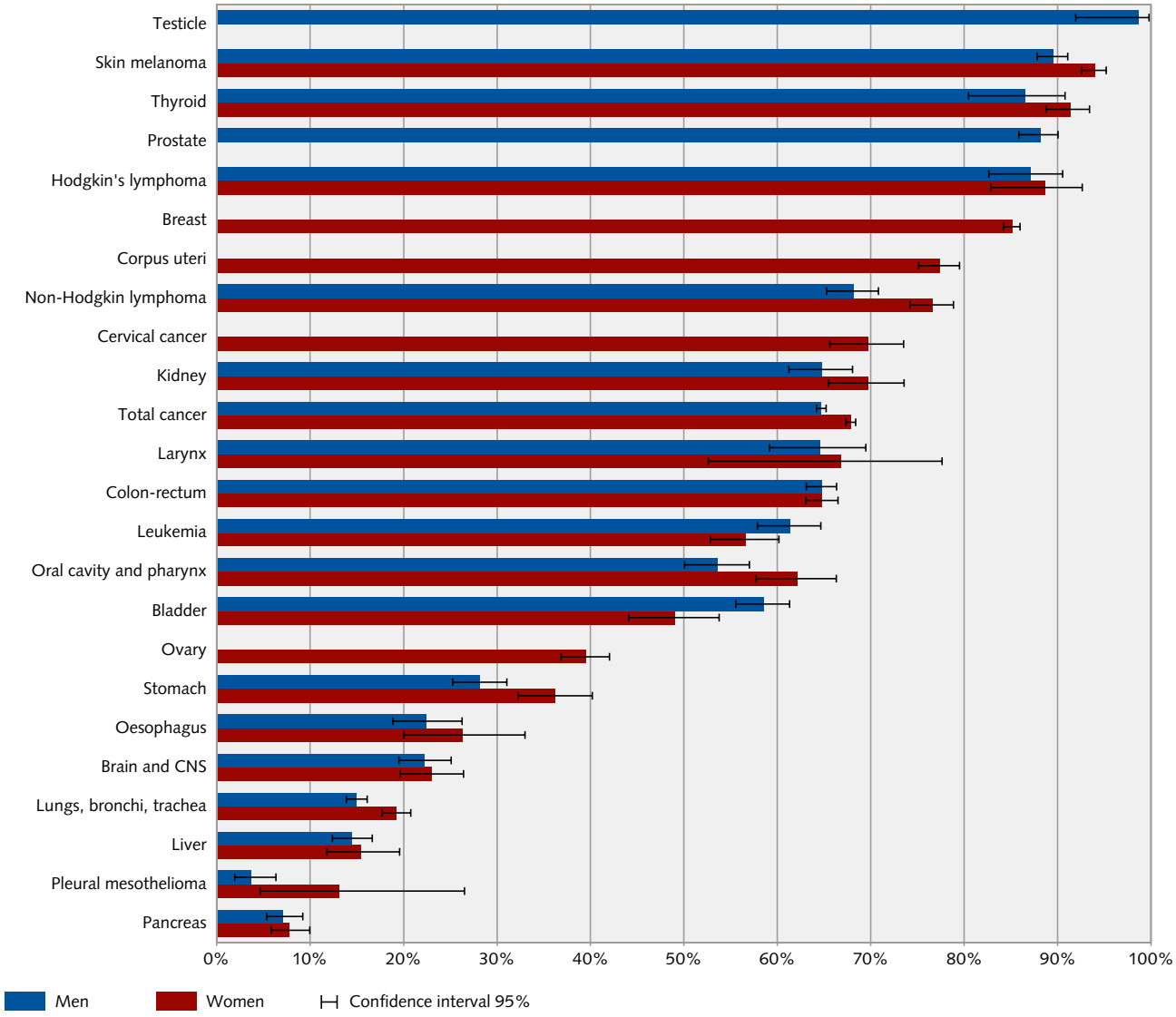
Sources: NICER – New cases; FSO – Deaths

Cancer: Relative survival rate after 1, 5 and 10 years G 3.8



Source: NICER

Relative 5-year survival rates, by cancer site, 2008–2012 **G 3.9**



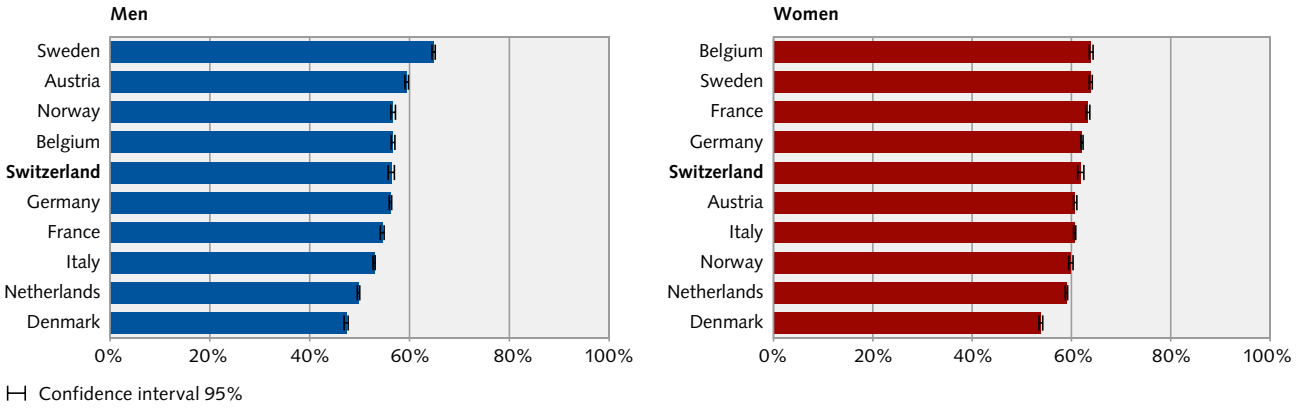
Source: NICER

There are, nevertheless, differences between the types of cancer. The prognosis is poor for cancer of the liver, lungs and pancreas, acute leukaemia, brain tumours and tumours of the central nervous system. For testicular cancer, melanoma, thyroid cancer, Hodgkin-lymphoma and breast cancer, on the other hand, the prognosis is good (G 3.9).

Across all types of cancer, Switzerland's survival rates in international comparison are in the upper middle range (G 3.10).

The increased likelihood of survival has led to a rise in prevalence. A marked increase has been observed in particular among so-called long-term survivors (5 years and more after diagnosis). At the present time (prognosis of 2015) some 170,000 women and 147,000 men who have been diagnosed with cancer are living in Switzerland (G 3.11).

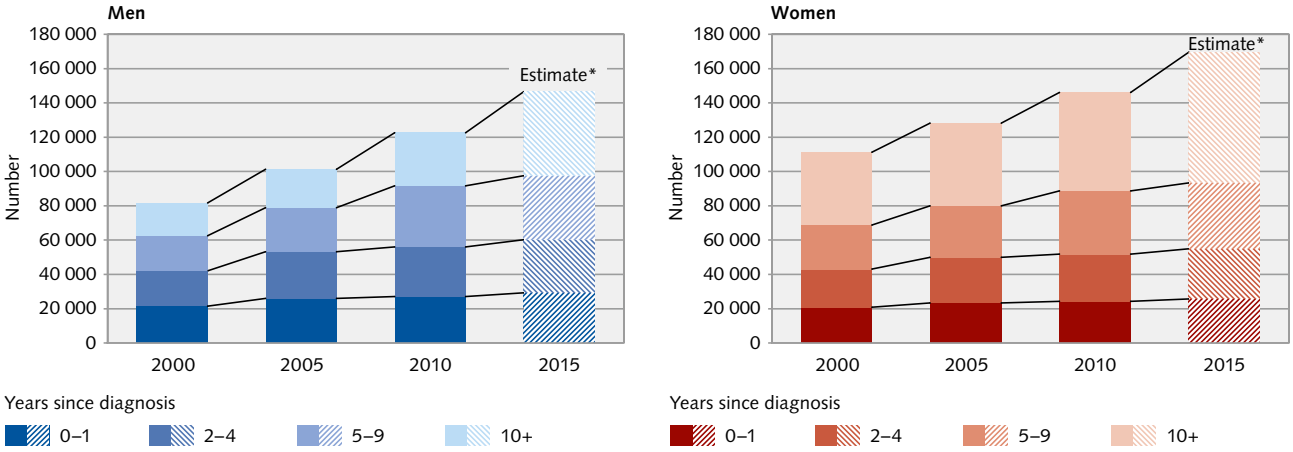
Cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 3.10**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data that do not cover the whole country

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Cancer: Number of survivors (prevalence) **G 3.11**



* Extrapolation from the years 1981–2010

Source: NICER

3.3 Risk factors and prevention

How does cancer develop?

Cancer usually develops from a single cell. The transition from a normal cell to a tumour cell is a process with several stages, typically progressing from a preliminary stage (precancerous lesion) to malignant tumours. These changes are generally the result of an interaction between genetic factors and external cancer promoting or carcinogenic factors (carcinogens) including:

- physical carcinogens such as ultraviolet and ionising radiation;
- chemical carcinogens such as asbestos, benzene, tobacco smoke components, aflatoxin and arsenic;
- biological carcinogens such as infections from certain viruses, bacteria or parasites.

In a specific individual case of cancer, however, the cause is usually not known.

Ageing is another important factor in the development of cancer. The incidence rate increases with age because as one gets older, exposure to carcinogens accumulates and at the same time the body's capacity to repair itself decreases so that the process of developing cancer can progress more quickly.

The Swiss Cancer League estimates that between 5% and 10% of all cancer patients have a hereditary mutation in their genetic substance (DNA), which encourages cancer (such as the Li-Fraumeni syndrome for example, or familial adenomatous polyposis). For a further 20% of patients (in particular breast, ovary, prostate, colon or rectal cancer or malignant melanoma patients) genetic metabolic modifications are thought to be responsible.

What encourages or enhances cancer?

With regard to the population as a whole, the consumption of tobacco and alcohol, reproductive and hormonal factors, obesity, poor diet and lack of exercise are the main risk factors for cancer. But certain chronic infections such as hepatitis B (HBV), hepatitis C (HCV), Helicobacter pylori and some types of the Human papillomavirus (HPV) as well as occupational or environmental pollution are also relevant to the development of cancer as they increase the risk of lung, liver, stomach and cervical cancer.

How can the cancer burden be reduced?

It is assumed that over 30% of cancer deaths could be prevented by changing or avoiding exposure to the main risk factors.[2] Tobacco consumption alone causes some 20% of cancer deaths worldwide and some 70% of all deaths from lung cancer.

3.4 Prevention strategies

The WHO recommends the following strategies to reduce the risk of cancer.

- Avoidance of risk factors mentioned above
- Human papillomavirus (HPV) and hepatitis B virus (HBV) vaccination
- Reduction of occupational hazards
- Reduction of exposure to ionising and non-ionising radiation

Early detection

Many types of cancer have a high chance of being cured if they are detected early and treated appropriately. A distinction is made between organised screening and early diagnosis after appearance of the first symptoms.

Screening

The aim of screening is to detect abnormalities in otherwise symptom-free persons by means of specific examination methods that may indicate cancer or pre-cancer. Patients showing an abnormality must be immediately referred for further diagnostic investigation and treatment. For an effective screening programme the following requirements must be met:

- the disease must be of importance to public health, i.e. the risk of developing the disease must be relatively high,
- the malignancy must be treatable and the prognosis must be considerably better when treatment is started early on in the course of the disease,
- the test must be able to detect or exclude the disease being screened for with the greatest certainty possible,
- the examination should be time and cost efficient,
- the examination should stress those being screened as little as possible.

Examples of cancer screening programmes in Switzerland:

- Mammography screening for breast cancer (programmes in individual cantons)
- Smear test for cervical cancer
- HPV test for early detection of cervical cancer (in preparation)
- Blood in stool test or coloscopy (programme in preparation) for the early detection of colon cancer.

An early diagnosis

For many types of cancer there is so far no effective screening programme. For these types of cancer, priority is given to efforts to increase awareness of early signs and symptoms in order to enable early diagnosis and treatment.

T3.1 Cancer: Key epidemiological figures

	Men		Women	
	Incidence*	Deaths	Incidence*	Deaths
Number of cases per year, average 2008–2012	20 846	8 999	17 650	7 249
Number of cases 2015 (estimated)	22 567	9 602	19 089	7 604
Crude rate (per 100,000 inhabitants and year), 2008–2012	541.1	233.6	444.3	182.5
Average annual change in the crude rate, 2003–2012	0.2%	–0.2%	0.7%	–0.1%
Crude rate 2015 (estimated)	554.7	236.0	459.7	183.1
Standardised rate (per 100,000 inhabitants and year), 2008–2012	435.2	176.1	324.3	111
Average annual change in the standardised rate, 2003–2012	–0.9%	–1.7%	0.1%	–1.0%
Median age at diagnosis and death, average 2008–2012	68.7	74.6	67.3	75.6
Lifetime risk, 2008–2012	47.2%	26.4%	37.6%	18.8%
Cumulative risk before age 70, 2008–2012	24.9%	7.5%	20.5%	5.5%
Years of potential life lost before age 70, annual average 2008–2012	–	33 509	–	29 064

	Men	Women
Number of patients (prevalence), on 31.12.2010	122 628	146 069
of whom diagnosed within the past 5 years	56 000	51 812
Observed 5-year survival rate, on 31.12.2012	56.7%	62.1%
Relative 5-year survival rate, on 31.12.2012	64.7%	67.9%

Sources: NICER – New cases; FSO – Deaths

* New cases excl. non-melanoma skin cancer

3.5 Childhood cancers

Childhood cancers are rare. Around 190 children are diagnosed with cancer each year (ages 0–14). Improved therapies in recent years have led to a steady rise in the success of treatment and the cure rate is now more than 80%.

The types of cancer occurring in childhood are different to those in adults. Among adults, lung, prostrate, colon and breast cancer are predominant. These are cancers, which arise from the surface tissue of the skin or the mucosa, known as the epithelium. In childhood cancers, however, blood cancer (leukaemia) and brain tumours are very common.

Tumours in children develop from all kinds of tissue types, e.g. from embryonic tissue. For this reason, childhood cancers are classified by tissue type (histology) and not by site. This is another difference to cancer in adults. Chapter 5 of this report is devoted to childhood cancers. It describes the current situation of incidence, survival rates, treatment, risk factors and prevention.

References

1 Federal Statistical Office GDP and beyond – Indicators – Health – Potential Years of Life Lost; www.bfs.admin.ch/bfs/portal/en/index/themen/00/09/blank/ind42.indicator.420018.420005.html (Page consulted on 03/05/2016)

2 World Health Organization (WHO). Cancer. Fact sheet N°297, updated February 2015 [online] (Page consulted on 11/06/2015) www.who.int/mediacentre/factsheets/fs297/en/

4 Cancer sites

4.1 Oral cavity and pharynx cancer

4.1.1 New cases and mortality

Current situation

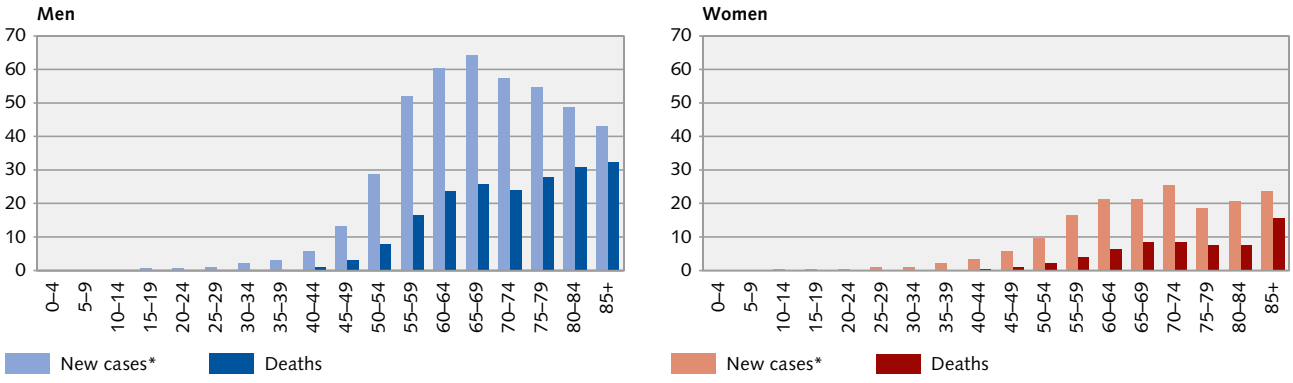
Between 2008 and 2012 an average of 750 men and 320 women were diagnosed with oral cavity and pharynx cancer each year. This type of cancer accounts for 3.6% of all cancers among men and for 1.8% among women. The lifetime risk of developing oral cavity and pharynx cancer is 1.7% for men and 0.8% for women (equal to almost 2 out of 100 men and 1 out of 100 women; T4.1.1). This type of cancer is more common among men than women (incidence ratio of 2.6:1).

Oral cavity and pharynx cancer (COO–C14) concerns malignant neoplasms of the lip, oral cavity and pharynx. This type of cancer also includes malignant neoplasms of the palate, floor of the mouth, gums, salivary gland, tonsils and the tongue.[1]

On average, oral cavity and pharynx cancer is responsible for approximately 280 deaths among men and approximately 100 deaths among women each year. This cancer type accounts for 3.2% of all cancer deaths among men and for 1.5% among women. The risk of dying from oral cavity and pharynx cancer is 0.7% for men and 0.3% for women. This means that approximately 2 out of 300 men and 1 out of 300 women die from this cancer.

Oral cavity and pharynx cancer by age, 2008–2012 **G 4.1.1**

Age-specific rate per 100,000 inhabitants

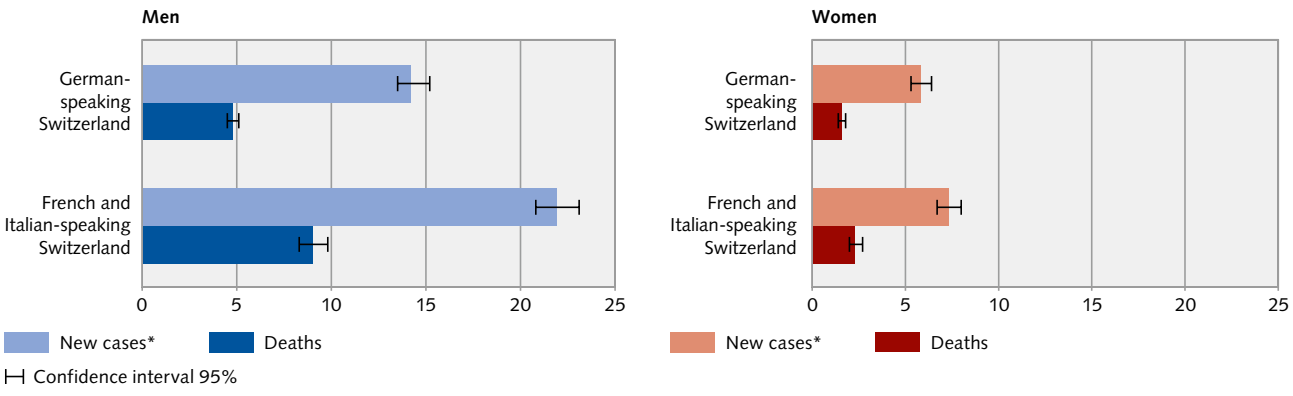


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Oral cavity and pharynx cancer in regional comparison, 2008–2012 **G 4.1.2**

Rate per 100,000 inhabitants, European standard

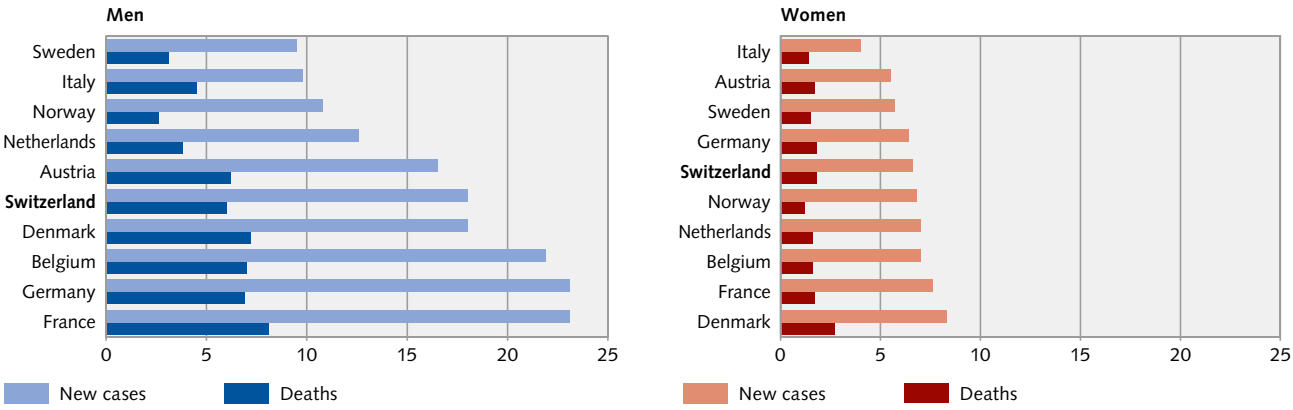


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Oral cavity and pharynx cancer in international comparison, 2012 G 4.1.3

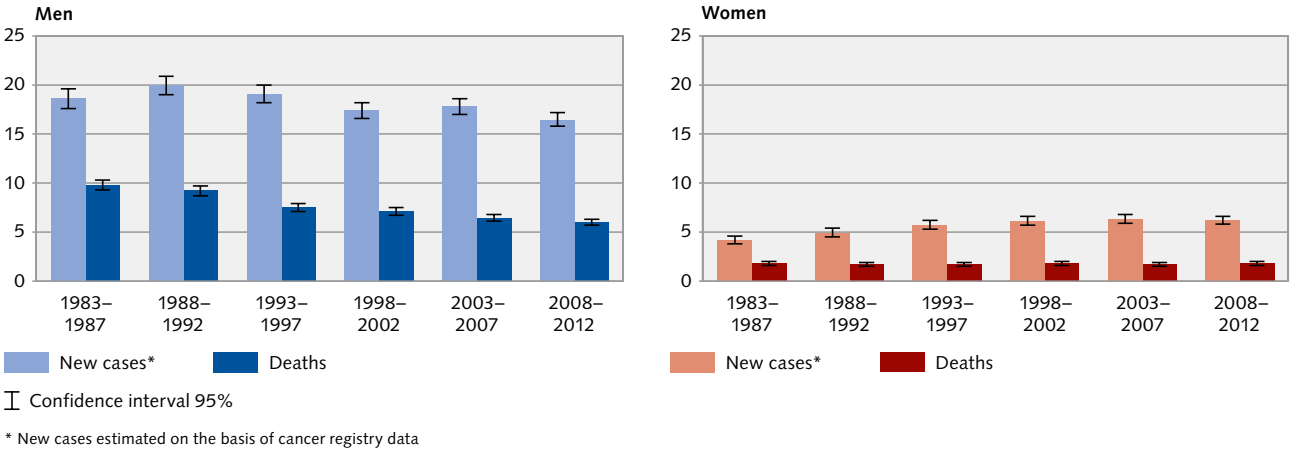
Age-specific rate per 100,000 inhabitants



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Oral cavity and pharynx cancer: Trends over time G 4.1.4

Rate per 100,000 inhabitants, European standard



Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Among men oral cavity and pharynx cancer incidence rates increase until the age of 70. Among women incidence rates rise until the age of 75. The mortality rate rises among both sexes with increasing age, with the rate stabilising among women aged 70 to 84 (G 4.1.1).

The median age at diagnosis is 63 for men and 65 for women. The median age at death is 66 for men and 70 for women.

Regional and international comparisons

Incidence and mortality rates are considerably higher in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.1.2).

Incidence rates among men are relatively high in Switzerland. Among the nine European countries compared with Switzerland, five countries have in part distinctly lower incidence rates than Switzerland. Switzerland's rates for women are however in the middle range with four countries having lower incidence rates. With regard to mortality rates, Switzerland has comparatively higher values for both sexes (G 4.1.3).

Trends over time

Among men incidence rates decreased by approximately 18% between 1988 and 2012. Among women incidence rates increased by 45% between 1983 and 2002, after which they stabilise (G 4.1.4).

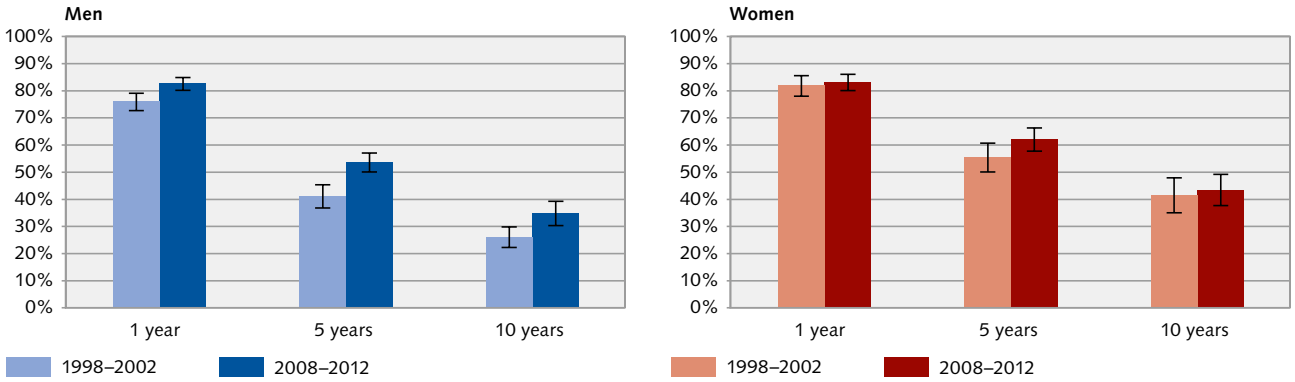
Whereas mortality rates remained stable among women between 1983 and 2012, mortality rates decreased among men during the same period.

4.1.2 Survival rates

In the period 2008–2012 roughly 47% of male patients and 57% of female patients survived at least for five years after having been diagnosed with oral cavity and pharynx cancer (observed survival rate; T 4.1.1). Taking into account the risk of dying from other causes, the five-year survival rate for men is 54% and 62% for women (relative survival rate). Between 1998 and 2002 it was 41% for men and 56% for women (G 4.1.5).

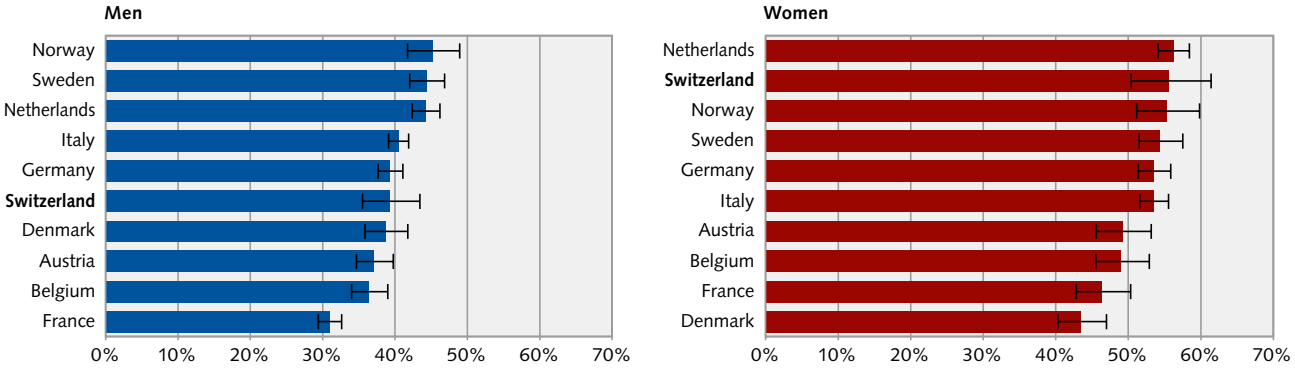
Between 1998 and 2012 the ten-year survival rate improved from 26% to 35% for men but only from 42% to 43% for women (G 4.1.5).

Oral cavity and pharynx cancer: Relative survival rate after 1, 5 and 10 years **G 4.1.5**



Source: NICER

Oral cavity and pharynx cancer:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.1.6**



* Corresponds only to the ICD-O-3 code C01–C06, C09–C14 used in the Eurocare-5 database
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.1.1 Oral cavity and pharynx cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	748	284	326	106
Number of cases 2015 (estimated)	772	320	374	134
Proportion of all cancer cases, average 2008–2012	3.6%	3.2%	1.8%	1.5%
Crude rate (per 100,000 inhabitants and year), 2008–2012	19.4	7.4	8.2	2.7
Average annual change in the crude rate, 2003–2012	–0.7%	0.6%	1.3%	3.2%
Crude rate 2015 (estimated)	19.0	7.9	9.0	3.2
Standardised rate (per 100,000 inhabitants and year), 2008–2012	16.4	6.0	6.2	1.8
Average annual change in the standardised rate, 2003–2012	–1.7%	–0.7%	0.2%	2.4%
Median age at diagnosis and death, average 2008–2012	63.0	66.2	65.4	70.1
Lifetime risk, 2008–2012	1.7%	0.7%	0.8%	0.3%
Cumulative risk before the age of 70, 2008–2012	1.2%	0.4%	0.4%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1771	–	510

	Men	Women
Observed 5-year survival rate, on 31.12.2012	46.9%	56.7%
Relative 5-year survival rate, on 31.12.2012	53.6%	62.2%

Sources: NICER – New cases; FSO – Deaths

Among the nine European countries compared with Switzerland, five countries have higher survival rates in men than Switzerland, and Switzerland has the second-highest survival rate for women after the Netherlands (G 4.1.6).

4.1.3 Risk factors

Smoking cigarettes and drinking alcohol are the main risk factors for developing this type of cancer. The longer the duration of consumption, the higher the risk. The combination of smoking and drinking increases the risk of developing this type of cancer. Further risk factors are acid reflux, chewing tobacco leaves, poor oral hygiene, human papillomavirus infection (HPV), Epstein-Barr virus, occupational exposure to formaldehyde and wood flour, exposure to radiation, consumption of canned products (vegetables) and salt-preserved food, malaria infection and genetic predisposition.[1,2,3]

References

1 The Swiss Cancer League. Mundhöhlenkrebs [online] (page accessed on 1/07/2015). http://www.krebsliga.ch/de/uber_krebs/krebsarten/mund-hohlenkrebs/

2 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

3 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

4.2 Oesophageal cancer

4.2.1 New cases and mortality

Current situation

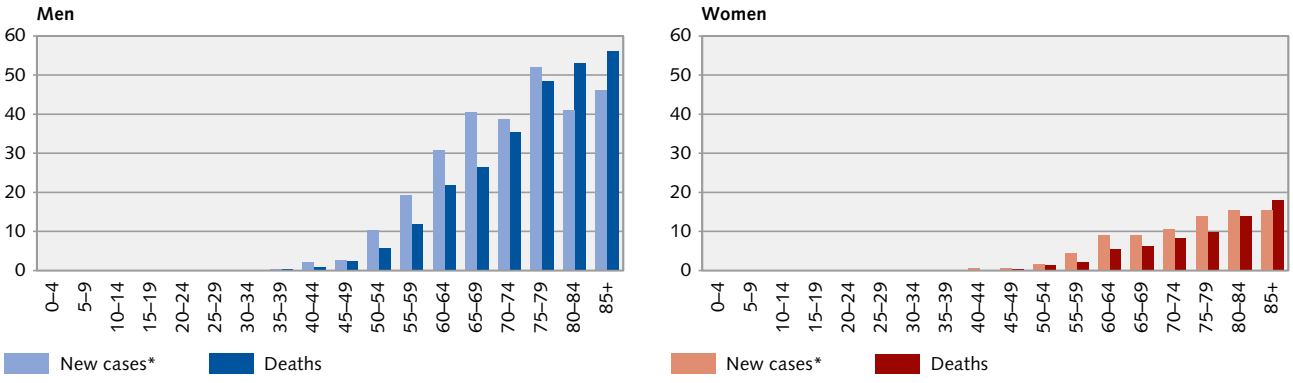
Between 2008 and 2012 an average of 400 men and 130 women were diagnosed with oesophageal cancer each year. This type of cancer accounts for 1.9% of all cancers among men and for 0.7% among women. The lifetime risk of developing oesophageal cancer is 1.0% for men and 0.3% for women (equal to almost 1 out of 100 men and 1 out of 300 women; T 4.2.1). This type of cancer is more common among men than women (incidence ratio of 3.9:1).

Oesophageal cancer (C15) usually develops from the mucosal cells. It mainly develops either from surface cells (squamous cell carcinoma, more commonly in the upper part of the oesophagus) or from the gland cells (adenocarcinoma, tends to be in the lower part of the oesophagus).[1]

Between 2008 and 2012, on average approximately 320 men and 100 women died per year from oesophageal cancer. This type of cancer accounts for 3.6% of all cancer deaths among men and for 1.4% among women. The risk of dying from oesophageal cancer is 0.9% for men and 0.3% for women. This means that approximately 1 out of 100 men and 1 out of 300 women die from this cancer.

Oesophageal cancer by age, 2008–2012 **G 4.2.1**

Age-specific rate per 100,000 inhabitants

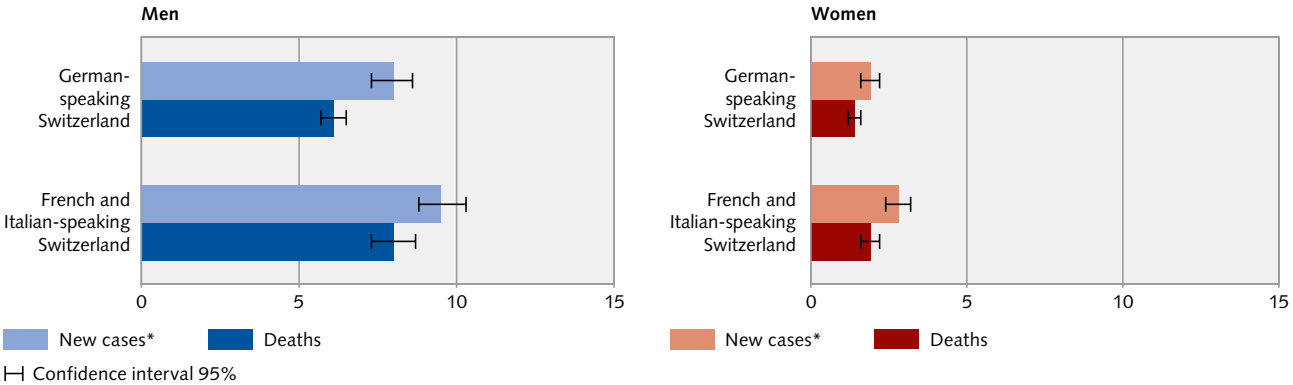


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Oesophageal cancer in regional comparison, 2008–2012 **G 4.2.2**

Rate per 100,000 inhabitants, European standard

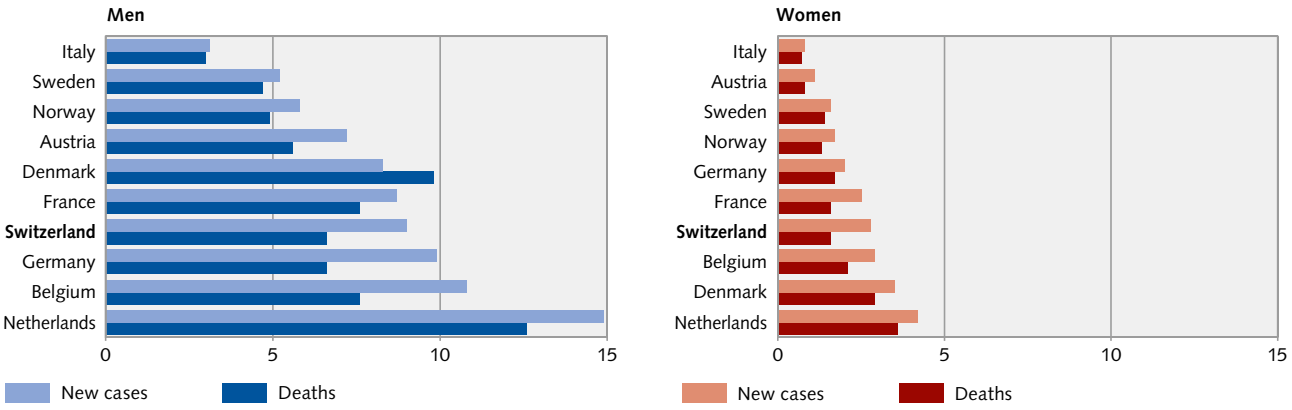


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Oesophageal cancer in international comparison, 2012 G 4.2.3

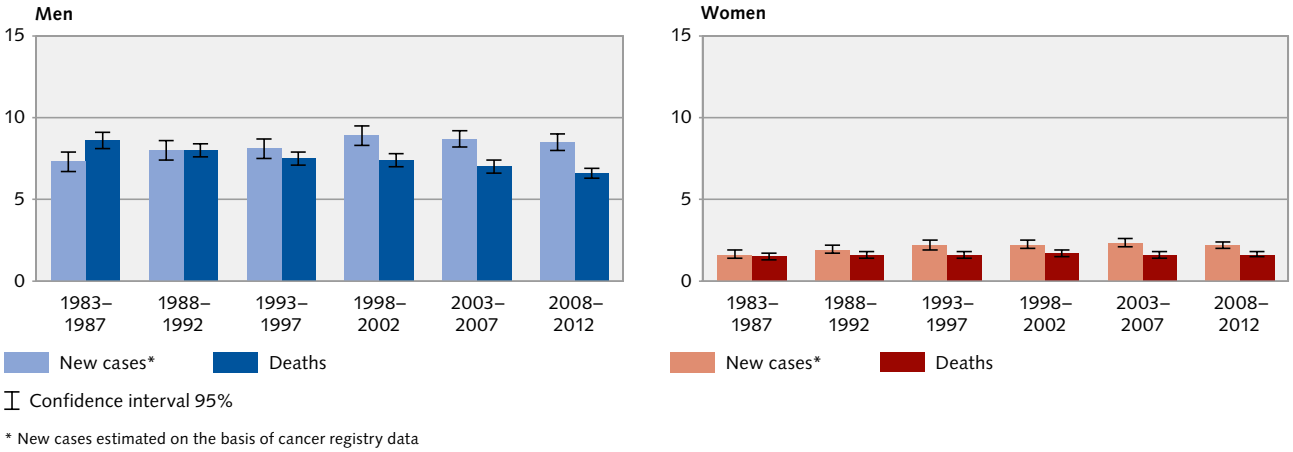
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Oesophageal cancer: Trends over time G 4.2.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

The incidence rates for oesophageal cancer rise with increasing age. After the age of 80, these rates stabilise for women and decrease for men. The mortality rates for oesophageal cancer increase for both sexes with increasing age (G 4.2.1). The median age at diagnosis is 68 for men and 73 for women. The median age at death is 71 for men and 76 for women.

Regional and international comparisons

Incidence rates for both sexes are higher in French and Italian-speaking Switzerland than in German-speaking Switzerland. Mortality rates are higher among men in French and Italian-speaking Switzerland than in German-speaking Switzerland. There are no differences in mortality rates for women between the regions shown (G 4.2.2).

The incidence rates for both genders are relatively high in Switzerland in international comparison. Among the nine European countries compared with Switzerland, six countries have lower incidence rates than Switzerland. Swiss mortality rates, however, are comparable

with rates from the selected European countries. Four countries show lower rates for men, while five countries show lower rates for women (G 4.2.3).

Trends over time

An increase in incidence rates became evident in both sexes between 1983 and 2002 (men: 22%, women: 38%). After this period of time, incidence rates stabilised (G 4.2.4).

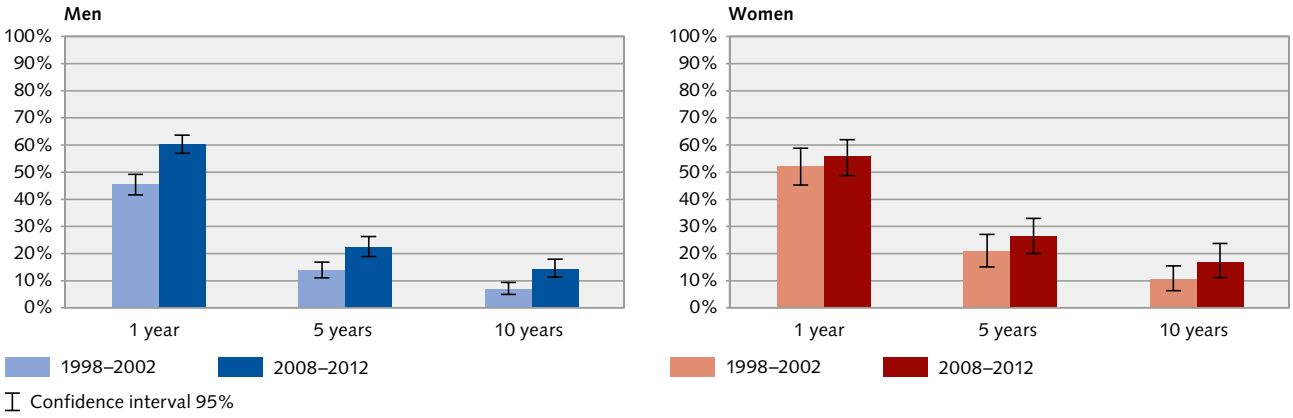
A decrease of approximately 23% in mortality rates among men can be seen for the period between 1983 and 2012. Among women mortality rates remained stable during this period (G 4.2.4).

4.2.2 Survival rates

In the period 2008–2012 roughly 20% of male patients and 25% of female patients survived at least five years after having been diagnosed with oesophageal cancer (observed survival rate; T 4.2.1). Taking into account the risk of dying from other causes, the five-year survival rate for men is 23% and 26% for women (relative survival rate). Between 1998 and 2002 the five-year survival rate was 14% for men and 21% for women (G 4.2.5).

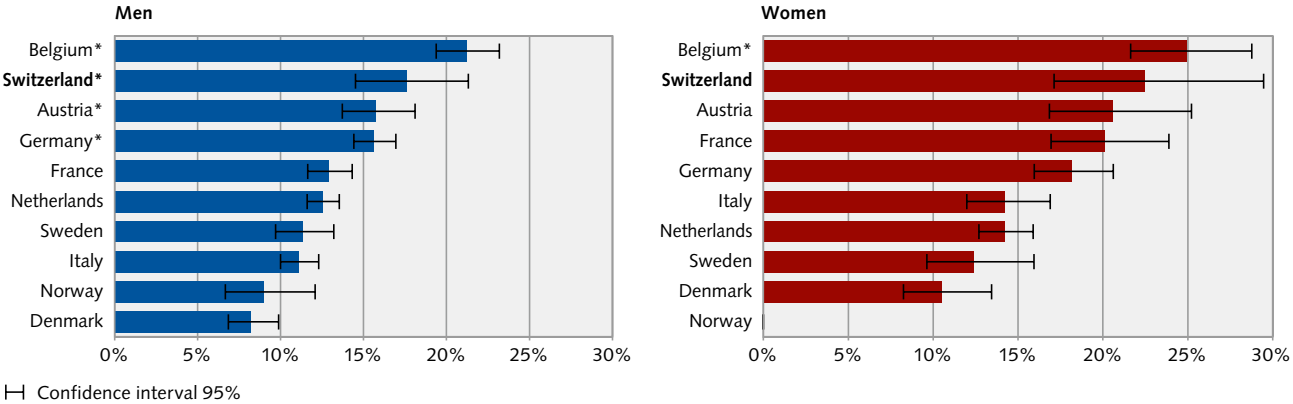
Between 1998 and 2012 the ten-year survival rates doubled from 7% to 14% for men but improved only from 10% to 17% for women. However, the prognosis still remains very unfavourable (G 4.2.5).

Oesophageal cancer: Relative survival rate after 1, 5 and 10 years **G 4.2.5**



Source: NICER

Oesophageal cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.2.6**



* According to the source, the calculated survival rate is exceptionally high with the result that there may be a problem with data collection in this country
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.2.1 Oesophageal cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	405	328	132	103
Number of cases 2015 (estimated)	449	365	150	112
Proportion of all cancer cases, average 2008–2012	1.9%	3.6%	0.7%	1.4%
Crude rate (per 100,000 inhabitants and year), 2008–2012	10.5	8.5	3.3	2.6
Average annual change in the crude rate, 2003–2012	0.7%	0.5%	0.7%	0.3%
Crude rate 2015 (estimated)	11.0	9.0	3.6	2.7
Standardised rate (per 100,000 inhabitants and year), 2008–2012	8.5	6.6	2.2	1.6
Average annual change in the standardised rate, 2003–2012	–0.5%	–0.9%	–0.6%	–0.3%
Median age at diagnosis and death, average 2008–2012	67.7	70.9	72.5	75.5
Lifetime risk, 2008–2012	1.0%	0.9%	0.3%	0.3%
Cumulative risk before the age of 70, 2008–2012	0.5%	0.3%	0.1%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1 419	–	306

	Men	Women
Observed 5-year survival rate, on 31.12.2012	20.4%	25.1%
Relative 5-year survival rate, on 31.12.2012	22.5%	26.3%

Sources: NICER – New cases; FSO – Deaths

In comparison with the nine selected European countries, Switzerland has the highest survival rates for patients with oesophageal cancer – along with Belgium – for the years 2000–2007 (G 4.2.6).

4.2.3 Risk factors

Smoking cigarettes and drinking alcohol are the main risk factors to develop oesophageal cancer. Further risk factors for this type of cancer are being overweight, acid reflux, consumption of hot drinks, a lot of grilled meat and pickled vegetables, chewing tobacco leaves and exposure to ionising radiation.[2,3,4]

References

1 The Swiss Cancer League. Speiseröhrenkrebs (Ösophagus-Karzinom) [online] (page accessed on 1/07/2015). http://www.krebsliga.ch/de/uber_krebs/krebsarten/speiserohrenkrebs_/

2 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.3 Stomach cancer

Stomach cancer (C16) almost always develops from the stomach mucosa which lines the stomach.[1]

4.3.1 New cases and mortality

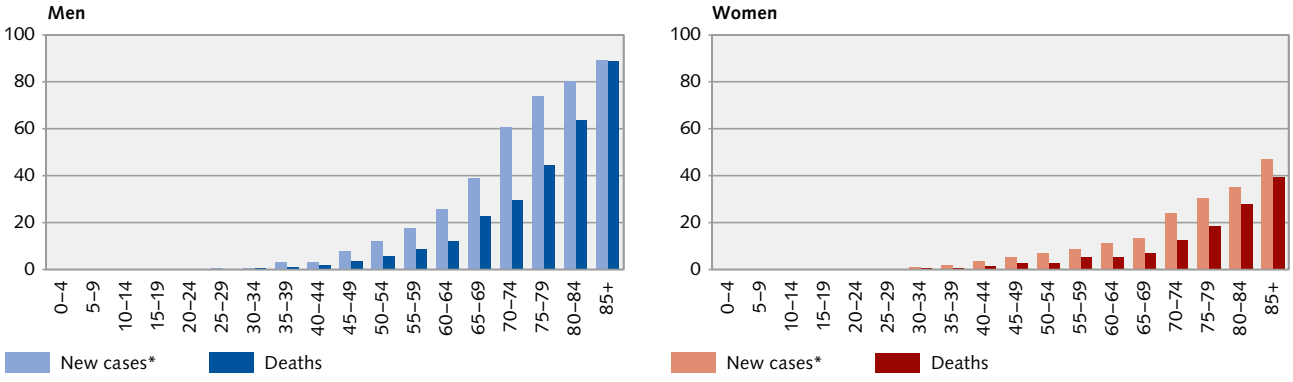
Current situation

Between 2008 and 2012 around 850 cases of stomach cancer were diagnosed each year. This accounts for 2.5% of all types of cancer among men and for 1.8% among women. The lifetime risk of developing stomach cancer is 1.4% for men and 0.8% for women (equal to almost 1 out of 100 men and women; T 4.3.1). Stomach cancer is more common among men than among women; the standardised incidence rate of men is twice as high as that of women.

During the same period stomach cancer resulted in over 500 deaths per year. The risk of dying from stomach cancer is 0.9% for men and 0.5% for women. This means that approximately 1 out of 100 men and 1 out of 200 women die from this type of cancer, which accounts for respectively 3.5% and 2.7% of all cancer deaths.

Stomach cancer by age, 2008–2012 **G 4.3.1**

Age-specific rate per 100,000 inhabitants

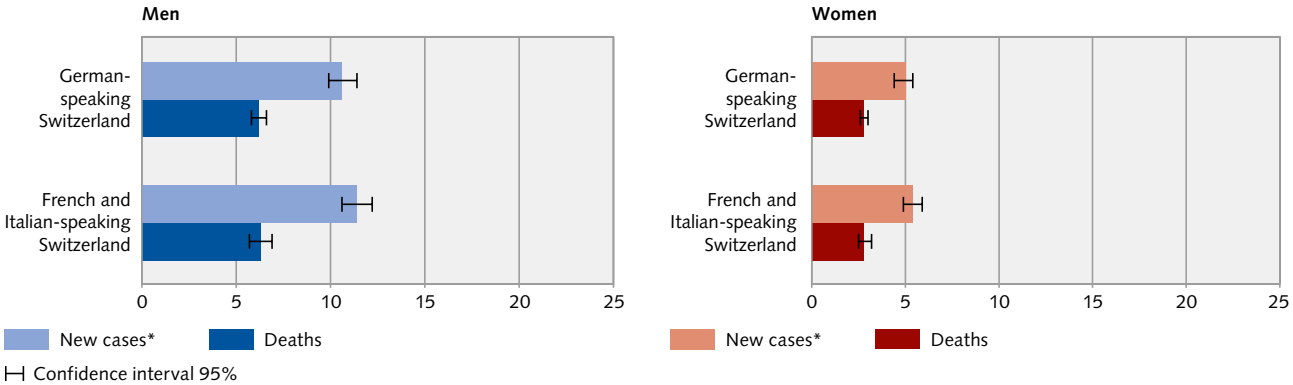


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Stomach cancer in regional comparison, 2008–2012 **G 4.3.2**

Rate per 100,000 inhabitants, European standard

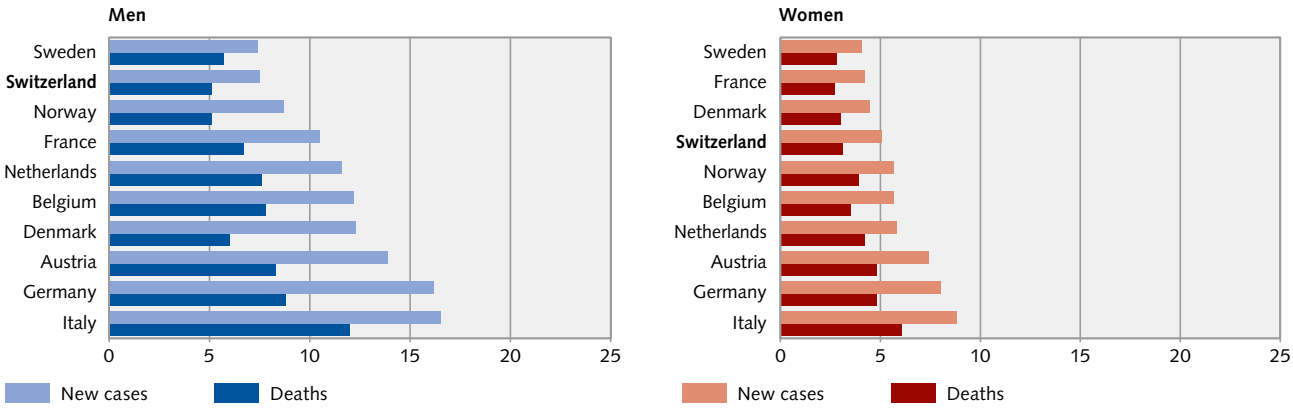


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Stomach cancer in international comparison, 2012 G 4.3.3

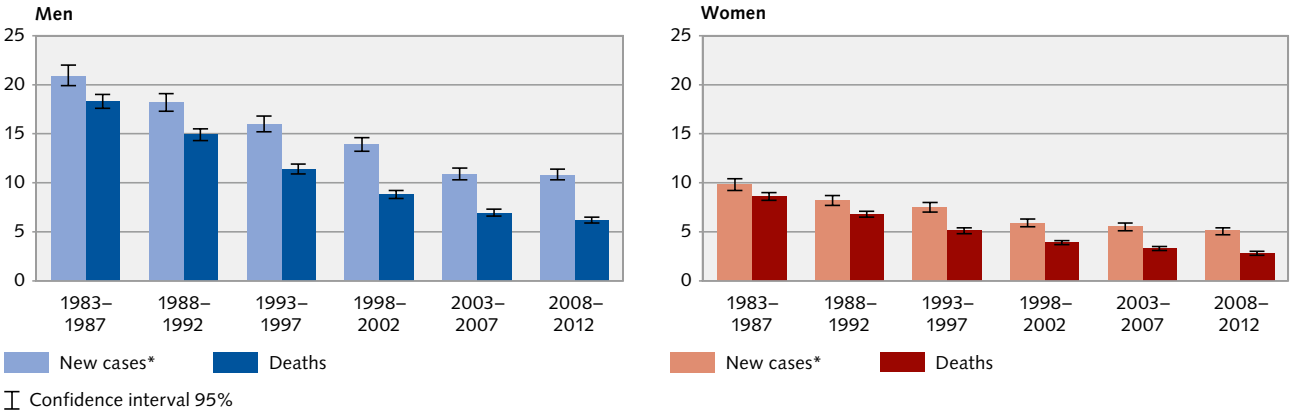
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Stomach cancer: Trends over time G 4.3.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

The median age at diagnosis and death is 71 and 74 for men and 73 and 77 for women. In the period 2008–2012 no cases were diagnosed before the age of 20 (G 4.3.1). Incidence and mortality rates for stomach cancer up to the age of 35 are less than 1:100,000 but increase with higher age.

Regional and international comparisons

There are no differences between German-speaking Switzerland and French and Italian-speaking Switzerland.

Compared with the nine selected European countries, Switzerland shows the lowest incidence and mortality rates for stomach cancer (G 4.3.3). Among men the incidence rate is at a similar level to the least affected country and the mortality rate is the lowest among the ten European countries compared. Three countries show lower incidence and mortality rates for women.

Trends over time

Over the past 30 years a marked decline in the incidence rate (–48%) and the mortality rate (–67% among women and –66% among men) could be observed (G 4.3.4). However, there has been no further significant decline in the incidence rate over the past ten years.

4.3.2 Survival rates

In the period 2008–2012, 25% of male patients and 34% of female patients survived five years after having been diagnosed with stomach cancer (observed survival rate; T 4.3.1). Taking into account the risk of dying from other causes, the five-year survival rate for men is 28% and 36% women (relative survival rate). Between 1998 and 2002 it was 25% for men and 29% for women (G 4.3.5).

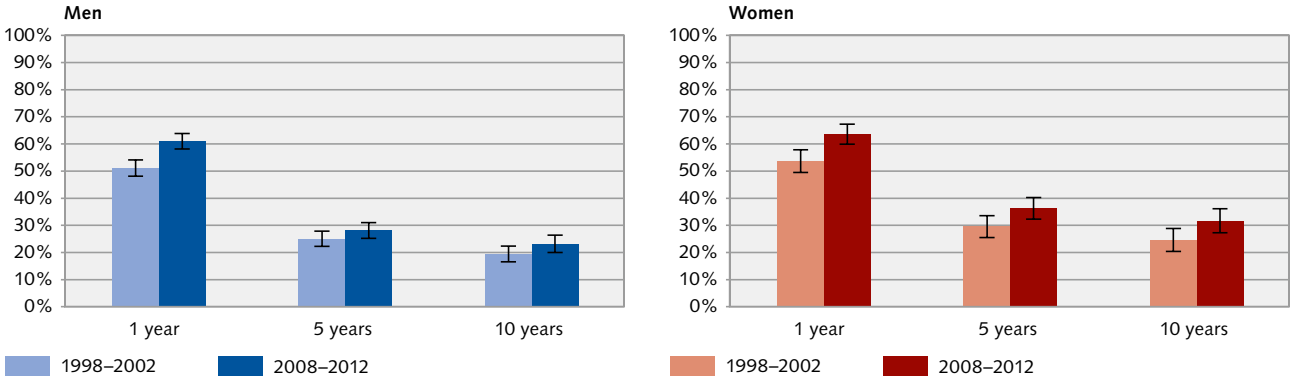
Between 1998 and 2012 the ten-year survival rates improved from 19% to 23% for men and from 25% to 32% for women. Compared with other types of cancer, however, these rates remain unfavourable (G 4.3.5).

For the years 2000–2007 Switzerland shows the highest survival rates among the ten selected European countries in diagram G 4.3.6.

4.3.3 Risk factors

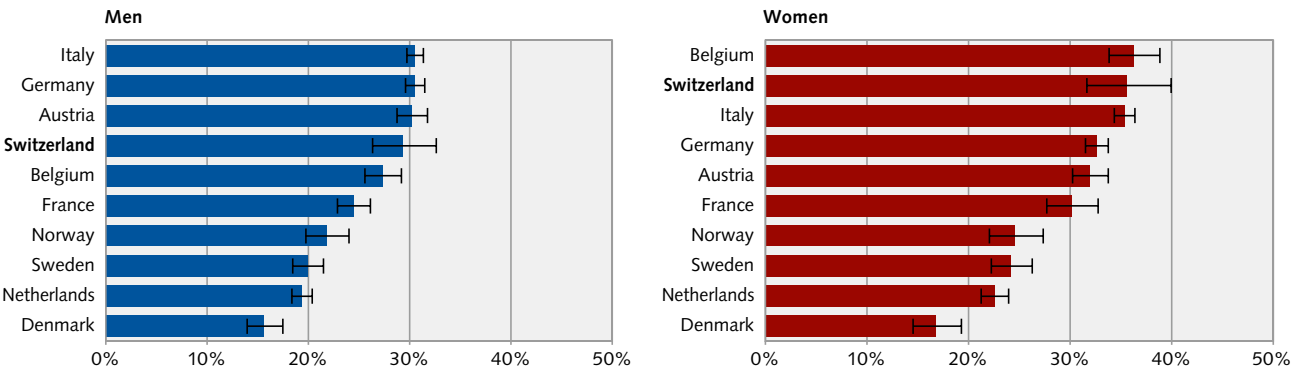
It is known today that infection with the Helicobacter *pylori* bacterium is one of the major risk factors for stomach cancer.[2] Inflammation triggered by the bacterium stimulates the development of cancer pre-stages. Another risk factor is frequent consumption of highly salted, cured or smoked food.[1] The significant decrease in stomach cancer is not only likely to be due to decline in an infection with the *Helicobacter pylori* bacterium but also due to the prevalence of refrigerators and the subsequently inproved food preservation.[3] Other factors increasing the risk of stomach cancer inclued smoking and nitrosamines formed in the stomach from nitrates in food or in the presence of bacteria altering the gastric juice's PH-value.[2]

Stomach cancer: Relative survival rate after 1, 5 and 10 years **G 4.3.5**



Source: NICER

Stomach cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.3.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.3.1 Stomach cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	531	316	315	193
Number of cases 2015 (estimated)	569	328	328	180
Proportion of all cancer cases, average 2008–2012	2.5%	3.5%	1.8%	2.7%
Crude rate (per 100,000 inhabitants and year), 2008–2012	13.8	8.2	7.9	4.8
Average annual change in the crude rate, 2003–2012	0.3%	–0.7%	–0.9%	–3.0%
Crude rate 2015 (estimated)	14.0	8.1	7.9	4.3
Standardised rate (per 100,000 inhabitants and year), 2008–2012	10.8	6.2	5.1	2.8
Average annual change in the standardised rate, 2003–2012	–0.7%	–2.0%	–0.7%	–2.5%
Median age at diagnosis and death, average 2008–2012	70.5	73.5	73.4	77.4
Lifetime risk, 2008–2012	1.4%	0.9%	0.8%	0.5%
Cumulative risk before the age of 70, 2008–2012	0.6%	0.3%	0.3%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1441	–	846

	Men	Women
Observed 5-year survival rate, on 31.12.2012	25.0%	33.7%
Relative 5-year survival rate, on 31.12.2012	28.1%	36.2%

Sources: NICER – New cases; FSO – Deaths

X-rays and gamma rays as well as occupational exposure to rubber and ethylene oxide are described as further risk factors. Similar risk factors as for oesophagus cancer apply to cancer of the cardia (the entrance of the stomach in the proximity of the oesophagus). These are smoking, acid reflux and obesity.

Most cases occur sporadically but those with a family history of stomach cancer have a higher risk. 1% to 3% of stomach cancers are genetic. Genetic predisposition (e.g. hereditary diffuse gastric cancer or gastric adenocarcinoma and proximal polyposis of the stomach[1]) can stimulate the development of stomach cancer.

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.4 Colorectal cancer

4.4.1 New cases and mortality

Current situation

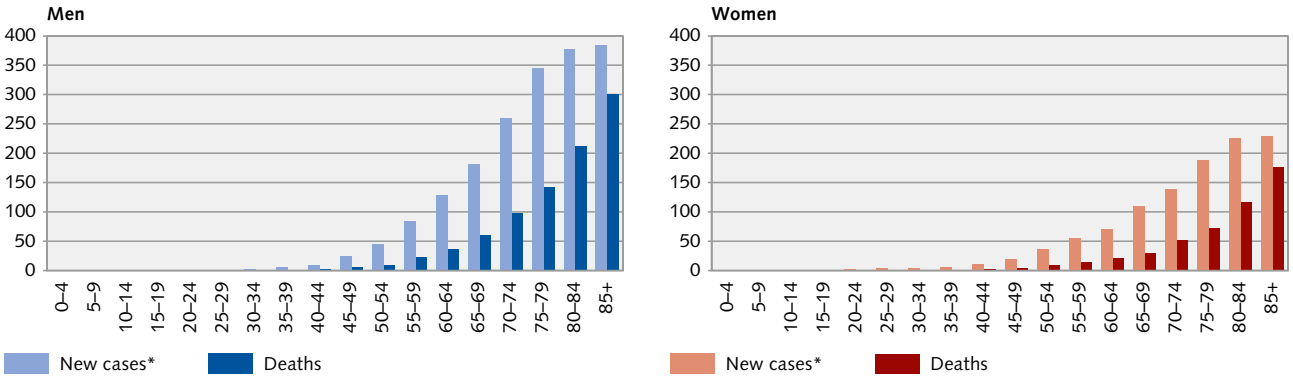
Colorectal cancer includes malignant neoplasms of the colon (C18), the rectosigmoid (junction from the colorectal to rectum; C19) and the rectum (C20). Most cases, however, occur in the sigmoid colon and rectum. This type of cancer usually develops from intestinal mucosa cells.[1]

Colorectal cancer is the third most common cancer in men and the second most common in women. Between 2008 and 2012 a total of approximately 2300 men and 1800 women were diagnosed with colorectal cancer. This type of cancer is more common among men than women (incidence ratio of 1.6:1). The lifetime risk of developing colorectal cancer is 6.3% for men and 4.7% for women (equal to almost 6 out of 100 men and 5 out of 100 women; T 4.4.1).

This type of cancer is the third most common cause of cancer death among both sexes with 900 deaths among men and 700 among women. The risk of dying from colorectal cancer is 2.8% for men and 2.1% for women. This means that approximately 3 out of 100 men and 2 out of 100 women die from this cancer.

Colorectal cancer by age, 2008–2012 **G 4.4.1**

Age-specific rate per 100,000 inhabitants

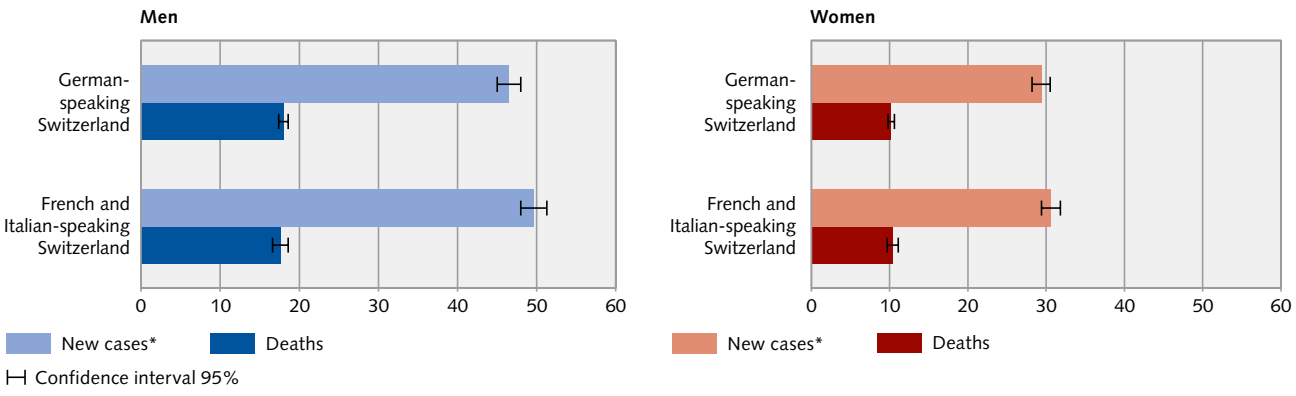


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Colorectal cancer in regional comparison, 2008–2012 **G 4.4.2**

Rate per 100,000 inhabitants, European standard

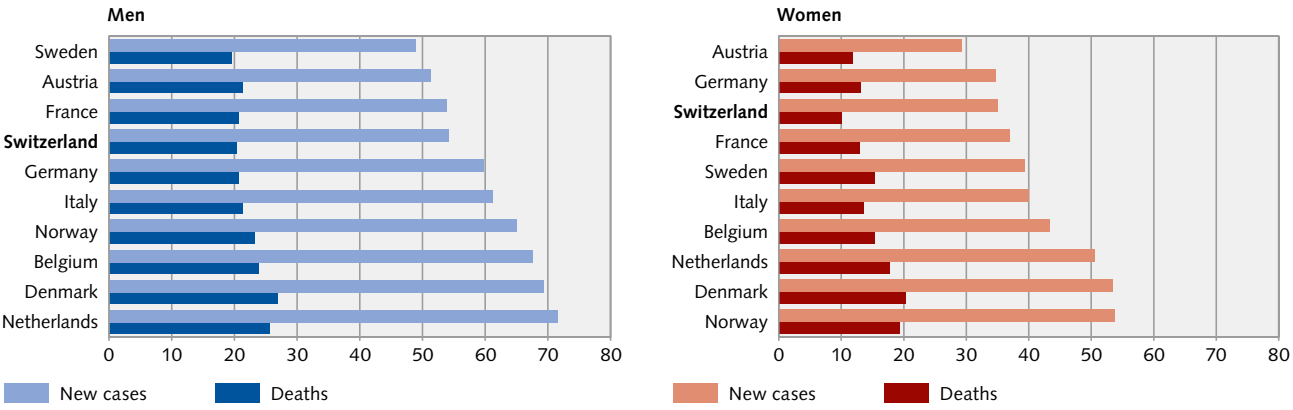


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Colorectal cancer in international comparison, 2012 G 4.4.3

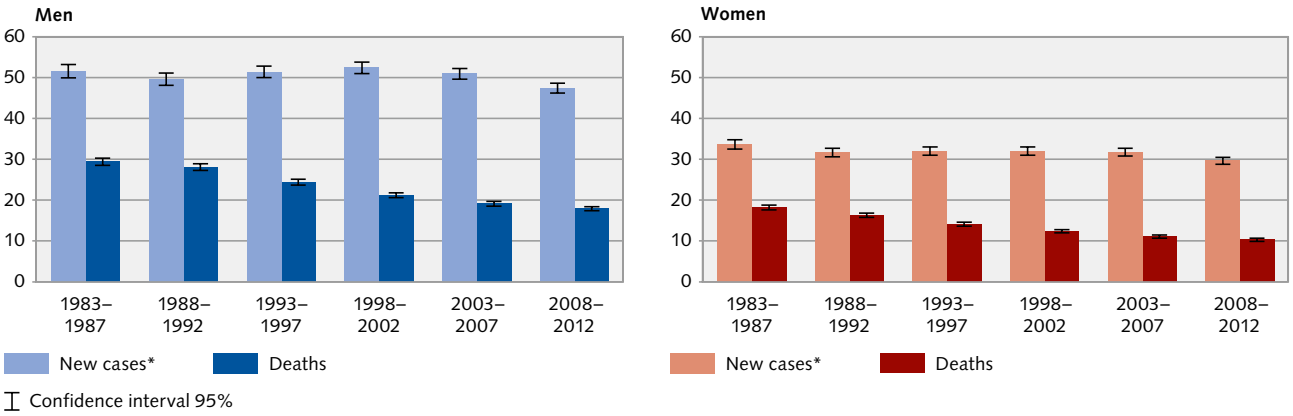
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Colorectal cancer: Trends over time G 4.4.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

The incidence rates rise with increasing age and stabilise after the age of 80. Mortality rates also rise with increasing age (G 4.4.1). The median age at diagnosis of colorectal cancer is 71 for men and 73 for women. The median age at death from colorectal cancer is 76 for men and 79 for women.

Regional and international comparisons

Incidence and mortality of colorectal cancer do not differ between German-speaking Switzerland and French and Italian-speaking Switzerland (G4.4.2). Compared with the nine selected European countries, Switzerland's incidence rates are relatively low. Switzerland is in fourth place for men and in third place for women (G4.4.3). It has the second lowest mortality rate for men and the lowest mortality rate for women.

Trends over time

Among both genders, incidence rates have largely remained stable in the last 30 years, whereas mortality rates have declined (G 4.4.4). If one only takes the past 10 years into consideration, a slight decrease in incidence rates can be observed, whereas mortality rates have only declined marginally (T 4.4.1). There has been variation in trends in the 20–49 age group over the past 30 years: incidence rates have increased though at a lower level than in other age groups. Mortality rates remained constant.

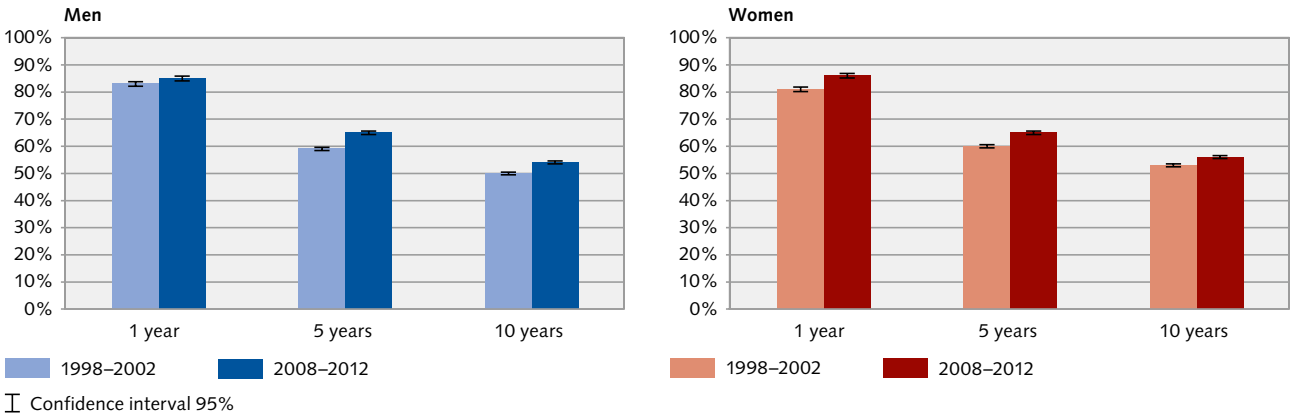
4.4.2 Survival rates and number of cancer survivors

In the period 2008–2012, 57% of male patients and 59% of female patients survived at least five years after having been diagnosed with colorectal cancer (observed survival rate; T 4.4.1). Taking into account the risk of dying from other causes, the five-year survival rate is 65% among both sexes (relative survival rate; G 4.4.5). Between 1998 and 2002 it was 59% for men and 60% for women.

Between 1998 and 2012 the ten-year survival rate improved from 50% to 54% for men and from 53% to 56% for women (G 4.4.5). The longer survival time is attributed to improvements in treatment and registration of the earlier stages through the increased use of diagnostics.

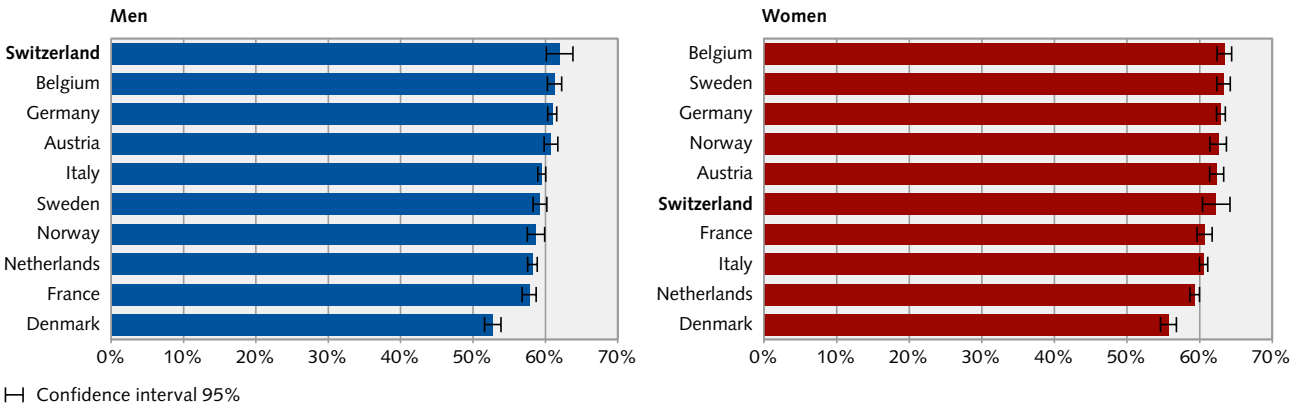
Compared with the nine selected European countries for the period 2000–2007, Switzerland has the highest survival rates for colorectal cancer patients, together with Belgium, Germany and Austria, and additionally together with Sweden and Norway when considering women. The differences between the countries are very small (G 4.4.6).

Colorectal cancer: Relative survival rate after 1, 5 and 10 years **G 4.4.5**



Source: NICER

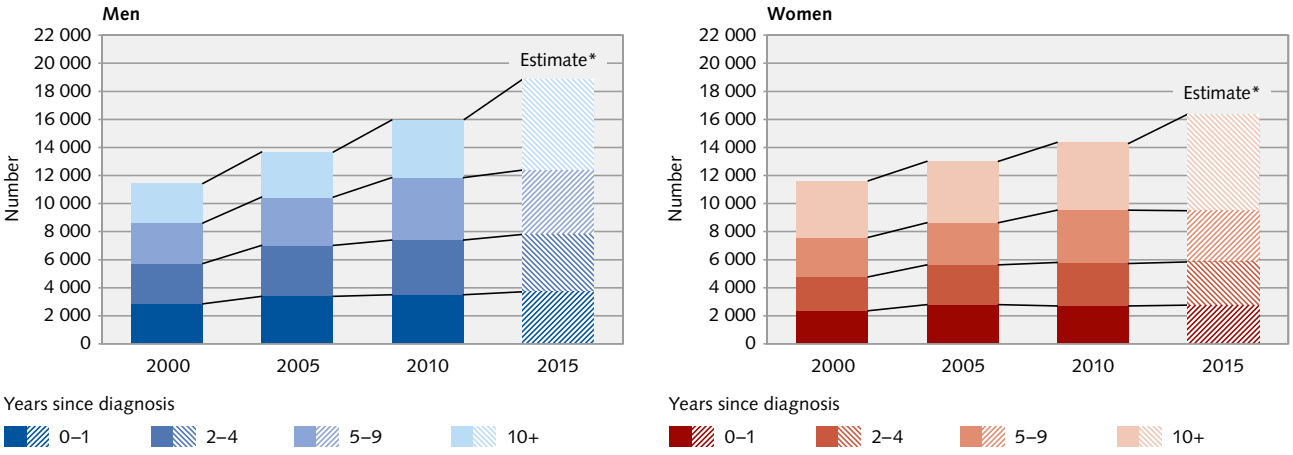
Colorectal cancer:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.4.6**



* Corresponds to the ICD-0-3 codes C18-21 and C26.0 used in Eurocare-5 database
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Colorectal cancer: Number of survivors (prevalence) **G 4.4.7**



* Extrapolation from the years 1981–2010

Source: NICER

While there were 23,000 survivors of colorectal cancer in Switzerland in 2000, this figure rose to 30,300 for 2010 (G 4.4.7). This increase can mainly be attributed to the sharp rise in the older population, i.e. it is primarily a demographic effect. More than 35,000 survivors in Switzerland have been estimated for 2015; 21,500 of these persons have survived cancer for five years or more whereas approximately 13,600 survivors are in within the first 5 years after diagnosis (G 4.4.7).

4.4.3 Risk factors

Riskfactors associated with colorectal cancer include high consumption of red and processed meat, a high body mass index, a disproportionate amount of abdominal fat, lack of physical activity and an above average body size.[2,3]

Proven risk factors for colorectal cancer include the consumption of alcoholic drinks, tobacco and exposure to X-ray and gamma radiation.[2] Between 5% and 10% of colorectal cancers are attributed to genetic factors such as familial adenomatous polyposis (FAP) and hereditary nonpolyposis colorectal cancer (HNPCC). 20% of all cases occur among persons with a family history of colorectal cancer. Finally, inflammatory bowel diseases such as ulcerative colitis or Crohn's disease also increase the risk of colorectal cancer.[3]

T 4.4.1 Colorectal cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	2 335	924	1 822	745
Number of cases 2015 (estimated)	2 504	1 029	1 825	759
Proportion of all cancer cases, average 2008–2012	11.2%	10.3%	10.3%	10.3%
Crude rate (per 100,000 inhabitants and year), 2008–2012	60.6	24.0	45.9	18.7
Average annual change in the crude rate, 2003–2012	0.0%	0.5%	–0.9%	–0.6%
Crude rate 2015 (estimated)	61.6	25.3	44.0	18.3
Standardised rate (per 100,000 inhabitants and year), 2008–2012	47.4	17.9	29.7	10.3
Average annual change in the standardised rate, 2003–2012	–1.2%	–0.9%	–1.1%	–1.4%
Median age at diagnosis and death, average 2008–2012	70.9	75.5	73.2	79.4
Lifetime risk, 2008–2012	6.3%	2.8%	4.7%	2.1%
Cumulative risk before the age of 70, 2008–2012	2.4%	0.7%	1.6%	0.4%
Years of potential life lost before the age of 70, average 2008–2012	–	2 883	–	2 098

	Men	Women
Number of patients (prevalence), on 31.12.2010	15 952	14 364
of whom diagnosed within the past 5 years	7 379	5 810
Observed 5-year survival rate, on 31.12.2012	56.7%	59.0%
Relative 5-year survival rate, on 31.12.2012	64.8%	64.8%

Sources: NICER – New cases; FSO – Deaths

References

1 The Swiss Cancer League (2014). Dickdarm- und Enddarmkrebs. Bern. https://assets.krebsliga.ch/downloads/1063.pdf

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Vol. 10

3 World Cancer Research Fund/American Institute for Cancer Research (2011). Continuous Update Project Report. Food, Nutrition, Physical activity, and the Prevention of Colorectal Cancer.

4.5 Liver cancer

This chapter deals with the primary cancer tumours (C22), which mostly arise from liver cells (hepatocytes)[1]. Secondary liver tumours, which are often caused by the spreading of cancer cells from another primary cancer (metastases), are not discussed here.

4.5.1 New cases and mortality

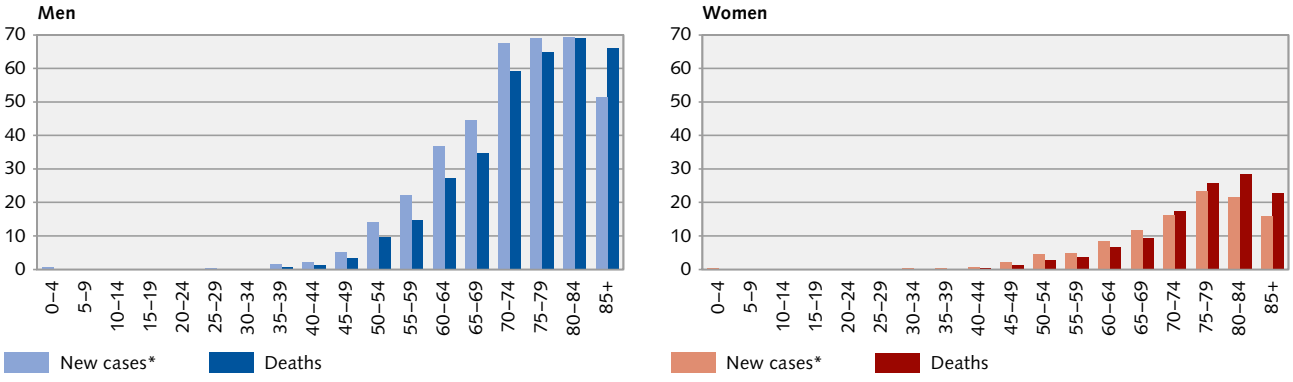
Current situation

With an average of 540 new cases in men per year (compared with 190 in women) between 2008 and 2012, liver cancer accounts for 2.6% (1.1% in women) of all new cancer cases. The lifetime risk of developing liver cancer is 1.4% for men and 0.5% for women (equal to almost 3 out of 200 men and 1 out of 200 women; T 4.5.1). The standardised incidence rate for liver cancer is 3.5 times higher for men than for women.

An average of 450 men die from liver cancer each year (2008–2012 period). This makes it the fifth most common cancer related cause of death, accounting for 5% of all cancer deaths. Liver cancer leads to the death of an average of 190 women (2.6% of all cancer deaths) each year. The risk of dying from liver cancer is 1.2% for men and 0.5% for women. This means that approximately 1 out of 100 men and 1 out of 200 women die from this cancer.

Liver cancer by age, 2008–2012 **G 4.5.1**

Age-specific rate per 100,000 inhabitants

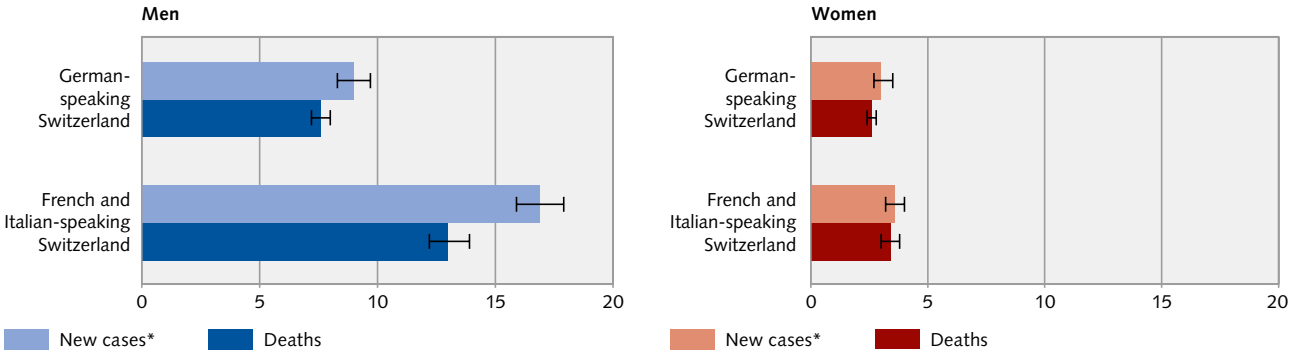


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Liver cancer in regional comparison, 2008–2012 **G 4.5.2**

Rate per 100,000 inhabitants, European standard

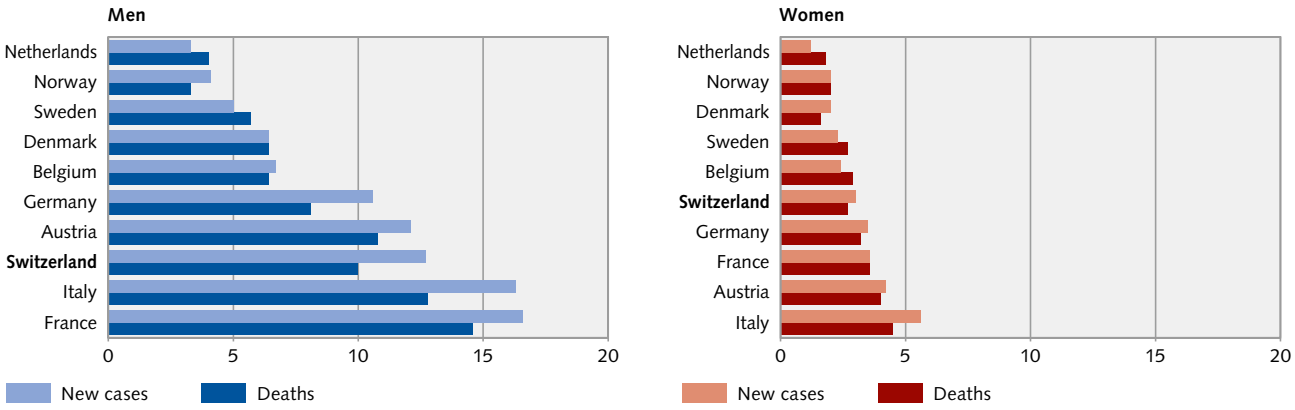


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Liver cancer in international comparison, 2012 G 4.5.3

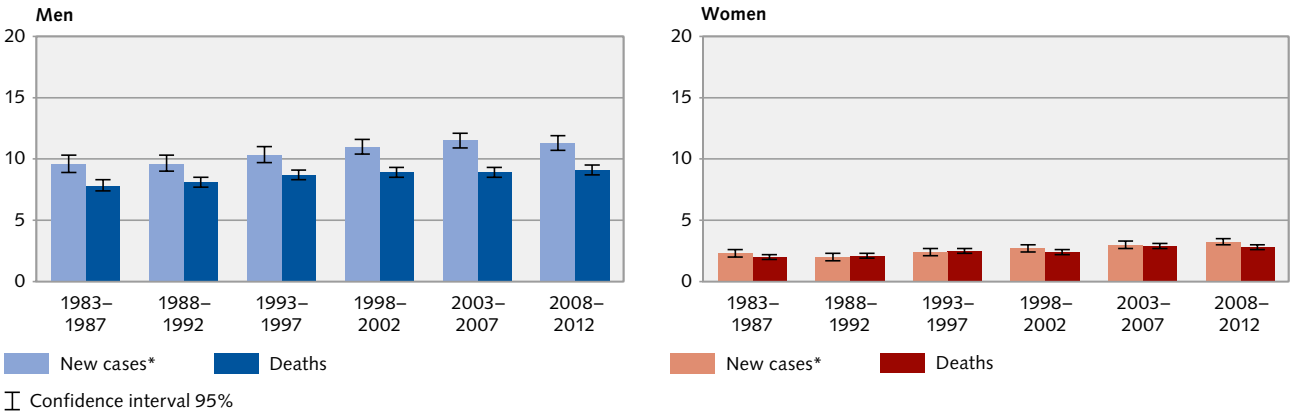
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Liver cancer: Trends over time G 4.5.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Incidence rates of liver cancer in men rise until the age of 84 and in women until the age of 79. The mortality rates continue to rise among both sexes until the age of 84 (G 4.5.1). The median age at diagnosis is 69 for men and 72 for women. The median age at death is 71 and 76 respectively.

Regional and international comparisons

Among men there are substantial regional differences. French and Italian-speaking Switzerland show significantly higher incidence and mortality rates for liver cancer than German-speaking Switzerland. Among women, only the mortality rate in French and Italian-speaking Switzerland is slightly higher than in German-speaking Switzerland (G 4.5.2).

In comparison with the nine selected European countries, Switzerland has the third highest incidence rate after France and Italy and the fourth highest mortality rate (G 4.5.3). Switzerland's rates for women are in the middle range: 5th position in terms of incidence and ranked 6th in terms of mortality.

Trends over time

In the past 30 years an increase in incidence and mortality rates has been observed in both sexes (G 4.5.4). For men the increase in incidence and mortality rates was 18% and 17% respectively. For women the increase for these rates was 39% and 40%. In the past ten years, however, the incidence and mortality rates have not changed significantly.

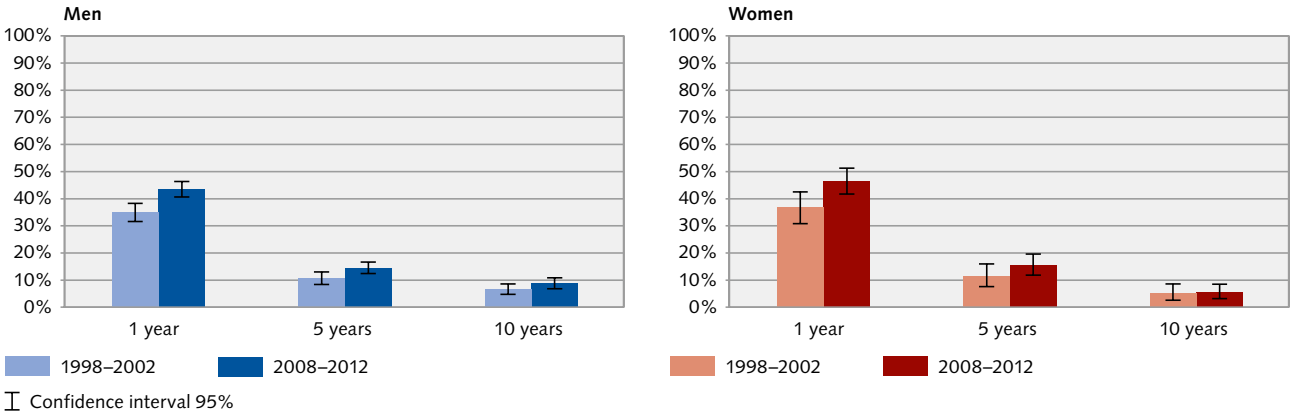
4.5.2 Survival rates and number of cancer survivors

In the period 2008–2012, 13% of male patients and 15% of female patients survived at least five years after having been diagnosed with liver cancer (observed survival rate; T 4.5.1). Taking into account the risk of dying from other causes, the five-year survival rate for men and women is 15% (observed survival rate). Between 1998 and 2002 it was 11%.

Between 1998 and 2012 the ten-year survival rates for men only slightly improved from 6% to 9% and remained stable at the low value of 5% for women (G 4.5.5).

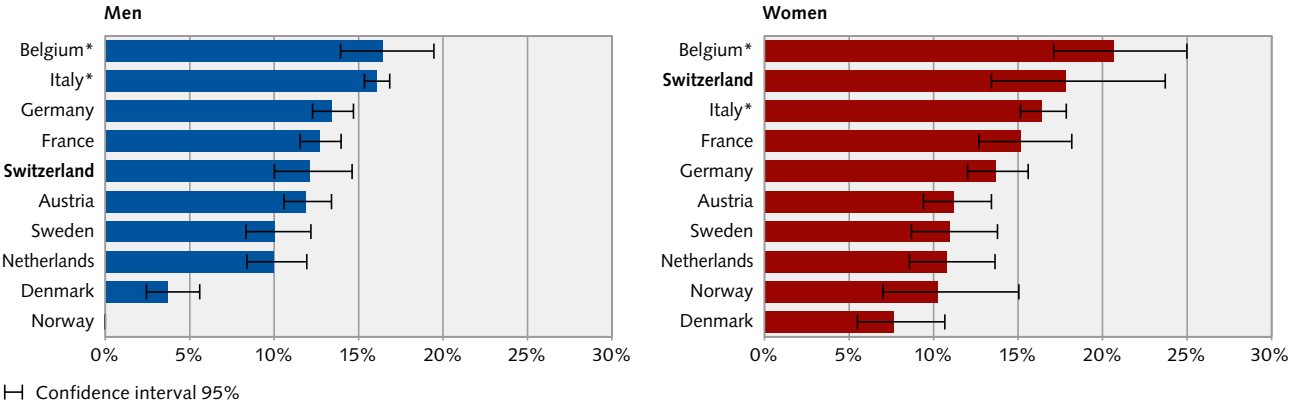
In comparison with the nine selected European countries for the years 2000–2007, Switzerland is holding a middle place regarding survival rates for men. For women Switzerland shows the highest survival rate after Belgium (G 4.5.6).

Liver cancer: Relative survival rate after 1, 5 and 10 years **G 4.5.5**



Source: NICER

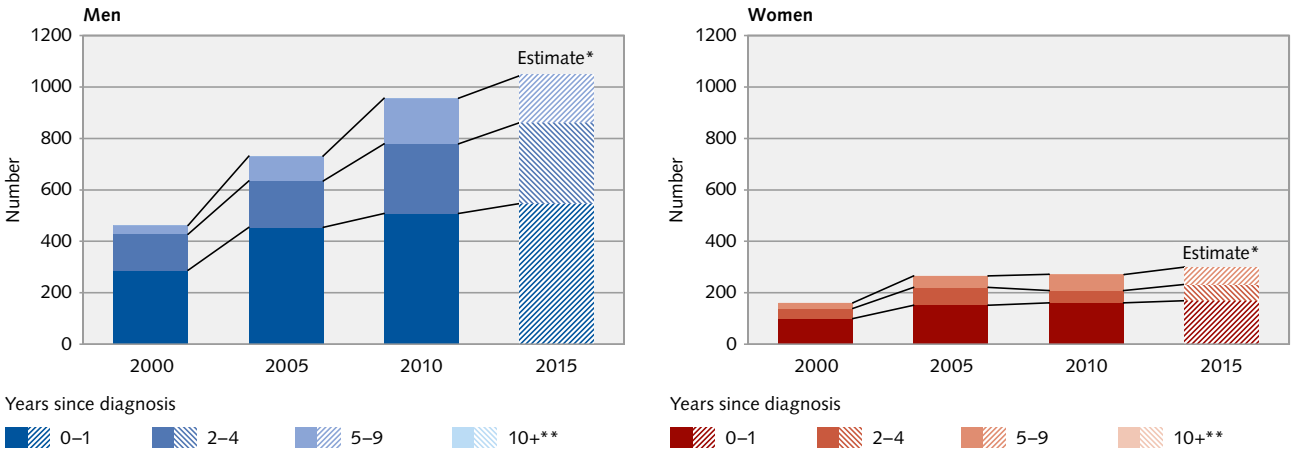
Liver cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.5.6**



* According to the source, the calculated survival rate is exceptionally high with the result that there may be a problem with data collection in this country
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Liver cancer: Number of survivors (prevalence) **G 4.5.7**



* Extrapolation from the years 1981–2010
** Data unavailable

Source: NICER

Whereas in 2000, 600 people were living with a diagnosis made up to 10 years ago, by 2010 this figure had doubled (G 4.5.7). This increase can mainly be attributed to the sharp rise in the older population, i.e. it is primarily a demographic effect. For 2015, an estimated 1350 persons are predicted to be living with a liver cancer diagnosis in Switzerland. For 1100 of these men and women, less than five years will have passed since diagnosis. Due to the poor prognosis, only around 250 patients are expected to have survived five to ten years past diagnosis (G 4.5.7).

4.5.3 Risk factors

The main risk factors for the most common liver cancer, liver cell carcinoma, are chronic liver diseases, which may be related to a chronic hepatitis B or C infection. Toxic exposure to excessive alcohol consumption also increases the risk of liver cancer.[1]

Liver cancer is more common in men. They are more likely to be infected with the hepatitis B or C virus and consume alcohol more frequently but hormones may also play a role.[1] In women, the contraceptive pill with oestrogen and progesterone in combination might increase the risk of liver cancer.[2]

Smoking is another risk factor. The children of smokers also have a higher risk of developing liver cancer.[2] Contact with thorium-232 and its decay products (medical exposure) and plutonium (occupational exposure) is also considered to increase the risk of liver cancer.[2] Other diseases, such as alcoholic or non-alcoholic liver cirrhosis, metabolic syndromes in association with obesity, diabetes or non-alcoholic fatty liver disease or rare genetic metabolic diseases increase the risk of developing liver cancer.[3,1]

Exposure to aflatoxins (fungi) is also one of the main risk factors for liver cancer in developing countries. They are mainly ingested with food, which has been contaminated with Aspergillus mould. Aflatoxins occur most frequently in regions where heat and damp encourage the contamination of stored cereals and pulses (Sub-Saharan Africa, South-East Asia and China).[3,1] Certain liver parasites (clonorchis and opisthorchis) can cause cholangiocarcinomas. The liver tumours which arise from these are seldom seen outside of South-East Asia.[1]

T 4.5.1 Liver cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	541	449	187	187
Number of cases 2015 (estimated)	619	533	211	204
Proportion of all cancer cases, average 2008–2012	2.6%	5.0%	1.1%	2.6%
Crude rate (per 100,000 inhabitants and year), 2008–2012	14.0	11.7	4.7	4.7
Average annual change in the crude rate, 2003–2012	1.2%	1.9%	1.1%	0.5%
Crude rate 2015 (estimated)	15.2	13.1	5.1	4.9
Standardised rate (per 100,000 inhabitants and year), 2008–2012	11.3	9.1	3.2	2.8
Average annual change in the standardised rate, 2003–2012	–0.1%	0.5%	0.9%	0.3%
Median age at diagnosis and death, average 2008–2012	68.8	71.0	72.4	75.9
Lifetime risk, 2008–2012	1.4%	1.2%	0.5%	0.5%
Cumulative risk before the age of 70, 2008–2012	0.6%	0.5%	0.2%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	2034	–	615

	Men	Women
Number of patients (prevalence), on 31.12.2010	*	*
of whom diagnosed within the past 5 years	778	209
Observed 5-year survival rate, on 31.12.2012	13.1%	14.9%
Relative 5-year survival rate, on 31.12.2012	14.4%	15.5%

Sources: NICER – New cases; FSO – Deaths

* Data not available

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.6 Pancreatic cancer

The majority of pancreatic cancers (Pancreas, C25) arise in the glandular tissue, which produces the digestive juices for the intestine.[1]

4.6.1 New cases and mortality

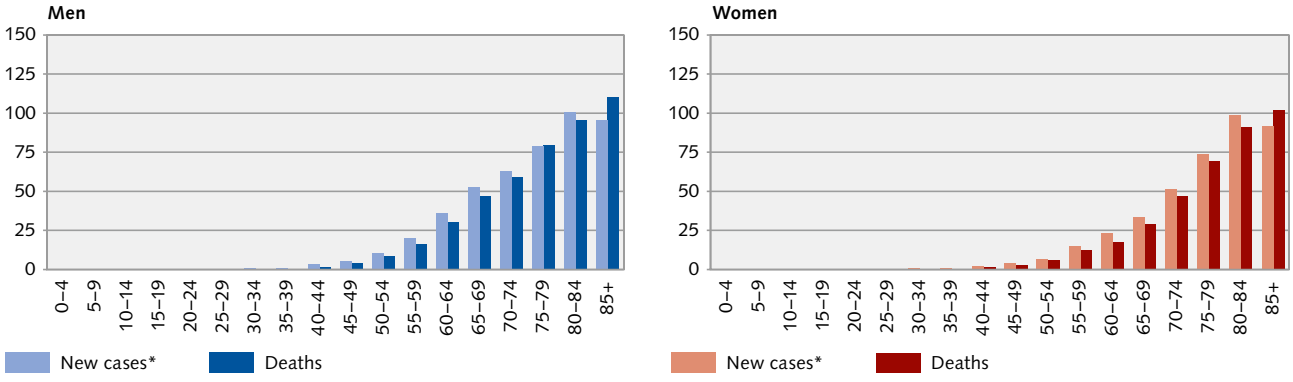
Current situation

Between 2008 and 2012 an average of about 600 men and 630 women were diagnosed with pancreatic cancer each year. This type of cancer accounts for 2.8% of all cancers among men and for 3.6% among women. The lifetime risk of developing pancreatic cancer is 1.6% for men and 1.7% for women (equal to almost 2 out of 100 men and 100 women respectively; T4.6.1). Taking age distribution into account (age-standardised rates) the risk is higher for men than for women (incidence ratio of 1.3:1).

Between 2008 and 2012, on average approximately 540 men and 570 women died per year from pancreatic cancer. This cancer type accounts for 6.0% of all cancer deaths among men and for 7.9% among women. This makes pancreatic cancer the fourth most common cause of cancer death among both sexes. The risk of dying from pancreatic cancer is 1.5% for men and 1.6% for women. This means that approximately 3 out of 200 men and women die from this cancer.

Pancreatic cancer by age, 2008–2012 **G 4.6.1**

Age-specific rate per 100,000 inhabitants

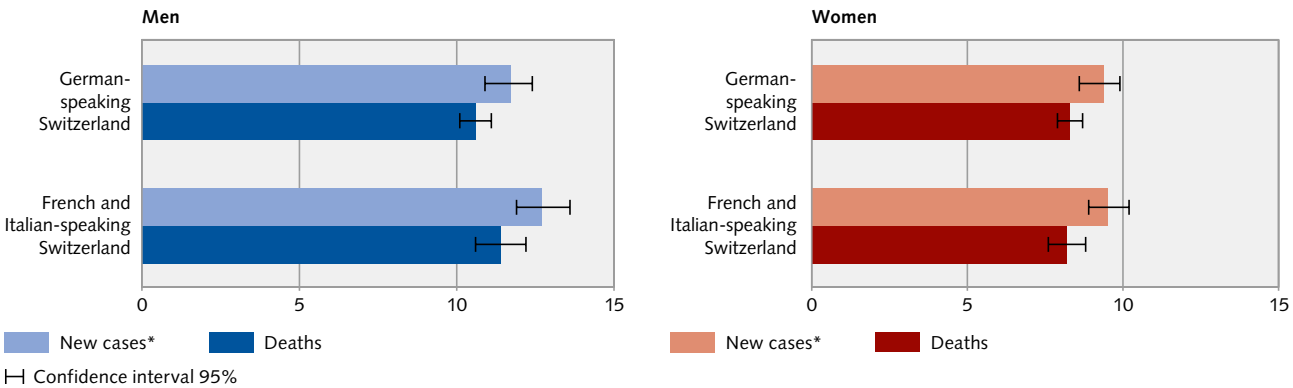


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Pancreatic cancer in regional comparison, 2008–2012 **G 4.6.2**

Rate per 100,000 inhabitants, European standard

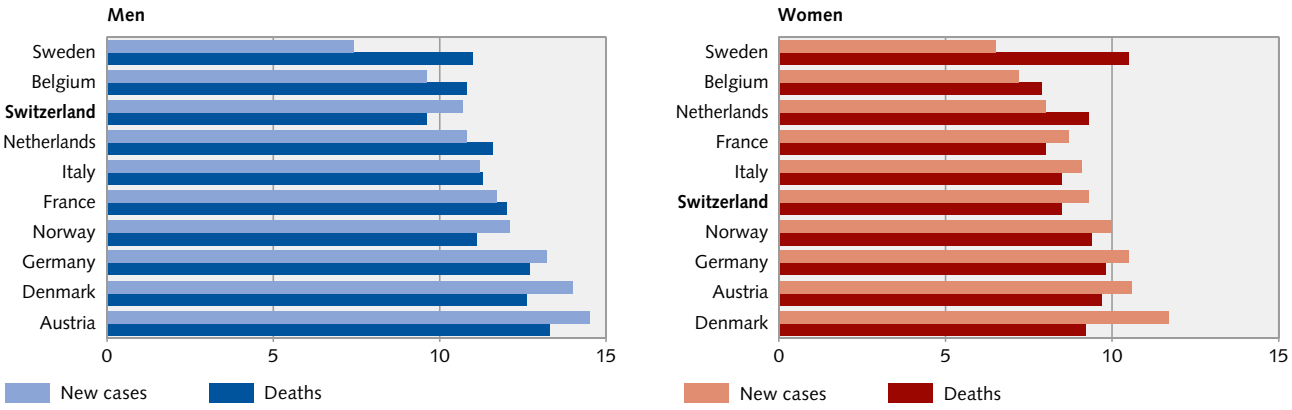


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Pancreatic cancer in international comparison, 2012 G 4.6.3

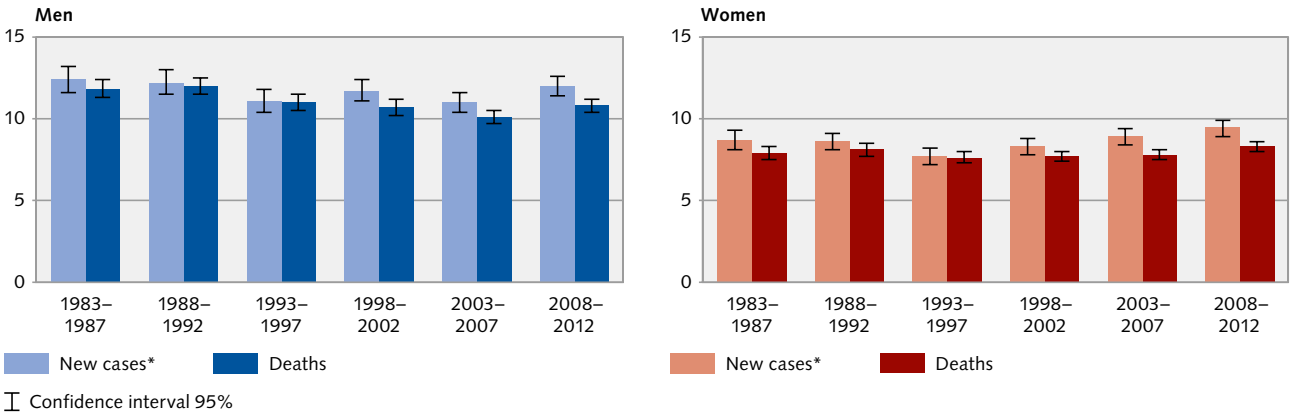
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Pancreatic cancer: Trends over time G 4.6.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

The incidence and mortality rates for pancreatic cancer rise with increasing age. After the age of 84, incidence rates stabilise (G 4.6.1). The median age at diagnosis is 70 for men and 76 for women. The median age at death is 72 for men and 77 for women.

Regional and international comparisons

There are no differences between German-speaking Switzerland and French and Italian-speaking Switzerland (G 4.6.2).

Among the nine European countries compared with Switzerland, incidence rates for men are low. Only Belgium and Sweden have lower incidence rates than Switzerland. For women, Switzerland is situated in the middle, with five countries having lower incidence rates than Switzerland (G 4.6.3).

Mortality rates for men in Switzerland are the lowest in comparison with the European countries selected. Mortality rates for women are lower in Italy, France and Belgium than in Switzerland (G 4.6.3).

Trends over time

Between 1983 and 2012 the incidence and mortality rates for both men and women remained largely stable (G 4.6.4).

4.6.2 Survival rates and number of survivors

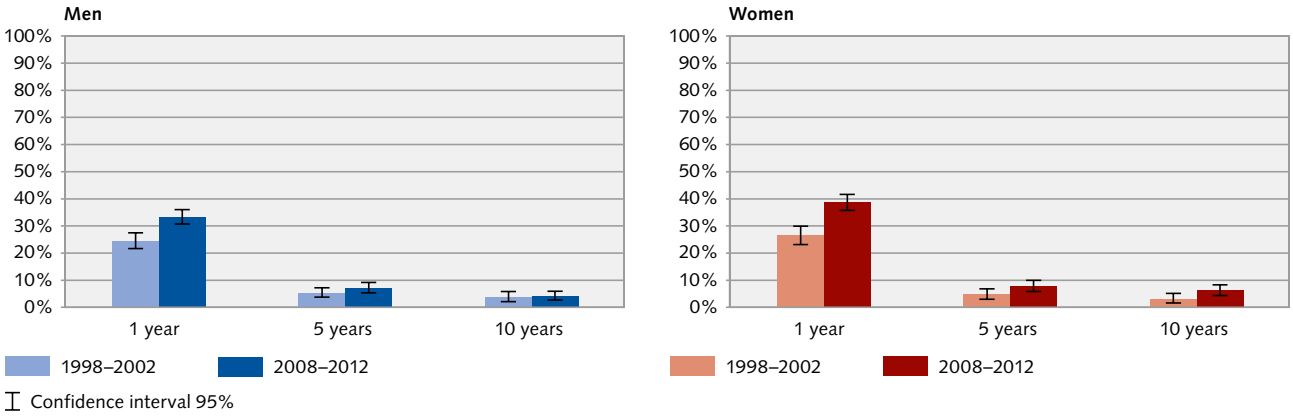
In the period 2008–2012 roughly 7% of male and female patients survived at least five years after having been diagnosed with pancreatic cancer (observed survival rate; T4.6.1). Taking into account the risk of dying from other causes, the five-year survival rate for men and women is between 7% to 8% (relative survival rate). Between 1998 and 2002 it was 5% (G4.6.5).

The ten-year survival rates of only 4% for men did not improve between 1998 and 2012 and for women rose only slightly from 3% to 6% (G4.6.5). This makes pancreatic cancer one of the cancer diagnoses with the worst prognosis.

When considering the nine other European countries selected for this report for comparison within the 2000–2007 period, Switzerland occupies seventh place for men and sixth place for women (G4.6.6).

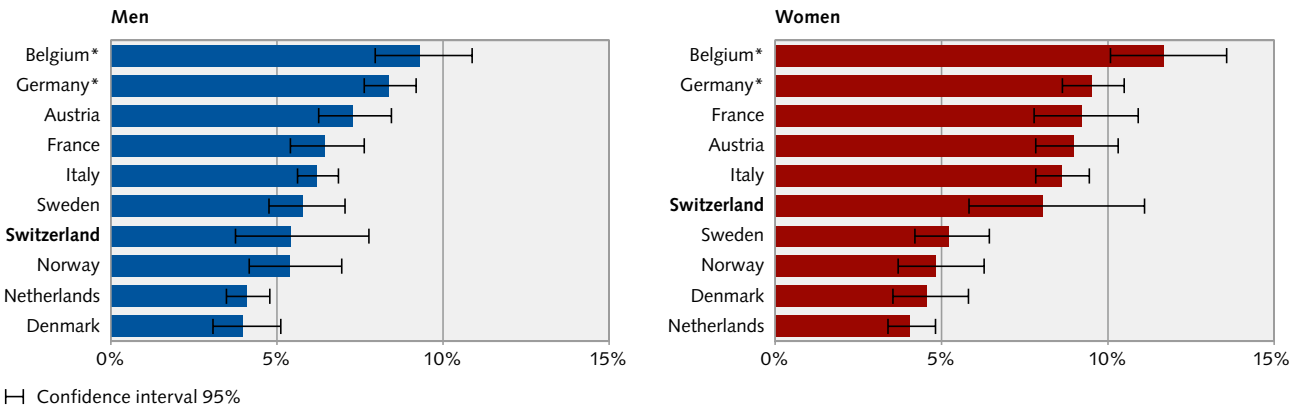
Whereas in 2000 there were 750 people living with a pancreatic cancer diagnosis made within the past 10 years, in 2010 this figure had risen to 1200, i.e. an increase of 60% (G. 4.6.7). This increase can mainly be attributed to a sharp rise in the older population, i.e. it is primarily a demographic effect. For 2015, an estimated 1400 men and women are predicted to be living with or after a pancreatic cancer diagnosis in Switzerland. For 1200 of these patients, less than 5 years will have passed since diagnosis. Due to the very poor prognosis, there are only 200 survivors five to ten years past diagnosis of pancreatic cancer (G4.6.7).

Pancreatic cancer: Relative survival rate after 1, 5 and 10 years **G 4.6.5**



Source: NICER

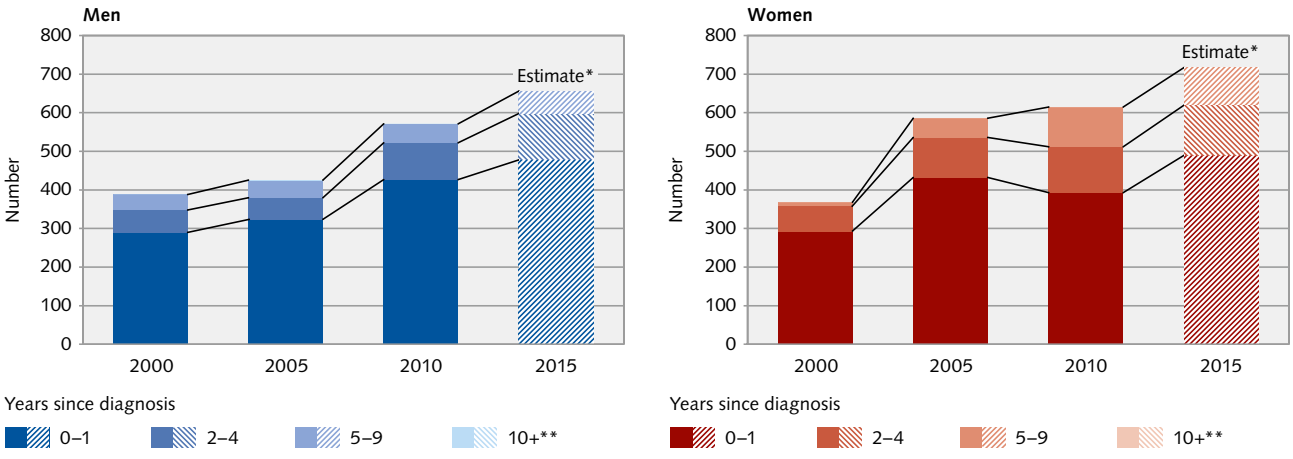
Pancreatic cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.6.6**



* According to the source, the calculated survival rate is exceptionally high with the result that there may be a problem with data collection in this country
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Pancreatic cancer: Number of survivors (prevalence) **G 4.6.7**



* Extrapolation from the years 1981–2010
** Data unavailable

Source: NICER

4.6.3 Risk factors

Smoking, being overweight, diabetes as well as inflammation of the pancreas are risk factors for pancreatic cancer. Some 20–25% of all pancreatic cancer cases are attributable to smoking. The increased risk of pancreatic cancer among men could, therefore, be explained by the relatively higher rates of tobacco consumption by men. Greater body height in adults is also associated with an increased risk of developing pancreatic cancer, however, the causes for this association are not clear. Lastly, in some 10% of cases, family background plays a certain role.[1,2]

T 4.6.1 Pancreatic cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	593	541	629	574
Number of cases 2015 (estimated)	718	637	725	681
Proportion of all cancer cases, average 2008–2012	2.8%	6.0%	3.6%	7.9%
Crude rate (per 100,000 inhabitants and year), 2008–2012	15.4	14.1	15.8	14.5
Average annual change in the crude rate, 2003–2012	2.6%	2.0%	2.1%	2.4%
Crude rate 2015 (estimated)	17.6	15.7	17.4	16.4
Standardised rate (per 100,000 inhabitants and year), 2008–2012	12.0	10.8	9.5	8.3
Average annual change in the standardised rate, 2003–2012	1.7%	0.8%	0.8%	1.5%
Median age at diagnosis and death, average 2008–2012	70.3	71.8	76.2	77.4
Lifetime risk, 2008–2012	1.6%	1.5%	1.7%	1.6%
Cumulative risk before the age of 70, 2008–2012	0.6%	0.5%	0.4%	0.4%
Years of potential life lost before the age of 70, average 2008–2012	–	2161	–	1503

	Men	Women
Number of patients (prevalence), on 31.12.2010	*	*
of whom diagnosed within the past 5 years	522	512
Observed 5-year survival rate, on 31.12.2012	6.7%	7.4%
Relative 5-year survival rate, on 31.12.2012	7.1%	7.7%

Sources: NICER – New cases; FSO – Deaths

* Data not available

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.7 Laryngeal cancer

Laryngeal cancer (larynx carcinoma, C32) is a disease in which malignant tumours form predominantly in the larynx.[1]

4.7.1 New cases and mortality

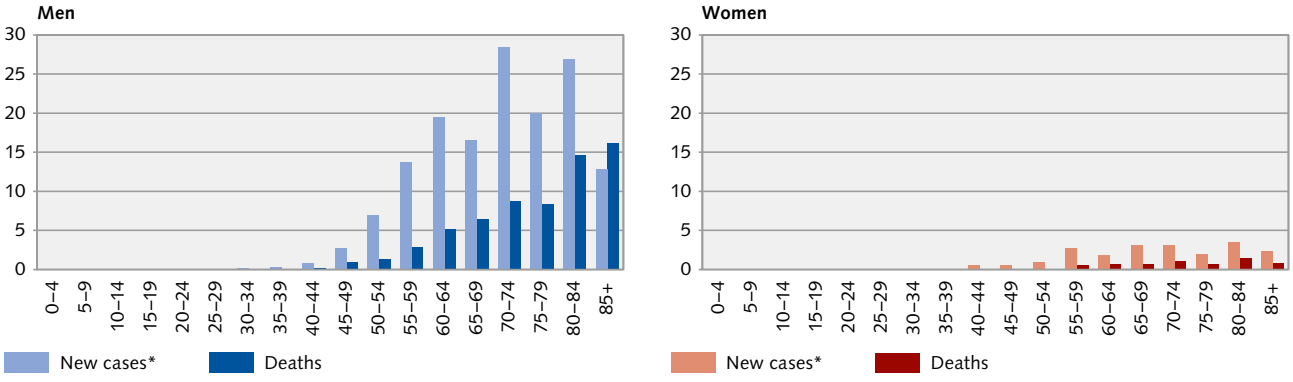
Current situation

Between 2008 and 2012 an average of about 230 men and 40 women were diagnosed with laryngeal cancer each year. This type of cancer accounts for 1.1% of all cancer among men and for 0.2% among women. The lifetime risk of developing laryngeal cancer is 0.6% for men and 0.1% for women (equal to almost 1 out of 200 men and 1 out of 1000 women; T 4.7.1). This type of cancer is much more common among men than among women (incidence ratio of 7:1).

In the same period, an average of approximately 80 men and 10 women died per year from laryngeal cancer. This cancer type accounts for 0.9% of all cancer deaths among men and for 0.1% among women. The risk of dying from laryngeal cancer is 0.2% for men and less than 0.1% for women. This means that approximately 1 out of 500 men and fewer than 1 out of 1000 women die from this cancer.

Laryngeal cancer by age, 2008–2012 **G 4.7.1**

Age-specific rate per 100,000 inhabitants

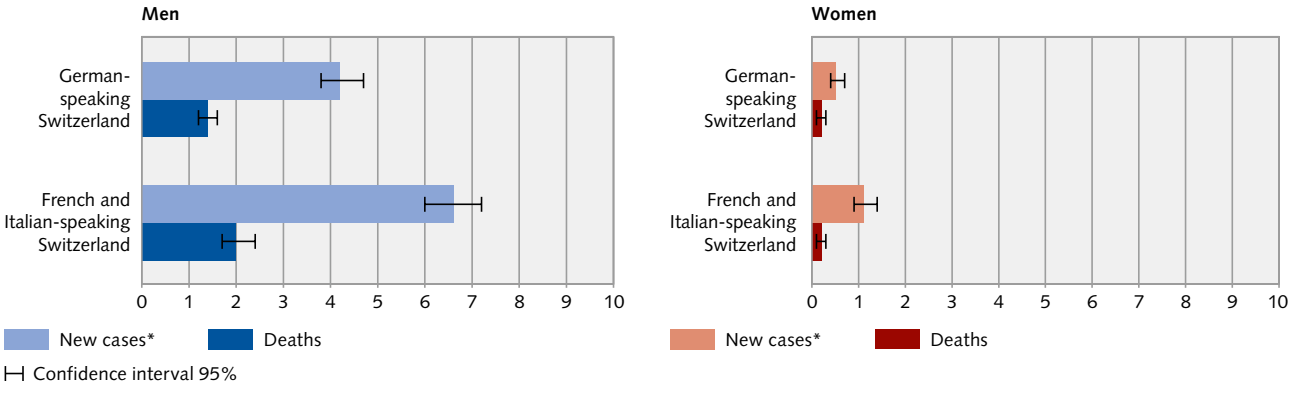


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Laryngeal cancer in regional comparison, 2008–2012 **G 4.7.2**

Rate per 100,000 inhabitants, European standard

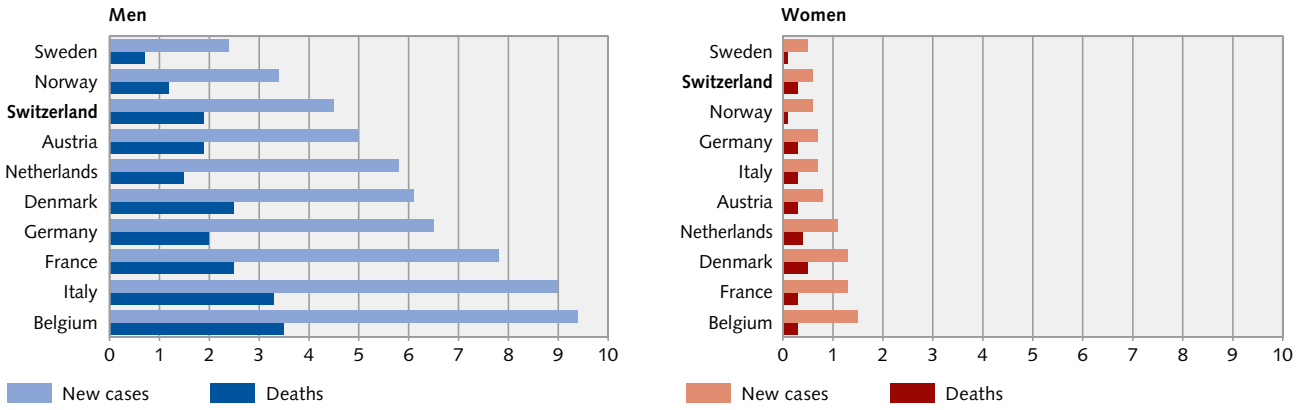


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Laryngeal cancer in international comparison, 2012 G 4.7.3

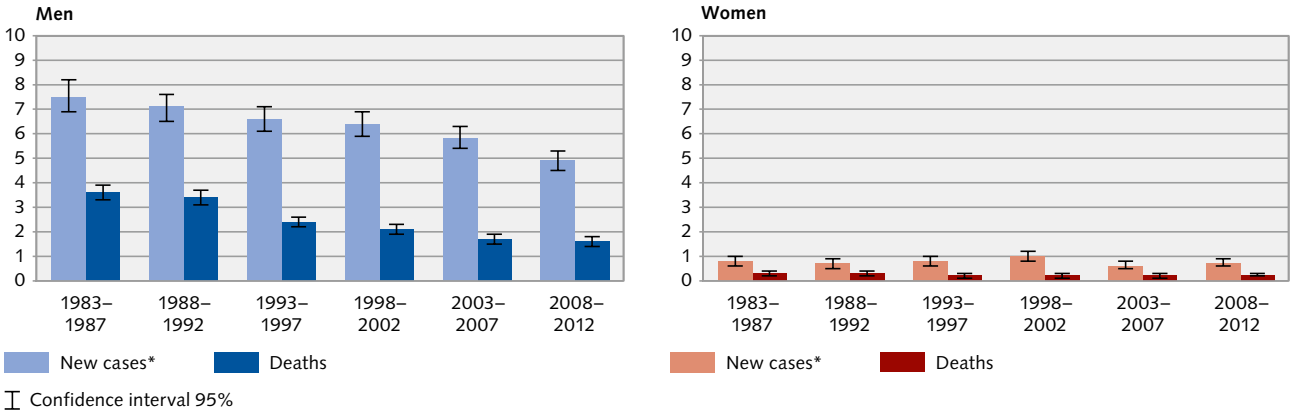
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Laryngeal cancer: Trends over time G 4.7.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Laryngeal cancer incidence rates are higher among older men, peaking among 70 to 74 year-olds and 80 to 84 year-olds. Among women incidence rates rise until the age of 69. After the age of 70, incidence rates stabilise.

Deaths from laryngeal cancer can already be observed in the 40 to 44 age group. The risk of dying from laryngeal cancer rises with increasing age in men. In the women, the age groups between 55 and 85 years show similar mortality rates with few deaths (G 4.7.1).

The median age at diagnosis of is 66 for men and 67 for women. The average age at death is 71 for both sexes.

Regional and international comparisons

Incidence- and mortality rates are markedly higher among men in French and Italian-speaking Switzerland than in German-speaking Switzerland. For women, incidence rates are also higher in French and Italian-speaking Switzerland than in German-speaking Switzerland. However, there are no differences in female mortality rates between the linguistic regions shown (G 4.7.2).

Compared with the nine European countries, incidence rates for men are low in Switzerland. Only Sweden and Norway show lower incidence rates than Switzerland. Together with five other countries, Switzerland shows an incidence rate for women of less than 0.8 per 100,000 person-years.

With regard to mortality in men, Switzerland is situated in the middle of the ten countries compared. The Netherlands, Norway and Sweden show lower mortality rates. For women, mortality rates in Switzerland are comparable to those in Belgium, France, Austria, Germany and Italy. Norway and Sweden show lower rates than Switzerland (G 4.7.3).

Trends over time

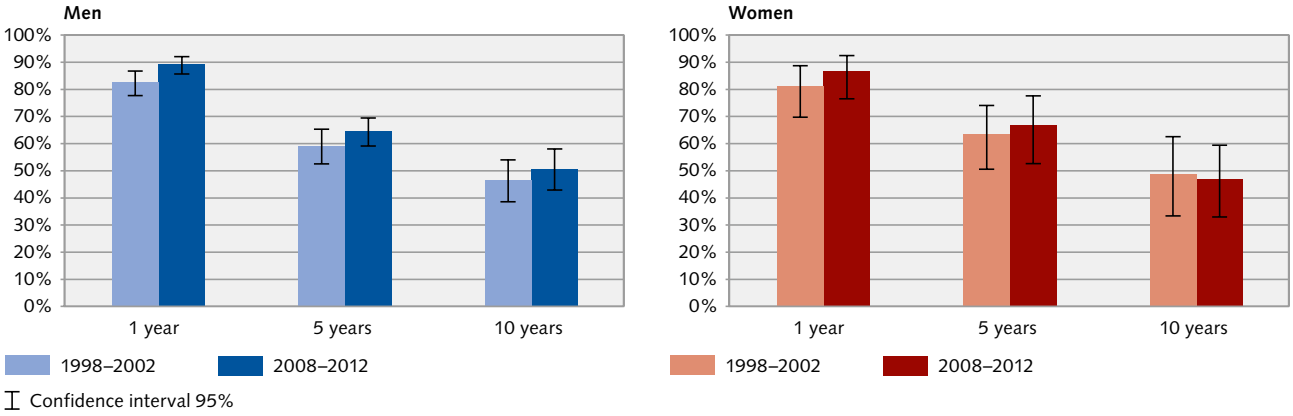
Between 1983 and 2012 a marked decline of 35% and 56% respectively was observed in incidence and mortality rates among men. Incidence and mortality rates among women remained stable at a low level (G 4.7.4).

4.7.2 Survival rates

In the period 2008–2012 roughly 57% of male patients and 61% of female patients survived at least five years after having been diagnosed with laryngeal cancer (observed survival rate; T 4.7.1). Taking into account the risk of dying from other causes, the five-year survival rate for men is 65% and 67% for women (relative survival rate). Between 1998 and 2002 it was 59% for men and 64% for women (G 4.7.5).

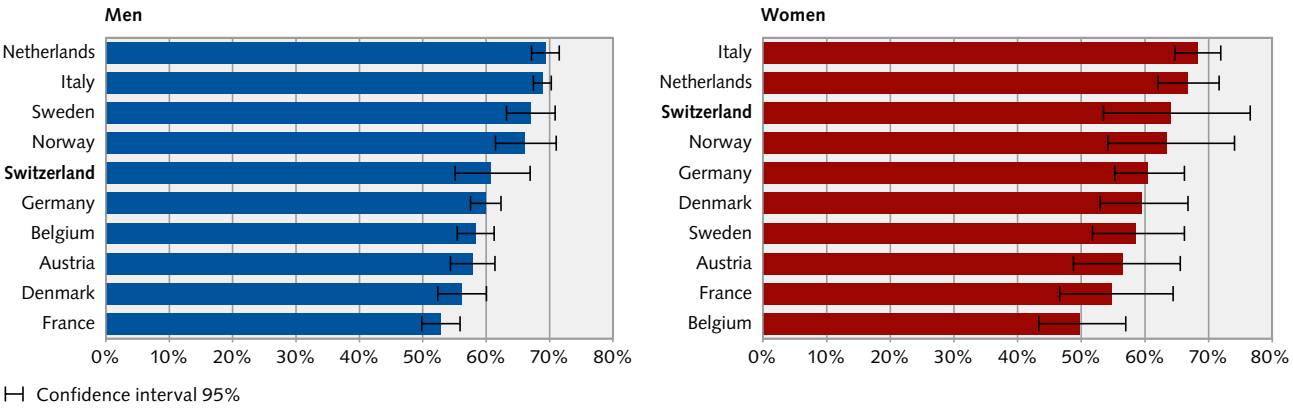
Between 1998 and 2012 the ten-year survival rate improved from 46% to 51% for men and remained at a similar level for women (approximately 48%) (G 4.7.5).

Laryngeal cancer: Relative survival rate after 1, 5 and 10 years **G 4.7.5**



Source: NICER

Laryngeal cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.7.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.7.1 Laryngeal cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	229	79	38	10
Number of cases 2015 (estimated)	231	83	48	13
Proportion of all cancer cases, average 2008–2012	1.1%	0.9%	0.2%	0.1%
Crude rate (per 100,000 inhabitants and year), 2008–2012	5.9	2.1	0.9	0.3
Average annual change in the crude rate, 2003–2012	–1.8%	–0.3%	3.2%	–0.1%
Crude rate 2015 (estimated)	5.7	2.0	1.2	0.3
Standardised rate (per 100,000 inhabitants and year), 2008–2012	4.9	1.6	0.7	0.2
Average annual change in the standardised rate, 2003–2012	–2.9%	–1.5%	2.4%	–0.7%
Median age at diagnosis and death, average 2008–2012	65.8	70.6	66.9	71.4
Lifetime risk, 2008–2012	0.6%	0.2%	0.1%	0.1%
Cumulative risk before the age of 70, 2008–2012	0.3%	0.1%	0.1%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	353	–	39
	Men		**Women**	
Observed 5-year survival rate, on 31.12.2012	56.9%		61.2%	
Relative 5-year survival rate, on 31.12.2012	64.6%		66.8%	

Sources: NICER – New cases; FSO – Deaths

In the 2000–2007 period, in comparison with the nine European countries selected for this report, Switzerland occupied fifth place for its survival rate for laryngeal cancer in men and third place for women (G 4.7.6).

4.7.3 Risk factors

Smoking and alcohol consumption are the most important risk factors for this type of cancer. The high incidence rates for men may be explained by relatively high rates of tobacco and alcohol consumption. Smoking and drinking combined increase the risk of developing this cancer. The longer one smokes, the higher the risk of developing this cancer.[1,2]

Furthermore, heartburn (acid reflux), occupational exposure to hydrocarbons, isopropyl alcohol, sulphuric acid, diesel exhaust, acidic vapours (sulphuric acid, yperite) are risk factors for laryngeal cancer.[1,2]

References

1 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

2 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

4.8 Lung cancer

4.8.1 New cases and mortality

Current situation

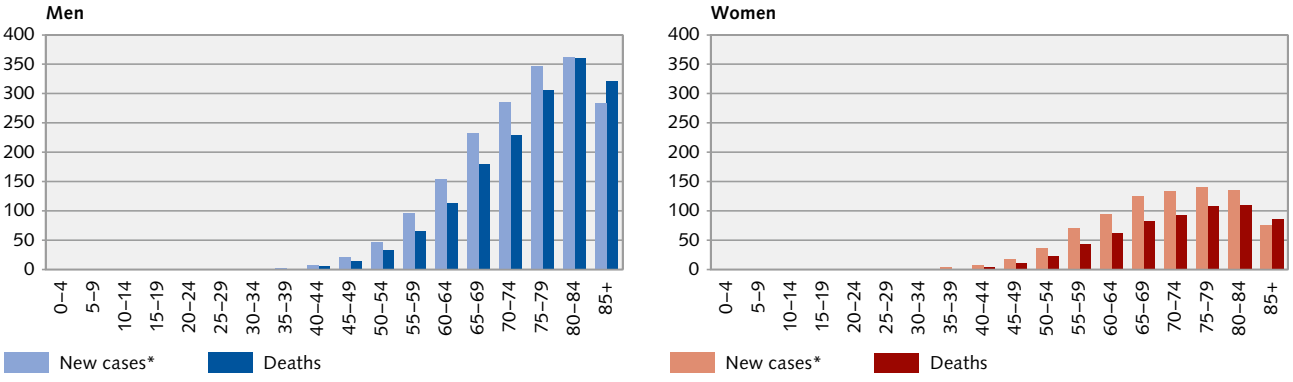
Lung cancer is a malignant neoplasm in the respiratory tract and lungs (C33, C34). A distinction is made between small cell and non-small cell malignant neoplasms). Small cell neoplasms are very aggressive and spread very quickly but form only a small percentage of all lung cancers.[1]

Between 2008 and 2012 an average of some 2500 men and 1500 women were diagnosed with lung cancer each year. Lung cancer accounts for 11.8% of all types of cancer among men and for 8.5% among women. It is the second most common cancer in men and the third most common in women. The lifetime risk of developing lung cancer is 6.5% for men and 3.6% for women (equal to almost 7 out of 100 men and 4 out of 100 women; T4.8.1). Lung cancer is more common among men than among women (incidence ratio of 1.8:1).

In the period 2008–2012, on average 2000 men and 1100 women died per year from lung cancer. Lung cancer is the most common cause of cancer death among men, accounting for 22.3% of all cancer deaths and among women (14.9%) the second most common. The risk of dying from lung cancer is 5.5% for men and 2.7% for women. This means that almost 6 out of 100 men and 3 out of 100 women die from this cancer.

Lung cancer by age, 2008–2012 **G 4.8.1**

Age-specific rate per 100,000 inhabitants

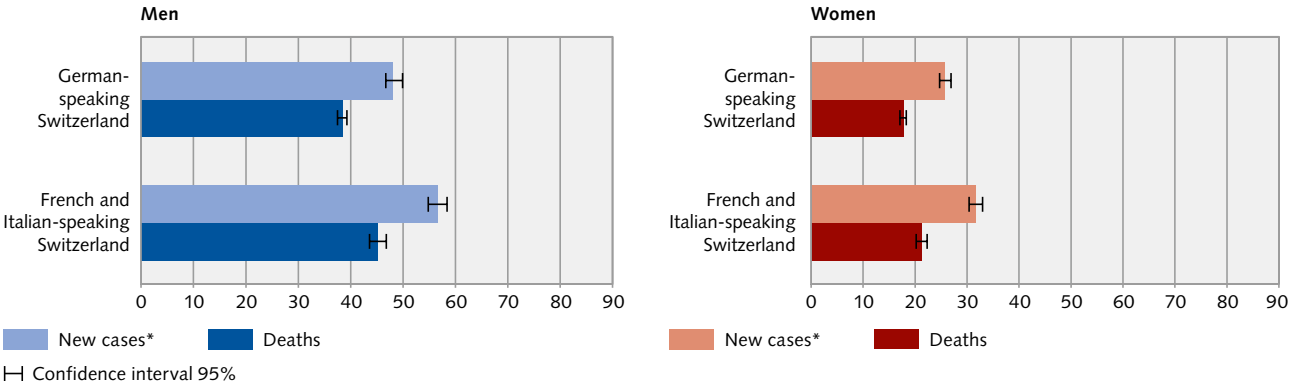


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Lung cancer in regional comparison, 2008–2012 **G 4.8.2**

Rate per 100,000 inhabitants, European standard

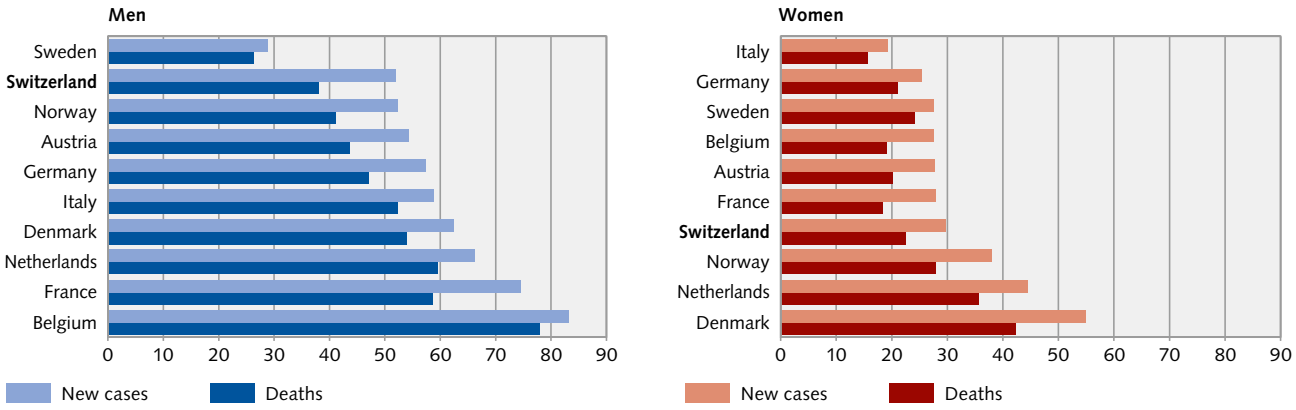


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Lung cancer in international comparison, 2012 G 4.8.3

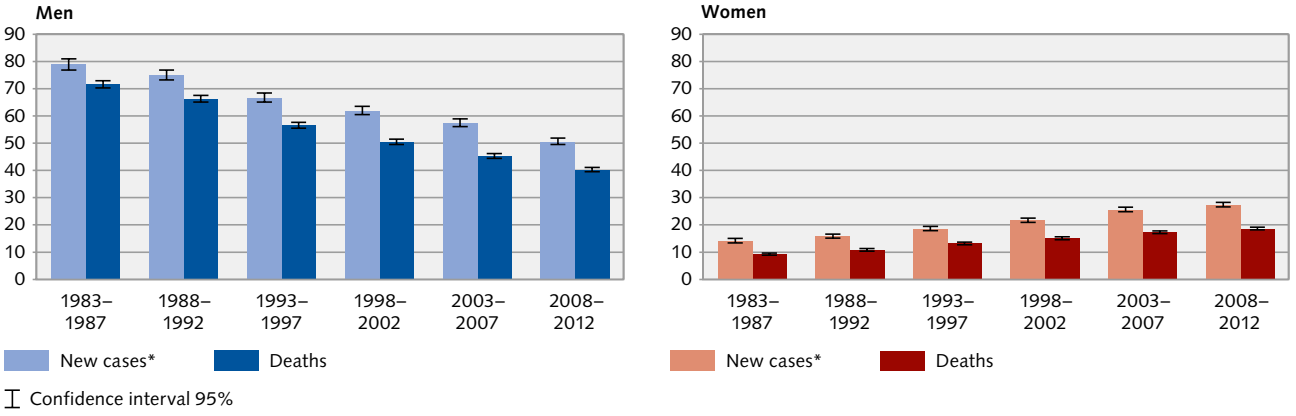
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Lung cancer: Trends over time G 4.8.4

Rate per 100,000 inhabitants, European standard



Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Among men lung cancer incidence rates increase until the age of 84 after which they decline. Among women incidence rates rise until the age of 79 and then decline. The mortality rate continues to rise in both sexes until the age of 84. After this age, a decline is observed (G 4.8.1).

The median age at diagnosis of lung cancer is 70 for men and 69 for women. The median age at death from lung cancer is 72 for men and 70 for women.

Regional and international comparisons

Incidence and mortality rates for both sexes are higher in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.8.2).

Among the nine European countries compared with Switzerland, only Sweden has lower incidence and mortality rates for men than Switzerland. Incidence rates for women are relatively high in comparison with the selected European countries. Of the nine countries compared with Switzerland, six countries have lower incidence rates than Switzerland. Swiss mortality rates for women, however, are comparable with rates from the selected European countries of which five show lower mortality rates for women (G 4.8.3).

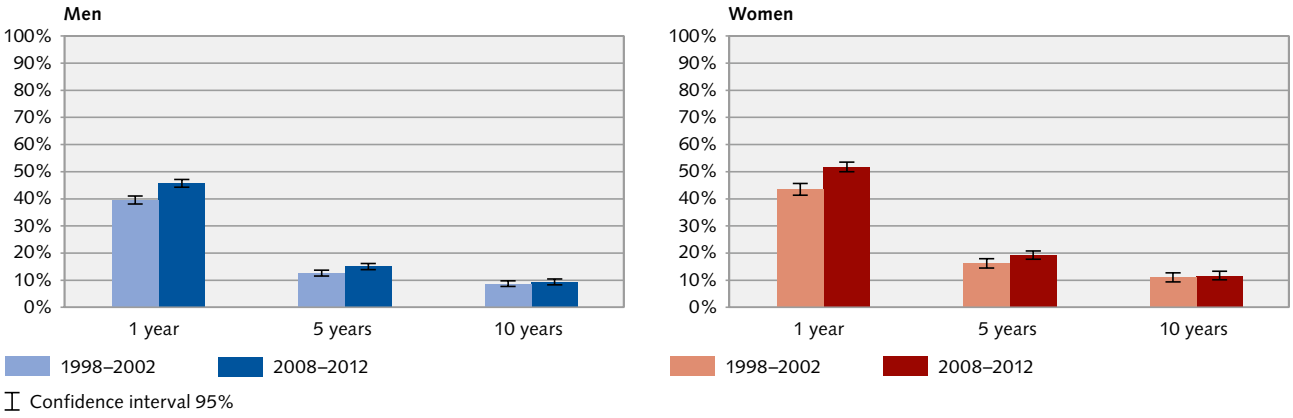
Trends over time

Between 1983 and 2012 a marked and continuous decrease of 36% and 44% respectively was observed in incidence and mortality rates among men. In contrast, both rates have doubled among women over the same period of time (G 4.8.4). This trend can be seen in all age groups except for women aged between 20 and 49. The highest level among women of this age group was observed in 2003–2007. A slight decline in incidence rates could be observed in the last period 2008–2012.

4.8.2 Survival rates and number of survivors

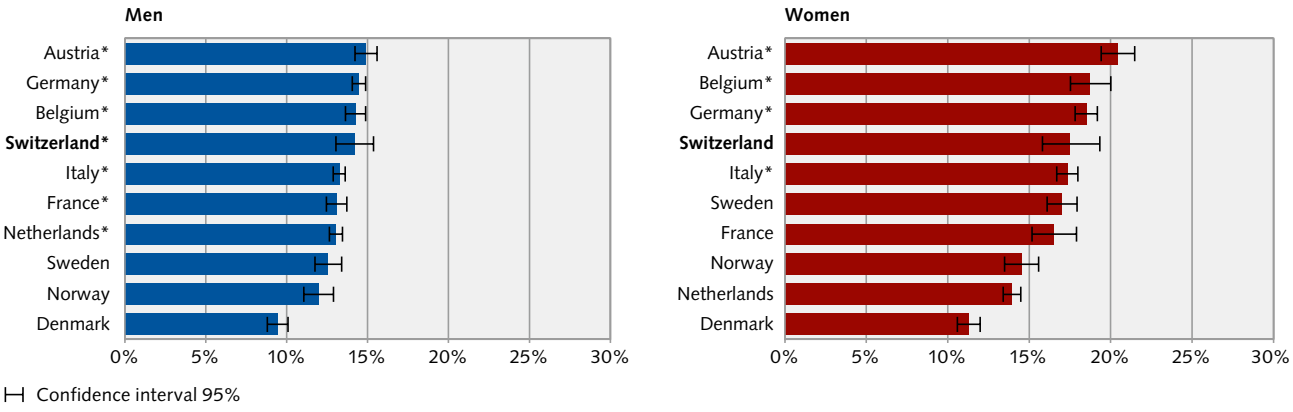
In the period 2008–2012 roughly 14% of male patients and 18% of female patients survived at least five years after having been diagnosed with lung cancer (observed survival rate; T 4.8.1). Taking into account the risk of dying from other causes, the five-year survival rate for lung cancer is 15% among men and 19% among women (relative survival rate). Between 1998 and 2002 it was 13% for men and 16% for women (G 4.8.5). Between 1998 and 2012 the ten-year survival rates remained stable at 9% (men) and 11% (women) (G 4.8.5).

Lung cancer: Relative survival rate after 1, 5 and 10 years **G 4.8.5**



Source: NICER

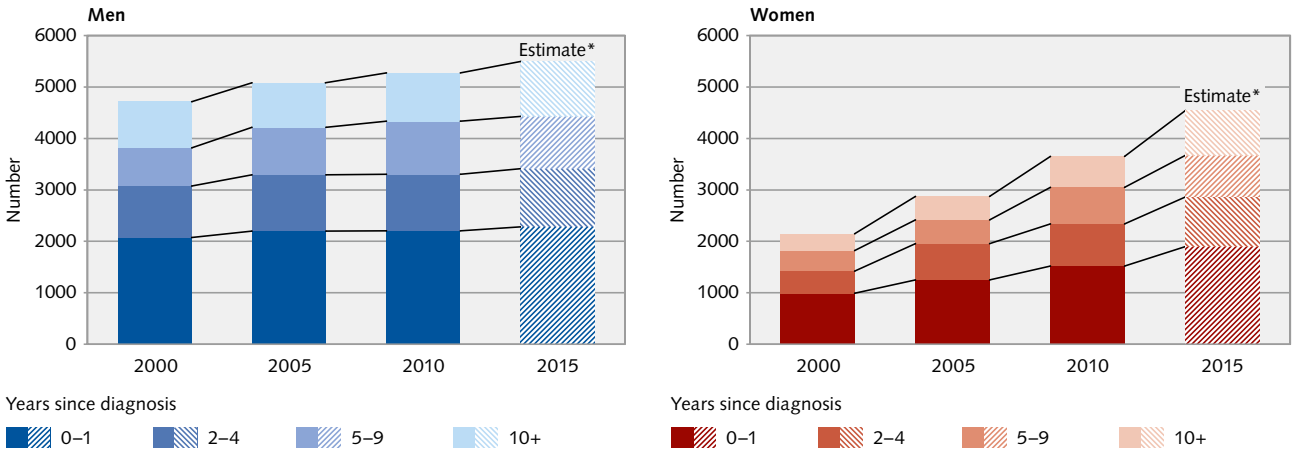
Lung cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.8.6**



* According to the source, the calculated survival rate is exceptionally high with the result that there may be a problem with data collection in this country
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Lung cancer: Number of survivors (prevalence) **G 4.8.7**



* Extrapolation from the years 1981–2010

Source: NICER

An international comparison for the years 2000–2007 shows that survival for lung cancer patients is highest in Switzerland, together with Austria, Germany and Belgium (G 4.8.6).

Whereas there were 6800 lung cancer survivors in 2010, this figure had risen to 8900 in 2010 (G 4.8.7). The proportion of female lung cancer survivors rose from 31% to 41%. For 2015, 10,000 lung cancer survivors are estimated, with 45% being women. In 2015, around 3700 men and women may be considered as long-term lung cancer survivors (i.e. having survived lung cancer 5 years and more) (G 4.8.7).

4.8.3 Risk factors

Throughout the world, the main causes of lung cancer are smoking and passive smoking. Smoking is responsible for 90% of all lung cancer cases in the developed world. Other risk factors for lung cancer are radon exposure, occupational exposure to polycyclic aromatic hydrocarbons, asbestos, silica dust, metals (beryllium, arsenic, chrome, nickel), air pollution from fine particles (<PM10), exhaust from diesel engines as well as burning solid fuels at home.[1] Further risk factors for lung cancer are exposure to X-rays, gamma rays and plutonium radiation.[2]

T 4.8.1 Lung cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	2463	2010	1509	1079
Number of cases 2015 (estimated)	2500	2055	1762	1322
Proportion of all cancer cases, average 2008–2012	11.8%	22.3%	8.5%	14.9%
Crude rate (per 100,000 inhabitants and year), 2008–2012	63.9	52.2	38.0	27.1
Average annual change in the crude rate, 2003–2012	–1.1%	–0.9%	2.2%	3.0%
Crude rate 2015 (estimated)	61.5	50.5	42.4	31.8
Standardised rate (per 100,000 inhabitants and year), 2008–2012	50.5	40.3	27.4	18.7
Average annual change in the standardised rate, 2003–2012	–2.4%	–2.4%	1.3%	1.9%
Median age at diagnosis and death, average 2008–2012	69.7	71.5	68.5	70.3
Lifetime risk, 2008–2012	6.5%	5.5%	3.6%	2.7%
Cumulative risk before the age of 70, 2008–2012	2.8%	2.1%	1.8%	1.1%
Years of potential life lost before the age of 70, average 2008–2012	–	7969	–	5199

	Men	Women
Number of patients (prevalence), on 31.12.2010	5274	3653
of whom diagnosed within the past 5 years	3303	2341
Observed 5-year survival rate, on 31.12.2012	13.6%	18.1%
Relative 5-year survival rate, on 31.12.2012	15.0%	19.2%

Sources: NICER – New cases; FSO – Deaths

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.9 Pleural mesothelioma

4.9.1 New cases and mortality

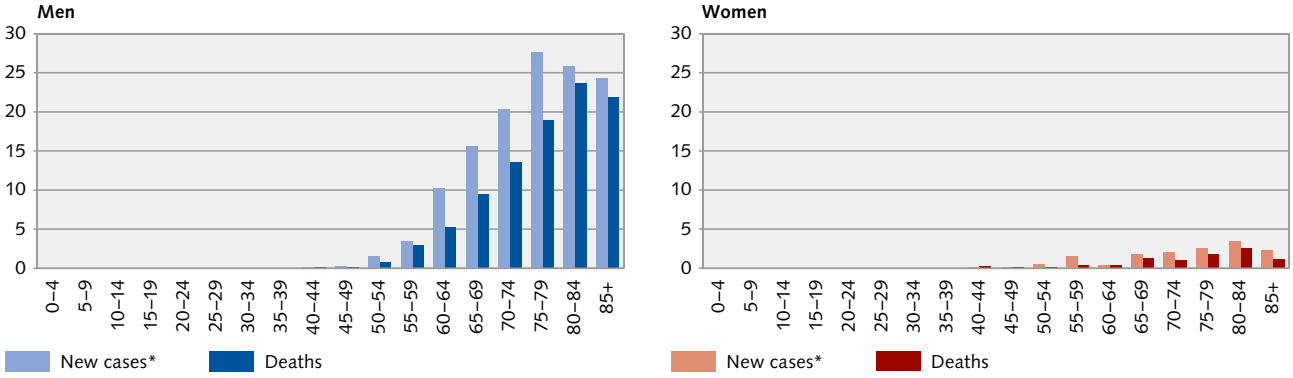
Current situation

Between 2008 and 2012 an average of 160 men were diagnosed with a pleural mesothelioma each year. With an average of 25 cases each year, women are affected much less frequently. The lifetime risk of developing a pleural mesothelioma is 0.4% for men and 0.1% for women (equal to almost 4 out of 1000 men and only 1 out of 1000 women; T 4.9.1). In the same period, some 110 men died from it each year (15 women). The risk of dying from a pleural mesothelioma is 0.3% for men and less than 0.1% for women. This means that approximately 3 out of 1000 men and fewer than 1 out of 1000 women die from this cancer.

The information in this chapter refers to mesothelioma of pleura (C45.0) as well as to other malignant neoplasms of pleura (C38.4). The pleura covers the lungs. In rare cases not considered here, mesotheliomas can also occur in the peritoneum which lines the abdominal cavity and covers its organs (C45.1), in the pericardium which envelopes the heart (C45.2) or in other sites (C45.7). Also included are mesotheliomas with unspecified sites (45.9) (see also chapter 4.23).

Pleural mesothelioma by age, 2008–2012 **G 4.9.1**

Age-specific rate per 100,000 inhabitants

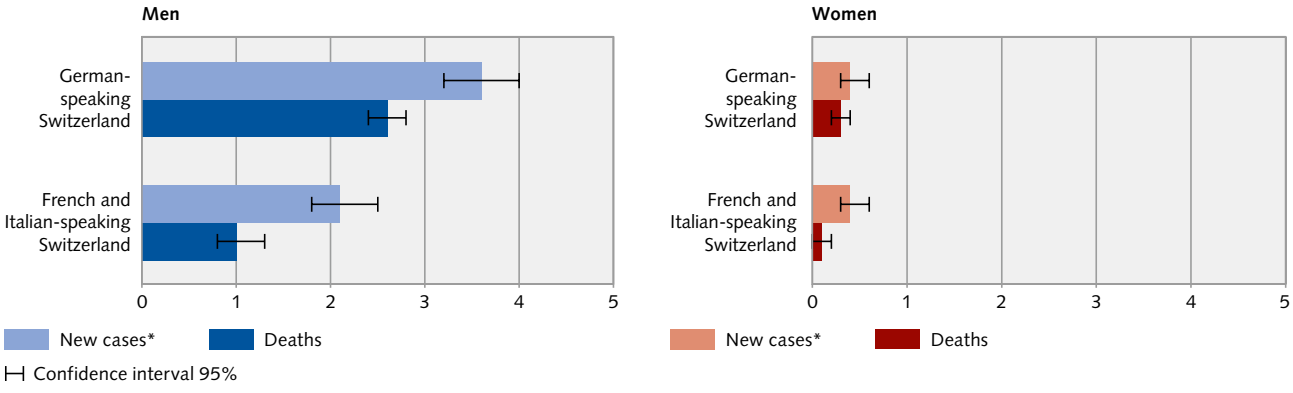


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Pleural mesothelioma in regional comparison, 2008–2012 **G 4.9.2**

Rate per 100,000 inhabitants, European standard

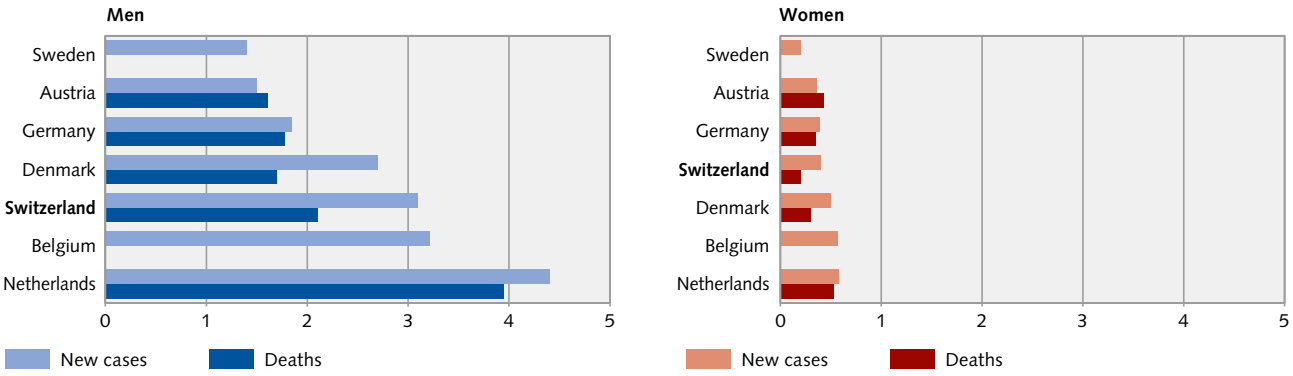


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Mesothelioma in international comparison, 2011–2012* G 4.9.3

Rate per 100,000 inhabitants, European standard

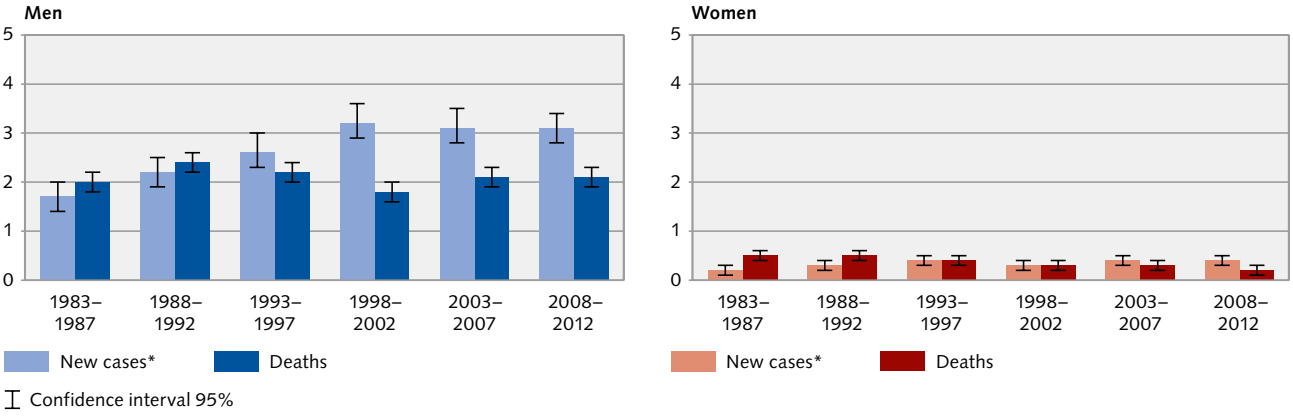


* Corresponds to the ICD-10 Code C45 with the exception of Sweden and Denmark (C38.4). Data from FSO/NICER 2008-2012 were used for Switzerland (C38.4, C45.0)
Belgium and Sweden: no comparable data on mortality. Norway, Italy and France: no data available.

Sources: Robert Koch-Institut (2015) – Krebs in Deutschland 2011/2012; data for switzerland: NICER – New cases; FSO – Deaths

Pleural mesothelioma: Trends over time G 4.9.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

The median age at diagnosis is 72 for men and 73 for women. The median age at death is 74 for both sexes. In the period 2008–2012 no cases were diagnosed before the age of 40 (G 4.9.1). The incidence rate for men is less than 1 per 100,000 persons until age 50 (55 for women), after which it rises until the age of 79 (84 for women). The mortality rate rises above the value of 1 per 100,000 persons after the age of 55 (65 for women).

Regional and international comparisons

The incidence and mortality rates for pleural mesothelioma and other malignant neoplasms of pleura are higher among men in German-speaking Switzerland than in French and Italian-speaking Switzerland. These mesotheliomas are very rare in women and no differences are observed between German-speaking Switzerland and French and Italian-speaking Switzerland.

Due to inconsistent and incomplete data, an international comparison is only possible to a limited extent. Incidence and mortality rates for men are relatively high in Switzerland. Switzerland's rates for women are however in the middle range when comparing with the countries with available data.

Trends over time

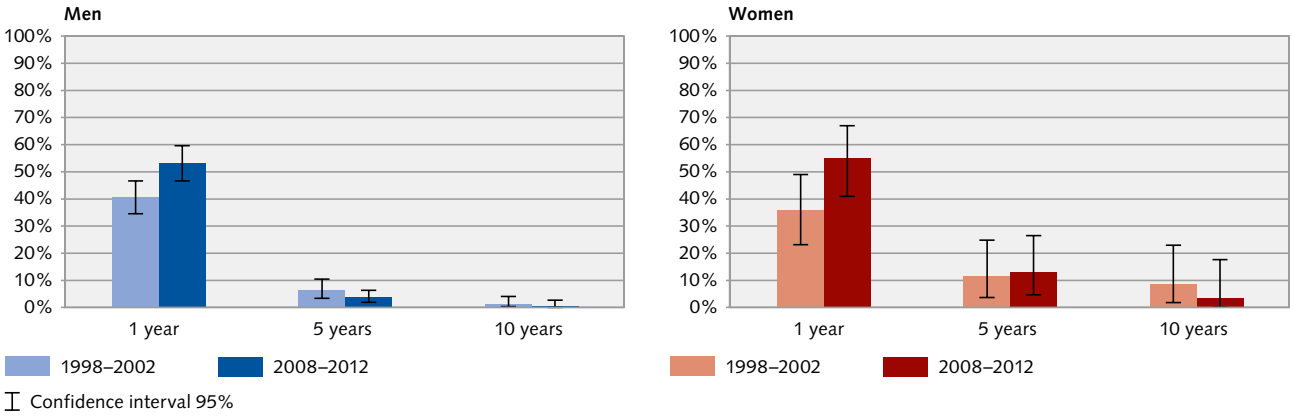
Between 1983 and 2002 incidence rates among men rose considerably until 2002. Thereafter they appear to stabilise (G 4.9.4). No clear trend can be seen with regard to mortality. Due to the small number of cases among women, no clear incidence and mortality trends can be seen.

4.9.2 Survival rates

In the period 2008–2012, 3% of male patients and 11% of female patients survived at least five years after having been diagnosed with pleural mesothelioma (observed survival rate; T 4.9.1). Taking into account the risk of dying from other causes, the five-year survival rate for men is 4% and 13% for women (relative survival rate). Between 1998 and 2002 it was 6% for men and 12% for women (G 4.9.5). This means that this type of cancer has the worst prognosis of all cancers.

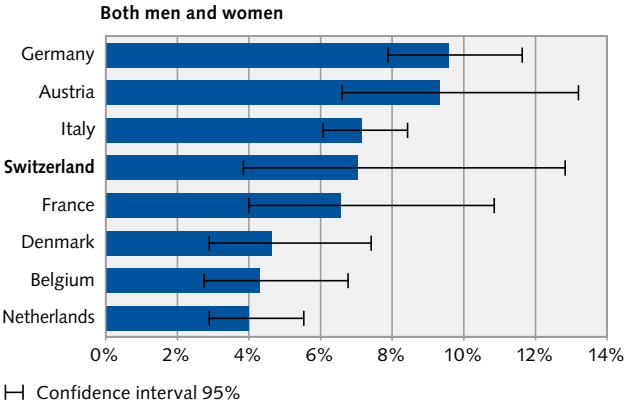
During the period in question, the ten-year survival rates did not improve for men (only 1%) or for women (nominal decline from 9% to 4%) (G 4.9.5). Due to the small number of cases among women, however, random effects have a great influence on survival rates.

Pleural mesothelioma: Relative survival rate after 1, 5 and 10 years **G 4.9.5**



Source: NICER

Pleural mesothelioma:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.9.6**



* Corresponds only to the ICD-O-3 code C38.4 used in the Eurocare-5 database; only available for both sexes together
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.9.1 Pleural mesothelioma: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	158	108	25	15
Number of cases 2015 (estimated)	192	139	27	15
Proportion of all cancer cases, average 2008–2012	0.8%	1.2%	0.1%	0.2%
Crude rate (per 100,000 inhabitants and year), 2008–2012	4.1	2.8	0.6	0.4
Average annual change in the crude rate, 2003–2012	1.3%	2.2%	–0.2%	–1.3%
Crude rate 2015 (estimated)	4.7	3.4	0.7	0.4
Standardised rate (per 100,000 inhabitants and year), 2008–2012	3.1	2.1	0.4	0.2
Average annual change in the standardised rate, 2003–2012	–0.4%	0.0%	0.5%	–1.6%
Median age at diagnosis and death, average 2008–2012	72.2	73.9	72.6	74.1
Lifetime risk, 2008–2012	0.4%	0.3%	0.1%	0.1%
Cumulative risk before the age of 70, 2008–2012	0.2%	0.1%	0.1%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	274	–	60

	Men	Women
Observed 5-year survival rate, on 31.12.2012	3.1%	11.4%
Relative 5-year survival rate, on 31.12.2012	3.7%	13.2%

Sources: NICER – New cases; FSO – Deaths

In the 2000–2007 period, survival rates for patients with a pleural mesothelioma diagnosis in Switzerland were comparable to those in Europe. Four countries have lower survival rates for men and women than Switzerland. However, corresponding data are only available for both sexes together (G 4.9.6).

4.9.3 Risk factors

The main risk factor for developing a pleural mesothelioma is inhalation of asbestos particles. Depending on the source, it is responsible for up to 90%[1] of all cases. Frequently used in the 1950s to 1970s in the construction industry, many workers came into contact with asbestos. Although it has been forbidden since 1989, it can still be found in buildings constructed prior to the ban. People carrying out renovation work (sanding, drilling and sawing) are at particular risk of coming into contact with it. Erionite, another fibrous mineral, is also a risk factor for mesotheliomas. Similarly to asbestos, this mineral leads to pollution in regions with large deposits (e.g. Turkey for erionite and Corsica for asbestos).

Painters are at increased risk of pleural mesothelioma. Furthermore, certain synthetic mineral fibres, ionising radiation or chemical substances such as bromates, nitrosoureas or nitrosamines are also suspected of causing mesotheliomas.[2]

References

1 Neumann V. (2013). Malignant Pleural Mesothelioma. Dtsch Arztebl Int; 110(18): 319-26

2 Unité "Cancer, Environnement et Nutrition" from Centre Léon Bérard. Mésotheliome [online] (page accessed on 1/07/2015). http://www.cancer-environnement.fr/85-Mesotheliome.ce.aspx

4.10 Skin melanoma

Skin melanoma (C43) is a cancer that develops from the melanocytes – the cells which produce the skin's pigment (melanin). This chapter does not deal with rare forms of melanoma which occur in organs other than the skin, nor with other types of skin cancer (such as basal cell and squamous-cell carcinoma).[1]

4.10.1 New cases and mortality

Current situation

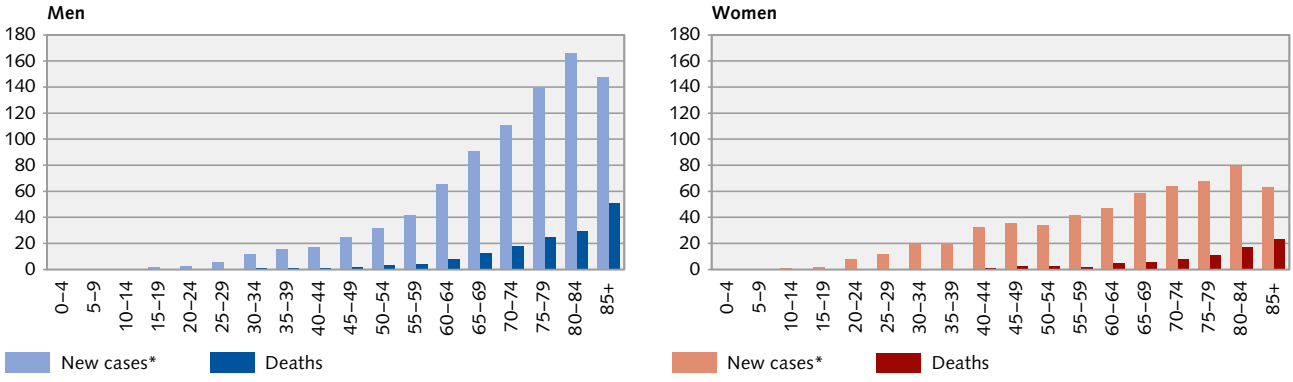
With an average of nearly 2450 new diagnoses per year between 2008 and 2012, melanoma skin cancer is the fourth most common type of cancer in Switzerland. The lifetime risk of developing a melanoma is 3.1% for men and 2.6% for women (equal to almost 3 out of 100 men and women; T 4.10.1). The standardised incidence rate is similar in both sexes.

In the same period melanomas led on average to the deaths of 180 men and 130 women per year. The risk of dying from a melanoma is 0.5% for men and 0.3% for women. This means that approximately 1 out of 200 men and 1 out of 300 women die from this cancer. It is responsible for 2% of all cancer deaths.

The median age at diagnosis of melanoma skin cancer is 67 for men and 60 for women. Up to the age of 55, women are slightly more affected than men. After the age of 60, however, the incidence rate among men is significantly higher than among women (G 4.10.1). The average age at death is 72 and 75 respectively.

Skin melanoma by age, 2008–2012 **G 4.10.1**

Age-specific rate per 100,000 inhabitants

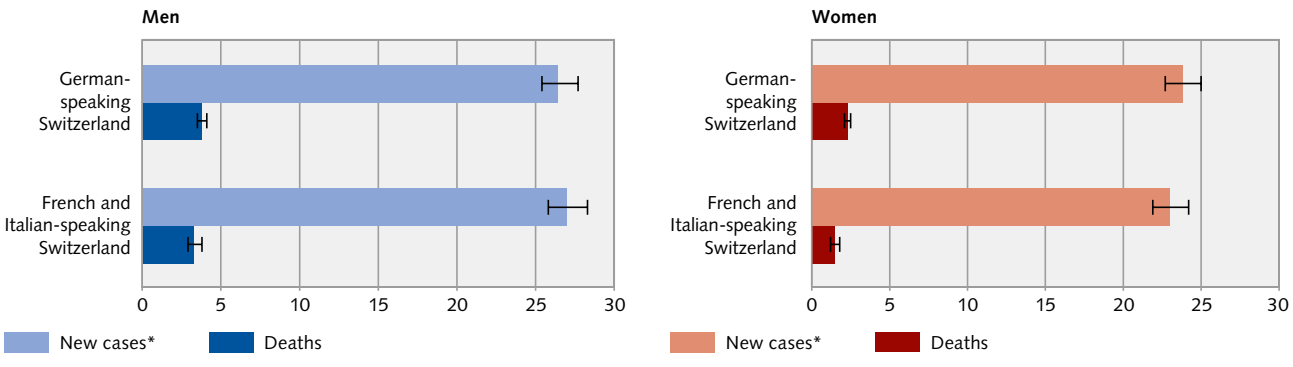


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Skin melanoma in regional comparison, 2008–2012 **G 4.10.2**

Rate per 100,000 inhabitants, European standard

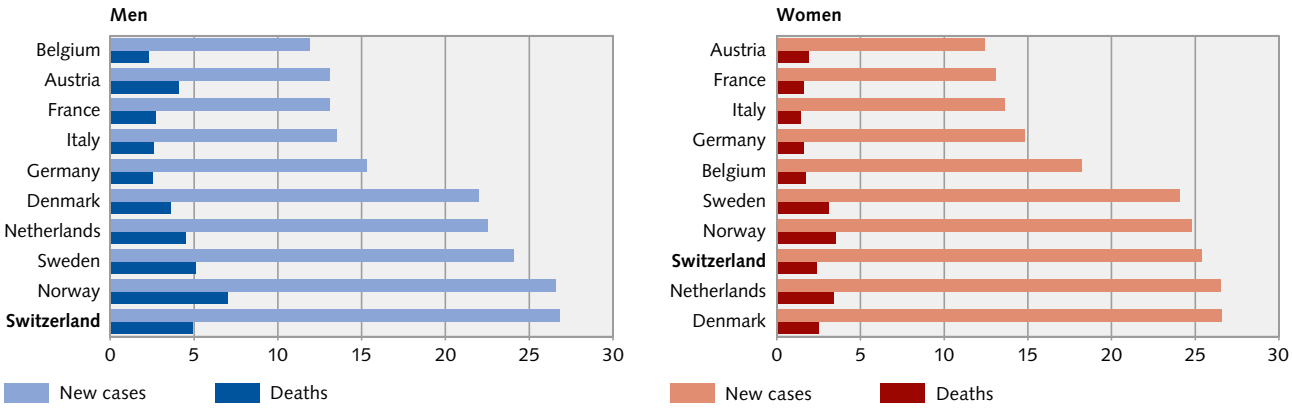


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Skin melanoma in international comparison, 2012 G 4.10.3

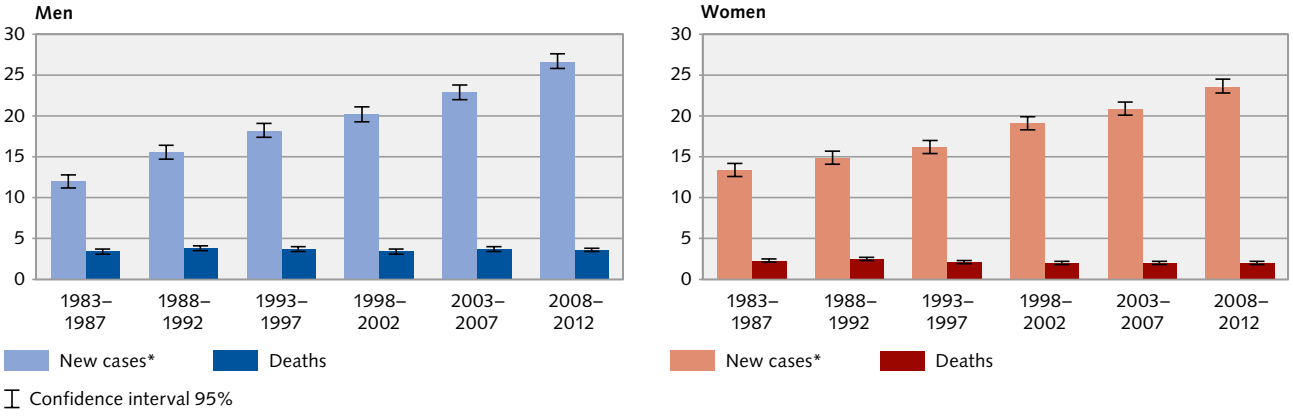
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Skin melanoma: Trends over time G 4.10.4

Rate per 100,000 inhabitants, European standard



Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Regional and international comparisons

There is no difference in incidence rates between German-speaking Switzerland and French and Italian-speaking Switzerland (G 4.10.2). The mortality rate linked to melanoma is, nevertheless, slightly higher for women in German-speaking Switzerland than in French and Italian-speaking Switzerland. No difference is observed among men.

Among the European countries compared, Switzerland has the highest rate for men and the third highest for women after Denmark and the Netherlands (G 4.10.3). With more than 25 cases per 100,000 inhabitants, the incidence rate is considerably higher than in the least affected countries with rates of between 12 and 18 cases per 100,000 inhabitants. With regard to mortality rates for both men and women, Switzerland comes 3rd and 5th respectively among the most affected countries.

Trends over time

Incidence rates have increased noticeably for both men and women in the past 30 years (G 4.10.4). This increase can be seen in all age groups and has been confirmed in the past ten years (T 4.10.1). Mortality rates, however, have remained stable. The only exception is the younger population (20 to 49 year-olds), in whom a slight decline has been observed since 1987.

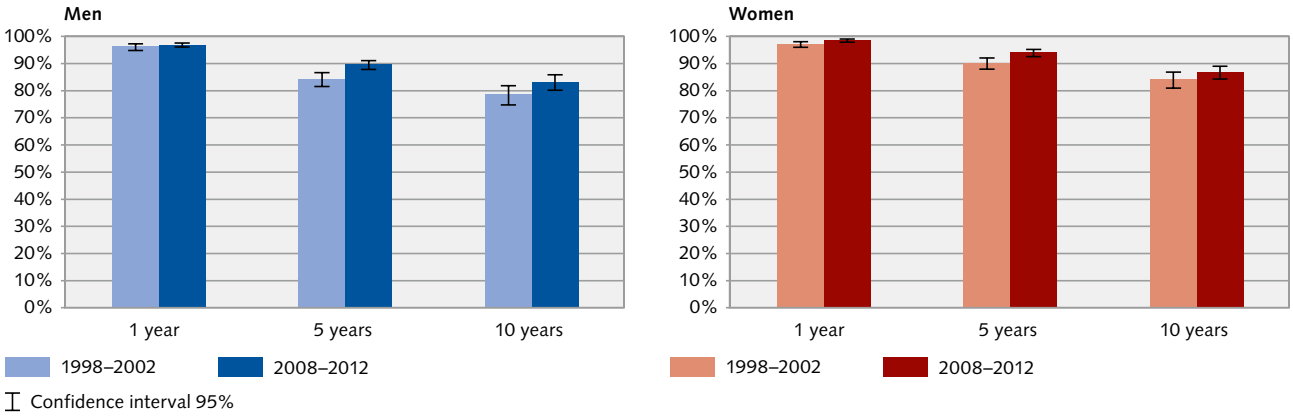
4.10.2 Survival rates and number of cancer survivors

In the period 2008–2012, 83% of male patients and 89% of female patients survived at least five years after having been diagnosed with melanoma skin cancer (observed survival rate; T 4.10.1). Taking into account the risk of dying from other causes, the five-year survival rate for melanoma is 90% among men and 94% among women (relative survival rate). Between 1998 and 2002 it was 84% for men and 90% for women (G 4.10.5).

Between 1998 and 2012 the ten-year survival rate rose from 79% to 83% for men and from 84% to 87% for women (G 4.10.5). One of the reasons for these improved survival rates is patients' and doctors' greater awareness of potentially malignant skin changes, which has probably led to melanomas being detected at a relatively early stage of development, with more favourable treatment outcomes.

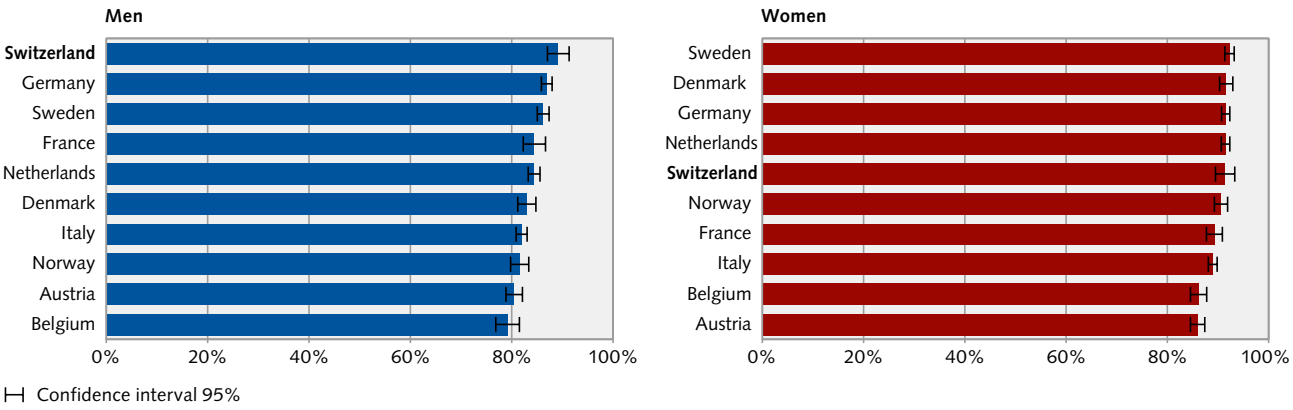
Among the ten countries chosen for comparison, Switzerland has the highest survival rates for men. For women, Switzerland is in 5th place; the differences are, however, very slight (G 4.10.6).

Skin melanoma: Relative survival rate after 1, 5 and 10 years **G 4.10.5**



Source: NICER

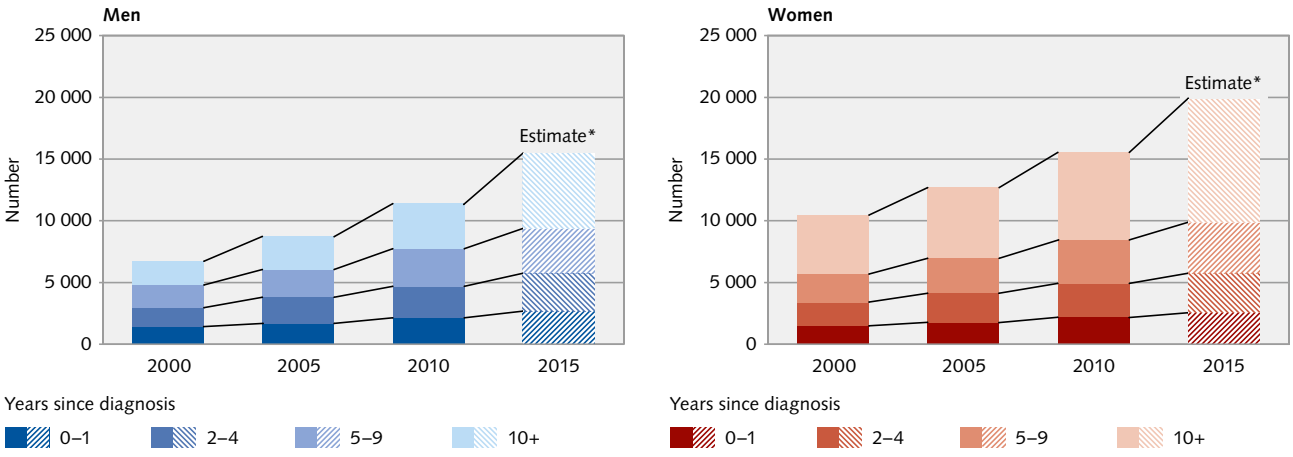
Pleural mesothelioma:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.10.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Skin melanoma: Number of survivors (prevalence) **G 4.10.7**



* Extrapolation from the years 1981–2010

Source: NICER

Whereas there were 17,000 melanoma skin cancer survivors in 2000, this figure rose to 27,000 for 2010 (G4.10.7). A forecast of more than 35,000 melanoma survivors has been made for 2015. For almost 24,000 men and women, five years and more have already passed since their diagnosis, whereas for some 11,000 the diagnosis was made less than five years ago (G4.10.7).

4.10.3 Risk factors

UV rays constitute the greatest risk for developing melanoma skin cancer. They damage the genetic material (DNA) of skin cells, especially in people with sensitive skin (fair or freckled skin, skin that does not tan). Damage mainly occurs in childhood or adolescence and in the event of occasional, intensive exposure to sunlight.[1] The sun is the main source of UV rays but solarium visitors are also exposed to UV rays. The risk of developing a melanoma varies greatly depending on skin pigmentation.[1] Fair skinned population groups are at a higher risk than dark skinned population groups.

People with atypical moles or melanomas that have already been diagnosed are at a greater risk. People with family members who have already been diagnosed with melanoma, as well as people with a weak immune system, patients who are being treated with immunosuppressive drugs or people with AIDS are also at greater risk. According to the IARC[2] contact with polychlorinated biphenyl (PCB) constitutes another risk factor.

T 4.10.1 Skin melanoma: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	1 262	181	1 185	131
Number of cases 2015 (estimated)	1 628	234	1 450	147
Proportion of all cancer cases, average 2008–2012	6.1%	2.0%	6.7%	1.8%
Crude rate (per 100,000 inhabitants and year), 2008–2012	32.7	4.7	29.8	3.3
Average annual change in the crude rate, 2003–2012	3.7%	2.4%	3.0%	1.2%
Crude rate 2015 (estimated)	40.0	5.8	34.9	3.5
Standardised rate (per 100,000 inhabitants and year), 2008–2012	26.6	3.6	23.6	2.0
Average annual change in the standardised rate, 2003–2012	2.5%	0.9%	2.3%	–0.4%
Median age at diagnosis and death, average 2008–2012	66.5	72.3	60.6	75.2
Lifetime risk, 2008–2012	3.1%	0.5%	2.6%	0.3%
Cumulative risk before the age of 70, 2008–2012	1.6%	0.2%	1.6%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1 015	–	735

	Men	Women
Number of patients (prevalence), on 31.12.2010	11 389	15 539
of whom diagnosed within the past 5 years	4 692	4 940
Observed 5-year survival rate, on 31.12.2012	82.9%	89.2%
Relative 5-year survival rate, on 31.12.2012	89.6%	94.0%

Sources: NICER – New cases; FSO – Deaths

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.11 Breast cancer

4.11.1 New cases and mortality

Current situation

With an average of over 5700 new diagnoses per year between 2008 and 2012, breast cancer is the most common type of cancer among women. It accounts for one third of all cancer cases among women. The lifetime risk of developing cancer is 12.7% for women (equal to almost 13 out of 100 women; T 4.11.1).

During the same period breast cancer resulted in approximately 1400 deaths per year. The risk of dying from breast cancer is 3.6%. This means almost 4 out of 100 women die from this cancer.

The median age at diagnosis is 64 and the median age at death 73. This type of cancer is very rare before the age of 25 (less than one case per 100,000 women), after this the incidence rate increases until the age of 69 and subsequently falls again. From age 30, the mortality rates for breast cancer increase.

Regional and international comparisons

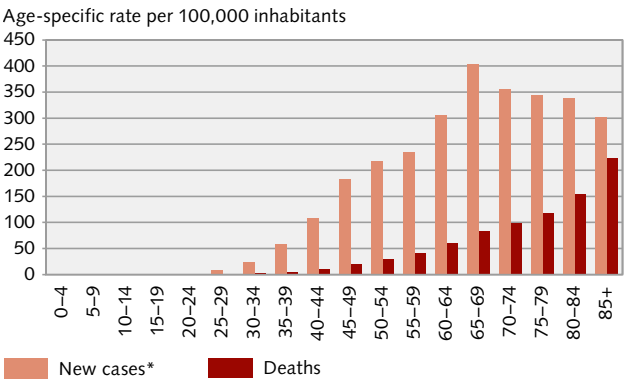
Breast cancer is diagnosed more frequently in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.11.2). However, the mortality rates in French and Italian-speaking Switzerland are marginally lower. Three of the nine European countries selected for comparison (Austria, Norway and Sweden) show lower incidence rates than Switzerland (G 4.11.3). Lower mortality rates are observed only in Norway and Sweden.

Breast cancer (C50) develops in the gland cells of the breast. The International Classification of Diseases (ICD) distinguishes between 20 subtypes of breast cancer.[1] This chapter discusses female breast cancer. Breast cancer can also occur in men (see chapter 4.23).

Trends over time

Between 1983 and 2002 there was a marked increase in the number of new breast cancer cases (G 4.11.4). Since then, however, their number has remained relatively stable. In contrast, the mortality rate has continuously fallen since 1983. The same trends can be observed in the 50 to 69 age group. After 2002 the incidence rate has continuously increased among younger women (20 to 49 years) while the mortality rate has declined. Since

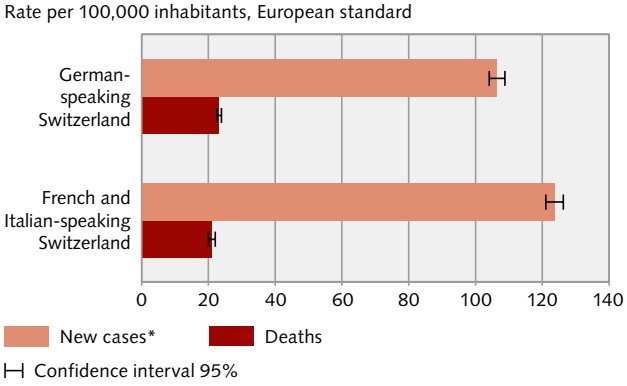
Breast cancer by age, 2008–2012 **G 4.11.1**



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

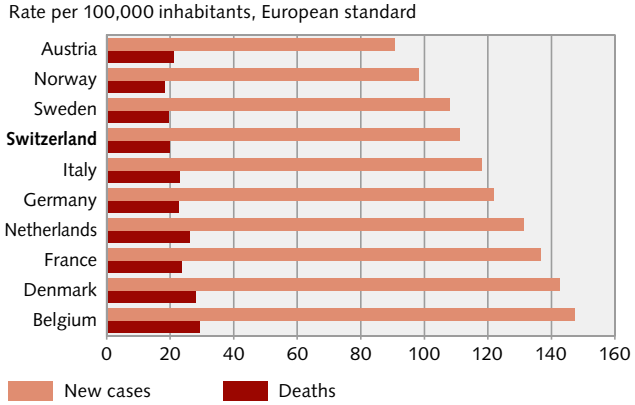
Breast cancer in regional comparison, 2008–2012 **G 4.11.2**



* New cases estimated on the basis of cancer registry data

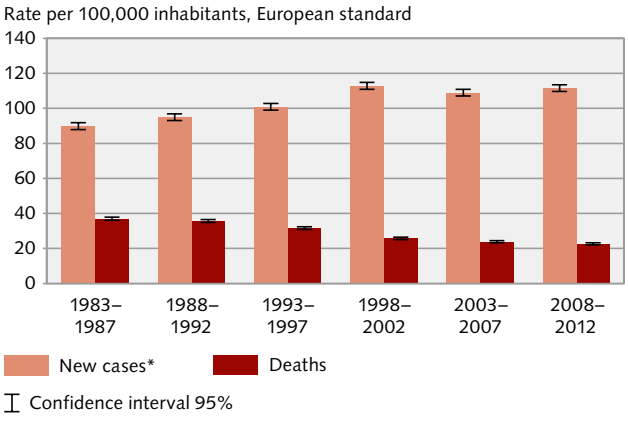
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Breast cancer in international comparison, 2012 **G 4.11.3**



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012 © FSO, Neuchâtel 2016

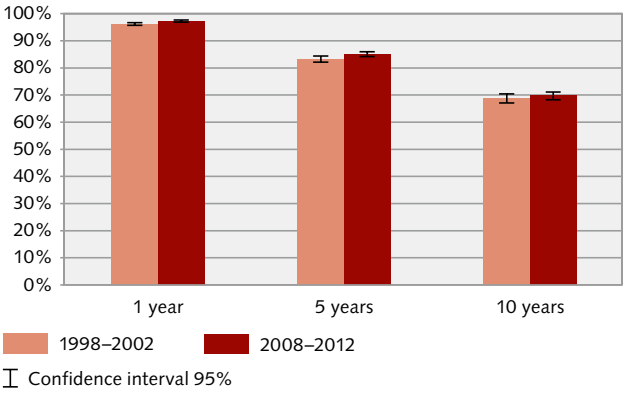
Breast cancer: Trends over time **G 4.11.4**



* New cases estimated on the basis of cancer registry data

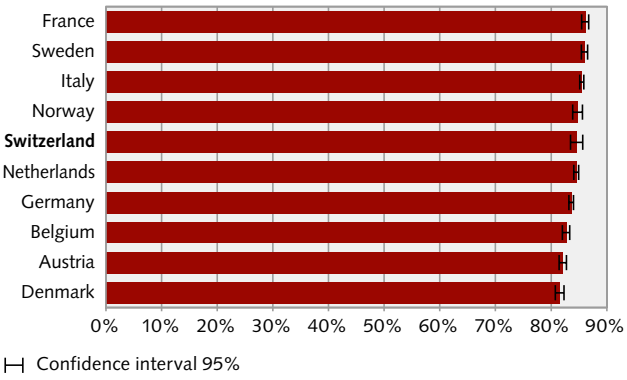
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Breast cancer: Relative survival rate after 1, 5 and 10 years **G 4.11.5**



Source: NICER © FSO, Neuchâtel 2016

Breast cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.11.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

1983, there has hardly been any change in the incidence rate among women aged 70 or over and the mortality rate has generally fallen despite some variability.

4.11.2 Survival rates and number of cancer survivors

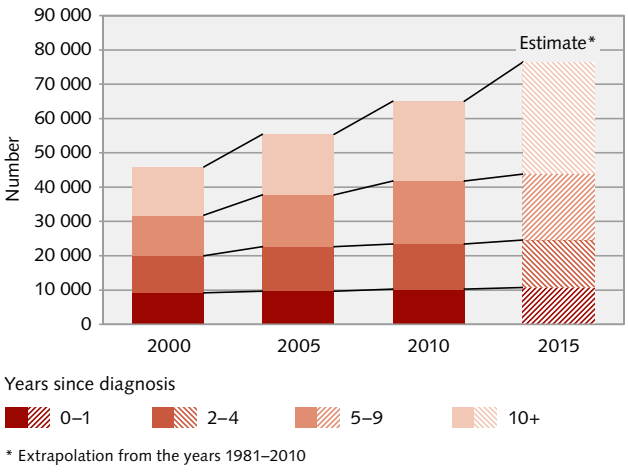
In the period 2008–2012, 78% of female patients survived at least five years after having been diagnosed with breast cancer (observed survival rate; T 4.11.1). Taking into account the risk of dying from other causes, the five-year survival rate is 85% (relative survival rate). Between 1998 and 2002 this rate was only slightly lower at 83% (G 4.11.5). The marginal increase in the survival rate is attributed to improved treatments and early detection thanks to mammograms. But this can also result in the overdiagnosis of indolent cases that would never have been discovered without early detection. During the same period, the ten-year survival rate remained unchanged at 69% to 70% (G 4.11.5).

In the 2000–2007 period, in comparison with the nine European countries selected for this report, Switzerland occupied fifth place for its survival rate (G 4.11.6). However, the differences are marginal.

The number of breast cancer survivors in Switzerland increased from 45,900 in 2000 to 65,000 in 2010 (G 4.11.7). This sharp increase can partly be attributed to the rise in the old age female population, i.e. it is primarily a demographic effect.

For 2015, a total of 76,500 breast cancer survivors is expected, with the majority (n = 51,800) being long-term survivors (five and more years past diagnosis; G 4.11.7).

Breast cancer:
Number of survivors (prevalence) **G 4.11.7**



* Extrapolation from the years 1981–2010

Source: NICER

4.11.3 Risk factors

Established risk factors for breast cancer are connected with reproduction and female sex hormones. Women with an early menarche, a late menopause, those who do not have children or give birth after the age of 30 have a higher risk of developing breast cancer. This is probably due to the number of menstrual cycles[1] and higher oestrogen levels.[2] Taking the pill and menopausal hormone therapies (especially combined oestrogen and progesterone treatments[3]) also increase the risk of breast cancer.[1] Women who are excessively overweight are at greater risk, but only after the menopause, due to the conversion of androgens into oestrogen in fatty tissue. However, the connection between being overweight and breast cancer risk is complex, because prior to the menopause being severely overweight offers protection against breast cancer, probably because it suppresses ovulation.[1] Before and most likely after the menopause, tall women are at greater risk of breast cancer. Furthermore, women with a high birth weight have a greater risk of developing breast cancer before the menopause.

Alcohol consumption, a high calorie diet and a lack of exercise are also risk factors for breast cancer.[1] Contact with X-rays and gamma rays and taking diethylstilbestrol (which was prescribed during pregnancy between 1940 and 1970 to offer protection against miscarriages[1]) favour the development of breast cancer. Smoking can also increase the risk of breast cancer.[3]

High breast density, atypical lesions in early biopsies and a family history of breast cancer also entail greater breast cancer risk. A small percentage of breast cancer cases are due to genetic changes (genetic predisposition) in genes involved in cell repair (e.g. the *BRCA1* and *BRCA2* genes).[1]

T 4.11.1 Breast cancer: Key epidemiological figures

	Women	
	Incidence	Deaths
Number of cases per year, average 2008–2012	5 732	1 397
Number of cases 2015 (estimated)	6 209	1 403
Proportion of all cancer cases, average 2008–2012	32.5%	19.3%
Crude rate (per 100,000 inhabitants and year), 2008–2012	144.3	35.2
Average annual change in the crude rate, 2003–2012	1.0%	–0.5%
Crude rate 2015 (estimated)	149.5	33.8
Standardised rate (per 100,000 inhabitants and year), 2008–2012	111.6	22.6
Average annual change in the standardised rate, 2003–2012	0.3%	–1.7%
Median age at diagnosis and death, average 2008–2012	63.7	72.9
Lifetime risk, 2008–2012	12.7%	3.6%
Cumulative risk before the age of 70, 2008–2012	7.7%	1.3%
Years of potential life lost before the age of 70, average 2008–2012	–	7 178

	Women
Number of patients (prevalence), on 31.12.2010	65 072
of whom diagnosed within the past 5 years	23 464
Observed 5-year survival rate, on 31.12.2012	77.7%
Relative 5-year survival rate, on 31.12.2012	85.1%

Sources: NICER – New cases; FSO – Deaths

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

3 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.12 Cancer of the uterus

4.12.1 New cases and mortality

Current situation

Cervical cancer

Between 2008 and 2012 an average of 250 women were diagnosed with cervical cancer each year. This cancer site accounts for 1.4% of all types of cancer among women. The lifetime risk of developing cervical cancer is 0.5% (equal to almost 1 out of 200 women; T 4.12.1).

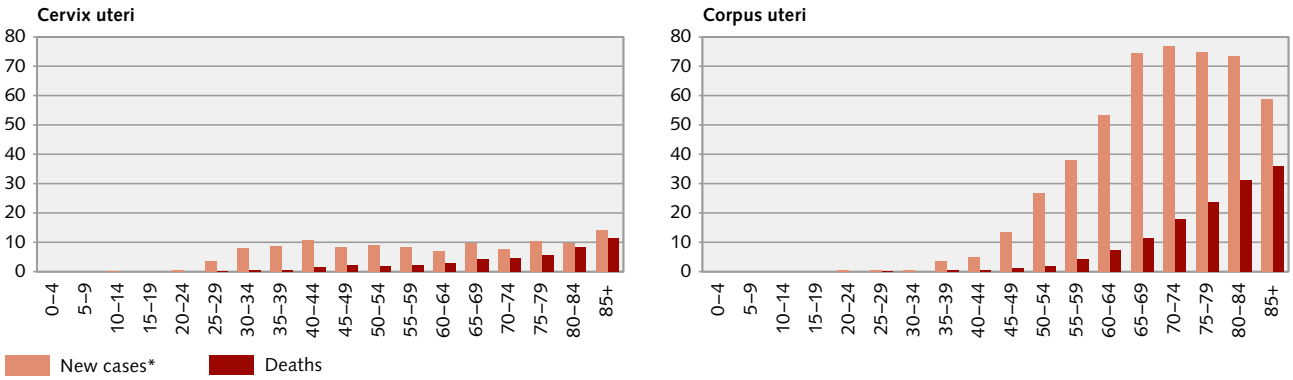
In the same period, an average of approximately 80 women died per year from cervical cancer. This type of cancer accounts for 1.1% of all cancer deaths among women. The risk of dying from cervical cancer is 0.2% for women. This means that 1 out of 500 women die from this cancer.

The uterus comprises the cervix and the corpus uteri. Due to the different risk factors and prevalence, a distinction is made between cervical cancer (C53) and cancer of the corpus uteri (C54–C55).[1]

The incidence rate increases between the ages of 20 and 44. After this, it remains stable until the age of 85 when it rises again. The mortality rate increases between the ages of 25 and 49. After this, it remains stable before rising again from the age of 60 (G 4.12.1). The median age at diagnosis is 52. The median age at death is 70.

Cancer of the uterus by age, 2008–2012 **G 4.12.1**

Age-specific rate per 100,000 inhabitants

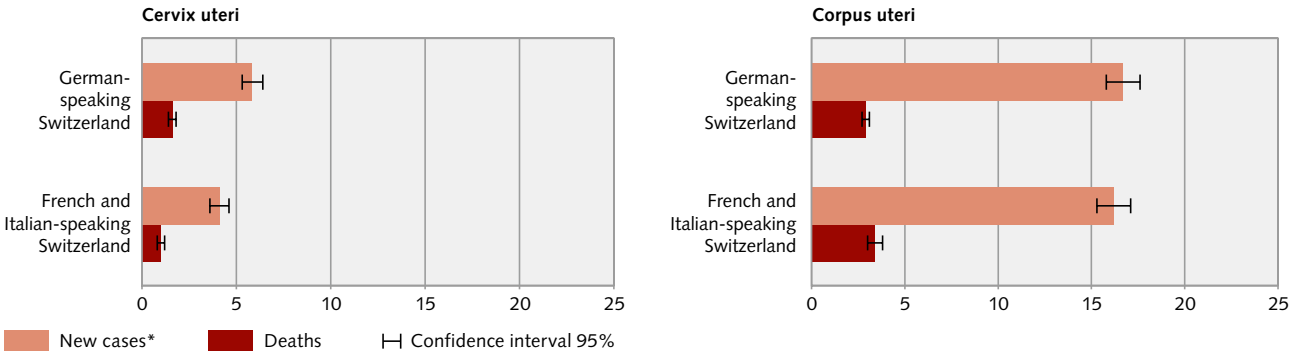


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Cancer of the uterus in regional comparison, 2008–2012 **G 4.12.2**

Rate per 100,000 inhabitants, European standard

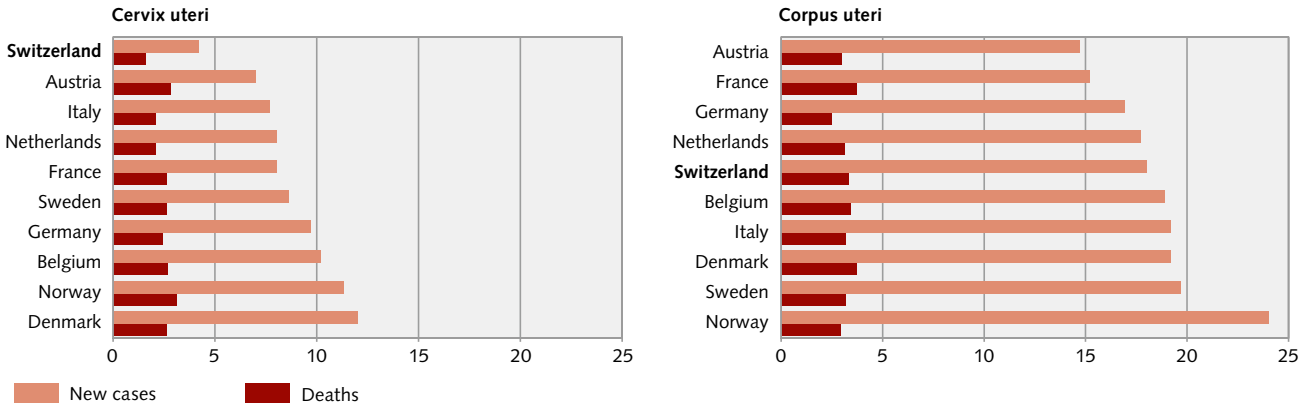


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Cancer of the uterus in international comparison, 2012 G 4.12.3

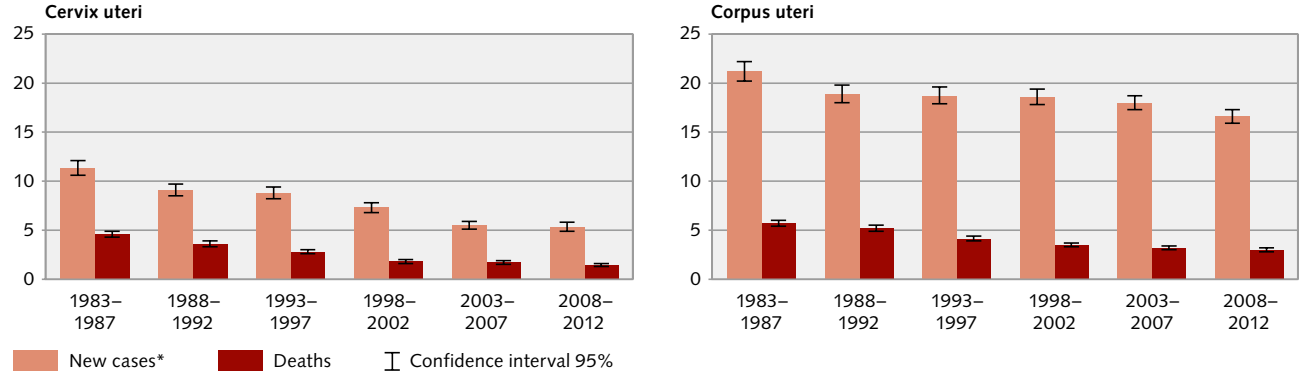
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Cancer of the uterus: Trends over time G 4.12.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Cancer of the corpus uteri

Between 2008 and 2012 an average of 900 women were diagnosed with cancer of the corpus uteri each year. This cancer site accounts for 5.1% of all cancer diagnoses in women and is the fifth most common type of cancer in women behind breast cancer, colon cancer, lung cancer and skin cancer. The lifetime risk of developing cancer of the corpus uteri is 2.2% (equal to almost 2 out of 100 women; T 4.12.1).

In the same period, an average of approximately 200 women died per year from cancer of the corpus uteri. This type of cancer accounts for 2.9% of all cancer deaths among women. The risk of dying from cancer of the corpus uteri is 0.6% for women. This means that approximately 1 out of 200 men and women die from this cancer.

The incidence rate increases until the age of 74 and declines after this age. Mortality rates also rise with increasing age (G 4.12.1). The median age at diagnosis is 70. The median age at death is 77.

Regional and international comparisons

Cervical cancer

Incidence and mortality rates are considerably higher in German-speaking Switzerland than in French and Italian-speaking Switzerland (G 4.12.2).

Compared with the nine selected European countries, Switzerland shows the lowest incidence and mortality rates for cervical cancer (G 4.12.3).

Cancer of the corpus uteri

There are no differences in incidence and mortality rates between the different linguistic regions (G 4.12.2).

Switzerland's incidence rates are average in European comparison. Of the nine European countries compared with Switzerland, four countries have lower incidence rates than Switzerland. Nevertheless, Switzerland has the fourth highest mortality rate of the ten countries compared (G 4.12.3).

Trends over time

Cervical cancer

A decline in incidence and mortality rates was observed between 1983 and 2007. After this period, rates stabilised. Between 1983 and 2007 incidence rates fell by approximately 51% and mortality rates by around 44% (G 4.12.4).

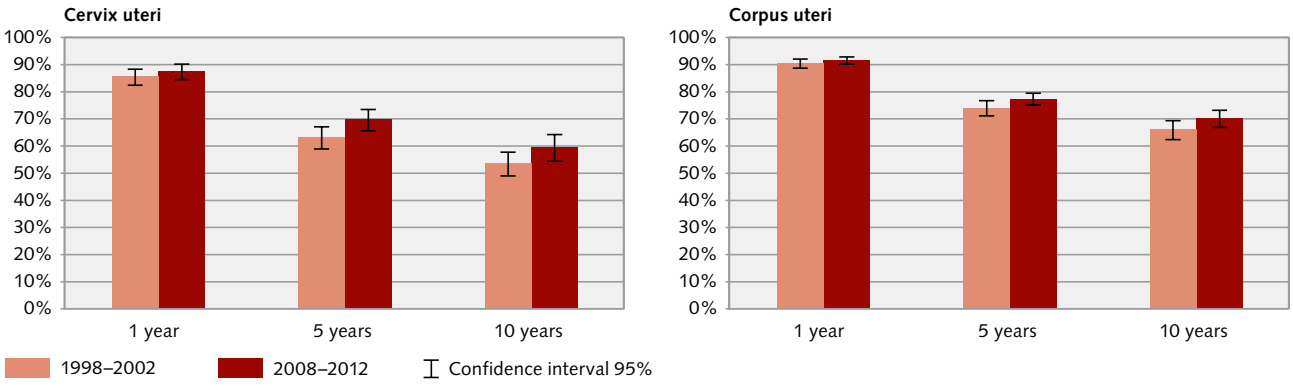
Cancer of the corpus uteri

A decline in incidence rates of around 22% was observed between 1983 and 2012, although no change could be observed between 1988 and 2007. Between 1983 and 2012 mortality rates fell considerably (70%) (G 4.12.4).

4.12.2 Survival rates and number of cancer survivors

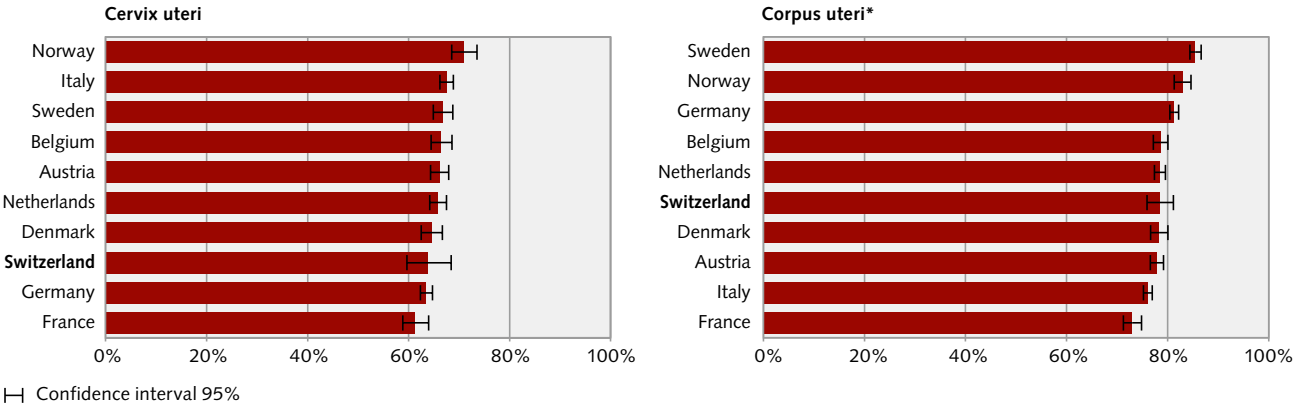
In the period 2008–2012, 67% of patients survived at least five years after having been diagnosed with cervical cancer and 71% after being diagnosed with cancer of the corpus uteri (observed survival rate; T4.12.1). Taking into account the risk of dying from other causes, the five-year survival rate for cervical cancer is 70% and for cancer of the corpus uteri 77% (relative survival rate). These percentages were only slightly lower during the period 1998–2002 (63% and 74% respectively) (G4.12.5)

Cancer of the uterus: Relative survival rate after 1, 5 and 10 years **G 4.12.5**



Source: NICER

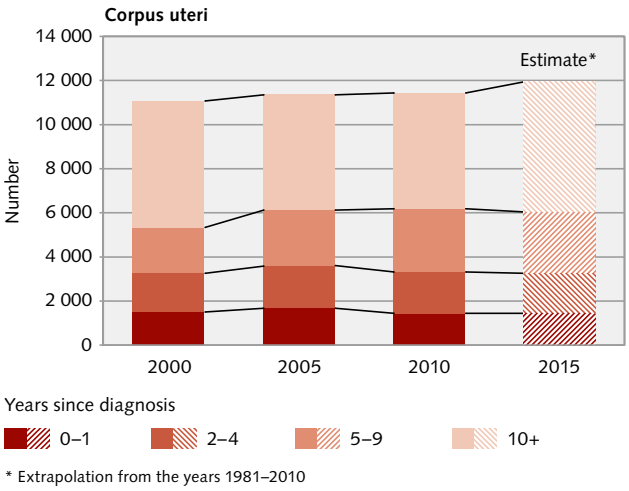
Cancer of the uterus: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.12.6**



* Corresponds to the ICD-O-3 code C54 used in the Eurocare-5 database
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Cancer of the uterus:
Number of survivors (prevalence) **G 4.12.7**



* Extrapolation from the years 1981–2010

Source: NICER © FSO, Neuchâtel 2016

Between 1998 and 2012 the ten-year survival rate rose from 53% to 60% for cervical cancer and from 66% to 70% for cancer of the corpus uteri (G 4.12.5). The longer survival rates for cervical cancer are largely due to improved treatments and earlier detection.

In the 2000–2007 period, survival rates in Switzerland for patients with cervical cancer and cancer of the corpus uteri were comparable to those in Europe. Compared with the nine selected European countries, Norway, Sweden, Italy and Germany have the highest survival rates (G 4.12.6).

Whereas there were 11,100 survivors with a diagnosis of cancer of the corpus uteri in 2000, this figure rose slightly to 11,400 in 2010 (G 4.12.7). An estimated 11,900 survivors have been forecasted for 2015. For some 8700 women, five years and more have passed since diagnosis. Another 3200 are still in the first five year period after diagnosis. Similar calculations regarding cervical cancer were not available before the editorial deadline (G 4.12.7).

4.12.3 Risk factors

Cervical cancer

Infection with the human papillomavirus (HPV), which is sexually transmitted, is one of the main risk factors. Among the different types of HPV virus, the HPV types 16 an 18 are responsible for three-quarters of all cases of cervical cancer.[2] Other risk factors are smoking, taking the contraceptive pill and infection with the human immunodeficiency virus (HIV).[3,4]

Cancer of the corpus uteri

An important risk factor for cancer of the corpus uteri is a high level of sex hormones (e.g. oestrogen and androgen). Taking oestrogen as a replacement hormone during the menopause is also a risk factor for this type of cancer. Increased exposure to oestrogen also explains the other risk factors for cancer of the corpus uteri: early menarche and late menopause, childlessness and obesity. Among these risk factors, obesity is responsible for 40% of all cancer cases.[2] Polycystic ovary syndrome (PCOS), a metabolic disorder in women, which leads to dysfunction of the ovaries, is also a risk factor for cancer of the corpus uteri. Taking Tamoxifen in the prevention and treatment of breast cancer also constitutes a risk factor for cancer of the corpus uteri.[2,4]

T4.12.1 Cancer of the uterus: Key epidemiological figures

	Cervical cancer		Corpus uteri	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	254	81	908	207
Number of cases 2015 (estimated)	258	82	929	215
Proportion of all cancer cases, average 2008–2012	1.4%	1.1%	5.1%	2.9%
Crude rate (per 100,000 inhabitants and year), 2008–2012	6.4	2.0	22.9	5.2
Average annual change in the crude rate, 2003–2012	–0.5%	–1.4%	–0.6%	–0.5%
Crude rate 2015 (estimated)	6.2	2.0	22.4	5.2
Standardised rate (per 100,000 inhabitants and year), 2008–2012	5.3	1.4	16.6	3.0
Average annual change in the standardised rate, 2003–2012	–0.4%	–2.3%	–1.4%	–1.0%
Median age at diagnosis and death, average 2008–2012	51.9	69.6	68.1	76.9
Lifetime risk, 2008–2012	0.5%	0.2%	2.2%	0.6%
Cumulative risk before the age of 70, 2008–2012	0.4%	0.1%	1.1%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	640	–	572

	Cervical cancer	Corpus uteri
Number of patients (prevalence), on 31.12.2010	–	11 433
of whom diagnosed within the past 5 years	–	3 316
Observed 5-year survival rate, on 31.12.2012	67.4%	71.1%
Relative 5-year survival rate, on 31.12.2012	69.8%	77.4%

Sources: NICER – New cases; FSO – Deaths

References

1 The Swiss Cancer League. Gebärmutterkörperkrebs [online] (page accessed on 1/07/2015). http://www.krebsliga.ch/de/uber_krebs/krebsarten/gebarmutterkrebs/

2 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.13 Ovarian cancer

4.13.1 New cases and mortality

Current situation

Between 2008 and 2012 an average of 580 women were diagnosed with ovarian cancer and 430 women died from it. This type of cancer accounts for 3.3% of all new cancer cases but for 6% of all cancer deaths. Ovarian cancer is the eighth most common cancer in women and the fifth most common cause of cancer death. The lifetime risk of developing ovarian cancer is 1.4% (equal to almost 3 out of 200 women; T 4.13.1). The risk for women of dying from ovarian cancer is 1.1%. This means that approximately 1 out of 100 women dies from this cancer.

Ovarian cancer (C56) can develop from three types of tissue: in cells in the layer of tissue surrounding the ovary, in the hormone producing cells and in the cells which develop into the ova.[1]

Incidence and mortality rates for ovarian cancer rise constantly with increasing age until the age of 84 (G 4.13.1). The median age at diagnosis is 67 and the median age at death 73.

Regional and international comparisons

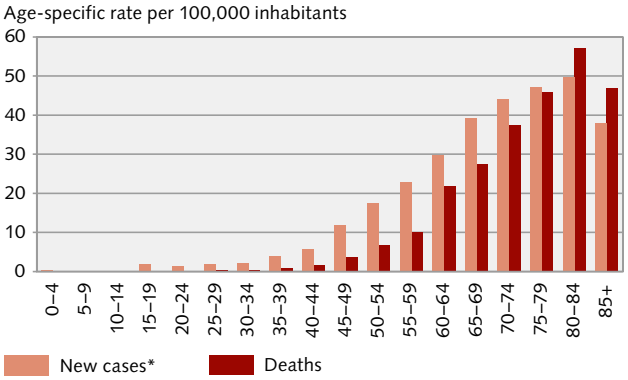
There are no differences in the incidence and mortality rates between German-speaking Switzerland on the one hand and French and Italian-speaking Switzerland on the other (G 4.13.2).

Three of the nine European countries compared with Switzerland (Denmark, Norway and Italy) show above-average incidence rates. Switzerland is ranked behind them, with the fourth highest incidence rate. Switzerland has the sixth highest mortality rate (G 4.13.3).

Trends over time

Incidence and mortality rates for women with ovarian cancer have fallen in the past 30 years by 26% and 33% respectively (G 4.13.4). Between 2003 and 2012, however, a significant decline in mortality has been observed.

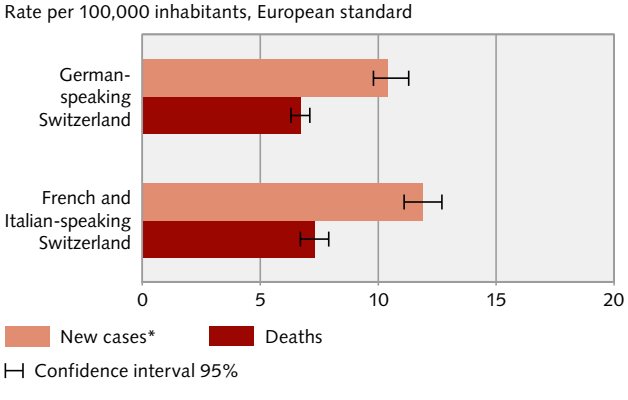
Ovarian cancer by age, 2008–2012 **G 4.13.1**



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

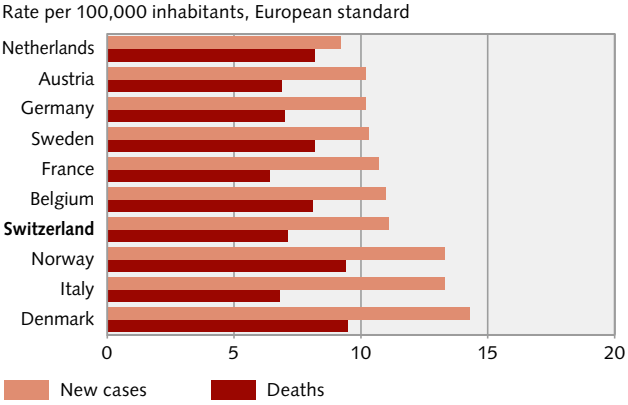
Ovarian cancer in regional comparison, 2008–2012 **G 4.13.2**



* New cases estimated on the basis of cancer registry data

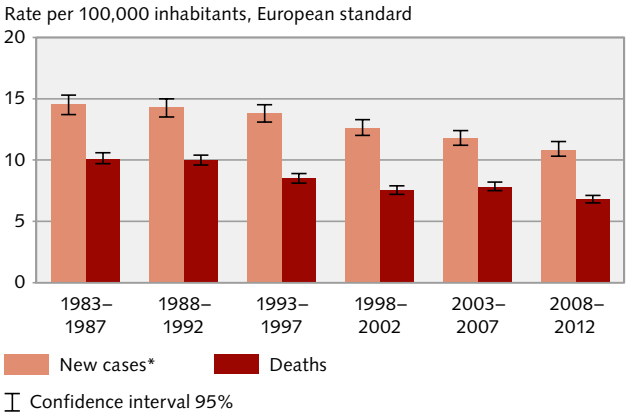
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Ovarian cancer in international comparison, 2012 **G 4.13.3**



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012 © FSO, Neuchâtel 2016

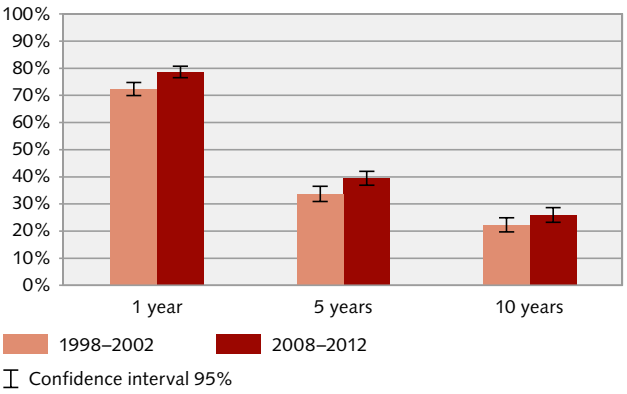
Ovarian cancer: Trends over time G 4.13.4



* New cases estimated on the basis of cancer registry data

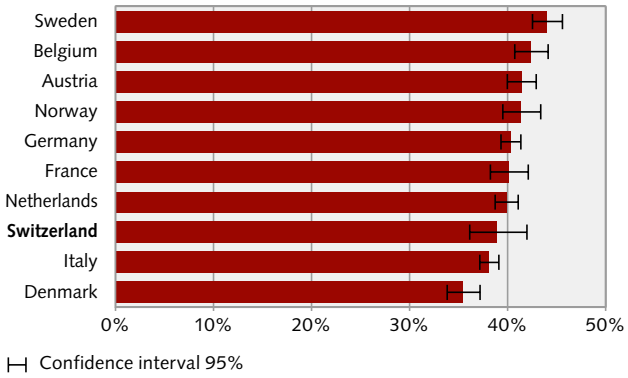
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Ovarian cancer: Relative survival rate after 1, 5 and 10 years G 4.13.5



Source: NICER © FSO, Neuchâtel 2016

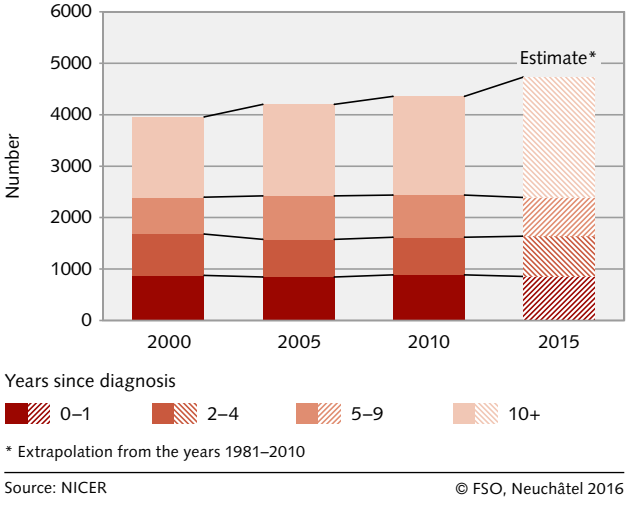
Ovarian cancer:* Relative 5-year survival rates in international comparison, 2000–2007 G 4.13.6



* Corresponds to the ICD-O-3 code C56, C57.0–C57.4, C57.7 used in the Eurocare-5 database
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

Ovarian cancer: Number of survivors (prevalence) G 4.13.7



* Extrapolation from the years 1981–2010

Source: NICER © FSO, Neuchâtel 2016

4.13.2 Survival rates and number of cancer survivors

In the period 2008–2012, 37% of patients survived at least five years after having been diagnosed with ovarian cancer (observed survival rate; T 4.13.1). Taking into account the risk of dying from other causes, the five-year survival rate for ovarian cancer is 40% (relative survival rate). Between 1998 and 2002 this rate was 34% (G 4.13.5). Between 1998 and 2012 the ten-year survival rate rose from 22% to 26% (G 4.13.5).

For the 2000–2007 period, survival rates for patients with ovarian cancer in Switzerland were in the lower middle of the European range. Among the ten European countries being compared, Sweden, Belgium and Austria have the highest survival rates (G 4.13.6). It is the gynaecological tumour with the worst prognosis.[1]

Whereas there were 4000 ovarian cancer survivors in 2000, this figure rose only slightly to 4400 in 2010 (G 4.13.7). An estimated 4700 survivors have been predicted for 2015 with 3100 long-terme survivors (five and more years past dignosis) and some 1600 in their first five years past diagnoisis. (G 4.13.7).

T 4.13.1 Ovarian cancer: Key epidemiological figures

	Women	
	Incidence	Deaths
Number of cases per year, average 2008–2012	584	425
Number of cases 2015 (estimated)	578	401
Proportion of all cancer cases, average 2008–2012	3.3%	5.9%
Crude rate (per 100,000 inhabitants and year), 2008–2012	14.7	10.7
Average annual change in the crude rate, 2003–2012	–1.1%	–1.7%
Crude rate 2015 (estimated)	13.9	9.7
Standardised rate (per 100,000 inhabitants and year), 2008–2012	10.8	6.8
Average annual change in the standardised rate, 2003–2012	–1.5%	–2.7%
Median age at diagnosis and death, average 2008–2012	67.2	73.4
Lifetime risk, 2008–2012	1.4%	1.1%
Cumulative risk before the age of 70, 2008–2012	0.7%	0.4%
Years of potential life lost before the age of 70, average 2008–2012	–	1721

	Women
Number of patients (prevalence), on 31.12.2010	4359
of whom diagnosed within the past 5 years	1620
Observed 5-year survival rate, on 31.12.2012	37.4%
Relative 5-year survival rate, on 31.12.2012	39.5%

Sources: NICER – New cases; FSO – Deaths

4.13.3 Risk factors

As for breast cancer, the risk factors are related to early pregnancies and female sex hormones. A reduced number of ovulations (late first period, early menopause, pregnancies) seems to have a protective effect. Ovarian cancer is more common among childless women. The latest studies show that it is infertility itself, rather than infertility treatment, that increases the risk of ovarian cancer. Endometriosis is associated with certain types of ovarian cancer. Menopausal hormone therapies also increase the risk of developing ovarian cancer, whereas taking the pill reduces it.[2]

Smoking is another risk factor[3] as are irritants such as talc or asbestos.[2] Above-average height in adulthood and a high body mass index favour the development of ovarian cancer.[1]

Women with a family history of ovarian and breast cancer, carriers of a *BRCA1* and *BRCA2* gene mutation, as well as women with a hereditary nonpolyposis colon cancer (HNPCC), are also at greater risk.[2,4]

References

1 World Cancer Research Fund/American Institute for Cancer Research (2014). Continuous Update Project Report. Food, Nutrition, Physical activity, and the Prevention of Colorectal Cancer.

2 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

3 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4 The Swiss Cancer League (2011). Eierstockkrebs (Ovarialtumoren). Bern. https://assets.krebsliga.ch/downloads/1073.pdf

4.14 Prostate cancer

4.14.1 New cases and mortality

Current situation

Between 2008 and 2012 an average of about 6200 men were diagnosed with prostate cancer each year. Prostate cancer is the most common cancer among men. The lifetime risk of developing prostate cancer is 16.4% (equal to almost 16 out of 100 men; T 4.14.1).

Between 2008 and 2012, on average approximately 1300 men died per year from prostate cancer. This type of cancer is the second most common cause of cancer death among men. The risk of dying from prostate cancer is 4.9% for men. This means that almost 5 out of 100 men die from this cancer.

In most cases, prostate cancer (C61) is a tumour that originates in the glandular tissue of the prostate. In rarer cases, prostate cancer concerns tumours that originate from other tissue such as connective tissue.[1]

Prostate cancer mainly affects older men. Only very few cases occur in men under 55, after which incidence rates rise until the age of 74. Incidence rates fall again after this age. The mortality rate rises sharply after the age of 70 (G 4.14.1).

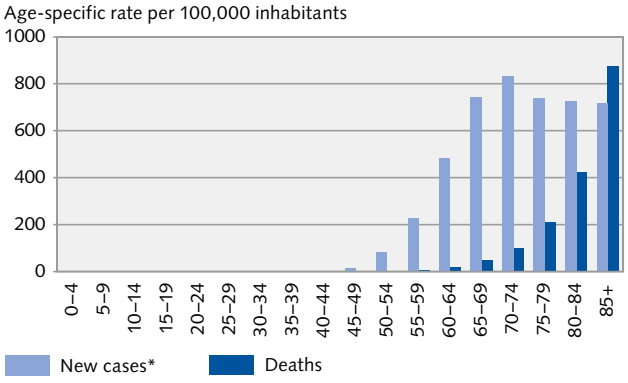
The median age at diagnosis is 69. The median age at death is 82.

Regional and international comparisons

There are no differences between German-speaking Switzerland and French and Italian-speaking Switzerland with regards to incidence rates. However, mortality rates are slightly higher in German-speaking Switzerland than in French and Italian-speaking Switzerland (G 4.14.2).

In comparison with the selected European countries, incidence rates are relatively high. Among the nine European countries compared with Switzerland, six countries have lower incidence rates than Switzerland. With regard to mortality rates, Switzerland is situated in the middle range, with Austria, Germany, France and Italy showing lower rates (G 4.14.3).

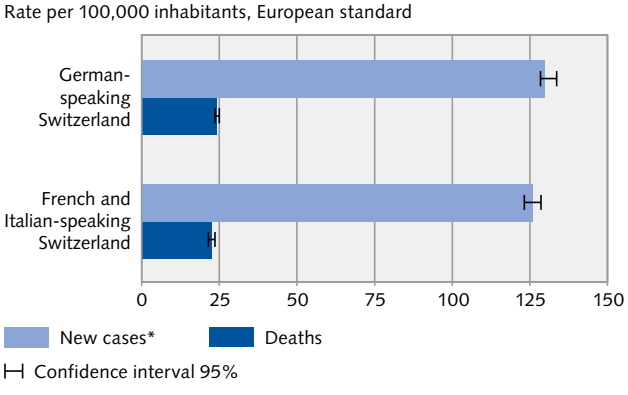
Prostate cancer by age, 2008–2012 **G 4.14.1**



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

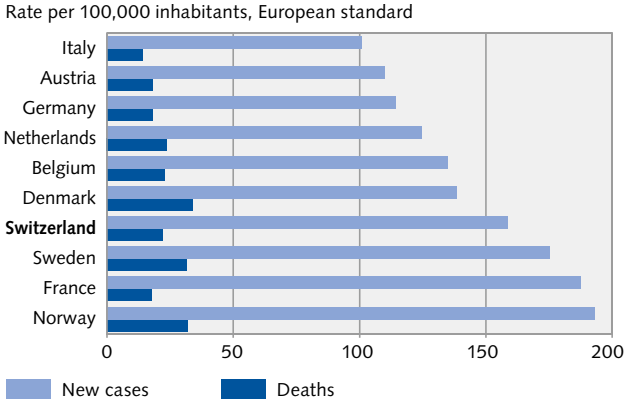
Prostate cancer in regional comparison, 2008–2012 **G 4.14.2**



* New cases estimated on the basis of cancer registry data

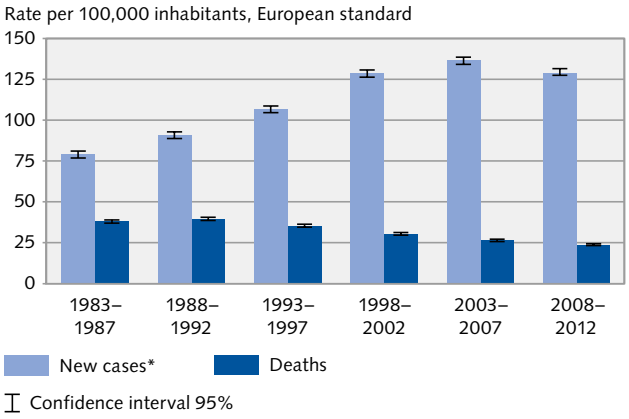
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Prostate cancer in international comparison, 2012 **G 4.14.3**



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012 © FSO, Neuchâtel 2016

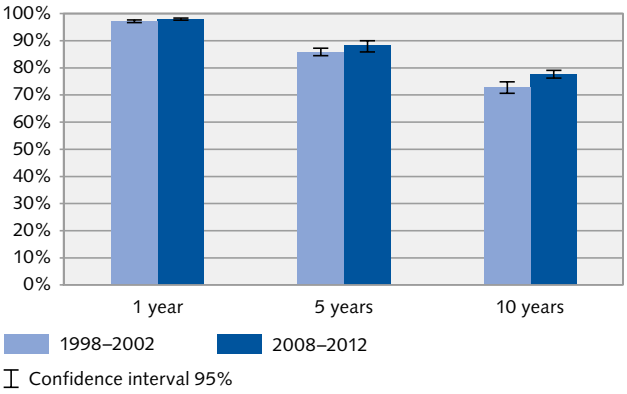
Prostate cancer: Trends over time **G 4.14.4**



* New cases estimated on the basis of cancer registry data

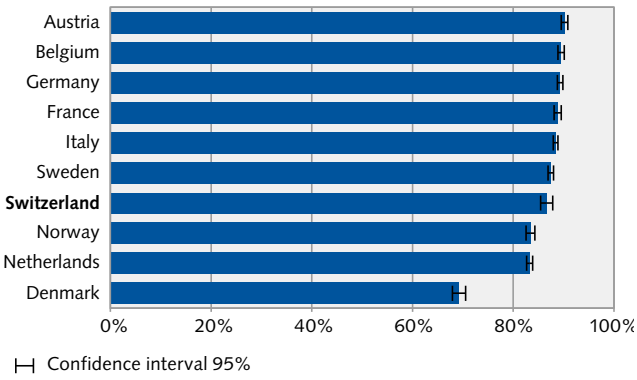
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Prostate cancer: Relative survival rate after 1, 5 and 10 years **G 4.14.5**



Source: NICER © FSO, Neuchâtel 2016

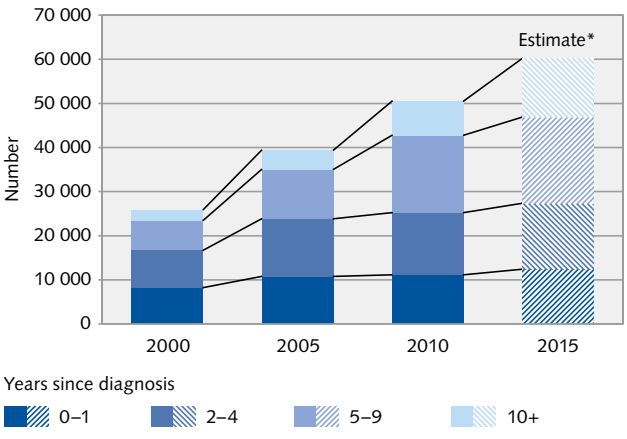
Prostate cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.14.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

Prostate cancer: Number of survivors (prevalence) **G 4.14.7**



* Extrapolation from the years 1981–2010

Source: NICER © FSO, Neuchâtel 2016

Trends over time

Between 1983 and 2007, incidence rates increased significantly by 73%. This increase is probably associated with the introduction of the prostate-specific antigen (PSA) test. Subsequently, incidence rates fall again. Between 1983 and 2012 the mortality rate fell sharply (37%; G 4.14.4). Among men aged over 70, incidence rates began falling as early as 1998.

4.14.2 Survival rates and number of cancer survivors

In the period 2008–2012, 78% of patients survived at least five years after having been diagnosed with prostate cancer (observed survival rate; T 4.14.1). Taking into account the risk of dying from other causes, the five-year survival rate is 88% (relative survival rate). Between 1998 and 2002 this rate was only slightly lower at 86% (G 4.14.5).

Between 1998 and 2012 the ten-year survival rate rose from 73% to 78% (G 4.14.5). The slight improvement in survival chances can be attributed to advances in treatment and earlier discovery of cases thanks to wider screening. However, screening may also result in overdiagnosis of indolent cases and overtreatment. Swiss experts opposed wider inplementaiton of screening which may generate more side effects than benefit.[2] Screening has been carried out less frequently since then and the incidence rates have not increased since 2007.

T 4.14.1 Prostate cancer: Key epidemiological figures

	Men	
	Incidence	Deaths
Number of cases per year, average 2008–2012	6 236	1 331
Number of cases 2015 (estimated)	6 622	1 392
Proportion of all cancer cases, average 2008–2012	29.9%	14.8%
Crude rate (per 100,000 inhabitants and year), 2008–2012	161.9	34.5
Average annual change in the crude rate, 2003–2012	–0.2%	–0.7%
Crude rate 2015 (estimated)	162.8	34.2
Standardised rate (per 100,000 inhabitants and year), 2008–2012	128.8	23.8
Average annual change in the standardised rate, 2003–2012	–1.3%	–2.4%
Median age at diagnosis and death, average 2008–2012	69.2	82.1
Lifetime risk, 2008–2012	16.4%	4.9%
Cumulative risk before the age of 70, 2008–2012	7.8%	0.4%
Years of potential life lost before the age of 70, average 2008–2012	–	964

	Men
Number of patients (prevalence), on 31.12.2010	50 505
of whom diagnosed within the past 5 years	25 234
Observed 5-year survival rate, on 31.12.2012	77.5%
Relative 5-year survival rate, on 31.12.2012	88.1%

Sources: NICER – New cases; FSO – Deaths

Survival rates for prostate cancer in Switzerland are ranked in the upper European middle range. Compared with the nine European countries selected, Switzerland occupied seventh place in the 2000–2007 period (G 4.14.6). Whereas there were 26,000 prostate cancer survivors in Switzerland in 2000, this figure almost doubled to 50,500 survivors in 2010 (G 4.14.7). This sharp increase can partly be attributed to the rise in the older population, i.e. it is also a demographic effect. More than 60,000 prostate cancer survivors in Switzerland have been estimated for 2015, with almost 33,000 representin long-term survivors (i.e. five years and more past diagnosis; G 4.14.7).

4.14.3 Risk factors

Besides age, the most important risk factor is a family history of prostate cancer. Men who have a family history of prostate cancer are two to three times more likely to develop prostate cancer than men without a family history of this disease.[1] Furthermore, a diet that is rich in calcium is also a risk factor for prostate cancer.[3]

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 Swiss Medical Board (2011). Stellenwert des PSA-Testes bei der Früherkennung des Prostatakarzinoms. Zürich. www.samw.ch/dms/de/Publikationen/Empfehlungen/d_PSA_Test.pdf

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.15 Testicular cancer

4.15.1 New cases and mortality

Current situation

Between 2008 and 2012 an average of about 400 men were diagnosed with testicular cancer each year. This type of cancer accounts for 2.0% of all cancers among men. The lifetime risk of developing testicular cancer is 0.7% (equal to almost 2 out of 300 men; T 4.15.1).

In the same period, an average of approximately 10 men died per year from testicular cancer. This type of cancer accounts for 0.1% of all cancer deaths among men. The risk of dying from this type of cancer is very low.

Testicular cancer (C62) is usually a tumour which develops from germ cells and which, in most patients, occurs in only one of the testicles.[1,2]

Testicular cancer mainly affects young men. Incidence rates peak in the 30 to 34 year-old age group and then decline.

Mortality rates are very low for all age groups. The age distribution follows no clear pattern (G 4.15.1).

The median age at diagnosis is 38. The median age at death is 48.

Regional and international comparisons

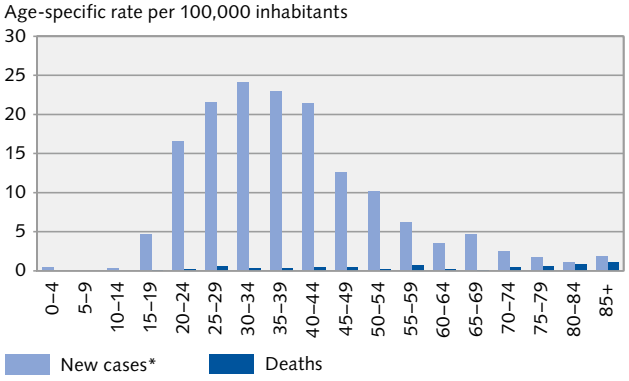
There is no difference in incidence rates between German-speaking Switzerland and French and Italian-speaking Switzerland (G 4.15.2).

In comparison with the selected European countries, incidence and mortality rates are relatively high in Switzerland. Of the nine European countries compared with Switzerland, seven countries have lower incidence rates than Switzerland. Together with Norway and Denmark, Switzerland has the second highest mortality rate after Austria (G 4.15.3).

Trends over time

Between 1983 and 2007 a slight increase in incidence rates (+22%) and a marked decline in mortality rates (–63%) were observed. Thereafter, incidence and mortality rates stabilised (G 4.15.4).

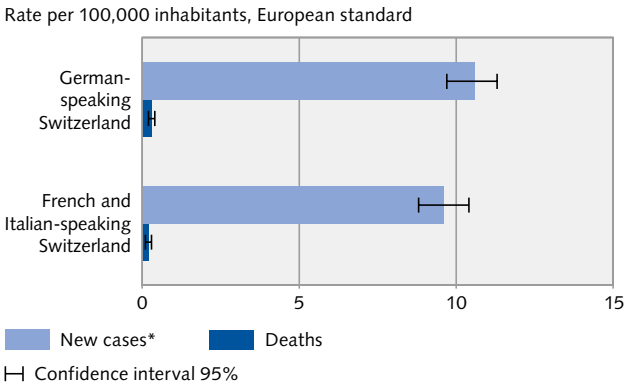
Testicular cancer by age, 2008–2012 **G 4.15.1**



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

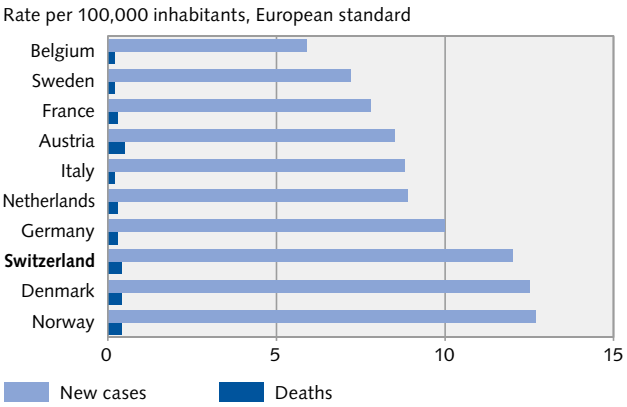
Testicular cancer in regional comparison, 2008–2012 **G 4.15.2**



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Testicular cancer in international comparison, 2012 **G 4.15.3**



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012 © FSO, Neuchâtel 2016

4.15.2 Survival rates

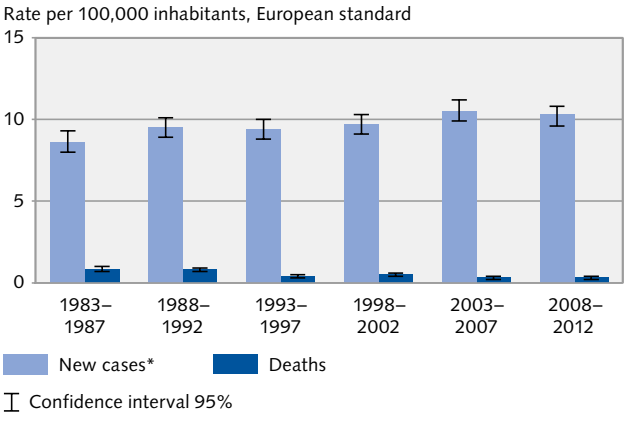
In the period 2008–2012, 96% of patients survived at least five years after having been diagnosed with testicular cancer (observed survival rate; T4.15.1). Taking into account the risk of dying from other causes, the five-year survival rate for testicular cancer is as high as 99% (relative survival rate). Between 1998 and 2002 this rate was almost as high at 97% (G4.15.5). This means that only few men died from testicular cancer.

Between 1998 and 2012 the ten-year survival rate rose from 82% to 87% (G4.15.5). Compared with the nine European countries selected, Switzerland's five-year survival rate of 83% during the period 2000–2007 was the lowest. But due to the small number of observations in the older age groups, Switzerland's survival rates are not meaningful (G4.15.6).

4.15.3 Risk factors

Established risk factors for testicular cancer are undescended testicles and family history. Men with undescended testicles are four times more at risk of developing this type of cancer. The brothers and sons of patients with testicular cancer have a 3 to 10 times greater risk of developing this type of cancer. Complete androgen insensitivity syndrome, causing a completely female appearance and physical characteristics also increases the risk of testicular cancer. Furthermore, the risk of cancer is increased in men with testicular anomalies.[1]

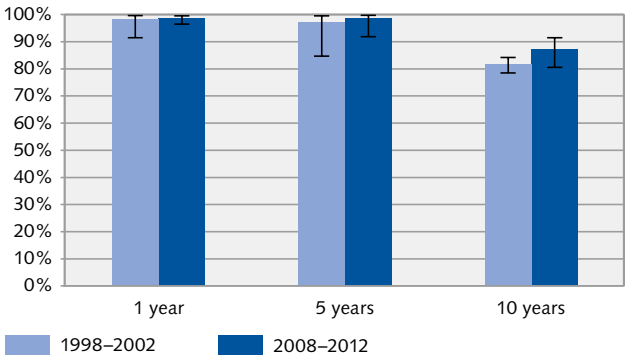
Testicular cancer: Trends over time **G 4.15.4**



* New cases estimated on the basis of cancer registry data

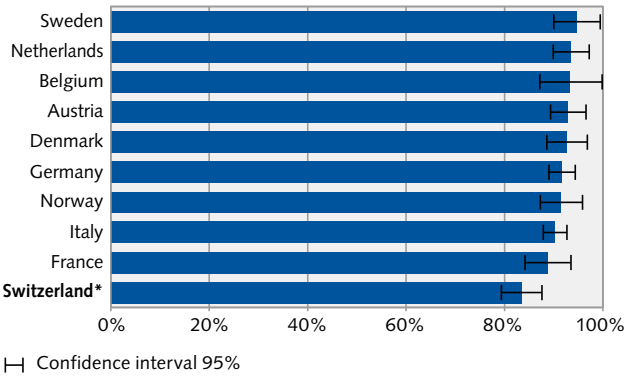
Sources: NICER – New cases; FSO – Deaths © FSO, Neuchâtel 2016

Testicular cancer: Relative survival rate after 1, 5 and 10 years **G 4.15.5**



Source: NICER © FSO, Neuchâtel 2016

Testicular cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.15.6**



* Limited reliability due to the small number of cases in the upper age groups in Switzerland
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

T 4.15.1 Testicular cancer: Key epidemiological figures

	Men	
	Incidence	Deaths
Number of cases per year, average 2008–2012	414	11
Number of cases 2015 (estimated)	435	11
Proportion of all cancer cases, average 2008–2012	2.0%	0.1%
Crude rate (per 100,000 inhabitants and year), 2008–2012	10.7	0.3
Average annual change in the crude rate, 2003–2012	–0.1%	–3.2%
Crude rate 2015 (estimated)	10.7	0.3
Standardised rate (per 100,000 inhabitants and year), 2008–2012	10.3	0.3
Average annual change in the standardised rate, 2003–2012	0.1%	–3.8%
Median age at diagnosis and death, average 2008–2012	37.7	48.3
Lifetime risk, 2008–2012	0.7%	0.1%
Cumulative risk before the age of 70, 2008–2012	0.7%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	239

	Men
Observed 5-year survival rate, on 31.12.2012	96.0%
Relative 5-year survival rate, on 31.12.2012	98.6%

Sources: NICER – New cases; FSO – Deaths

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

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4.16 Renal cancer

4.16.1 New cases and mortality

Current situation

Between 2008 and 2012 an average of about 620 men were diagnosed with renal cancer each year, equal to 3% of all new cancer cases. In the same period, 290 women were diagnosed with renal cancer each year (1.6% of all new cancer cases). The standardised incidence rate for men is around 2.5 times higher than for women. The lifetime risk of developing renal cancer is 1.5% for men and 0.7% for women (equal to almost 15 out of 1000 men and 7 out of 1000 women; T4.16.1).

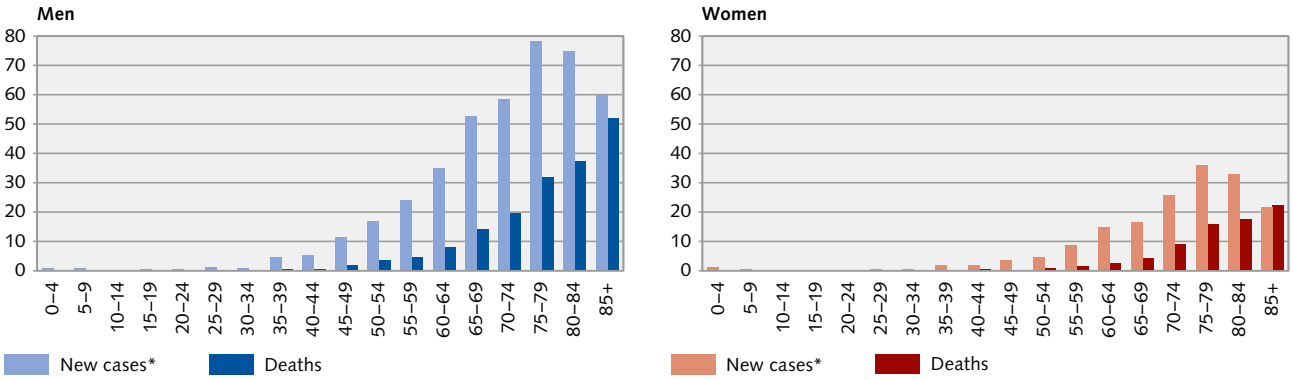
Renal cancer (C64) encompasses various types of cancer. They predominantly originate from the functional cells of the kidneys.[1]

Over the same period, renal cancer was responsible for 190 deaths in men and 110 deaths in women. This is equal to 2.1% and 1.5% respectively of all cancer deaths. The risk of dying from renal cancer is 0.6% for men and 0.3% for women. This means that approximately 6 out of 1000 men and 3 out of 1000 women die from this cancer.

The median age at diagnosis and death is 67 and 74 for men and 72 and 79 for women. Incidence rates rise with increasing age until the age of 79 (G4.16.1).

Renal cancer by age, 2008–2012 **G 4.16.1**

Age-specific rate per 100,000 inhabitants

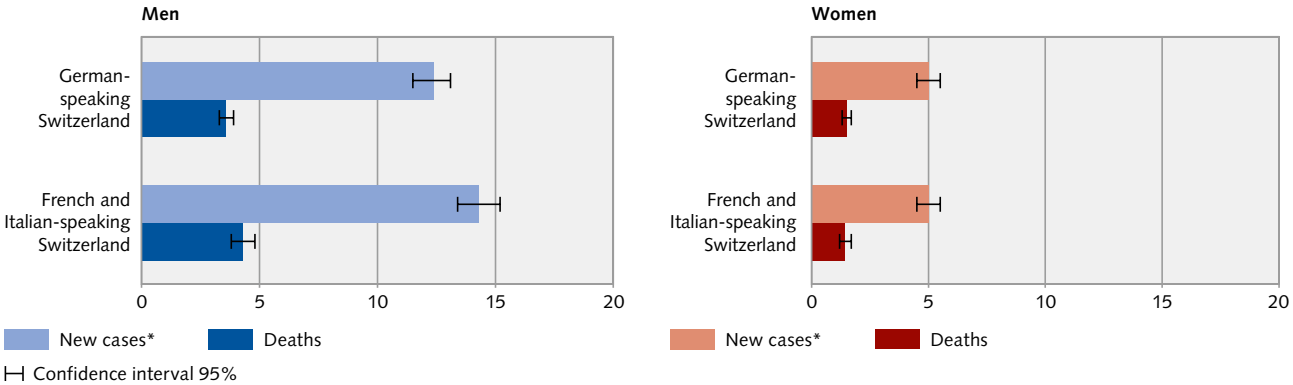


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Renal cancer in regional comparison, 2008–2012 **G 4.16.2**

Rate per 100,000 inhabitants, European standard

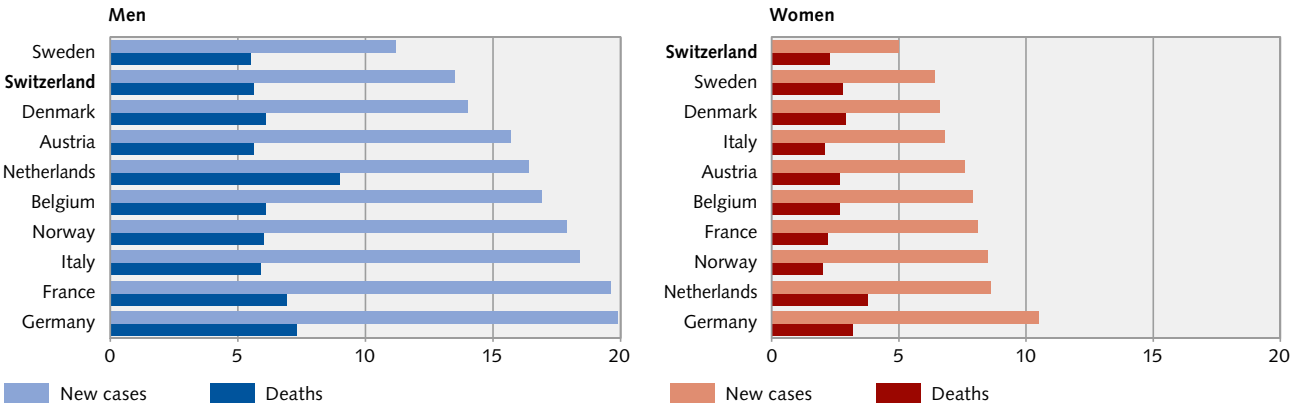


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Renal cancer in international comparison, 2012 G 4.16.3

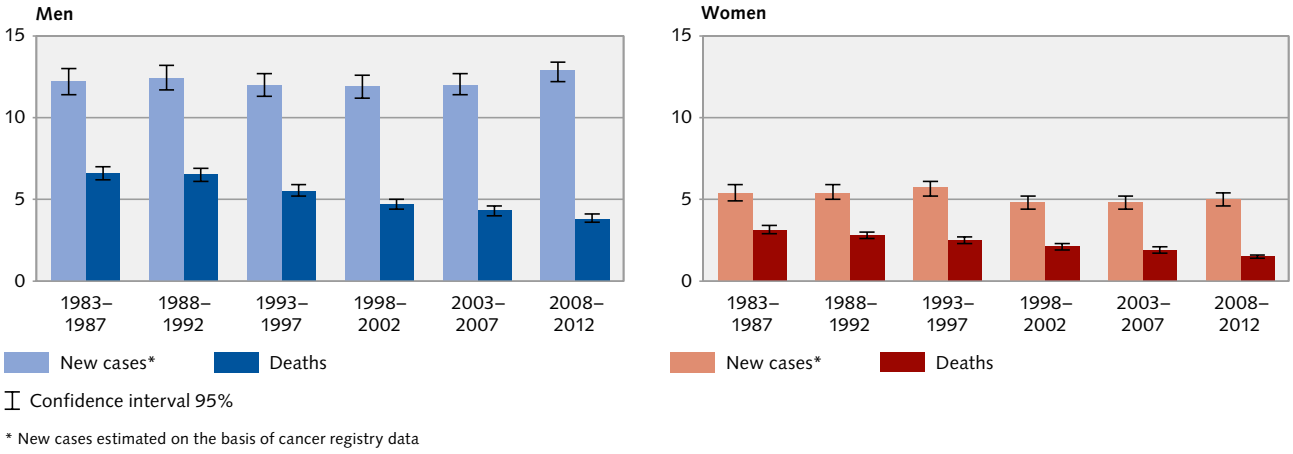
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Renal cancer: Trends over time G 4.16.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Nephroblastoma (Wilms' tumour), a subtype of renal cancer, can occur at an early age (cf. chapter Children). Between 2008 and 2012, no renal cancer related deaths were registered in persons under the age of 25. Beyond this age, the mortality rate rises with increasing age.

Regional and international comparisons

Renal cancer in men is diagnosed more frequently in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.16.2). This is not the case with women. With regard to mortality, there is no difference between French and Italian-speaking Switzerland and German-speaking Switzerland.

Among the ten European countries compared in this report, Switzerland has the second lowest incidence rate for men and the lowest for women. The mortality rate for men is comparable to that of the least affected countries Sweden and Austria. Among women, Switzerland is in fourth position.

Trends over time

The incidence rate has not changed much in the past 30 years (G 4.16.4). In contrast, the mortality rate has declined.

4.16.2 Survival rates

In the period 2008–2012, 57% of male patients and 65% of female patients survived at least five years after having been diagnosed with renal cancer (observed survival rate; T 4.16.1). Taking into account the risk of dying from other causes, the five-year survival rate for renal cancer is 65% among men and 70% among women (relative survival rate). Between 1998 and 2002 it was 62% for men and 60% for women (G 4.16.5).

Between 1998 and 2012 the ten-year survival rate rose from 48% to 52% for men and from 50% to 53% for women (G 4.16.5). Among the ten European countries compared, survival rates in Switzerland are ranked fifth for men and sixth for women in the 2007–2012 period (G 4.16.6).

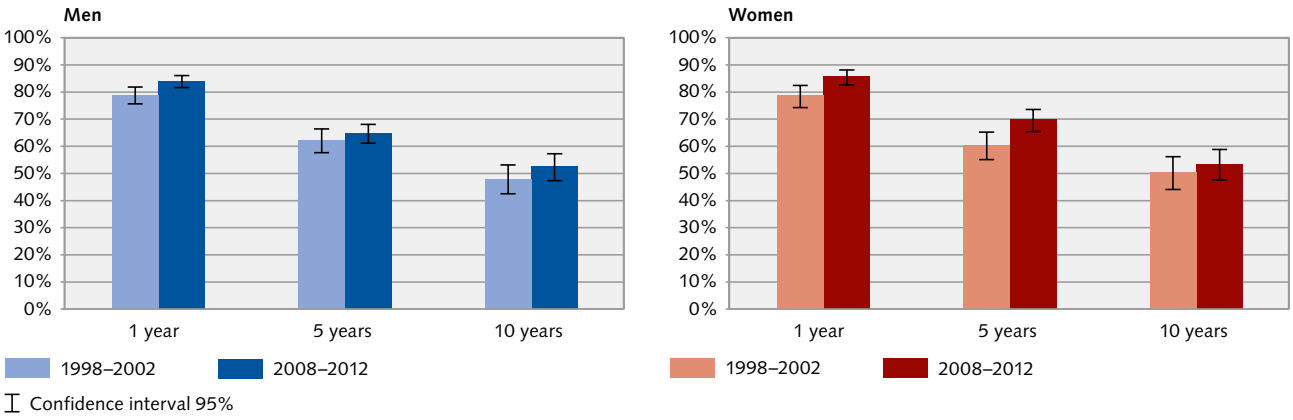
4.16.3 Risk factors

Smoking increases the risk of renal cancer. Other risk factors for renal cancer are being overweight and especially obese.[1]

Certain diseases, such as high blood pressure or its associated treatment, are also associated with a higher risk of renal cancer. Acquired cystic kidney disease is also associated with a higher risk. It occurs particularly in patients undergoing blood dialysis due to chronic terminal renal insufficiency (renal failure). Phenacetin, used in certain pain killers removed from the Swiss market in 1992[2] also favoured the development of renal cancer.

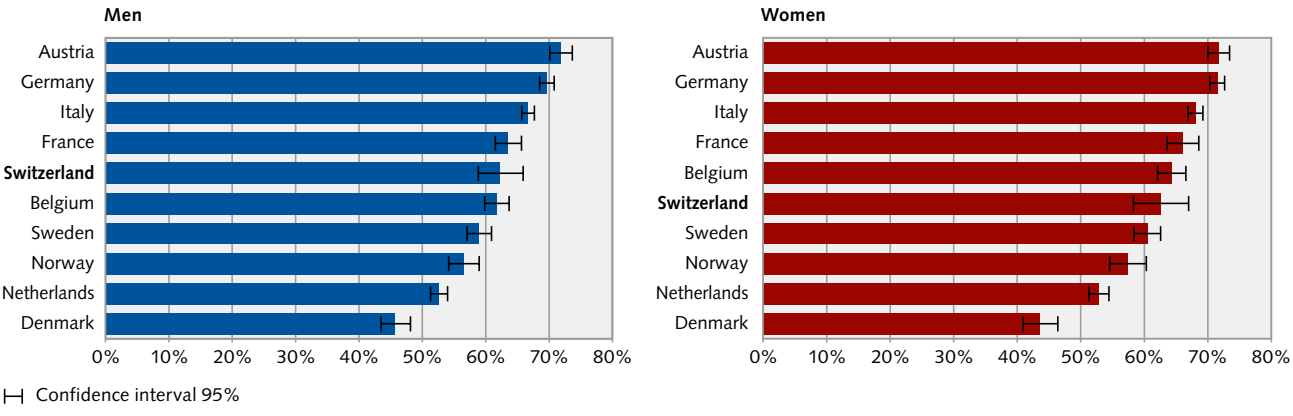
Although renal cancer is not considered an occupational disease, it is assumed that occupational contact with trichloroethylene may cause kidney tumours. Contact with petroleum products, asbestos, lead or cadmium

Renal cancer: Relative survival rate after 1, 5 and 10 years **G 4.16.5**



Source: NICER

Renal cancer:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.16.6**



* Corresponds to the ICD-O-3 codes C64–66, C68 used in the Eurocare-5 database
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.16.1 Renal cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	616	193	291	109
Number of cases 2015 (estimated)	761	205	329	108
Proportion of all cancer cases, average 2008–2012	3,0%	2,1%	1,6%	1,5%
Crude rate (per 100,000 inhabitants and year), 2008–2012	16,0	5,0	7,3	2,7
Average annual change in the crude rate, 2003–2012	2,8%	–0,6%	1,3%	–2,0%
Crude rate 2015 (estimated)	18,7	5,1	7,9	2,6
Standardised rate (per 100,000 inhabitants and year), 2008–2012	12,9	3,8	5,0	1,5
Average annual change in the standardised rate, 2003–2012	1,6%	–2,2%	0,6%	–4,1%
Median age at diagnosis and death, average 2008–2012	67,3	74,0	71,8	78,8
Lifetime risk, 2008–2012	1,5%	0,6%	0,7%	0,3%
Cumulative risk before the age of 70, 2008–2012	0,8%	0,2%	0,3%	0,1%
Years of potential life lost before the age of 70, average 2008–2012	–	753	–	219

	Men	Women
Observed 5-year survival rate, on 31.12.2012	57,3%	64,7%
Relative 5-year survival rate, on 31.12.2012	64,8%	69,7%

Sources: NICER – New cases; FSO – Deaths

increases the risk of developing renal cancer.[1] X-rays and gamma rays also constitute a risk factor.[3] Several studies have suggested a possible relationship between renal cancer and arsenic as well as a sugary diet (food and drink).[4]

2% to 4% of renal cancer cases already have a family history. Furthermore, several rare genetic diseases (von Hippel-Lindau syndrome; Birt-Hogg-Dubé syndrome; hereditary leiomyomatosis; familial or hereditary papillary renal cell carcinoma) are associated with an increased risk of renal cancer.[1]

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 Personal announcement from SwissMedic on 14 July 2015

3 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4 Lim S.S., Vos T., Flaxman A. D. et al. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet; 380:2224-60

4.17 Bladder cancer

4.17.1 New cases and mortality

Current situation

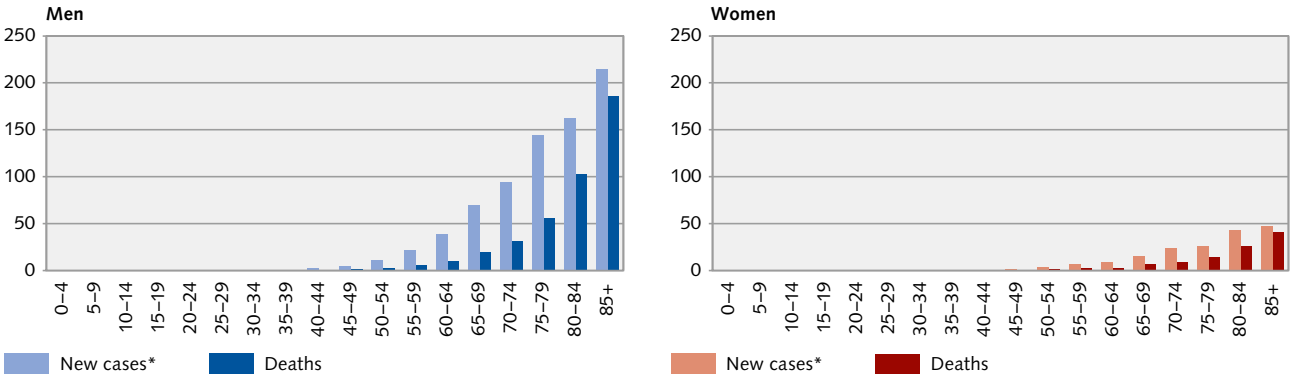
With an average of 850 new cases in men and 280 in women each year between 2008 and 2012, bladder cancer accounts for 4.1% (1.6% in women) of all new cancer cases. Bladder cancer is much more common among men: their standardised incidence rate is four times that of women. The lifetime risk of developing bladder cancer is 2.5% for men and 0.7% for women (equal to almost 25 out of 1000 men and 7 out of 1000 women; T 4.17.1).

There are five main types of invasive or superficial bladder cancer. They all originate in the cells lining the urinary tract (epithelium of the efferent urinary tract).[1] This chapter deals only with invasive carcinomas (C67) excluding the non-invasive papilloma (benign tumours arising from the epithelium of the efferent urinary tract) and in situ tumours of the bladder.

Bladder cancer accounts for an average of 370 deaths in men and 150 in women each year (4.1% and 2.1% respectively of all cancer deaths). The risk of dying from bladder cancer is 1.2% for men and 0.4% for women. This means that 3 out of 250 men and 1 out of 250 women die from this cancer.

Bladder cancer by age, 2008–2012 **G 4.17.1**

Age-specific rate per 100,000 inhabitants

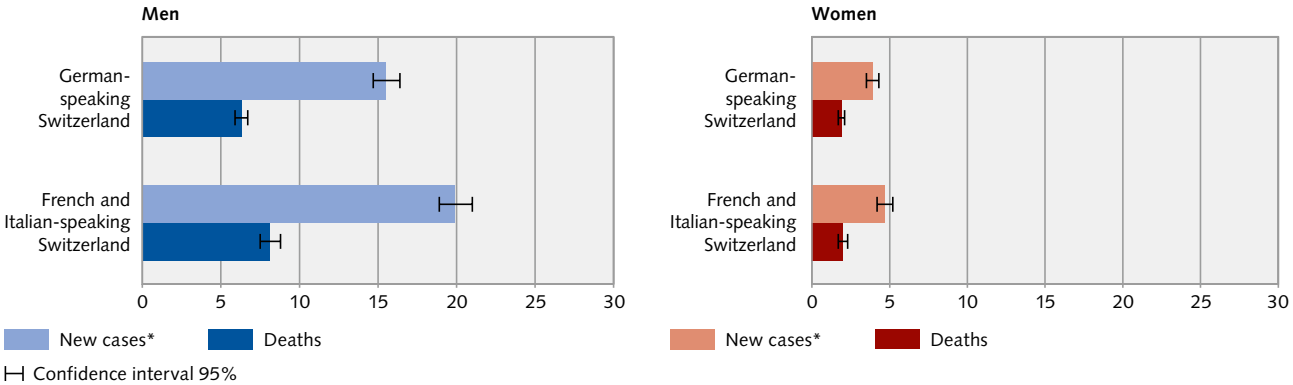


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Bladder cancer in regional comparison, 2008–2012 **G 4.17.2**

Rate per 100,000 inhabitants, European standard

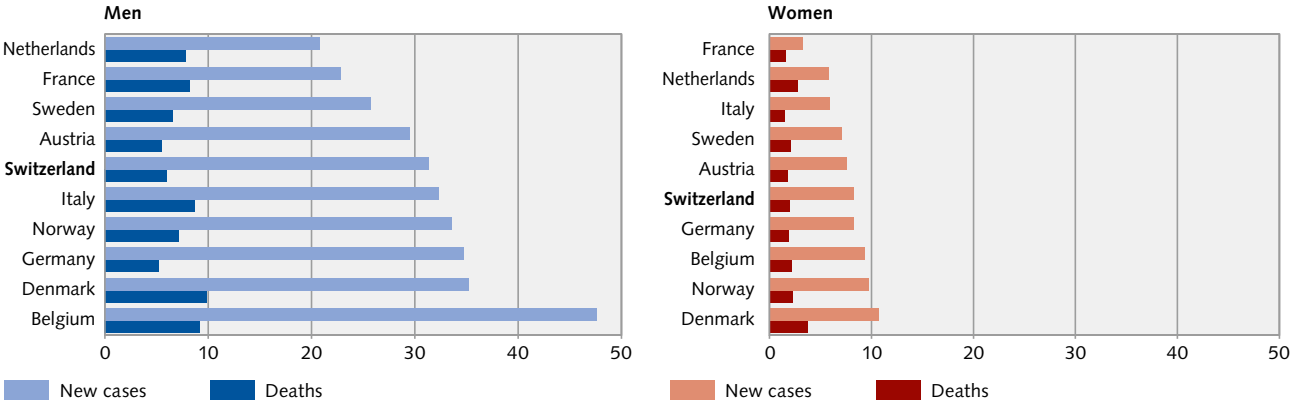


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Bladder cancer in international comparison, 2012 G 4.17.3

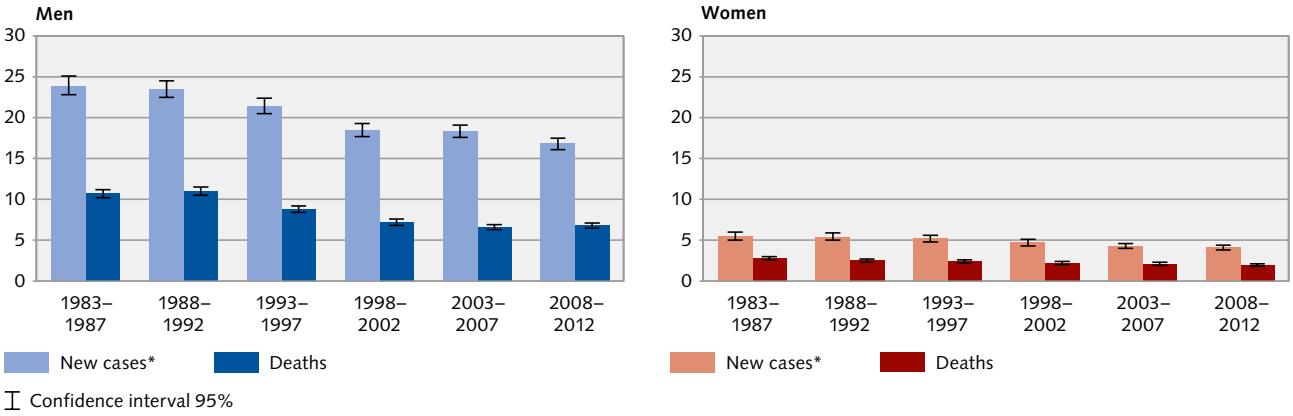
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Bladder cancer: Trends over time G 4.17.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Bladder cancer is rare in men before the age of 40 and in women until the age of 45. Incidence and mortality rates rise, however, with increasing age, although less sharply in women (G 4.17.1). The median age at diagnosis and death is 74 and 80 for men and 76 and 81 for women.

Regional and international comparisons

Incidence and mortality rates for men are considerably higher in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.17.2). For women there are no clear regional differences.

Among the ten European countries under comparison, incidence rates vary twofold in men and threefold in women. As information on the coding of papillomas and their malignancy is not available for all countries, the data are only comparable to a limited extent.[1] Subject to that restriction, the incidence rate in Switzerland for men is the sixth highest and for women the fourth highest (G 4.17.3). The range of mortality rates in the countries under comparison is smaller. Mortality rates for men in Germany and Austria are lower than in Switzerland. Four countries have a lower mortality rate for women.

Trends over time

Bladder cancer incidence and mortality rates for both sexes have declined since 1983 (G 4.17.4). A decline of 30% and 36% respectively can be observed in incidence and mortality rates among men. For women the decline for these rates was 25% and 32%. The figures have hardly changed since 2003.

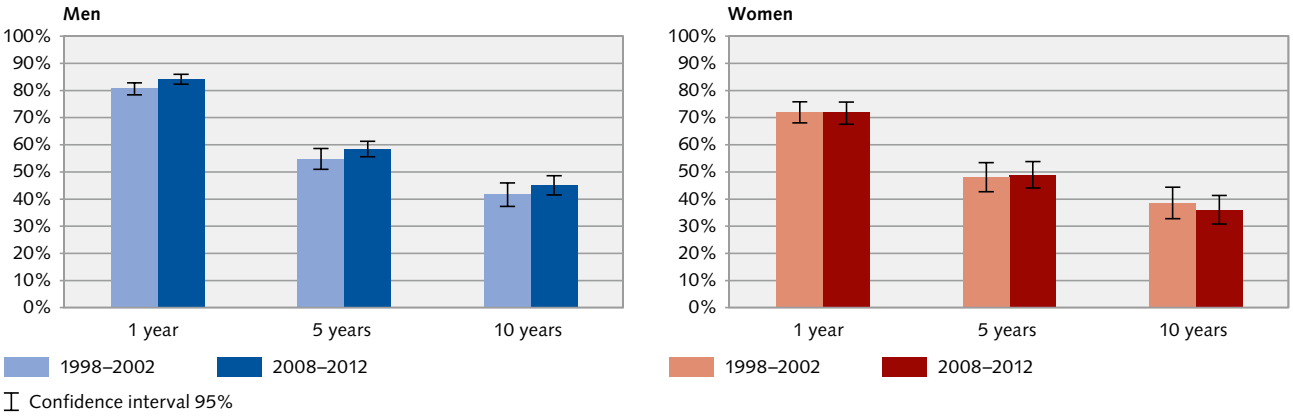
4.17.2 Survival rates and number of cancer survivors

In the period 2008–2012, 52% of male patients and 45% of female patients survived at least five years after having been diagnosed with bladder cancer (observed survival rate; T 4.17.1). Taking into account the risk of dying from other causes, the five-year survival rate for bladder cancer is 59% among men and 49% among women (relative survival rate). Between 1998 and 2002 it was 55% for men and 48% for women (G 4.17.5).

Between 1998 and 2012 the ten-year survival rate rose from 42% to 45% for men and fell slightly from 39% to 36% for women (G 4.17.5). Due to the low number of cases among women, however, random effects have a great influence on survival rates. Bladder cancer is one of the few cancers with higher survival rates for men than for women.

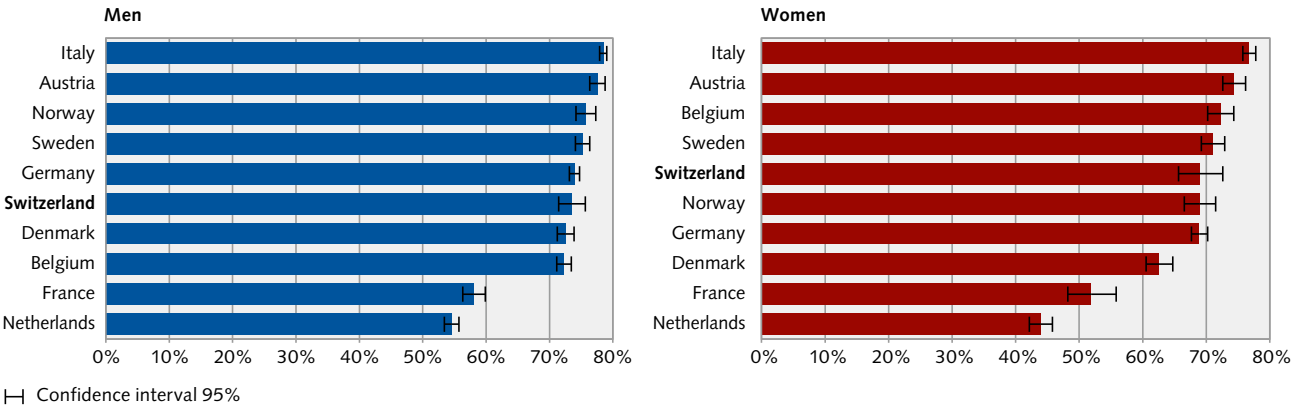
For the 2000–2007 period, survival rates in Switzerland for patients with bladder cancer were comparable to those in the nine European countries selected. Switzerland is ranked sixth for men and fifth for women (G 4.17.6).

Bladder cancer: Relative survival rate after 1, 5 and 10 years **G 4.17.5**



Source: NICER

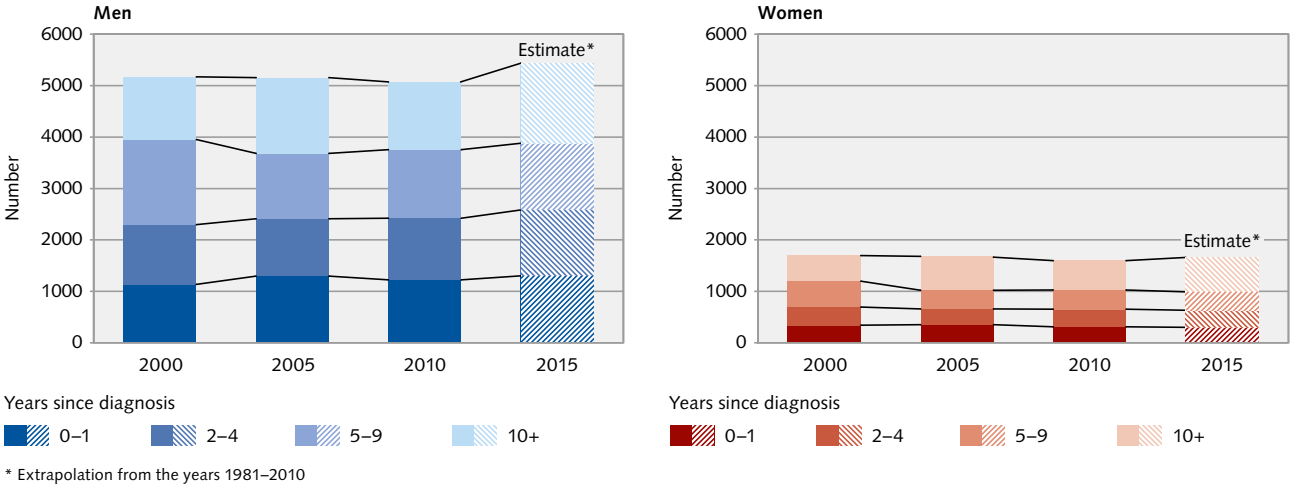
Bladder cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.17.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Bladder cancer: Number of survivors (prevalence) **G 4.17.7**



* Extrapolation from the years 1981–2010

Source: NICER

Whereas there were 6900 bladder cancer survivors in 2000, this figure fell slightly to 6700 in 2010 (G 4.17.7). Approximately 7000 persons living in Switzerland with a bladder cancer diagnosis are estimated for 2015 (G 4.17.7). The percentage of women in this figure is only 23%. For some 4000 men and women, five years and more have passed since diagnosis. Another 3000 are still in the first five years after diagnosis.

4.17.3 Risk factors

Smoking is the main risk factor for bladder cancer.[1] In addition to other toxic substances, cigarettes contain aromatic amines. These are also included in the occupational risk factors. It has been demonstrated that occupational contact with aromatic amines – a class of chemical substances that is used in manufacturing in the chemical industry[2] – can cause bladder cancer. Although it is difficult to identify all implicated products, it is known that metal processing oils in particular are responsible for an elevated risk (e.g. in the metal and machinery industry).[1] Bladder cancer is considered to be an occupational cancer, especially in dye production, the rubber industry, among painters and in the production of aluminium.[3] Solvents used in tanning processes also increase the risk of bladder cancer.[1]

Disinfection by-products produced during water chlorination processes also increase the risk of developing bladder cancer as does the contamination of drinking water with arsenic, a problem that concerns in particular certain regions of Southeast Asia.

Persons with chronic bladder infections are also at risk. Such inflammations can be caused by the long-term use of a catheter or by a parasitic disease (schistosomiasis). The latter, however, mainly affects regions where the disease is endemic.[1] The IARC also lists X-rays and gamma rays as further risk factors for bladder cancer.[3] Some hereditary genetic changes increase the risk, particularly in association with smoking.[4]

T 4.17.1 Bladder cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	853	368	277	149
Number of cases 2015 (estimated)	942	429	291	149
Proportion of all cancer cases, average 2008–2012	4.1%	4.1%	1.6%	2.1%
Crude rate (per 100,000 inhabitants and year), 2008–2012	22.1	9.5	7.0	3.8
Average annual change in the crude rate, 2003–2012	0.2%	1.8%	–0.1%	–1.0%
Crude rate 2015 (estimated)	23.1	10.6	7.0	3.6
Standardised rate (per 100,000 inhabitants and year), 2008–2012	16.8	6.8	4.1	1.9
Average annual change in the standardised rate, 2003–2012	–1.2%	0.1%	–0.4%	–1.5%
Median age at diagnosis and death, average 2008–2012	73.9	79.6	76.3	81.2
Lifetime risk, 2008–2012	2.5%	1.2%	0.7%	0.4%
Cumulative risk before the age of 70, 2008–2012	0.7%	0.2%	0.2%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	673	–	296

	Men	Women
Number of patients (prevalence), on 31.12.2010	5074	1597
of whom diagnosed within the past 5 years	2421	655
Observed 5-year survival rate, on 31.12.2012	51.7%	45.0%
Relative 5-year survival rate, on 31.12.2012	58.5%	49.0%

Sources: NICER – New cases; FSO – Deaths

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 National Cancer Institute. L'exposition à des produits en milieu professionnel [online] (page accessed on 3/07/2015). http://www.e-cancer.fr/Patients-et-proches/Les-cancers/Cancer-de-la-vessie/Les-facteurs-de-risque/L-exposition-a-des-produits-en-milieu-professionnel

3 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.18 Cancer of the brain and central nervous system

4.18.1 New cases and mortality

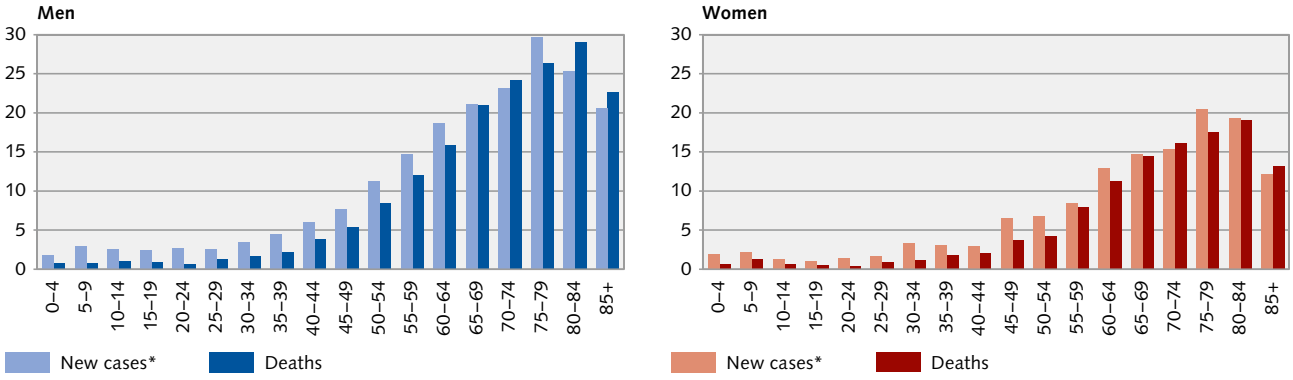
Current situation

Between 2008 and 2012 an average of 600 people per year developed a malignant brain tumour and 490 died from it (T 4.18.1). This is equal to 1.5% of all new cancer diagnoses and 3% of all cancer death causes. The standardised incidence rate for brain cancer is 1.5 times higher for men than for women. The lifetime risk of developing this type of cancer is 0.8% for men and 0.6% for women (equal to almost 8 out of 1000 men and 6 out of 1000 women; T 4.18.1). The risk of dying from this cancer is 0.7% for men and 0.5% for women. This means that 1 out of 150 men and 1 out of 200 women die from this cancer.

This chapter deals with the various malignant tumours that can affect the brain and tumours of the central nervous system (C70–72). They arise predominantly in the brain and more rarely in the spinal cord.[1] In this chapter they are grouped together under the term "brain tumour".[2] The most frequent malignant tumours in adults are gliomas. They also occur in children; in this case they arise from embryonic cells (cf. Chapter on Childhood). Secondary malignant growths from other tumours (metastases) often appear in the brain. They are not, however, dealt with in this chapter.[3]

Cancer of the brain and central nervous system by age, 2008–2012 **G 4.18.1**

Age-specific rate per 100,000 inhabitants

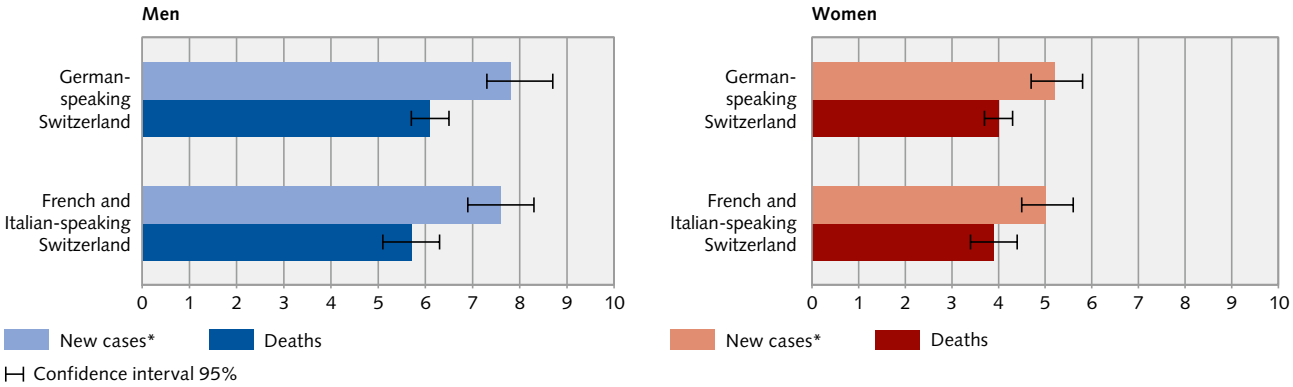


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Cancer of the brain and central nervous system in regional comparison, 2008–2012 **G 4.18.2**

Rate per 100,000 inhabitants, European standard

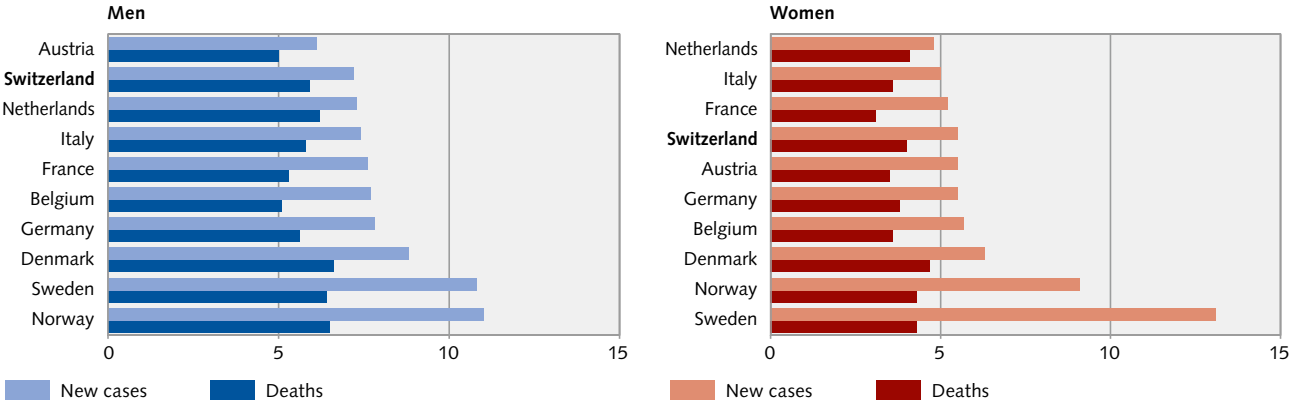


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Cancer of the brain and central nervous system in international comparison, 2012 G 4.18.3

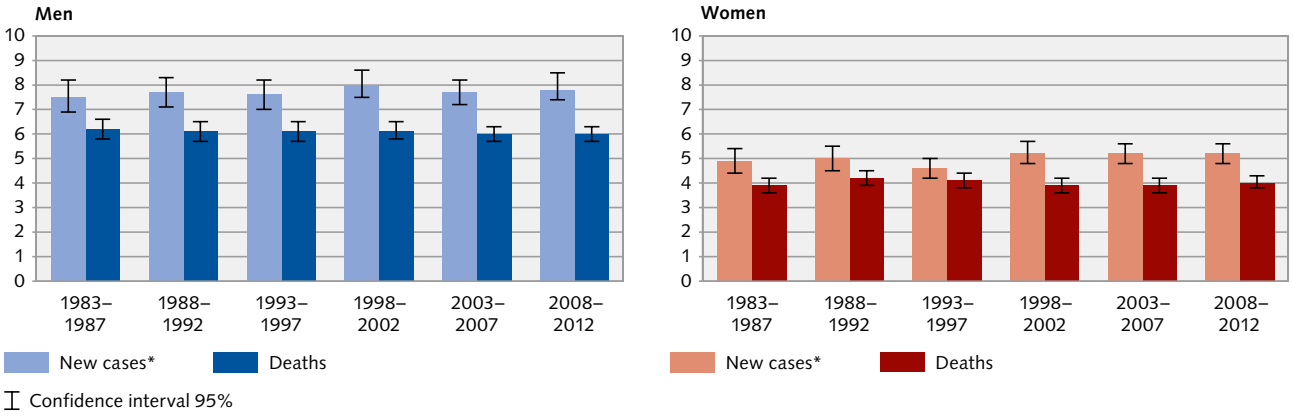
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Cancer of the brain and central nervous system: Trends over time G 4.18.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Brain tumours can develop in young people and they can be diagnosed and lead to death even in childhood. In later years incidence and mortality rates rise until the ages of 79 and 84 respectively (G 4.18.1). Around half of all new diagnoses and deaths resulting from a brain tumour occur in men before the age of 61 and 65 respectively and in women before the age of 64 and 68 respectively.

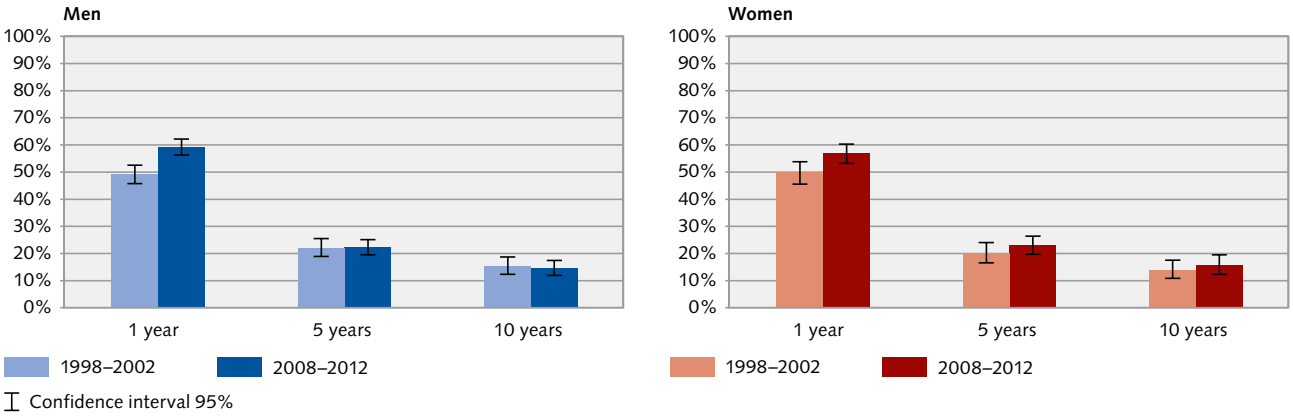
Regional and international comparisons

There are no differences in the incidence and mortality rates between German-speaking Switzerland on the one hand and French and Italian-speaking Switzerland on the other (G 4.18.2). The selected nine European countries show similar incidence rates; considerably higher values can be seen only in Norway and Sweden and among men in Denmark (G 4.18.3). Men in Austria have the lowest incidence rate, followed by Switzerland in second place. Women in Switzerland, Germany and Austria occupy fourth place. The differences in mortality rates are smaller, but here again the rates are highest in Denmark, Norway and Sweden. Behind the Netherlands, Switzerland is ranked fifth for both men and women.

Trends over time

Incidence and mortality rates for both sexes have remained stable overall in the past 30 years (G 4.18.4).

Cancer of the brain and central nervous system: Relative survival rate after 1, 5 and 10 years **G 4.18.5**



Source: NICER

4.18.2 Survival rates

In the period 2008–2012 roughly 22% of male and female patients survived at least five years after having been diagnosed with central nervous system tumour (observed survival rate; T 4.18.1). Taking into account the risk of dying from other causes, the five-year survival rate is 22% among men and 23% among women (relative survival rate G 4.18.5). Between 1998 and 2002 it was unchanged in men and only slightly lower in women (20%). Between 1998 and 2012 the ten-year survival rates for men and women remained stable at around 15% (G 4.18.5).

There are no comparable data at European level for the observation of differences in survival rates after malignant brain tumours. However, publications for major European regions (Northern, Central, Eastern and Southern Europe) indicate that in the treatment of malignant brain tumours, no advances have been made leading to an improvement in survival rates.[4]

4.18.3 Risk factors

Apart from a very small number of brain tumours (less than 1%), which arise in association with certain hereditary tumour diseases, radiation therapy is the only factor that has been unequivocally proven to increase the risk of brain tumours. Children who receive radiation therapy for acute myeloid leukaemia, for example, have an increased risk of developing a brain tumour later in life.

To date no environmental factors or behavioural patterns have been shown to pose a risk in the development of cancer. A relationship between exposure to electromagnetic fields and brain tumours has not been found. Despite numerous international surveys, this is also the case with regard to the use of mobile phones. As the widespread use of mobile phones is only a recent phenomenon, data on long-term effects are not yet available.[2]

T4.18.1 Cancer of the brain and central nervous system: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	343	277	259	212
Number of cases 2015 (estimated)	384	306	300	248
Proportion of all cancer cases, average 2008–2012	1.6%	3.1%	1.5%	2.9%
Crude rate (per 100,000 inhabitants and year), 2008–2012	8.9	7.2	6.5	5.3
Average annual change in the crude rate, 2003–2012	1.2%	0.9%	1.7%	2.0%
Crude rate 2015 (estimated)	9.4	7.5	7.2	6.0
Standardised rate (per 100,000 inhabitants and year), 2008–2012	7.8	6.0	5.2	4.0
Average annual change in the standardised rate, 2003–2012	0.5%	–0.1%	0.6%	0.6%
Median age at diagnosis and death, average 2008–2012	60.6	64.6	63.9	67.5
Lifetime risk, 2008–2012	0.8%	0.7%	0.6%	0.5%
Cumulative risk before the age of 70, 2008–2012	0.5%	0.4%	0.3%	0.3%
Years of potential life lost before the age of 70, average 2008–2012	–	2 890	–	1 908

	Men	Women
Observed 5-year survival rate, on 31.12.2012	21.8%	22.5%
Relative 5-year survival rate, on 31.12.2012	22.2%	23.0%

Sources: NICER – New cases; FSO – Deaths

References

1 The Swiss Cancer League. Hirntumore [online] (page accessed on 1/07/2015). http://www.krebsliga.ch/de/uber_krebs/krebsarten/hirntumore/

2 Canadian Cancer Society. Metastatic cancer [online] (page accessed on 1/07/2015). http://www.cancer.ca/en/cancer-information/cancer-type/metastatic-cancer/brain-metastases/ ?region=qc

3 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

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4.19 Thyroid cancer

Thyroid cancer (C73) encompasses various types of cancer mostly arising from cells which produce thyroid hormones.[1]

4.19.1 New cases and mortality

Current situation

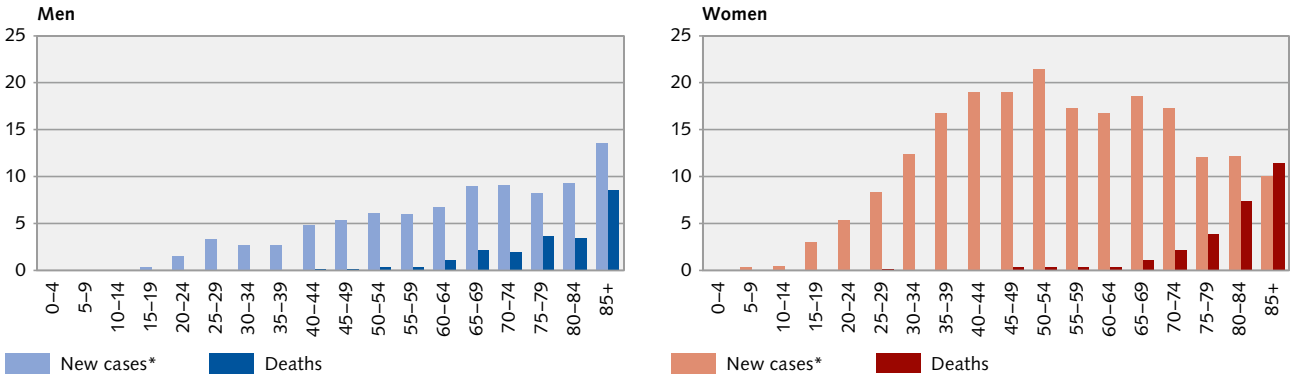
Between 2008 and 2012 an average of 160 men and 490 women per year were diagnosed with thyroid cancer (T 4.19.1). The standardised incidence rate for this type of cancer is three times higher for women than for men. The lifetime risk of developing thyroid cancer is 0.4% for men and 1.0% for women (equal to 1 out of 250 men and 1 out of 100 women; T 4.19.1). Thyroid cancer accounts for less than 1% of new cancer cases in men and less than 3% in women.

Between 2008 and 2012 thyroid cancer was responsible for 20 deaths in men and 40 deaths in women per year. The risk of dying from thyroid cancer is 0.1% for men and for women. This means that 1 out of 1000 men and 1 out of 1000 women die from this cancer. Thyroid cancer accounts for less than 0.5% of all cancer deaths.

The incidence rates in men rise slowly with increasing age (G 4.19.1), with an average age at diagnosis of 56. Incidence rates in women rise sharply until the age of 54, subsequently stabilise and then decline from the age of 75. The median age at diagnosis is 50 for women.

Thyroid cancer by age, 2008–2012 **G 4.19.1**

Age-specific rate per 100,000 inhabitants

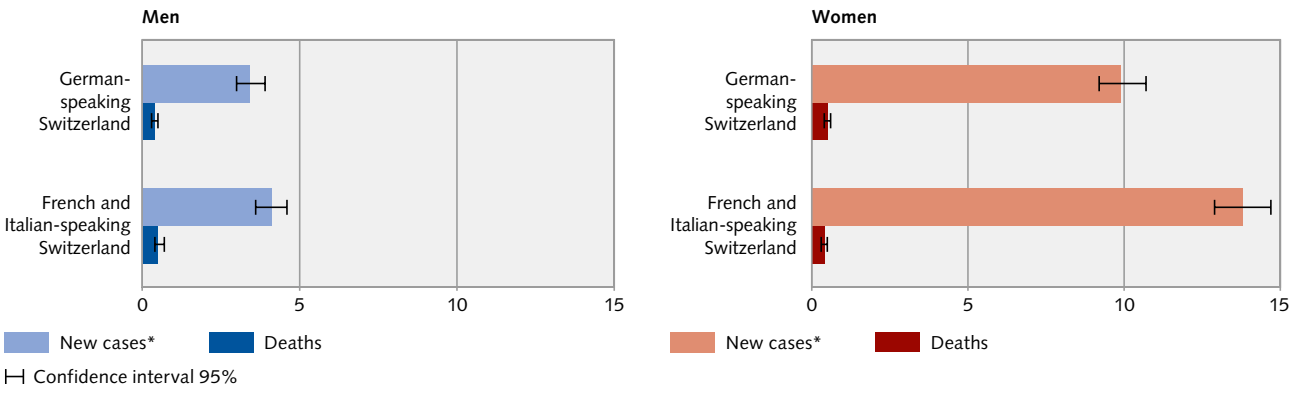


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Thyroid cancer in regional comparison, 2008–2012 **G 4.19.2**

Rate per 100,000 inhabitants, European standard

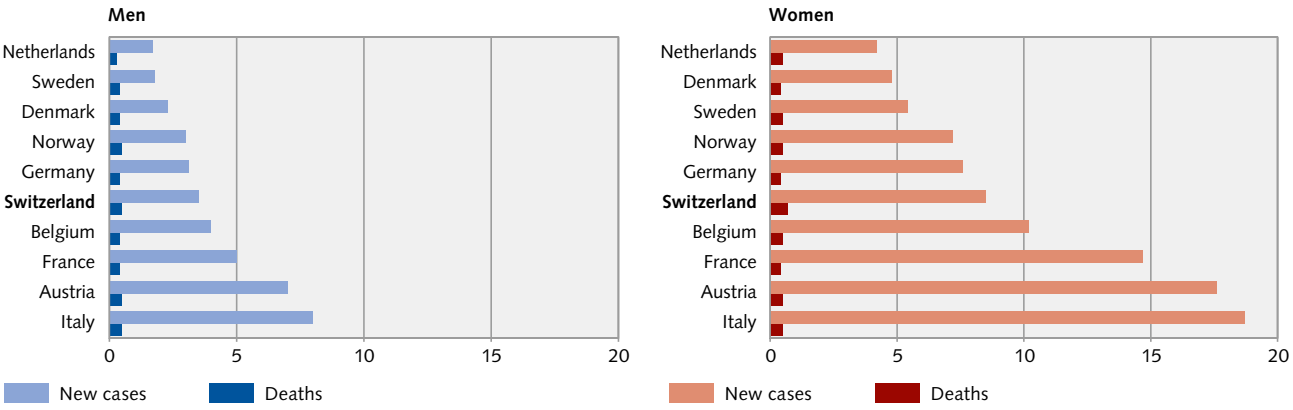


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Thyroid cancer in international comparison, 2012 G 4.19.3

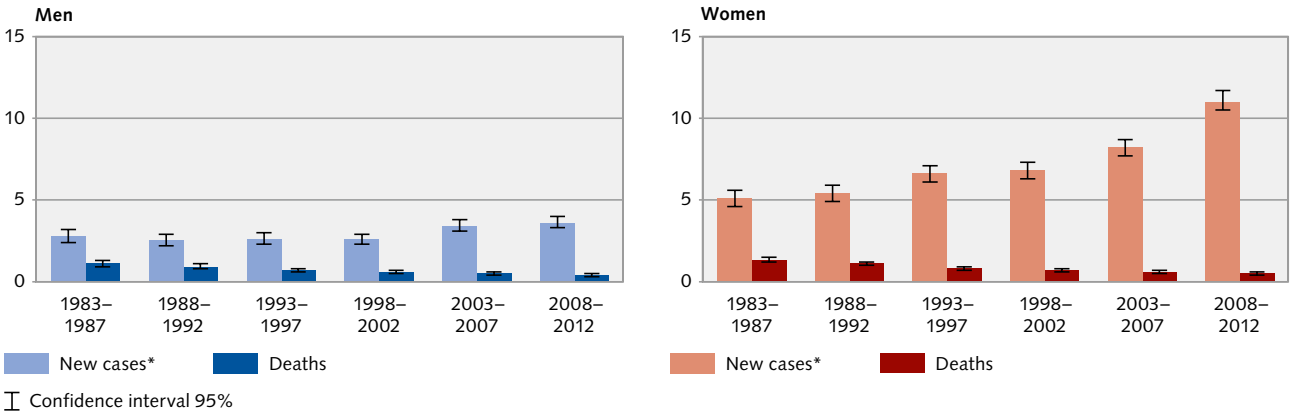
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Thyroid cancer: Trends over time G 4.19.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

A mortality rate of less than 1 case per 100,000 inhabitants is shown for men until the age of 60 and for women until the age of 65. The average age at death is 75 and 82 respectively.

Regional and international comparisons

Women are diagnosed with thyroid cancer more frequently in French and Italian-speaking Switzerland than in German-speaking Switzerland (G 4.19.2). Such a difference is not observed in men. With regard to mortality, there are no regional differences for both sexes.

Incidence rates vary widely among the ten European countries under comparison. Switzerland's incidence rate is roughly twice as high as that of the country with the lowest rate but is still average in European terms (G 4.19.3). Mortality rates are generally low everywhere but Switzerland has the highest rate for women among the countries under comparison.

Trends over time

A clear increase in thyroid cancer can be observed in women: the standardised incidence rate has doubled since 1983 (G 4.19.4). This cancer has also been more frequent in men since 2003 than it was in the two decades prior to that year. A similar trend can be seen in many European countries and in North America.

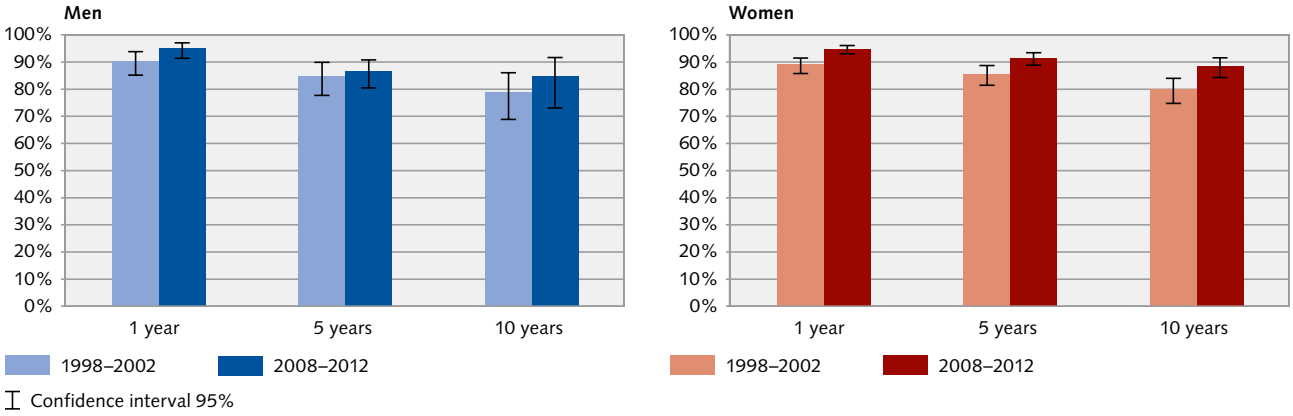
The increase in thyroid cancer is mainly attributed to a more frequent or improved diagnosis (ultrasound), but also to new molecular biological examination methods for the differential diagnosis of benign and malignant thyroid tumours. Benign thyroid diseases are more common in women and as a result they are more frequently examined. This in turn leads to a greater number of cancers being detected by chance in women. A relationship between hormonal and reproductive factors and thyroid cancer has not been clearly proven.[1] The mortality rates for both men and women have declined since 1983.

4.19.2 Survival rates

In the period 2008–2012 roughly 81% of male patients and 88% of female patients survived at least five years after having been diagnosed with thyroid cancer (observed survival rate; T 4.19.1). Taking into account the risk of dying from other causes, the five-year survival rate is 87% among men and 91% among women (relative survival rate). Between 1998 and 2002 it was approximately 85% for men and women (G 4.19.5).

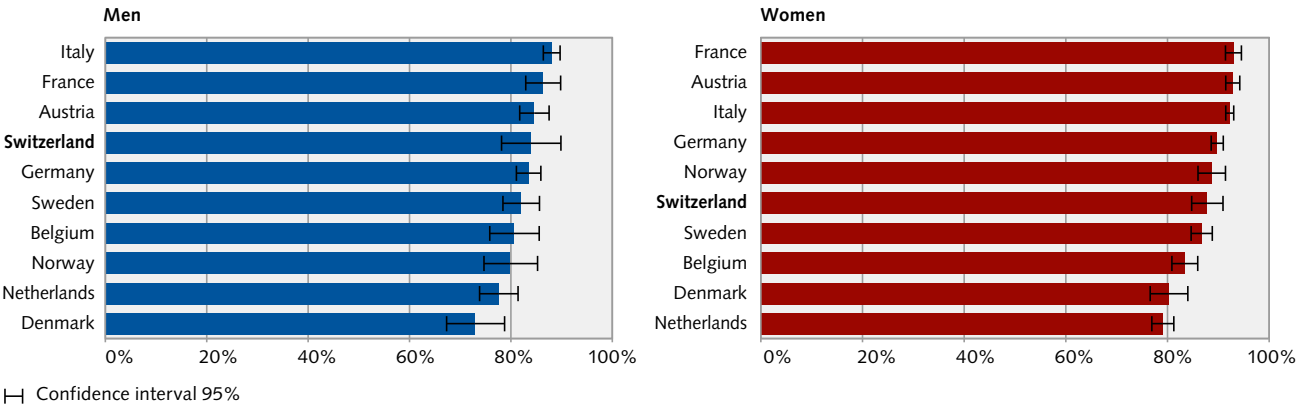
Between 1998 and 2012 the ten-year survival rates for both men and women rose from approximately 79% to 85% (men) and 88% (women) (G 4.19.5) respectively. Improved examination methods (e.g. ultrasound) as well as the use of new molecular biological examination methods for better differential diagnosis have led to thyroid cancer being detected at an early stage, which

Thyroid cancer: Relative survival rate after 1, 5 and 10 years **G 4.19.5**



Source: NICER

Thyroid cancer: Relative 5-year survival rates in international comparison, 2000–2007 **G 4.19.6**



Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.19.1 Thyroid cancer: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	160	23	493	38
Number of cases 2015 (estimated)	208	23	628	39
Proportion of all cancer cases, average 2008–2012	0.8%	0.3%	2.8%	0.5%
Crude rate (per 100,000 inhabitants and year), 2008–2012	4.2	0.6	12.4	1.0
Average annual change in the crude rate, 2003–2012	3.8%	–1.6%	5.5%	–1.5%
Crude rate 2015 (estimated)	5.1	0.6	15.1	0.9
Standardised rate (per 100,000 inhabitants and year), 2008–2012	3.6	0.4	11.0	0.5
Average annual change in the standardised rate, 2003–2012	2.8%	–3.1%	5.5%	–3.4%
Median age at diagnosis and death, average 2008–2012	55.9	75.1	50.3	82.2
Lifetime risk, 2008–2012	0.4%	0.1%	1.0%	0.1%
Cumulative risk before the age of 70, 2008–2012	0.2%	0.1%	0.8%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	63	–	68

	Men	Women
Observed 5-year survival rate, on 31.12.2012	81.3%	88.1%
Relative 5-year survival rate, on 31.12.2012	86.5%	91.4%

Sources: NICER – New cases; FSO – Deaths

on the whole has contributed to longer survival rates. In addition, overdiagnosis is being discussed as a cause for increased survival.

In the 2000–2007 period, survival rates for patients with thyroid cancer in Switzerland were comparable to those in Europe. Among the ten European countries under comparison, Switzerland is ranked fourth for men and sixth for women (G 4.19.6).

4.19.3 Risk factors

Among the proven risk factors for thyroid cancer is exposure to ionising radiation (X-rays or gamma rays) as well as to radioactive iodine,[2] especially radiation exposure in childhood. In Belarus, for example, after the Chernobyl accident in April 1986, an increase in thyroid cancer in children was observed. Iodine tablets are distributed to the population living near nuclear power stations in case of a nuclear accident with the release of radioactivity. These tablets saturate the thyroid with iodine, thus preventing the absorption of radioactive iodine.

Even after radiotherapy in childhood, there is an elevated risk of developing this cancer.

Cases of thyroid cancer in the family and a genetic disposition are also increasing the risk. Persons with a thyroid nodule, adenoma or goitre or who suffer from acromegaly (excess production of growth hormone) are also at greater risk.[1]

Furthermore, a diet too poor or too rich in iodine can enhance the development of thyroid cancer.[1] A slightly increased risk of thyroid cancer is also associated with above-average height and a high body mass index (BMI),[1] which can probably be explained by an increased iodine requirement.[3]

References

1 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

3 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.20 Hodgkin's lymphoma

4.20.1 New cases and mortality

Current situation

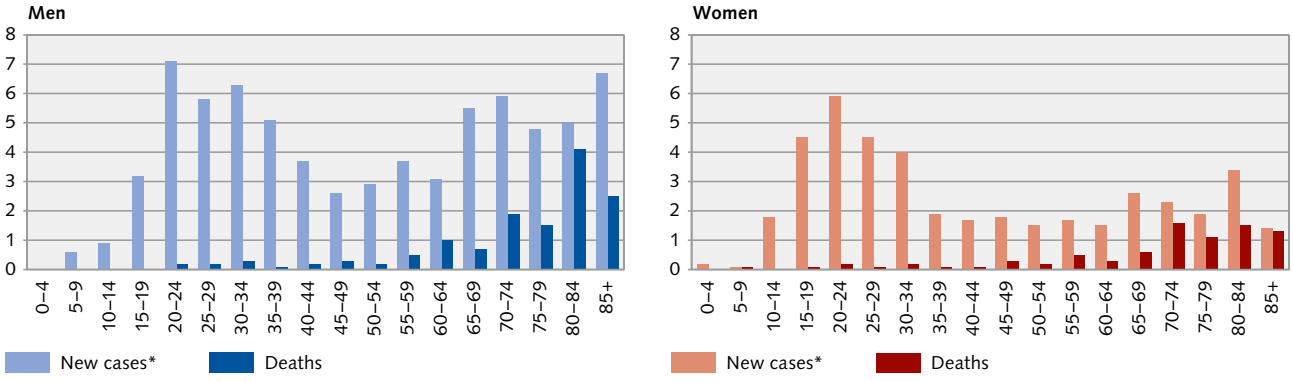
Between 2008 and 2012 an average of about 150 men and almost 100 women were diagnosed with Hodgkin's lymphoma each year. This type of cancer accounts for 0.7% of all cancers among men and for 0.5% among women. The lifetime risk of developing a Hodgkin's lymphoma is 0.3% for men and 0.2% for women (equal to almost 1 out of 300 men and 1 out of 400 women; T 4.20.1). Hodgkin's lymphoma is more common among men than among women (incidence ratio of 1.5:1).

Together with non-Hodgkin's lymphoma, Hodgkin's lymphoma (C81) belongs to the types of cancer which originate in the white blood cells. In contrast to non-Hodgkin's lymphoma which can occur almost anywhere in the body, Hodgkin's lymphomas are mainly confined to the lymph nodes.[1]

Hodgkin's lymphoma has a low mortality rate. Between 2008 and 2012, on average approximately 20 men and almost 14 women died per year from Hodgkin's lymphoma. This cancer site accounts for 0.2% of all cancer deaths among men and women. The risk of dying from Hodgkin's lymphoma is less than 0.1% for men and for women. This means that roughly 1 out of 1000 men and 1 out of 1000 women die from this cancer.

Hodgkin's lymphoma by age, 2008–2012 **G 4.20.1**

Age-specific rate per 100,000 inhabitants

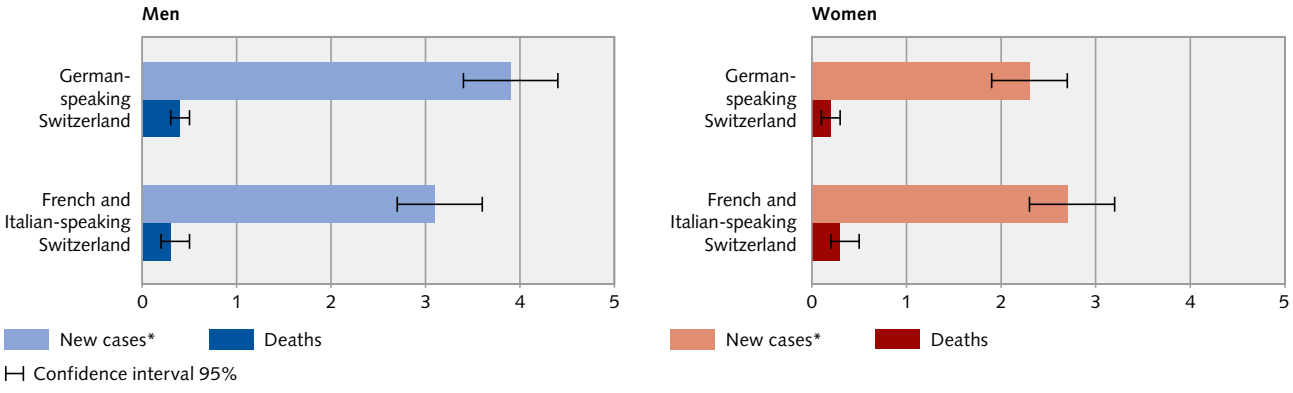


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Hodgkin's lymphoma in regional comparison, 2008–2012 **G 4.20.2**

Rate per 100,000 inhabitants, European standard

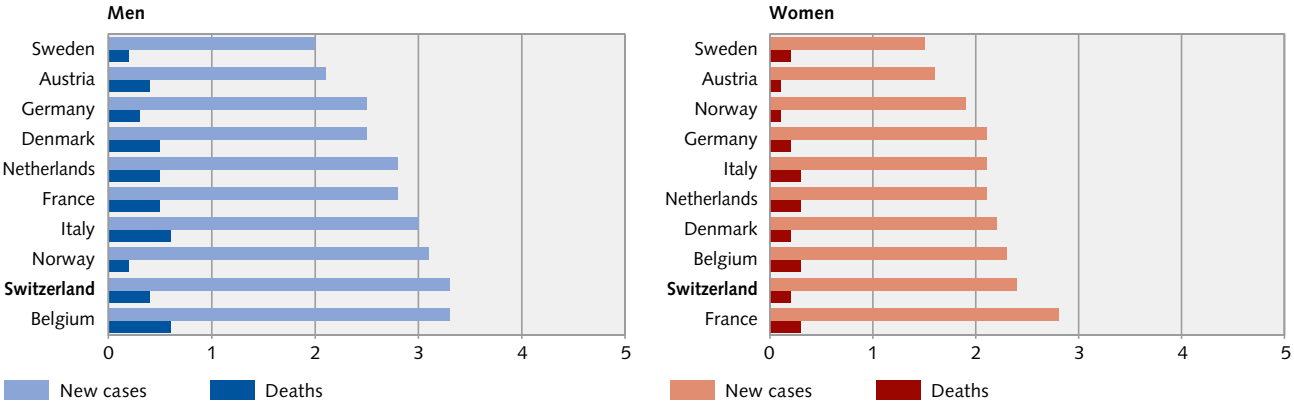


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Hodgkin's lymphoma in international comparison, 2012 G 4.20.3

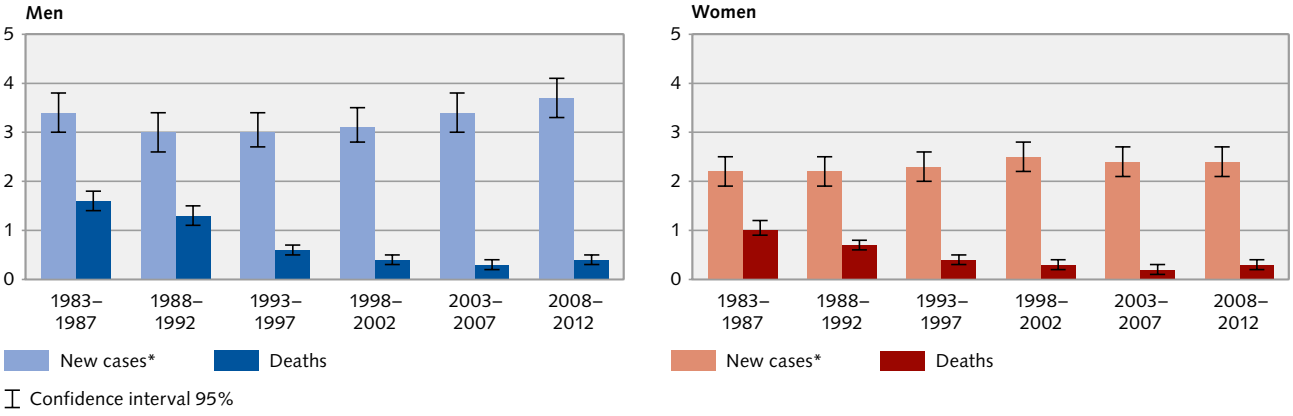
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Hodgkin's lymphoma: Trends over time G 4.20.4

Rate per 100,000 inhabitants, European standard



Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

In both sexes a peak in the incidence rates is seen among 20–24 year olds. A second peak occurs in men over 65 years of age and in women incidence rates rise slightly in old age.

In contrast to incidence rates, mortality rates rise in both sexes with increasing age with men showing the highest values in the 80 to 84 year-old age group. In women the values rise until the age of 74 and then remain stable (G 4.20.1). The median age at diagnosis is 40 for men and 34 for women. The median age at death is 69 for men and 71 for women.

Regional and international comparisons

There are no differences between German-speaking Switzerland and French and Italian-speaking Switzerland (G 4.20.2).

In comparison to the nine selected European countries the incidence rates in men in Switzerland are the highest apart from those in Belgium. Furthermore Switzerland has the second highest incidence rate among women (G 4.20.2). Among the compared countries, mortality rates for men are lower in Germany, Norway and Sweden than Switzerland. Women in Norway and Austria have lower mortality rates than Switzerland (G 4.20.3).

Trends over time

Between 1983 and 2012 incidence rates remained largely stable for both men and women. In contrast, a very sharp decline in mortality rates was observed for both sexes (G 4.20.4).

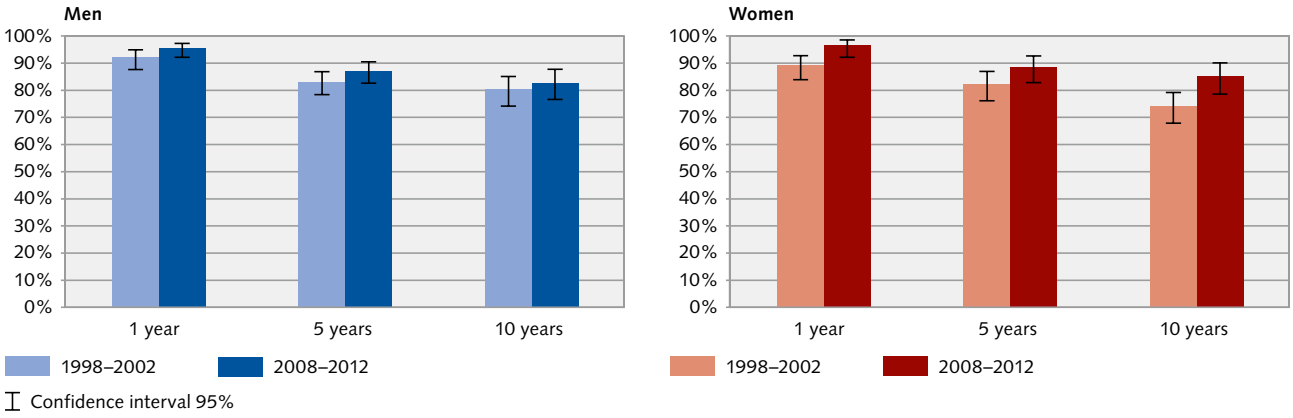
4.20.2 Survival rates

In the period 2008–2012, 85% of male patients and 87% of female patients survived at least five years after having been diagnosed with Hodgkin's lymphoma (observed survival rate; T 4.20.1). Taking into account the risk of dying from other causes, the five-year survival rate for Hodgkin's lymphoma is 87% among men and 89% among women (relative survival rate). Between 1998 and 2002 it was approximately 82% – 83% for men and women (G 4.20.5).

Between 1998 and 2012 the ten-year survival rate rose from 80% to 83% for men and from 74% to 85% for women (G 4.20.5).

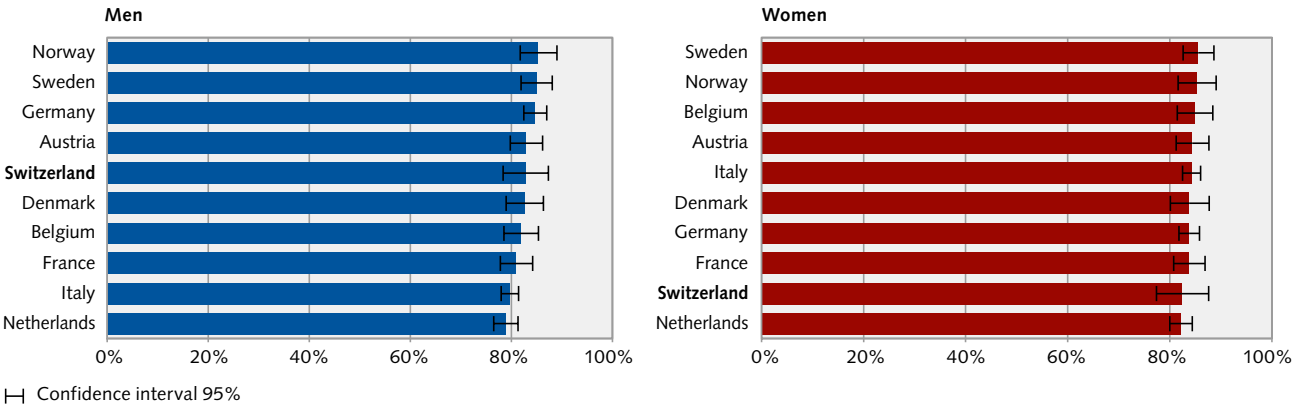
Among the ten European countries compared, Switzerland holds fifth place for men but ninth place for women for the 2000–2007 period (G 4.20.6).

Hodgkin's lymphoma: Relative survival rate after 1, 5 and 10 years **G 4.20.5**



Source: NICER

Hodgkin's lymphoma:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.20.6**



* Lymphome de Hodgkin defined according to the ICD-O-3
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T4.20.1 Hodgkin's lymphoma: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	149	18	96	14
Number of cases 2015 (estimated)	174	23	103	13
Proportion of all cancer cases, average 2008–2012	0.7%	0.2%	0.5%	0.2%
Crude rate (per 100,000 inhabitants and year), 2008–2012	3.9	0.5	2.4	0.4
Average annual change in the crude rate, 2003–2012	1.6%	2.4%	0.1%	–1.4%
Crude rate 2015 (estimated)	4.3	0.6	2.5	0.3
Standardised rate (per 100,000 inhabitants and year), 2008–2012	3.7	0.4	2.4	0.3
Average annual change in the standardised rate, 2003–2012	1.1%	0.5%	0.2%	–1.6%
Median age at diagnosis and death, average 2008–2012	40.4	68.6	33.9	70.8
Lifetime risk, 2008–2012	0.3%	0.1%	0.2%	0.1%
Cumulative risk before the age of 70, 2008–2012	0.3%	0.1%	0.2%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	178	–	144

	Men	Women
Observed 5-year survival rate, on 31.12.2012	84.5%	86.6%
Relative 5-year survival rate, on 31.12.2012	87.1%	88.7%

Sources: NICER – New cases; FSO – Deaths

4.20.3 Risk factors

An infection with the Epstein-Barr virus (EBV) that is responsible for glandular fever constitutes a risk factor for Hodgkin's lymphoma. Roughly 40% of new cases in highly industrialised Western countries can be attributed to the EBV virus.[2] Furthermore, an infection with the human immunodeficiency virus (HIV) increases the risk of developing this type of cancer.[3]

References

1 The Swiss Cancer League (2013). Hodgkin- und Non-Hodgkin-Lymphome. Bern. https://assets.krebsliga.ch/downloads/1080_1.pdf

3 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

4 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.21 Non-Hodgkin's lymphoma

Like Hodgkin's lymphoma, non-Hodgkin's lymphoma (C82–C86, C96) originates in the white blood cells. In contrast to Hodgkin's lymphomas which are mainly confined to the lymph nodes, non-Hodgkin's lymphomas can occur almost anywhere in the body.[1]

4.21.1 New cases and mortality

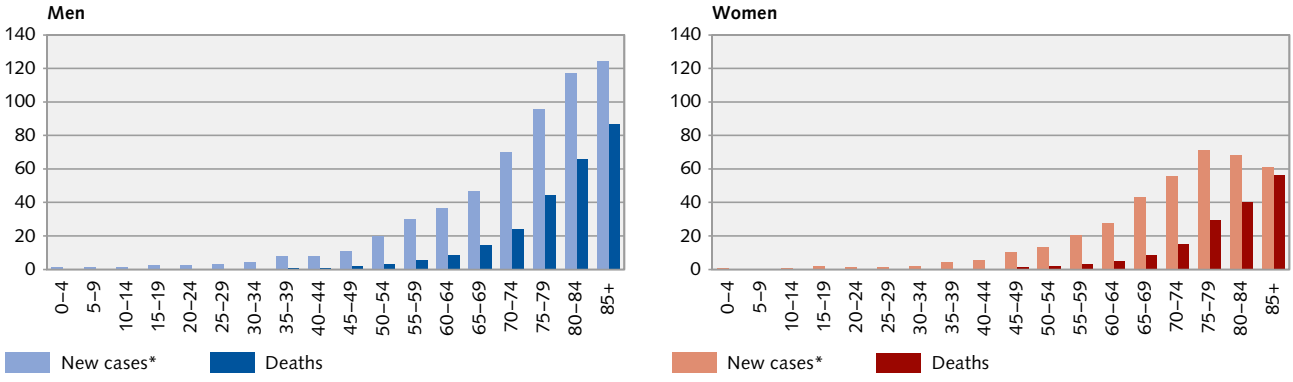
Current situation

Between 2008 and 2012 an average of about 780 men and 670 women were diagnosed with non-Hodgkin's lymphoma each year. This type of cancer accounts for 3.7% of all cancers among men and for 3.8% among women. The lifetime risk of developing non-Hodgkin's lymphoma is 2.0% for men and 1.7% for women (equal to almost 1 out of 50 men and 1 out of 60 women; T4.21.1). This type of cancer is more common among men than among women (incidence ratio of 1.4:1).

Between 2008 and 2012, on average approximately 260 men and 240 women died per year from non-Hodgkin's lymphoma. This cancer site accounts for 2.9% of all cancer deaths among men and for 3.3% among women. The risk of dying from a non-Hodgkin's lymphoma is 0.8% for men and 0.7% for women. This means that 1 out of 125 men and 1 out of 140 women die from this cancer.

Non-Hodgkin's lymphoma by age, 2008–2012 **G 4.21.1**

Age-specific rate per 100,000 inhabitants

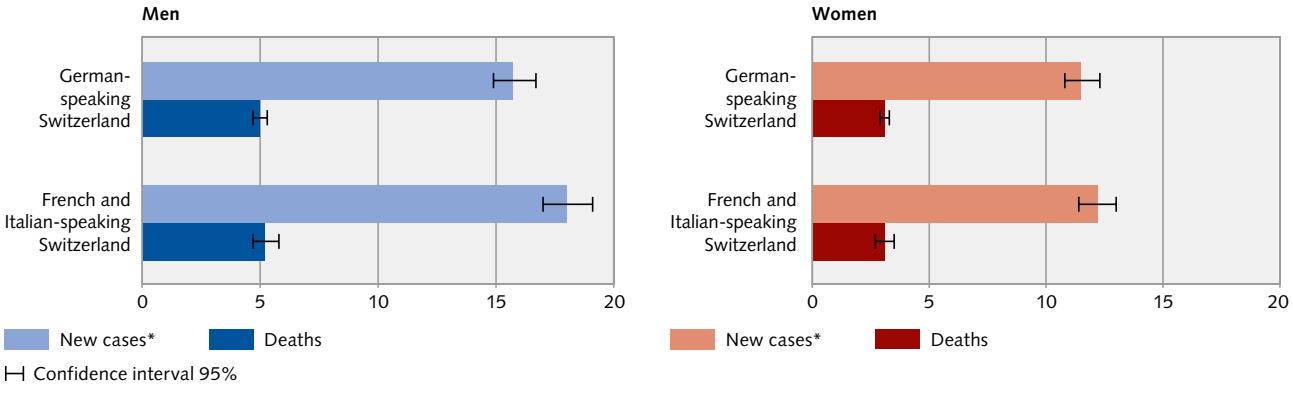


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Non-Hodgkin's lymphoma in regional comparison, 2008–2012 **G 4.21.2**

Rate per 100,000 inhabitants, European standard

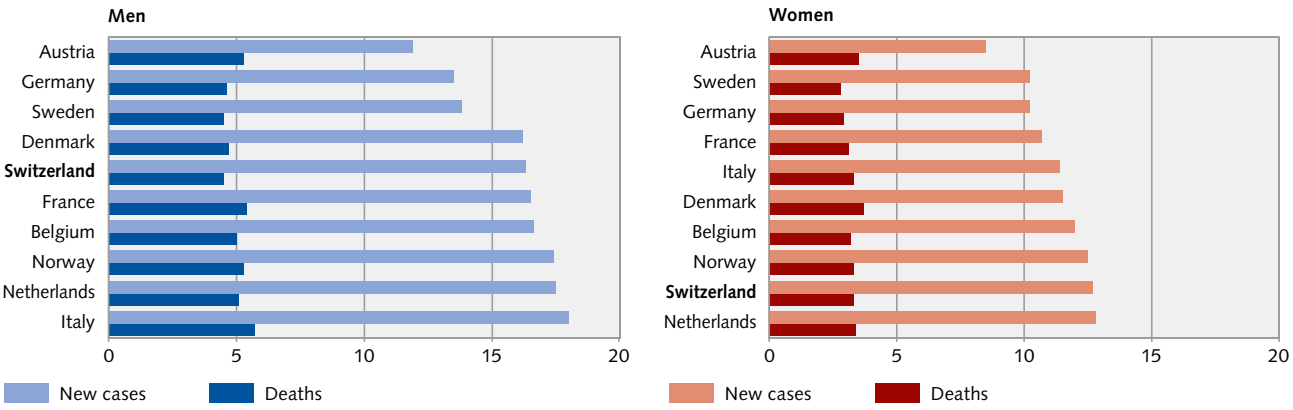


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Non-Hodgkin's lymphoma in international comparison, 2012 G 4.21.3

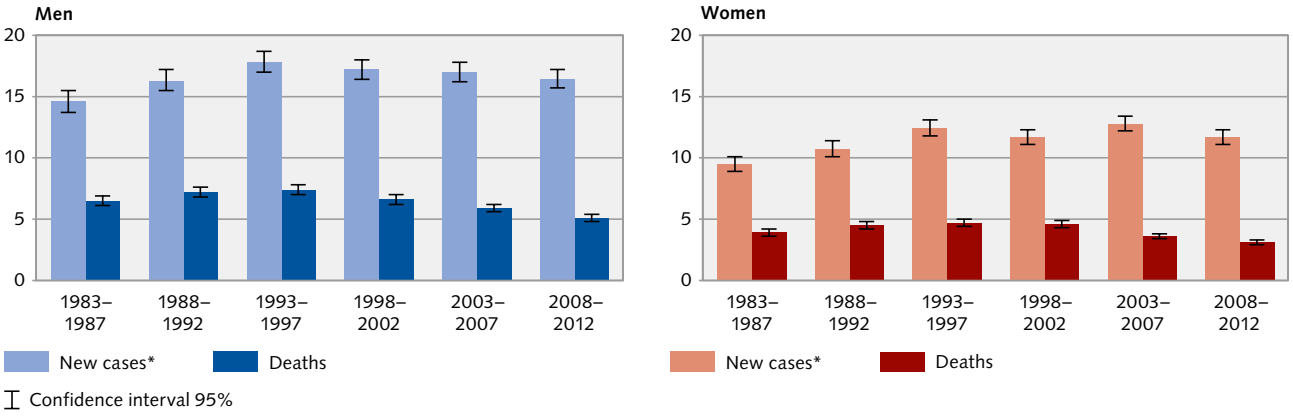
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Non-Hodgkin's lymphoma: Trends over time G 4.21.4

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

In men the incidence rates rise with increasing age. In women the incidence rates rise until the age of 79 and then decline again (G 4.21.1). In both genders, mortality rates rise with increasing age. The median age at diagnosis is 68 for men and 71 for women. The median age at death is 76 for men and 80 for women.

Regional and international comparisons

Incidence rates are slightly higher among men in French and Italian-speaking Switzerland than in German-speaking Switzerland. There are no differences between these regions in terms of incidence rates for women and in terms of mortality rates for both sexes.

Among the ten European countries compared, Switzerland shows the second highest incidence rate for women. On the other hand, it occupies a middle position for men. Among the European countries compared, four countries have lower incidence rates for men than Switzerland. In terms of the mortality rate among men, Switzerland has the lowest values together with Sweden. Together with Norway and Italy, Switzerland's mortality rate for women occupies a middle position. Four countries have lower mortality rates than Switzerland (G 4.21.3).

Trends over time

Between 1998 and 2012 incidence rates remained stable for both men and women but mortality rates fell considerably (men: 23%, women: 32%; (G 4.21.4).

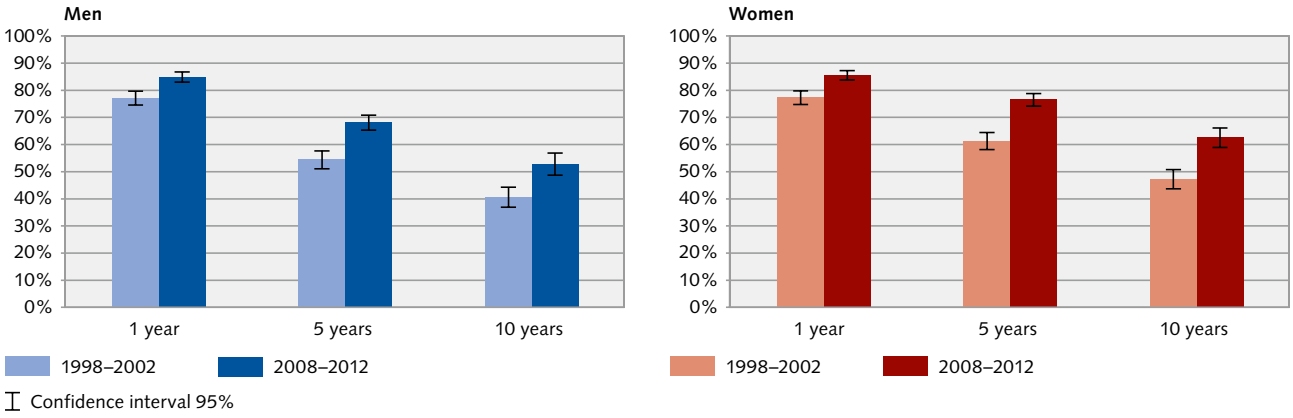
4.21.2 Survival rates

In the period 2008–2012, 60% of male patients and 71% of female patients survived at least five years after having been diagnosed with non-Hodgkin's lymphoma (observed survival rate; T 4.21.1). Taking into account the risk of dying from other causes, the five-year survival rate for non-Hodgkin's lymphoma is 68% among men and 77% among women (relative survival rate). Between 1998 and 2002 it was 54% for men and 61% for women (G 4.21.5).

Between 1998 and 2012 the ten-year survival rate rose from 41% to 53% for men and from 47% to 63% for women (G 4.21.5).

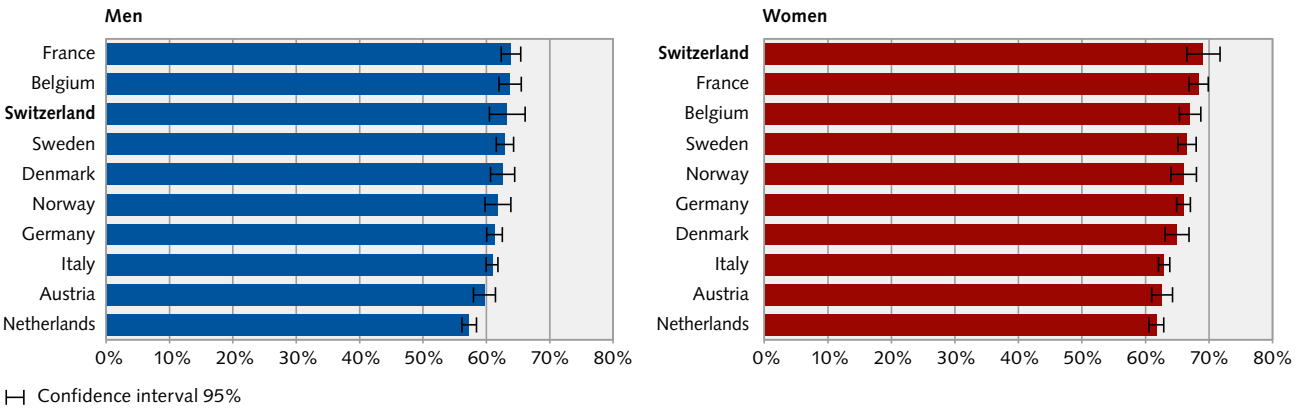
An international comparison for the years 2000–2007 shows that survival rates for non-Hodgkin's lymphoma patients are highest in Switzerland, together with France and Belgium. Among the ten European countries, selected for this report, Switzerland has the highest survival rate for women (G4.21.6).

Non-Hodgkin's lymphoma: Relative survival rate after 1, 5 and 10 years **G 4.21.5**



Source: NICER

Non-Hodgkin's lymphoma:* Relative 5-year survival rates in international comparison, 2000–2007 **G 4.21.6**



* Lymphome non hodgkinien defined according to the ICD-O-3
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T4.21.1 Non-Hodgkin's lymphoma: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases per year, average 2008–2012	781	263	673	236
Number of cases 2015 (estimated)	876	274	694	234
Proportion of all cancer cases, average 2008–2012	3.7%	2.9%	3.8%	3.3%
Crude rate (per 100,000 inhabitants and year), 2008–2012	20.3	6.8	16.9	5.9
Average annual change in the crude rate, 2003–2012	0.6%	–1.3%	–0.7%	–1.4%
Crude rate 2015 (estimated)	21.5	6.7	16.7	5.6
Standardised rate (per 100,000 inhabitants and year), 2008–2012	16.4	5.1	11.7	3.1
Average annual change in the standardised rate, 2003–2012	–0.4%	–3.0%	–1.5%	–3.0%
Median age at diagnosis and death, average 2008–2012	68.2	76.4	70.9	80.1
Lifetime risk, 2008–2012	2.0%	0.8%	1.7%	0.7%
Cumulative risk before the age of 70, 2008–2012	0.9%	0.2%	0.7%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1021	–	560

	Men	Women
Observed 5-year survival rate, on 31.12.2012	60.3%	71.2%
Relative 5-year survival rate, on 31.12.2012	68.1%	76.6%

Sources: NICER – New cases; FSO – Deaths

4.21.3 Risk factors

Infections with the Epstein-Barr virus (EBV), the hepatitis C virus or the human T-cell lymphotropic virus constitute a risk factor for non-Hodgkin's lymphoma. Roughly 8% of these cancer cases may be attributed to the hepatitis C virus. Immunosuppressive drugs are also a risk factor for this type of cancer.[2,3] Furthermore infection with the human immunodeficiency virus (HIV) increases the risk of developing this type of cancer.[4] Being overweight is also considered a risk factor.[2]

References

1 The Swiss Cancer League (2013). Hodgkin- und Non-Hodgkin-Lymphome. Bern. https://assets.krebsliga.ch/downloads/1080_1.pdf

2 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

3 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

4 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

4.22 Leukaemia

Leukaemia (C91–95) develops when progenitor white blood cells that have formed in bone marrow start to divide in an uncontrolled way. They enter the blood either at a premature and not fully functionally stage or in excessive quantities. Leukaemia is classified as lymphatic leukaemia (LL C91) and myeloid leukaemia (ML C92–94) according to the type of progenitor cells. A distinction is made between acute leukaemia (ALL and AML) and chronic leukaemia (CLL and CML) depending on the progression of the disease.[1] The information in this chapter refers to leukaemia among adults. Leukaemia in children is discussed in Chapter 5.

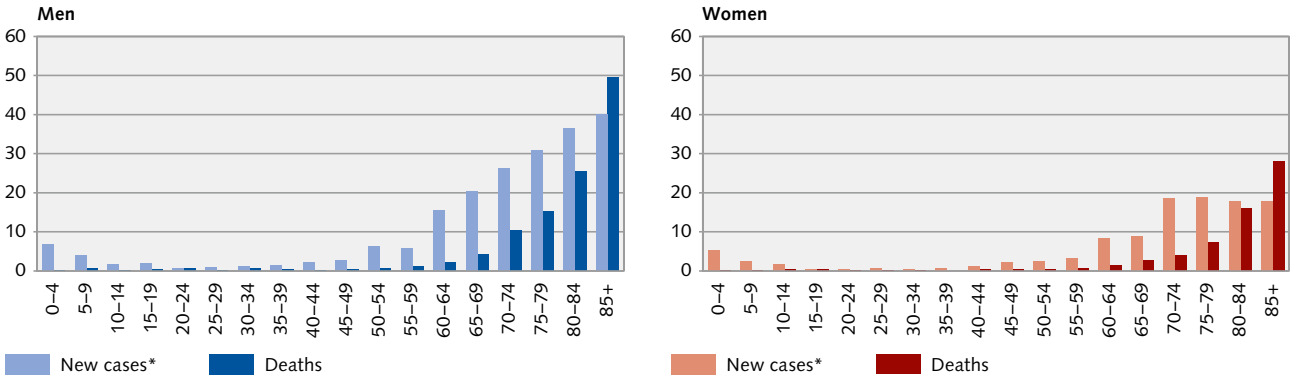
4.22.1 New cases and mortality

Current situation

Between 2008 and 2012 an average of about 900 people were diagnosed with leukaemia – more than 500 men and just under 400 women. This is equal to just under 2.5% of all new cancer cases. Leukaemia is more common in men than in women. The lifetime risk of developing leukaemia is 1.4% for men and 1.0% for women (equal to less than 3 out of 200 men and 1 out of 100 women; T 4.22.1). In the same period, leukaemia accounted for an average of 550 deaths: 300 among men and 250 among women. This is equal to almost 3.5% of all cancer deaths. The risk of dying from leukaemia is 0.9% for men and 0.7% for women. This means that approximately 1 out of 100 men and 1 out of 140 women die from this malignancy.

Lymphatic leukaemia by age, 2008–2012 **G 4.22.1a**

Age-specific rate per 100,000 inhabitants

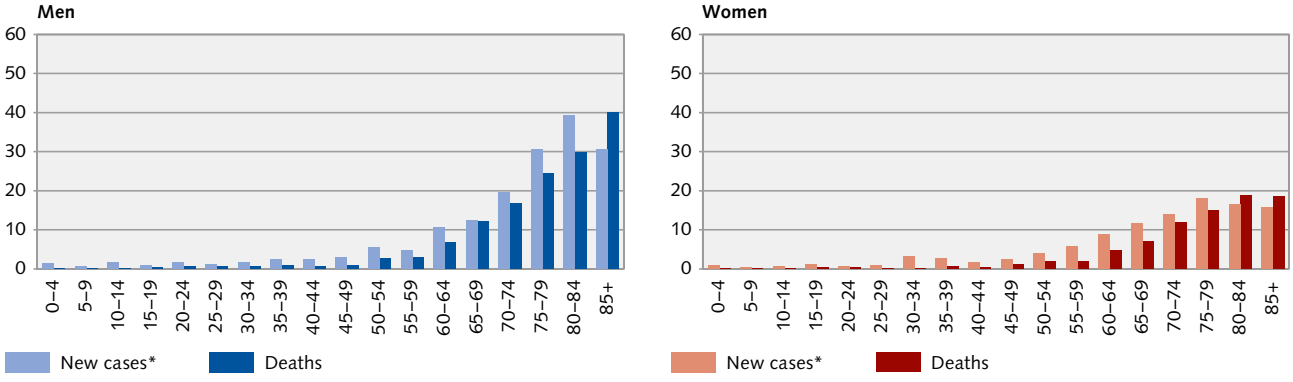


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Myeloid leukaemia by age, 2008–2012 **G 4.22.1b**

Age-specific rate per 100,000 inhabitants

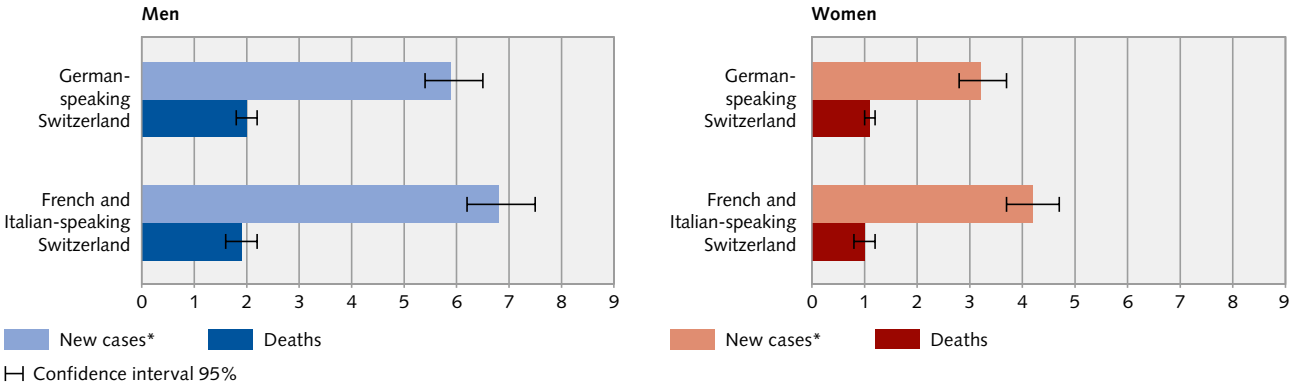


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Lymphatic leukaemia in regional comparison, 2008–2012 G 4.22.2a

Rate per 100,000 inhabitants, European standard

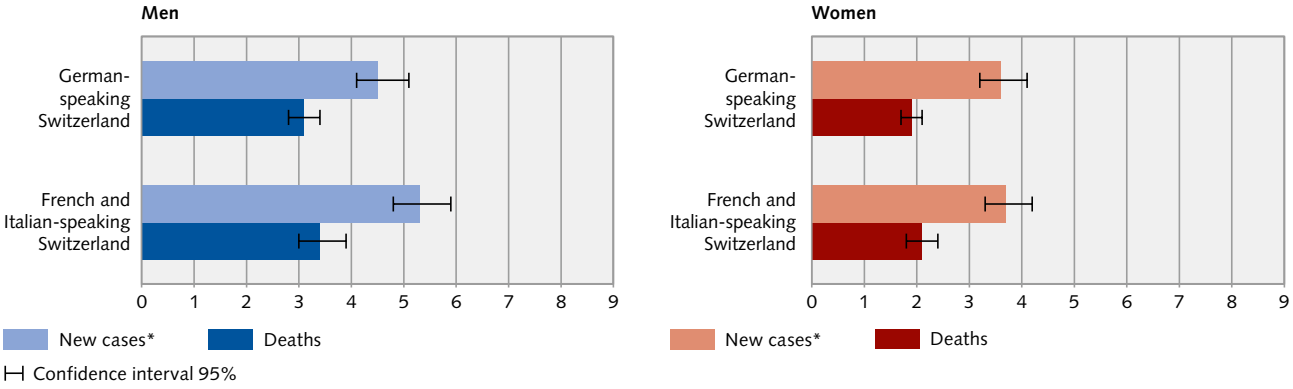


* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Myeloid leukaemia in regional comparison, 2008–2012 G 4.22.2b

Rate per 100,000 inhabitants, European standard



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Lymphatic Leukaemias (LL) account for approximately 1% of all incident cancer cases and deaths. Corresponding figures are 1% and 2% for acute myeloid leukaemia (ML). The median age at lymphatic leukaemia diagnosis is 67 years for men and 71 years for women. The median age at death is 78 years for men and 83 years for women respectively. The median age at diagnosis of myeloid leukaemia is similar to that of lymphatic leukaemia: 69 years for men and 68 years for women. However, the median age at death is lower for myeloid leukaemia (73 years for men an 76 years for women).

The incidence and mortality rates of lymphatic leukaemia and myeloid leukaemia rise with increasing age. However, cases occur as early as childhood. There is a cluster of childhood cases in particular for lymphatic leukaemia (G 4.22.1 and chapter5).

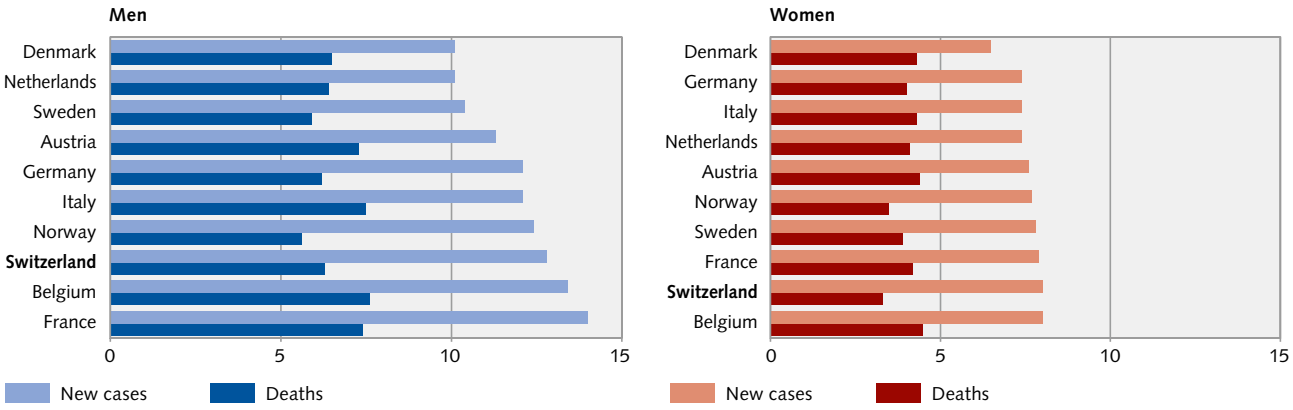
Regional and international comparisons

With the exception of lymphatic leukaemia, which is slightly more common among women in French and Italian-speaking Switzerland than in German-speaking Switzerland, there are no differences between the linguistic regions (G 4.22.2).

Among the ten selected European countries, Switzerland has the third highest incidence rate for men but the fourth lowest mortality rate (G 4.22.3). Differences in incidence rates are less marked among women but Switzerland has the highest incidence rate. It does, however, have the lowest mortality rate.

Lymphatic and myeloid leukaemia in international comparison, 2012 G 4.22.3

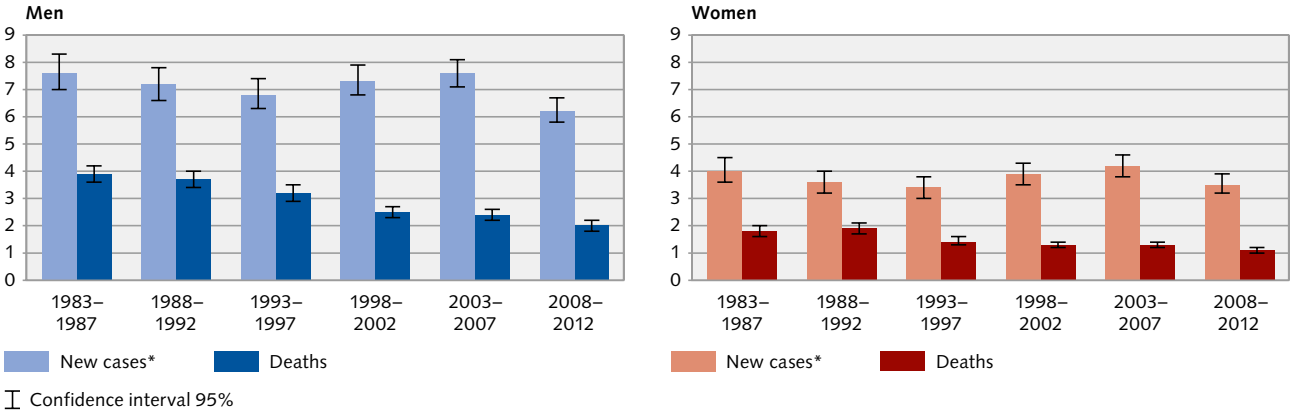
Rate per 100,000 inhabitants, European standard



Source: Ferlay J. et al. (2013). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012

Lymphatic leukaemia: Trends over time G 4.22.4a

Rate per 100,000 inhabitants, European standard



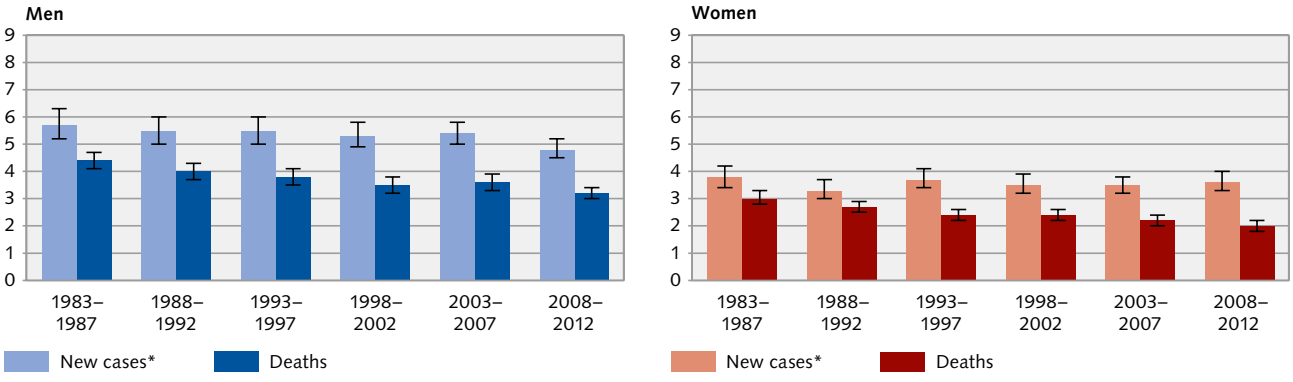
Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Myeloid leukaemia: Trends over time G 4.22.4b

Rate per 100,000 inhabitants, European standard

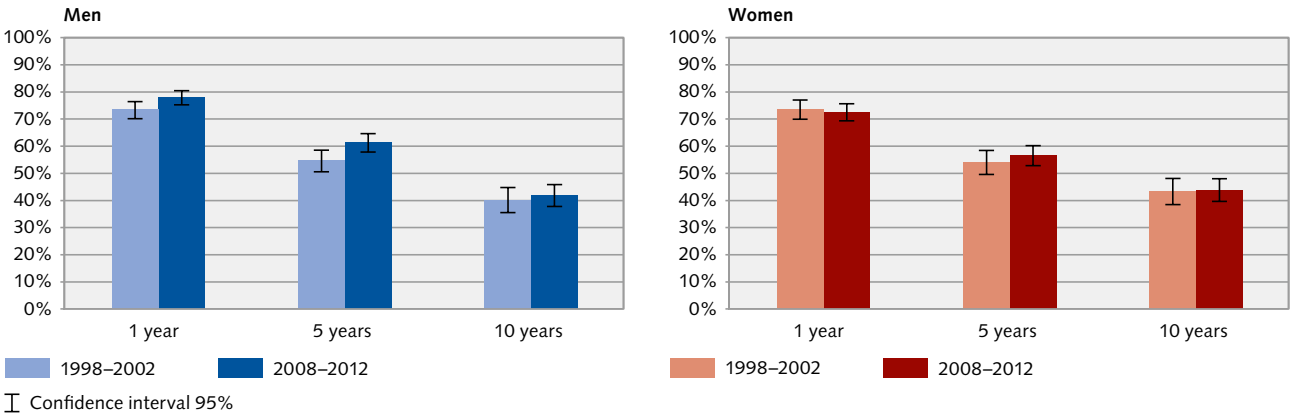


Confidence interval 95%

* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

Lymphatic and myeloid leukaemia: Relative survival rate after 1, 5 and 10 years **G 4.22.5**



Source: NICER

Trends over time

No constant trend has been seen with regard to leukaemia cases since 1983. The number of new diagnoses declined until the period 1993 to 1997. After this, the number increased until the period 2003 to 2007, before decreasing again over the past few years. These trends tend to concern LL (G 4.22.4a). The number of new cases for ML remained stable over time (G 4.22.4b). The mortality rate has also fallen since 1983 for both LL and ML.

4.22.2 Survival rates

In the period 2008–2012, 55% of male patients and 53% of female patients survived at least five years after having been diagnosed with leukaemia (observed survival rate; T 4.22.1). Taking into account the risk of dying from other causes, the five-year survival rate for leukaemia is 61% among men and 57% among women (relative survival rate). Between 1998 and 2002 it was approximately 54% for men and women (G 4.22.5).

Between 1998 and 2012 the ten-year survival rate rose slightly from 40% to 42% for men and from 43% to 44% for women (G 4.22.5). Leukaemia is heterogeneous and includes chronic and acute forms, while survival rates for the former are much better. Forms of leukaemia that occur in childhood now have a very good prognosis, whereas the prognosis for adults and for acute forms is still not favourable.

Compared with the selected nine European countries, Switzerland has the highest survival rates for patients with chronic leukaemia for the years 2000–2007 (G 4.22.6b and d).

In international comparison, Switzerland has the lowest survival rate for acute lymphatic leukaemia in men and there are no data available for women (G 4.22.6a). Switzerland holds a middle position for acute myeloid leukaemia when compared internationally (G 4.22.6c).

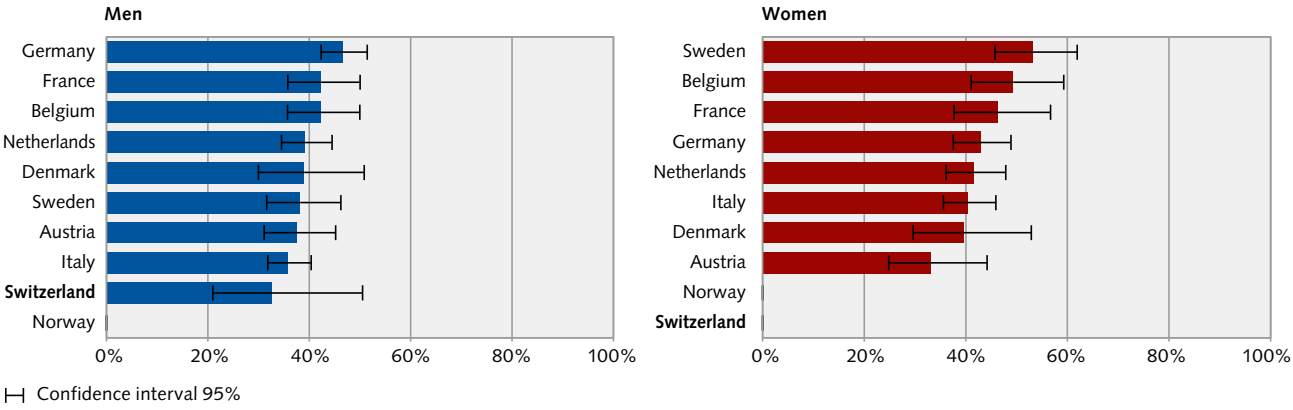
4.22.3 Risk factors

Proven risk factors for leukaemia include numerous chemical products such as formaldehyde, ethylene oxide and 1,3-butadiene. Occupational contact with substances in painting firms and the production of rubber has been linked with an elevated risk of leukaemia.[2]

Certain drugs used to treat other types of cancer are further risk factors for leukaemia. They include alkylating agents such as busulfan, chlorambucil, cyclophosphamide, chemotherapies with combined chlormethine-vincristine-procarbazine-prednisone treatments and topoisomerase II inhibitors such as etoposide.[3]

Ionising radiation favours the development of leukaemia. This may occur in a medical context (thorium-232 and its by-products, phosphorus-32, X-rays or gamma rays,[2] scanners[3]), but may also be linked to the environment (radon[3]). Furthermore, exposure following a nuclear accident (by-products such as strontium-90) or a nuclear explosion (X-ray and gamma radiation) is also possible.

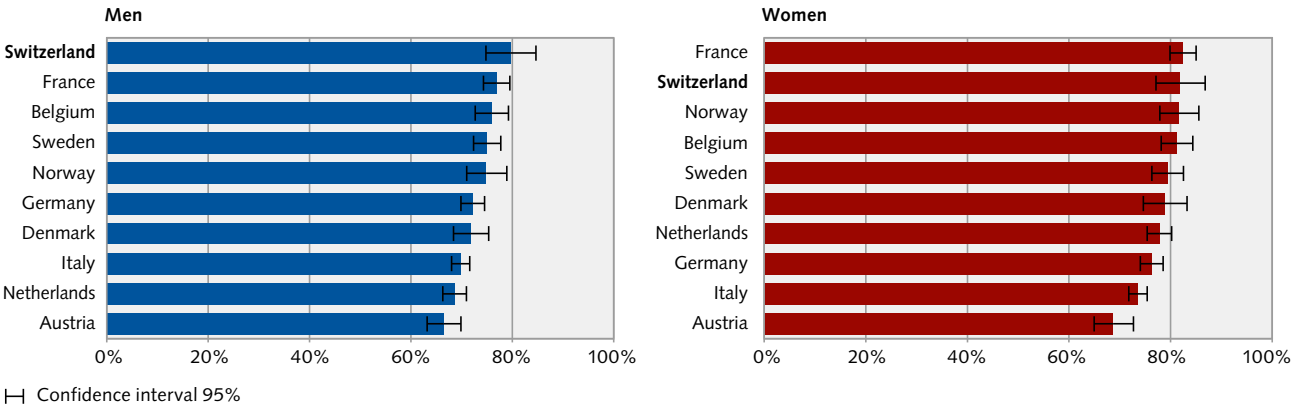
Acute lymphatic leukaemia:* Relative 5-year survival rates in international comparison, 2000–2007 G 4.22.6a



* Acute lymphatic leukaemia defined according to the ICD-O-3
The source does not supply data for Norway nor for women in Switzerland.
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

Chronic lymphatic leukaemia:* Relative 5-year survival rates in international comparison, 2000–2007 G 4.22.6b



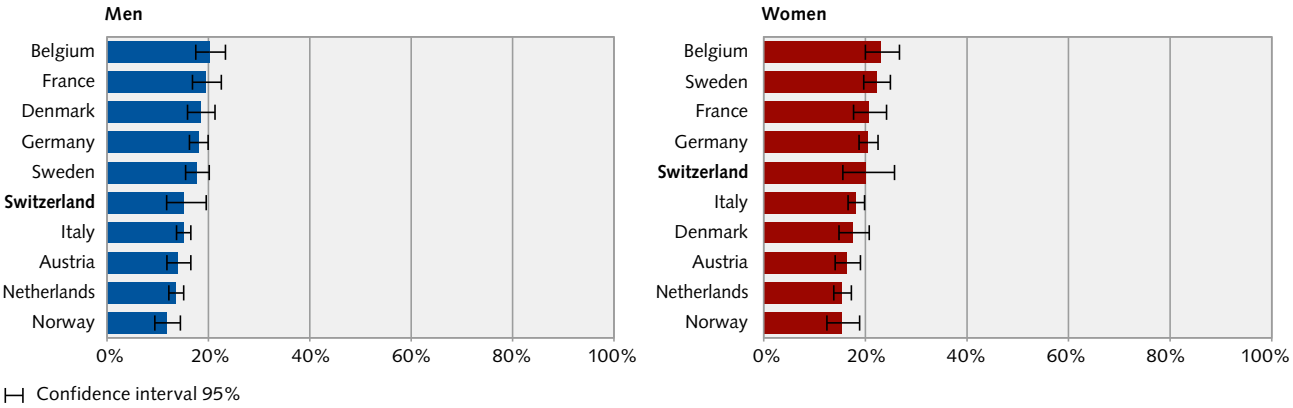
* Chronic lymphatic leukaemia defined according to the ICD-O-3
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007 © FSO, Neuchâtel 2016

Other recognised risk factors for leukaemia are smoking,[4] pesticides[3] and the HTLV-1 virus (endemic in Japan).[3] Overweight people are at greater risk.[3] Epidemiologic observational studies show an association between exposure to low electromagnetic frequencies and leukaemia in children, however causality has not been proven.[3]

A mother's exposure to a number of specified risk factors (paint, X-ray and gamma radiation, pesticides) is a risk for the child in the womb and increases its risk of leukaemia. Genetic factors also play a role: genetic disposition occurs in 5 to 10% of all CLL cases.[3]

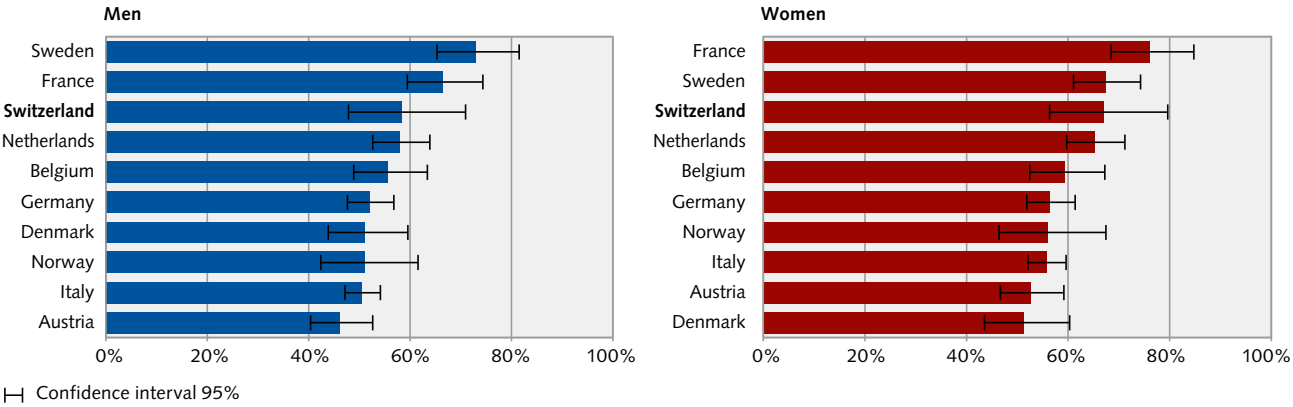
Acute myeloid leukaemia:* Relative 5-year survival rates in international comparison, 2000–2007 G 4.22.6c



* Acute myeloid leukaemia defined according to the ICD-O-3
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

Chronic myeloid leukaemia:* Relative 5-year survival rates in international comparison, 2000–2007 G 4.22.6d



* Chronic myeloid leukaemia defined according to the ICD-O-3
Data for Belgium, Germany, France, Italy and Switzerland are based on regional data which do not cover the whole country.

Source: EUROCARE-5 Database – Survival Analysis 2000–2007

T 4.22.1 Leukaemias: Key epidemiological figures

	Men		Women	
	Incidence	Deaths	Incidence	Deaths
Number of cases* per year, average 2008–2012	515	300	389	253
thereof lymphatic leukaemia	278	103	185	87
thereof myeloid leukaemia	226	160	195	129
Number of cases 2015 (estimated)	504	324	381	274
Proportion of all cancer cases, average 2008–2012	2.5%	3.3%	2.2%	3.5%
thereof lymphatic leukaemia	1.3%	1.1%	1.0%	1.2%
thereof myeloid leukaemia	1.1%	1.8%	1.1%	1.8%
Crude rate (per 100,000 inhabitants and year), 2008–2012	13.4	7.8	9.8	6.4
Average annual change in the crude rate, 2003–2012	–2.1%	–0.1%	–1.8%	0.5%
Crude rate 2015 (estimated)	12.4	8.0	9.2	6.6
Standardised rate (per 100,000 inhabitants and year), 2008–2012	11.2	5.9	7.2	3.6
Average annual change in the standardised rate, 2003–2012	–2.9%	–1.5%	–1.6%	–1.1%
Median age at diagnosis and death, average 2008–2012	68.1	75.5	70.3	78.8
thereof lymphatic leukaemia	67.4	78.4	71.4	82.7
thereof myeloid leukaemia	68.7	73.0	68.1	75.6
Lifetime risk, 2008–2012	1.4%	0.9%	1.0%	0.7%
Cumulative risk before the age of 70, 2008–2012	0.6%	0.2%	0.4%	0.1%
thereof lymphatic leukaemia	0.4%	0.1%	0.2%	<0.1%
thereof myeloid leukaemia	0.2%	0.1%	0.2%	0.1%
Years of potential life lost before the age of 70, average 2008–2012	–	1523	–	944
thereof lymphatic leukaemia	–	503	–	273
thereof myeloid leukaemia	–	878	–	524

	Men	Women
Observed 5-year survival rate, on 31.12.2012	54.5%	52.5%
Relative 5-year survival rate, on 31.12.2012	61.4%	56.6%

Sources: NICER – New cases; FSO – Deaths

* Incl. leukaemias not specified

References

1 The Swiss Cancer League (2011). Leukämie bei Erwachsenen. Bern. https://assets.krebsliga.ch/downloads/1081.pdf

2 WHO International Agency for Research on Cancer Monograph Working Group (2009). A review of human carcinogens – Part A to F. The Lancet Oncology; Volume 10

3 Steward B.W., Wild C. P. Eds. (2014). World Cancer Report 2014. International Agency for Research on Cancer, Lyon

4 World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical activity, and the Prevention of Cancer: a Global Perspective. AICR, Washington DC

4.23 Other and undefined cancer types

The previous 22 chapters discuss the most common types of cancer. Furthermore, there are a number of other rarer types of cancer that affect various organs and are briefly discussed here (C17, C21, C23, C24, C26, C30, C31, C37, C38, C39, C40, C41, C44, C46, C47, C48, C49, C51, C52, C57, C58, C60, C63, C65, C66, C68, C69, C74, C75, C88, C90; see the figure for explanation of the codes). This chapter also considers cases in which the underlying cancer type could not be determined or was not registered (C76-C80, C97).

4.23.1 Other cancer types

New cases and mortality

The incidence and frequency of these types of cancer are shown in graphic G 4.23.1 and table T 4.23.1. They are categorised in 26 diagnostic groups, furthermore, the number of cancers that cannot be precisely defined is also shown.

Between 2008 and 2012 some 1250 men and 1230 women were diagnosed with a rarer form of cancer (excluding basal cell carcinoma). These account for 6.0% of all cancer deaths among men and for 7.0% among women.

Between 2008 and 2012, on average approximately 633 men and 641 women died per year from one of these rarer types of cancer (excluding basal cell carcinoma). This accounts for 7.0% of all cancer deaths among men and for 8.8% among women.

Basal cell carcinoma and squamous cell carcinoma have a special role. These skin cancers are easy to detect and to remove and do not usually invade neighbouring tissue. They are relatively common: on average almost 4000 cases were registered in men and more than 3500 cases were registered in women between 2008 and 2012, although only some cancer registries record these cases. As a cause of death they belong to the rarer cancer types. On average 37 women and 56 men die of these types of cancer per year.

The most common among rare cancer types are plasmacytoma and malignant plasma cell neoplasms (C90) and cancer of the gall bladder and biliary tract (C23–C24) – in both sexes (G 4.23.1). In men additionally, cancer of the peripheral nerves and other connective tissues (C47, C49) and in women cancer of the vulva (C51) are also relatively common.

Among these rare cancers, the most common causes of death are also plasmacytoma and malignant plasma cell neoplasms and cancer of the gall bladder and biliary tract. In men, cancer of the urinary tract (C65, C66, C68) and in women cancer of other digestive organs (C26) are also relatively common cancer death causes.

For certain poorly defined types of cancer (non-localised cancer of the digestive organs, non-localised cancer of the endocrine glands and undefined mesothelioma), there are more deaths than diagnoses, which is illogical. This is due to the fact that some cases appear in the cause of death statistics without previously being recorded in a cancer registry. Data recorded in the cancer registries are usually coordinated with data from the cause of death statistics.

The median age at diagnosis and death is rather low for bone cancer, cancer of the cartilage and adrenal glands, cancer of other endocrine glands and for very rare cancers of the eye, thymus and placenta. Compared with all cancers together, basal cell carcinoma occurs in men and women at an advanced age, while malignant immunoproliferative diseases, plasmacytoma, cancers of the external genital organs and cancers of the digestive tract with unspecified localisation, occur in women at an advanced age.

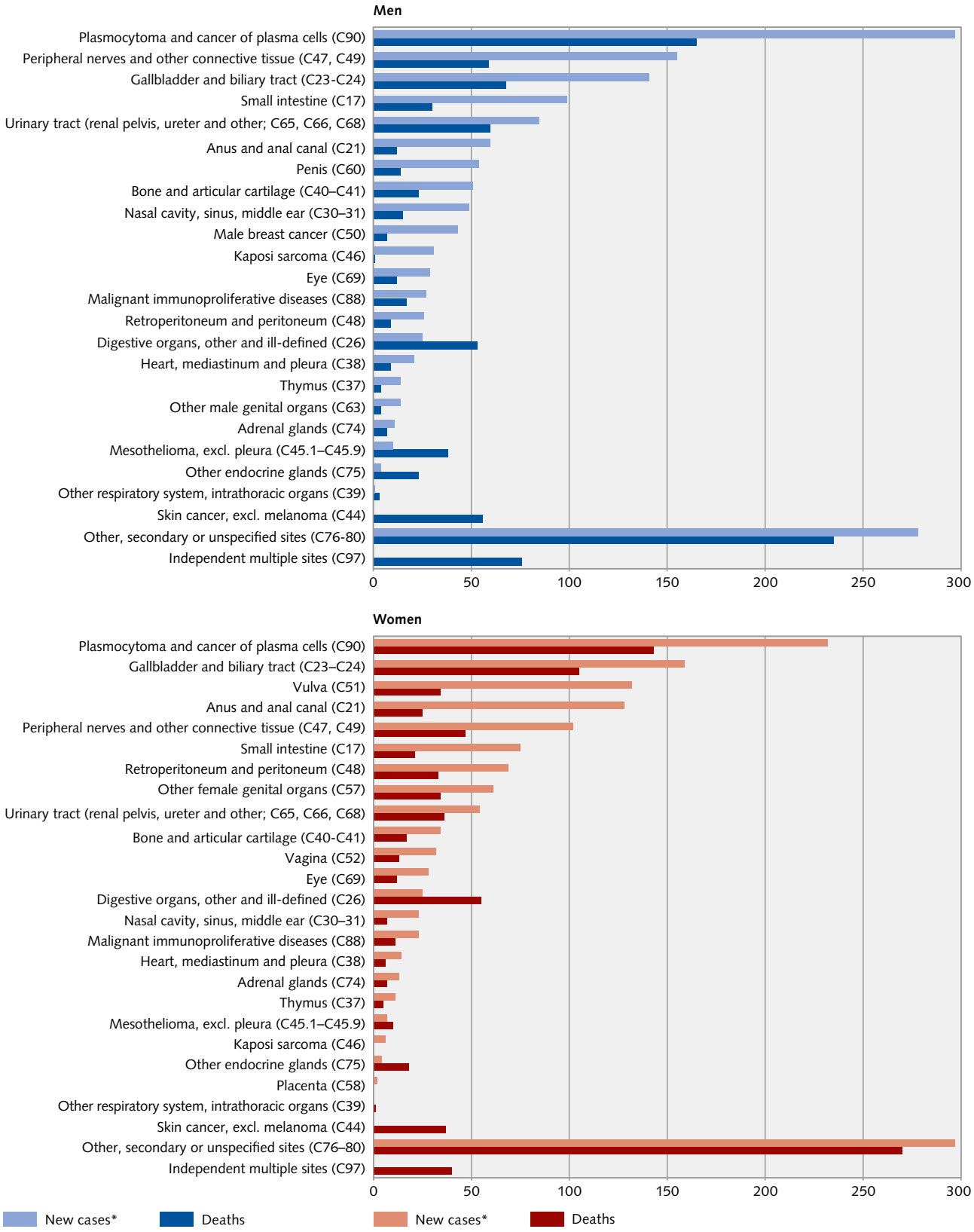
4.23.2 Undefined cancer types

It is not always possible to allocate a cancer to a particular site. Sometimes metastases are detected, but the original tumour cannot be found. After experiencing discomfort, some patients do not go to the doctor or go far too late. Consequently, at an advanced stage only palliative care is possible or death occurs quickly and no detailed diagnostic work-up can be made. Furthermore, some cancers are only detected upon death. This means that a subsequent precise diagnosis and recording by the cancer registry is no longer possible.

Between 2008 and 2012, 278 cancer cases in men and 297 cancer cases in women were registered every year in which the cause of the cancer or metastases could not be determined or reported to the relevant cancer registry. This accounts for 1.3% of cases in men and 1.7% in women.

Other and undefined cancer types: New cases and deaths, 2008–2012 G 4.23

Average number per year



* New cases estimated on the basis of cancer registry data

Sources: NICER – New cases; FSO – Deaths

T4.23.1 Other and undefined cancer types: frequency and average age, 2008–2012

	Men				Women			
	New cases		Deaths		New cases		Deaths	
	Cases*	Age	Cases*	Age	Cases*	Age	Cases*	Age
Small intestine (C17)	99	68,5	30	74,6	75	69,0	21	74,0
Anus and anal canal (C21)	60	62,8	12	74,3	128	66,3	25	74,5
Gallbladder and biliary tract (C23–C24)	141	72,9	68	75,9	159	75,9	105	78,3
Digestive organs, other and ill-defined (C26)	25	72,9	53	76,5	25	81,9	55	82,1
Nasal cavity, sinus, middle ear (C30–C31)	49	66,0	15	70,0	23	70,0	8	73,8
Thymus (C37)	14	54,8	4	67,5	11	64,7	5	69,2
Heart, mediastinum and pleura (C38)	21	64,8	9	71,5	14	67,4	6	73,5
Upper respiratory tract, part unspecified (C39)	1	81,4	3	69,2	< 1	62,5	1	68,8
Bone and articular cartilage (C40–C41)	51	48,8	23	65,8	34	47,8	17	72,1
Skin cancer, excl. melanoma (C44)	**	73,7	56	82,3	**	74,6	37	86,1
Mesothelioma, excl. pleura (C45.1–C45.9)	10	72,2	38	76,5	7	70,2	10	82,7
Kaposi sarcoma (C46)	31	55,2	1	86,3	6	61,2	< 1	87,5
Peripheral nerves and other connective tissue (C47, C49)	155	66,0	59	70,8	102	64,1	47	68,6
Retroperitoneum and peritoneum (C48)	26	68,3	9	72,5	69	68,6	33	74,8
Male breast cancer (C50)	43	71,7	7	73,8	***	***	***	***
Vulva (C51)					132	74,2	34	83,2
Vagina (C52)					32	74,7	13	83,0
Other and unspecified female genital organs (C57)					61	69,5	34	76,0
Placenta (C58)					2	31,6	<1	37,5
Penis (C60)	54	71,0	14	75,5				
Other and unspecified male genital organs (C63)	14	72,3	4	70,0				
Urinary tract (renal pelvis, ureter and other and unspecified; C65, C66, C68)	85	73,3	60	78,5	54	77,4	36	79,0
Eye and adnexa (C69)	29	61,6	12	69,0	28	67,8	12	74,8
Adrenal glands (C74)	11	41,2	7	58,0	13	48,7	7	66,5
Other endocrine glands (C75)	4	30,9	23	68,8	4	37,1	18	68,4
Malignant immunoproliferative diseases (C88)	27	71,1	17	83,8	23	73,2	11	83,1
Multiple myeloma and malignant plasma cell neoplasms (plasmocytoma) (C90)	297	69,9	165	76,1	232	73,1	143	78,1
Other, secondary or unspecified sites (C76–C80)	278	75,7	235	76,9	297	80,7	270	82,4
Independent multiple sites (C97)			76	76,3			40	74,9

Sources: NICER – New cases; FSO – Deaths

* Mean number of cases per year ** 4000 new cases were registered in men and 3600 cases in women *** see chapter 4.11

Approximately 235 men and 270 women die from an unknown primary tumour every year. This accounts for 2.6% and 3.7% of all cancer deaths in men and women. Until 2009 inclusive, this includes cases of multiple cancers (around 270 cases between 2004 and 2009). These were registered in the cause of death statistics under the code C97, meaning that they cannot be attributed to a cancer site.

The mean age at diagnosis of cancer or metastases of unknown origin is for men around 7 years and for women around 13 years above the average age for all types of cancer. For undefined cancer sites, the mean age at death is also higher than that for cancer overall. These differences are partly due to the fact that in the case of cancers in old age or in persons with another serious illness, e.g. dementia, no further investigation is undertaken because curative treatment would be unreasonable in such cases.

5 Childhood cancers

5.1 Incidence and mortality

Current situation

Childhood cancers are rare. Only some 0.5% of all tumours occur before the age of 15. During the period 2008 to 2012 around 190 children in Switzerland were diagnosed with cancer per year (16 new diagnoses per 100,000 children per year; T5.1). During the first 14 years of life approximately 260 out of 100,000 boys and 220 out of 100,000 girls are affected. Practically all types of tumours occur more frequently among boys than among girls, but sex differences are less pronounced than later in life (G5.1). Cancers occur in infants and children aged 1-4 years more frequently than during early school age. Among adolescents, the incidence increases again slowly, and continues to rise in adulthood.

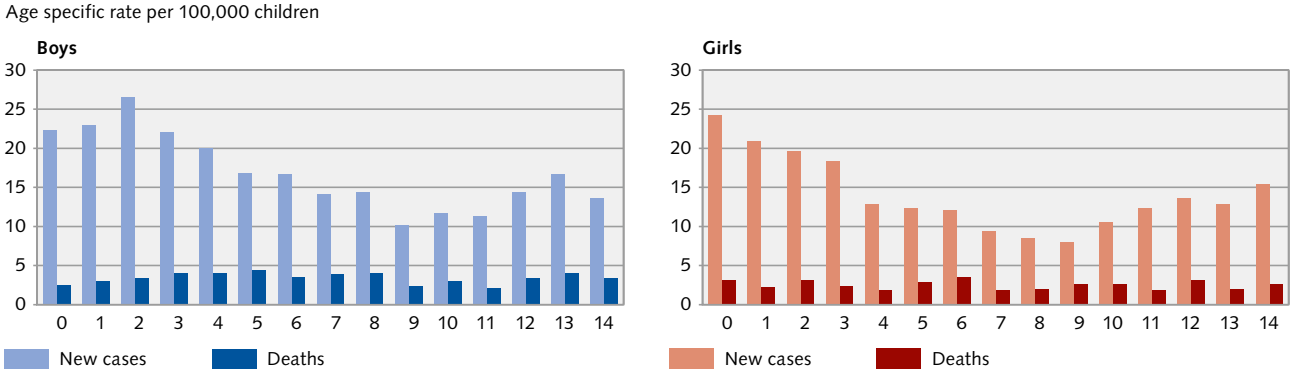
Thanks to major advances in treatment, four out of five cases of cancer in children can be cured. The cure rate is thus higher than among adults. Nevertheless, cancer is the most frequent cause of death due to illness in childhood. In the 2008–2012 period an average of 28 children (2.2 per 100,000) died per year of cancer. Mortality rates in children are relatively constant across all age groups (G5.1).

Cancers in childhood (age 0-14) are classified into 12 groups according to the International Classification of Childhood Cancer (ICCC-3).Leukaemias, lymphomas, tumours of the central nervous system, peripheral nervous cell tumours, retinoblastomas, renal tumours, hepatic tumours, bone tumours, soft tissue sarcomas, germ cell tumours, other malignant epithelial neoplasms and other unspecified malignant tumours.[1] Due to the small number of cases, longer observation periods are indicated in this chapter than in the rest of the report. Langerhans cell histiocytoses, which are registered in the Swiss Childhood Cancer Registry, are not discussed here as according to ICCC-3, they do not officially belong to the malignant tumours.

Tumour groups in children

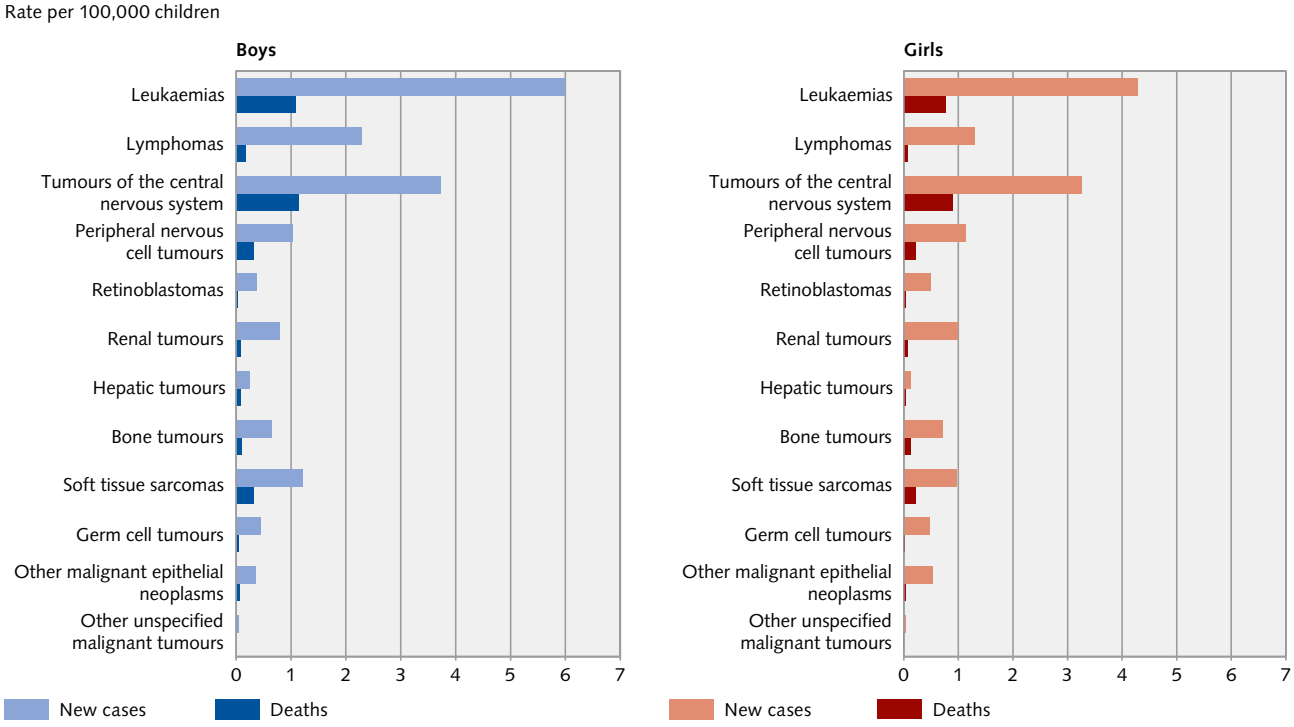
Figure G5.2 shows the incidence and mortality rates for the 12 main tumour groups occurring in children. Leukaemias occur most frequently (34% of all types of cancer), followed by tumours of the central nervous system (primarily brain tumours, 21%) and lymphomas (11%). Slightly less frequent are soft tissue sarcomas (8%), which develop from soft tissue (fat, muscle, tendons, connective tissue) as well as malignant bone tumours (4%). Other cancer types arise from embryonic tissue. These include peripheral nervous cell tumours (7%) from primitive nerve tissue, renal tumours (5%) from renal tissue, hepatic tumours (1%) from liver tissue,

Childhood cancers by age, 1993–2012 **G 5.1**



Source: SCCR – New cases; FSO – Deaths

Childhood cancers by tumour group, 1993–2012 **G 5.2**



Source: SCCR – New cases; FSO – Deaths

retinoblastomas (2%) from retinal cells as well as germ cell tumours (4%). The latter can occur in the gonads or also in other sites, for example in the brain. Other childhood cancers are melanomas and other rare tumours (together 3%).

Tumour-related deaths in childhood are predominantly due to leukaemias, tumours of the central nervous system, peripheral nervous cell tumours and soft tissue sarcomas (G 5.2).

Relative incidence changes considerably over the course of childhood: in infants embryonic tumours are most common, in pre-school children leukaemias and in school children lymphomas and bone tumours (G 5.3). Brain tumours are fairly common at every age.

Trends over time

The slight increase in incidence in the 1983 to 1993 period shown in the graphic G 5.4 is probably due to the increasing completeness of the Childhood Cancer Registry until 1992. Since 1993, incidence rates among boys and girls have remained relatively constant (G 5.4; T 5.1).

Mortality has been recorded with a high level of completeness over the entire period. It has constantly fallen from 3.6 per 100,000 per year (1983–1987) to 2.2 per 100,000 per year (2008–2012). This reflects improvements in treatment. Given the small number of cases, slight fluctuations from period to period may also be due to chance.

International comparisons

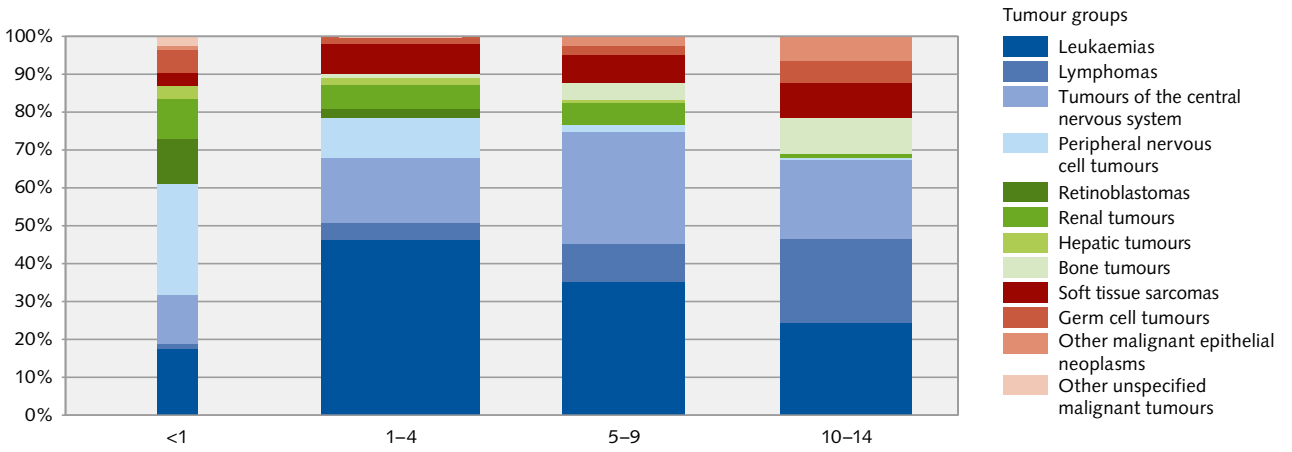
In international comparison the incidence rate for children in Switzerland (16 per 100,000) is similar to the neighbouring countries Germany (17 per 100,000) and France (16 per 100,000).[2,3]

5.2 Survival rates and number of cancer patients in the population

Survival rates

As many diagnosed children as possible are included in international studies on the optimisation of treatment. This involves comparing the best-practice treatment with a slightly modified treatment. Results are assessed on a regular basis. Thanks to a series of such studies, cancer treatment for children has gradually improved in recent decades. Whereas in the 1950s only 20% of children

Childhood cancers: Tumour groups by age group, 2008–2012 **G 5.3**



The surfaces are proportional to the number of cases.

Source: SCCR

with cancer survived, today more than 80% can be cured. The five-year survival rate of children diagnosed between 2003 and 2012 was around 85% (G5.5). The highest cure rate is for lymphomas, retinoblastomas, renal tumours and germ cell tumours (5-year survival rate of over 90%). The chances of a cure are lower for tumours of the central nervous system, advanced peripheral nervous cell tumours and bone tumours (G5.5).

International comparisons

In international comparison Switzerland belongs, together with Austria, Norway and Denmark to the countries with the best treatment outcomes (G5.6).[4]

Trends over time

Compared with the incidence periods 1983–1992 and 1993–2002, the chances of a cure for children who were diagnosed between 2003 and 2012 continued to improve substantially (G5.7). This can be seen particularly for the 5 and 10 year survival rates. There is, however, great variation among the different diagnostic groups.

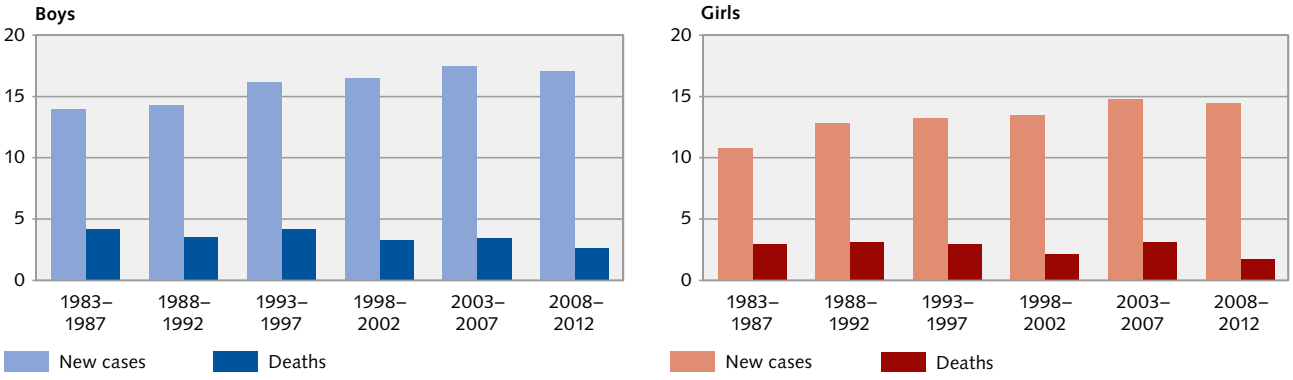
Number of cancer survivors, long-term effects and quality of life

In 2010 at least 4070 patients who had been diagnosed in childhood since 1976 were living in Switzerland (G5.8). For some 1590 the diagnosis was made less than 10 years ago; some 2480 were diagnosed more than 10 years ago. However, it must be assumed that the number of people who were diagnosed with cancer in childhood and who did not die from the disease is much higher, as the Childhood Cancer Register was not complete in its early years. Therefore it can be assumed that there are some patients who were diagnosed before 1976 and who are still alive.

Due to the high survival rate, the young age at diagnosis and because of possible long-term effects, it is very important for children with cancer that their subsequent health and quality of life is monitored. For this reason, all former patients who were diagnosed with cancer as children were followed up with a questionnaire in the Swiss Childhood Cancer Survivor Study.[5] The results showed that most young adults, who were diagnosed with cancer as children report good physical and mental health.[6] Despite this, people who had cancer as children have an increased mortality rate and many survivors develop health problems later in life.[7] For example, they have an increased risk of developing a second tumour. Other health problems such as hormonal problems, cardiovascular or respiratory diseases and osteoporosis also occur frequently as a consequence of aggressive cancer therapies.

Childhood cancers: Trends over time G 5.4

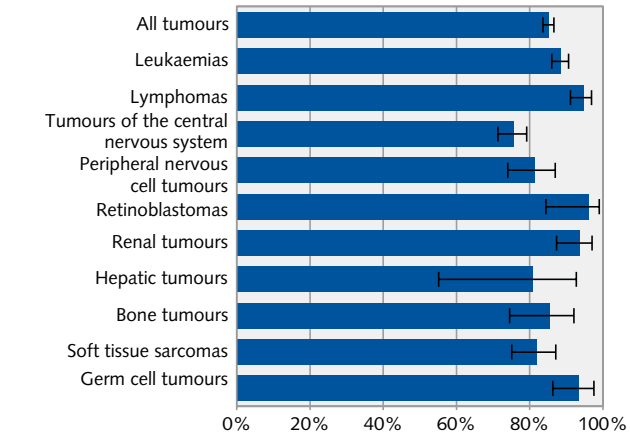
Rate per 100,000 children



Source: SCCR – New cases; FSO – Deaths

Childhood cancers: 5-year survival rate by tumour group, 2003–2012 G 5.5

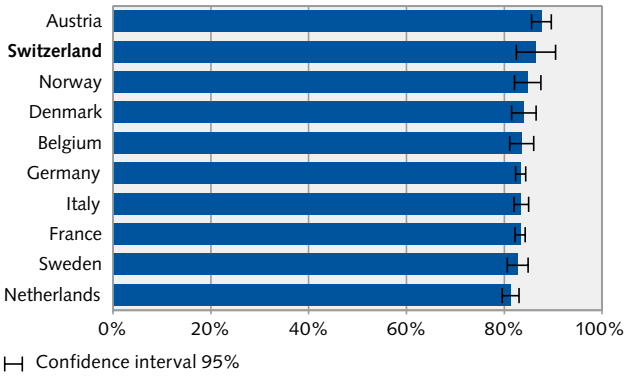
Observed 5-year survival rates



Source: SCCR

Childhood cancers: 5-year survival rates in international comparison, 2000–2007 G 5.6

Observed 5-year survival rates



Source: EUROCARE-5, Gatta et al., Lancet Oncol, 2014

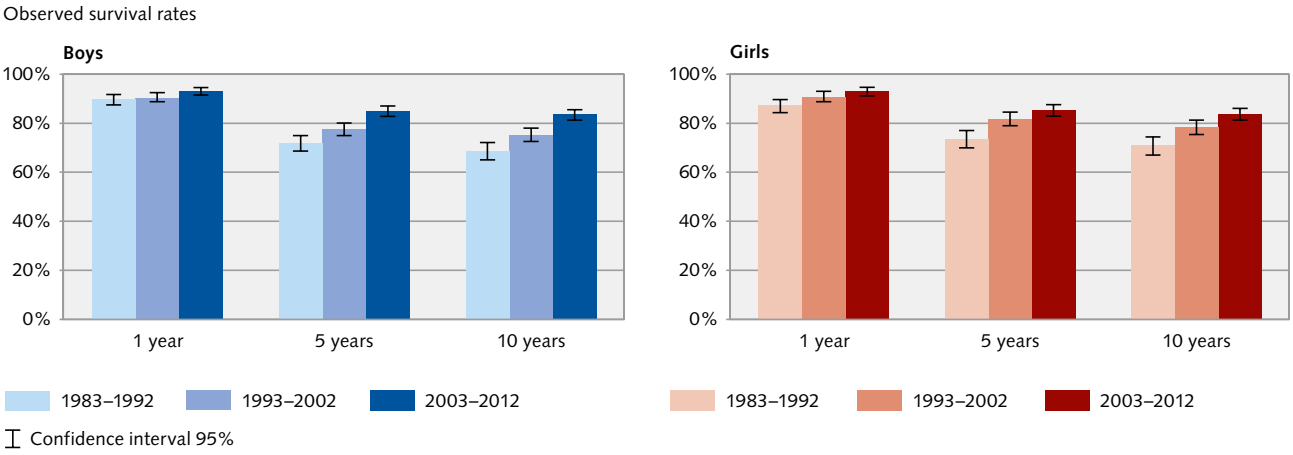
5.3 Treatment

In Switzerland most children with cancer are treated in one of the nine specialist paediatric oncology clinics. These paediatric oncology departments of the children's clinics in Aarau, Basel, Bern, Geneva, Lausanne, Lucerne, St. Gallen, Zurich and in Ticino (until 2008 Locarno, thereafter Bellinzona) form the Swiss Paediatric Oncology group (SPOG; www.spog.ch). These departments work closely together in order to guarantee the highest level of treatment. Where possible, all children are included in international treatment studies. The results of these studies contribute to a constant improvement in treatments. In addition to improved effectiveness, the focus is on the reduction of side effects. Unless the parents avail themselves of their veto power, information on the children's tumour, treatment and course of treatment are documented in the Swiss Childhood Cancer Registry (www.childhoodcancerregistry.ch). This ensures quality control and fast feedback of results to the clinics treating patients thus contributing to a constant improvement in treatments.

5.4 Risk factors and prevention

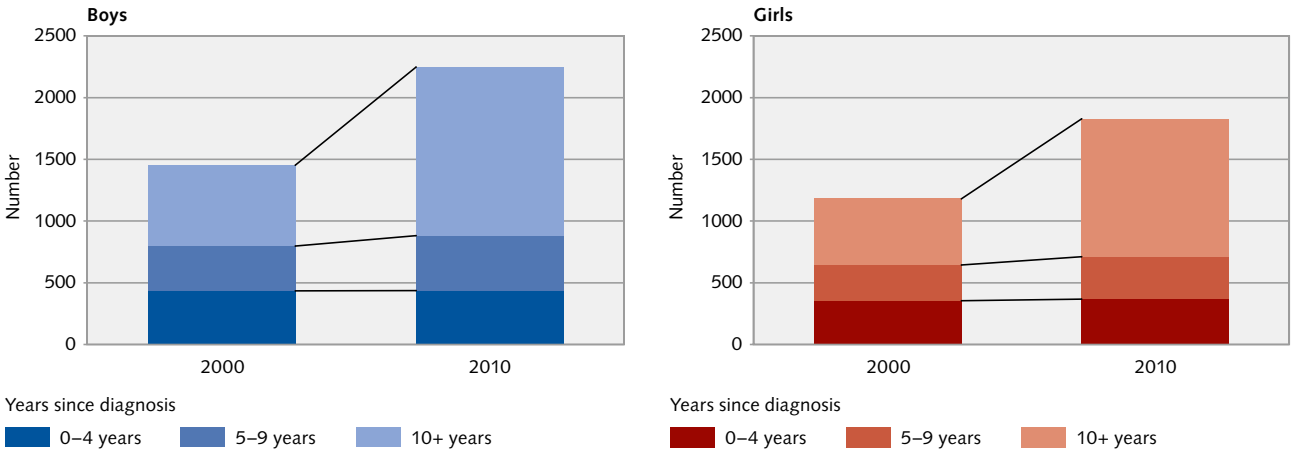
Cancers have a multifactorial aetiology, i.e. various causes must concur, including environmental factors and genetic disposition, in order for cancer to occur. Many risk factors for cancers in infants and small children have an influence during pregnancy and very early childhood, others are present even before conception.

Childhood cancers: Survival rate after 1, 5 and 10 years G 5.7



Source: SCCR

Childhood cancers: Number of survivors (prevalence) diagnosed with cancer as children G 5.8



Source: SCCR

Ionising radiation and other environmental factors

In high doses, ionising radiation favours the development of cancer. In the past, cancer developed in children whose mothers underwent regular antenatal X-ray examinations. The rise in thyroid cancer among children in Belarus after the Chernobyl disaster of April 1986 is well-documented.

Environmental factors also play a part in the occurrence of cancer in children. In Switzerland large-scale studies analyse the role of environmental factors in the development of cancer. The place of residence from birth to diagnosis of children with cancer is compared with the place of residence of healthy children in Switzerland. Such studies have found a slightly increased risk of cancer in children exposed to higher doses of natural radioactivity (terrestrial and cosmic radiation).[8] No effects were shown in Switzerland from radon gas, locations close to nuclear power stations and electromagnetic radiation from radio and television transmitters or mobile telephones with regard to leukaemias as well as tumours of the brain and the central nervous system.[9–12] Other ongoing studies in Switzerland and abroad are examining the effect of air pollution, pesticides, occupational exposure of parents and infectious diseases in childhood. It is not easy to conduct research on environmental factors causing cancer as childhood cancers are rare and there is often a relatively long latency period between the damage done and the onset of illness.

Other risk factors

Certain viruses, in particular HIV, hepatitis B, the Epstein-Barr virus (EBV) and the human herpes virus 8 (HHV-8) contribute to international variation in the incidence of cancer in children, especially for lymphomas, nasopharyngeal carcinoma, cancer of the liver and Kaposi sarcomas.

A range of familial and genetic syndromes are associated with an increased frequency of cancer. These include familial neoplastic syndromes such as familial retinoblastoma, familial Wilms' tumour, Li-Fraumeni syndrome, neurofibromatosis or multiple endocrine neoplasia. Children with congenital immunodeficiency or bone marrow disease and children with genetic diseases or chromosome abnormalities are also at increased risk of developing cancer. Down's syndrome children (trisomy 21) have an increased risk of acute leukaemia but a lower risk of solid tumours. Family members of children with cancer (siblings and offspring) only have an increased risk of cancer if they suffer from one of the familial syndromes mentioned or from genetic diseases.

The increasing age of the mother at birth is associated with a slight increase in the risk of cancer in children, in particular for ALL (acute lymphatic leukaemia). Data regarding the age of the father is less consistent. To date little is known of other causes of childhood cancers.

Prevention and early detection

Confirmed knowledge on avoidable risk factors is sparse. Some tumours in infants and small children (e.g. retinoblastomas) can be detected in the usual paediatric examinations. Apart from families with hereditary syndromes, there is not much in the special screening of children. A "laboratory screening" (concentration of specific substances in the urine) for neuroblastomas (which belong to the peripheral nervous cell tumour group) has not proved to be successful. This screening detected tumours which without treatment would have regressed by themselves. After such screenings, some children received unnecessary treatment without any improvement in the overall chances of survival. However, research continues to make advances also in this area.

T 5.1 Childhood cancer: Key epidemiological figures

	Boys		Girls	
	Incidence	Deaths	Incidence	Deaths
Incidence per year, average 2008–2012	105	17	81	11
Crude rate (per 100,000 inhabitants and year), 2008–2012	17.1	2.7	14.5	1.8
Average annual change in the crude rate, 1993–2012	0.1%	–1.2%	0.4%	–2.4%
Standardised rate (per 100,000 inhabitants and year), 2008–2012	17.4	2.7	14.7	1.7
Average annual change in the standardised rate, 1993–2012	0.1%	–1.6%	0.7%	–3.0%
Cumulative risk before age 15	0.02%	<0.01%	0.01%	<0.01%
Potential years of life lost before age 70, average 2008–2012	–	1196	–	794
	Boys		**Girls**	
Number of patients (prevalence), total, on 31.12.2010*	2247		1829	
of whom diagnosed within past 5 years	436		368	
Observed 5-year survival rate, on 31.12.2012	85.0%		85.4%	

Sources: SCCR – New cases; FSO – deaths

* Prevalence is comprised of all people diagnosed as children since 1976 and still alive on 31.12.2010.

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7 Landier W., Armenian S. & Bhatia S. (2015). Late effects of childhood cancer and its treatment. Pediatr Clin North Am; 62: 275–300

8 Spycher B. D., Lupatsch J. E., Zwahlen M. et al. (2015). Background Ionizing Radiation and the Risk of Childhood Cancer: A Census-Based Nationwide Cohort Study. Environmental health perspectives

9 Hauri D., Spycher B., Huss A. et al. (2013). Domestic radon exposure and risk of childhood cancer: a prospective census-based cohort study. Environmental health perspectives; 121: 1239–1244

10 Spycher B. D., Feller M., Zwahlen M. et al. (2011). Childhood cancer and nuclear power plants in Switzerland: a census-based cohort study. International journal of epidemiology; 40: 1247–1260

11 Hauri D. D., Spycher B., Huss A. et al. (2014). Exposure to Radio-Frequency Electromagnetic Fields From Broadcast Transmitters and Risk of Childhood Cancer: A Census-based Cohort Study. Am J Epidemiol; 179: 843–851

12 Aydin D., Feychting M., Schuz J. et al. (2011). Mobile phone use and brain tumors in children and adolescents: a multicenter case-control study. Journal of the National Cancer Institute; 103(16): 1264–76

6 Conclusions and outlook

The "Swiss Cancer Report 2015" provides – for the second time since 2011 – both specialists as well as the general public with current figures and information on cancer. Once again it highlights the fact that cancer is a serious problem for public health that will increase with the ageing of the population. For 2015 around 42,000 new cancer diagnoses are expected; 23,000 in men and 19,000 in women.

Mortality has been decreasing for most types of cancer. Overall, the age-standardised mortality rate fell by 30% between 1983 and 2012 (by 27% for women and by 36% for men). Mortality rates have fallen in particular for laryngeal, stomach, cervical, colon, breast and prostate cancer as well as for non-Hodgkin's lymphoma. The mortality rate for lung cancer has been declining for men only; in women it has been rosen steadily.

In contrast standardised incidence rates have fallen only slightly. The different types of cancer, however, show varying trends. Melanomas, thyroid and lung cancer (in women) have increased further. In contrast, incidence rates for laryngeal, stomach and cervical cancer have all been on the decline.

The five-year survival rates are higher than 80% for melanoma, testicular, thyroid, breast and prostate cancer as well as for Hodgkin's lymphoma and cancer overall in children. The improvement in survival rates through the years is largely due to new treatments and better cancer diagnosis.

Due to improving daignosis and demographic aging, the number of cancer survivors is increasing. Future cancer research will have to address long-term aspects and needs of cancer patients. The number of so-called cancer survivors in Switzerland (i.e. anybody living with and beyond a diagnosis of cancer) is estimated to be around 300,000. For some 60,000 persons, the diagnosis was made two to five years ago and they still need follow-up care and monitoring. Although the 200,000 people who were diagnosed more than 5 years ago are mostly considered to be cured, many of them suffer from organ damage and have a higher risk of secondary cancers. This needs to be observed as it can have repercussions on the future care of those affected.[1,2]

Epidemiologic data on cancer help to better understand its causes, to plan cancer prevention, to assess early detection measures and to monitor the effectiveness of treatment strategies. Physicians, specialist organisations, researchers and politicians can draw on this epidemiologic data in the planning of healthcare provision and to make evidence-based decisions. Such data is essential in the realisation of the "Cancer strategy 2014–2017" adopted by the Confederation and cantons and for forward-looking patient care.

To provide cancer registration with a solid base it must be enshrined in law. The aims of the planned Federal Cancer Registration Act (CRA) are the complete registration of all new cancer cases, the collection of data in the form of standardised, nationally uniform datasets, collected within a uniform framework, the protection of patients' individual rights as well as secure processing of all data and their appropriate dissemination. The future regulation governing registration shall be based on existing cantonal and national organisational structures. The CRA is a logical extension to the Human Research Act (HRA).

Cancer registration in Switzerland will be modernised with the planned federal act. The draft act provides for data on the course of diseases and their treatment to be added to epidemiological data from the cancer registry and for this data also to be used for quality assurance in oncology. This will create a reliable basis for the evaluation and improvement of cancer therapies in order to improve patients' quality of life. Analogously, the enhanced data will enable more effective prevention programmes to be developed (e.g. early detection programmes or vaccination programmes). Lastly the cancer registry data should also support research.

The merging and joint processing of epidemiologic, clinical and quality-related data will in future result in new interdisciplinary models of cooperation which will continue to improve the prevention and treatment of cancer in Switzerland.

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7 Glossary

Adenocarcinoma	Malignant tumour arising in glandular tissue.
Adenoma	Benign tumour arising in glandular tissue.
Aetiology	(The science of) all factors involved in the causation of a disease.
Age-standardised rate (ASR)	A summary measure of the incidence or mortality of a disease if the population had a standard age structure. Standardisation is necessary when comparing several populations that differ in their age structure. The ASR is a weighted mean of the age-specific rates. The standard population used here is the WHO's former European age structure from 1976.
Basalioma	Basal cell carcinoma is skin cancer that grows slowly and does not develop metastases.
BRCA1 and BRCA2 genes	Human genes from the tumour suppressor gene class (inhibit division of genetically damaged cells). Carriers of a mutated gene have a higher risk of breast and ovarian cancer.
Cancer site	Location or organ in which the cancer arises; also known as cancer type.
Carcinogenic	Having the potential to cause cancer.
Carcinoma	Malignant tumour arising in the epithelial tissue (outer or inner lining of organs).
Case-control studies	Case control studies compare persons with a certain disease with persons who do not have the disease. Both groups are investigated for prior exposure to potential risk factors.
Cohort studies	A cohort study observes people with different exposure histories to risk factors over a specific period of time. These people are then compared with one another with regard to the disease of interest.
Colon	Longest part of the large intestine between the appendix and the rectum
Colorectal	Affecting the colon and the rectum.
Coloscopy	Examination of the large intestine by means of visualisation through an optic probe (endoscopy).
Cytology	Microscopic study of a cell's structure and function
Dysplastic/dysplasia	Malformation or abnormality of an organ, part of the body or tissue.
Gamma radiation	Ionising radiation characterised by very deep penetration (penetration depth in the body of 1m).
Germ cell tumour	Tumour that arises in the ova or sperm.
Helicobacter pylori	Bacterium leading to chronic inflammation of stomach mucous membranes.
Hepatitis	Inflammation of the liver, e.g. due to infection with hepatitis viruses.

Hepatocytes	Liver tissue cells.
Hereditary nonpolyposis colorectal cancer (HNPCC)	Also known as Lynch syndrome, genetic tumour disease of the colon.
Histology	(The science of) the structure of body tissue.
Immunosuppressive drugs	Medication which inhibits activity of the immune system.
In situ	An early stage cancer confined to the site in which it started, and which has not (yet) spread to surrounding tissue.
Incidence	Frequency of new cases of a disease in a defined population during a specific period. Cancer incidence is often expressed as an annual rate per 100,000 inhabitants.
International Classification of Childhood Cancer (ICCC)	Classification of childhood cancer: classified primarily by morphology and then by site.
International Classification of Diseases (ICD)	Medical classification system developed in the 19th century and regularly updated and published by the World Health Organisation (WHO). The 10th revision has been in force since 1994 and in use in Switzerland since 1995.
International classification of diseases for oncology 3rd edition (ICD-O-3)	Extension to the ICD to include specifics characteristics of cancers (topography, histology). The 3rd revision is currently in force.
Invasive	Spreading to surrounding tissue.
Kaposi sarcoma	Cancer associated with Aids and the human herpes virus 8 (HHV-8).
Langerhans cell histiocytosis	Benign, nodular tissue proliferation from skin cells (Langerhans cells).
Leukemia	Malignant neoplasm of the blood or blood forming system.
Lymphocytes	A special type of white blood cells needed to fight infectious agents and exogenous substances.
Median	The middle value of a group of values; one half of the values are lower, the other half higher.
Metastasis	Secondary cancer tissues in an organ other than the primary cancer foci due to spreading of cancer cells from the primary foci via blood or lymph vessels.
Mortality	Frequency of deaths in a defined population over a specific period of time. Cancer mortality is often expressed as an annual rate per 100,000 inhabitants.
Myeloid	Originating in the bone marrow.
Occult blood	Blood in the stool that cannot be seen with the naked eye and that can be detected by a test (e.g. Haemoccult® test).
Over-diagnosis	Detection of an asymptomatic disease which would otherwise not have appeared during the patient's lifetime and would therefore have remained without consequence.
Palliative	Aimed at relieving the symptoms of a disease rather than curing it.
Papilloma	Benign tumour arising in the mucous membranes.
Plasmacytoma	Synonym for multiple myeloma.
Pleura	Membranes lining the thorax and enveloping the lungs.
Pre-cancer	Occurrence of cells whose cell renewal mechanisms are damaged, increasing the risk of cancer.

Pre-cancerous	Tissue changes which have the potential to develop into a malignant tumour.
Prednisone	Synthetically manufactured hormone used in the treatment of overreaction to the body's own immune system or to inhibit the immune system (e.g. after organ transplants).
Prevalence	Frequency of cases of a particular disease in a defined population at a specific point in time. Can be expressed as a number or a proportion of population affected.
Prevention	Measures to prevent the occurrence of a disease or other undesired events.
Primary tumour	The site where a neoplasm first arose.
Rectosigmoid	Junction of the rectum and the sigmoid.
Rectum	Connects the pelvic colon to the anus.
Sarcoma	Cancer arising in connective tissue, muscle or bone.
Screening/early detection xamination	Method of detecting disease before symptoms appear.
Sigmoidoscopy	Examination of pelvic colon by means of endoscopy.
Smear test	Cervical screening test for early detection of cervical cancer (Pap test).
Squamous-cell carcinoma	Cancer that develops in the uppermost layers of the skin or mucous membranes with almost no metastasis.
Survival rate, observed	Percentage of diagnosed patients who survive for a defined period of time after diagnosis.
Survival rate, relative	Survival rate taking into account risk of dying from other causes.
Thymus	Organ in which white blood cells proliferate or diversify.
Tumour	Abnormal growth caused by benign or malignant tissue growth. Malignant tumour is synonymous with cancer.
Years of potential life lost (YPLL)	Indicator for premature mortality, calculated from the sum of differences between age at death and a theoretically defined age limit (in this report age 70) corresponding to life expectancy in the population. Can also be presented as a rate.

Sources: FSO, IARC, Swiss Cancer League (KLS; www.krebsliga.ch), Gutzwiller F, Paccaud F (2009). Sozial- und Präventivmedizin – Public Health. 3rd revised edition. Bern: Huber

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9 Abbreviations

AICR	American Institute for Cancer Research
ALL	Acute lymphatic leukaemia
AML	Acute myeloid leukaemia
BMI	Body mass index
BRCA1/BRCA2	Human genes from the class of tumour suppressor genes
CLL	Chronic lymphatic leukaemia
CML	Chronic myeloid leukaemia
CRA	Federal Cancer Registration Act
DNA	Carrier of genetic information (DNA for: deoxyribonucleic acid)
EBV	Epstein-Barr virus
EUROCARE	European Cancer Registry based study on survival and care of cancer patients (EUROCARE for: EUROpean CAncer REgistry)
FAP	Familial adenomatous polyposis
FSO	Federal Statistical Office
HBV	Hepatitis B (HBV for: hepatitis B virus)
HCV	Hepatitis C (HCV for: hepatitis C virus)
HHV-8	Human herpesvirus-8
HI virus/HIV	Human immunodeficiency virus
HNPCC	Hereditary nonpolyposis colorectal cancer
HPV	Human papillomavirus
HRA	Federal Act on Research involving Human Beings (HRA for: Human Research Act)
HTLV-1	Human t-cell leukaemia virus type 1
IARC	International Agency for Research on Cancer
ICCC-3	International Classification of Childhood Cancer, 3rd revision
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
LL	Lymphatic leukaemia
ML	Myeloid leukaemia
NICER	National Institute for Cancer Epidemiology and Registration
PCB	Polychlorinated biphenyl
PCOS	Polycystic ovary syndrome
PM10	Fine particles with an aerodynamic diameter of 10 µm (PM for: particulate matter)
PSA	Prostate-specific antigen
SCCR	Swiss Childhood Cancer Registry
SPOG	Swiss Paediatric Oncology Group
UV radiation	Ultraviolet radiation
WHO	World Health Organisation
YPLL	Years of potential life lost

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