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Cancer in Germany 2011/2012

GERMAN CENTRE FOR CANCER REGISTRY DATA

GEKID

Contributions to
Federal Health Reporting

Cancer in Germany 2011/2012

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Preface

With about half a million new cases per year, cancer is among the most common diseases in Germany and it is also the second most common cause of death. Half of these cases are accounted for by the four most common forms of cancer – breast, prostate, bowel and lung cancer. This and other basic data that is needed to successfully combat cancer – such as trends, prevalence and regional distribution statistics are all comprehensively presented in the »Cancer in Germany« booklet, now available in this 10th edition. It is the latest update of a publication, which over almost 20 years of its existence has followed the development, establishment and advances made in epidemiological cancer registration in Germany.

How did this series come about? Coming into force in 1995, the Federal Cancer Registry Act established a legal basis obligating the Federal States of Germany to set up epidemiological (i. e. population-based) cancer registries if not already in existence. Before this, alongside the national German Cancer Registry for Children in Mainz there were only population-based cancer registries in Hamburg, the Saarland, the administrative district of Muenster (NRW) and in the eastern federal states (former GDR). In the process of implementing the new cancer registries it soon became evident that given the resultant different state-specific provisions, it seemed both sensible and necessary to bundle the activities of cancer registration in Germany. This led to the founding of the Working Group of Population-based Cancer Registries in Germany (ABKD) in 1996, an association of existing epidemiological cancer registries and those being established at that time. The primary objective of the ABKD was to achieve extensive methodological consistency and standardisation in order to guarantee comparability of data (Cancer in Germany, 1st Edition 1997, page 6). The Federal Ministry of Health provided sustained support for this work and integrated the ABKD in the then »Agenda for Cancer Control«.

In this context, the need for systematic processing of the cancer registry data to make it accessible to as many people as possible was quickly recognised. This heralded the arrival of »Cancer in Germany«. Inspired by the »Facts and Figures« booklet published by the »Europe against Cancer« programme, which was based on data from European cancer registries, the first edition appeared in 1997, funded by the German Federal Ministry of Health. It was published by the »Working Group of Population-based Cancer Registries in Germany« (ABKD) in collaboration with the then ›Federal Cancer Reporting Unit‹ at the Robert Koch Institute. In 60 pages, the brochure contained information on incidence and mortality rates regarding 16 selected types of cancer for the period from 1970 to 1994, as well as information on the progress of cancer registration in Germany. A separate chapter devoted to cancer in children already featured in the first edition as it has in all subsequent editions.

Data from the registries in Hamburg, the Saarland, Muenster and the National Cancer Registry of the former GDR was included in the evaluations for the first edition. Only the data from the Saarland cancer registry could cover the entire period while those from the former GDR cancer registry, at that time, ended in 1989. For the first time for Germany there was systematically processed and reliable information, albeit on the basis of still very limited data at this point. With increasing coverage and level of completeness of data coming from the epidemiological cancer registries within the German states, the database for »Cancer in Germany« has improved considerably across the various editions. »Cancer in Germany« also became more extensive and informative with regard to the reporting itself.

In this context, the spectrum of cancers reported on in the 10th edition has increased to 27 from the 16 covered originally. In addition to the above, data from all federal states is meanwhile being incorporated in the reporting. The successive inclusion of results on stage distribution, survival rates, 5-year prevalence and – last but not least – the type of presentation, all contribute significantly to the information content now publically available on »Cancer in Germany«. This means that the booklet, which had already been well accepted in professional circles, has become even more appreciated.

Until the 4th edition in 2006, the booklet was published by the Working Group of Population-based Cancer Registries in Germany (ABKD). Thereafter, publication was assumed by the organisation set up to succeed the ABKD, namely GEKID – the Association of Population-based Cancer Registries in Germany. Since the 6th edition (2008), »Cancer in Germany« has featured as a standard publication in the Federal Health Reporting series by the Robert Koch Institute. Joint publishers are the Centre for Cancer Registry Data (ZfKD) at the Robert Koch Institute and GEKID.

From its very beginning, »Cancer in Germany« has become an integral source of reporting cancer incidence in Germany. But even more – either in printed form or as a digitally available version, the booklet can be rightly seen as the core publication on this subject. It underlines the important role of cancer registries in combating cancer. In our role as »obstetricians« for »Cancer in Germany« we gladly accepted the request to share our pleasure on the success of the booklet in this preface to this 10th

edition. At the same time »Cancer in Germany« has also »come of age«, so to speak, with all editions now spanning 18 years between 1997 and 2015. We would like to take the opportunity to congratulate GEKID and ZfKD on the fact that it is possible to follow this »coming of age« in impressive fashion looking at the continuous renewal of content and presentation. We are convinced that it is an important contributor to our better understanding of cancer and therefore to the control of this disease.

Joachim Schüz

Wolf-Ulrich Batzler

Christa Stegmaier

Gabriele Hundsdörfer

»Cancer in Germany«, 1st Edition 1997

1 Epidemiological cancer registration in Germany

1.1 Aims and tasks of population-based cancer registries

Population-based (epidemiological) cancer registries are institutions for the collection, storage, processing, analysis and interpretation of data on the incidence and prevalence of cancers within defined registration areas (e.g. one German federal state). The data from the cancer registries also forms an indispensable basis for further studies into the causes of carcinogenesis, the assessment of early detection measures and population-based care of tumour patients.

Findings from population-based cancer registries include:

In Germany, 480,000 people are diagnosed with cancer each year.

The incidence of cancers (i.e. how frequently they occur annually in a certain population group) can be described using the data from population-based cancer registries. The incidence is calculated according to cancer type, patient age and gender, as well as other characteristics. Reliable information regarding incidence is indispensable for depicting the extent and type of the burden that cancer places on a population.

For some years there have been just as many new cases of lung cancer among women under the age of forty as among men of the same age.

Only by using data from the population-based cancer registries can the development of incidence over time (trends) can be observed. The registries have a key function for health reporting in this context.

Regional differences in the incidence of malignant melanoma of the skin can be observed in Europe and in Germany.

Population-based cancer registries can analyse the regional distribution of various types of cancer. It is also within their remit to investigate any cancer clusters observed. Further clarification of these clusters with regard to possible causes usually involves targeted analytical studies.

In recent years, the survival prospects following diagnosis with cancer have largely converged in both the western and eastern federal states.

Population-based cancer registries conduct survival-time analyses of all cancer patients in their registration region. Population-based survival rates are an important parameter for assessing the effectiveness of diagnosis, therapy and aftercare of cancers. In recent years, German registry data has been used for international comparisons of survival rates, for example within Europe.

Because of the demographic development in Germany, it is expected that there will be more than a 20 % increase in new cases of cancer between 2010 and 2030.

The prediction of the future number of new cancer cases is an important aspect of requirement planning within the health service. The population-based cancer registries provide the baseline data needed for this.

The data from population-based cancer registries is also used for scientific research into the causes of cancer or for health services research. Such studies (case-control studies, cohort studies, etc.) investigate issues such as:

- What are the causes of childhood leukaemia?
- Do women who take hormone-replacement therapy for menopausal problems have a higher risk of developing breast cancer?
- Does lung cancer develop more frequently in people in certain occupational groups?
- Are diagnosis, therapy and aftercare being carried out according to the latest standards?

Population-based cancer registries make it possible for all cases of the disease that have occurred in a defined population to be taken into account in research projects. If as many patients as possible participate in the project, it can be broadly guaranteed that the findings of such studies can be extrapolated to the general population. Population-based case-control studies and cohort studies consequently use data from population-based cancer registries for research into the causes and risks of cancer.

Further or specific issues may also be analysed using the registry data. Examples include:

- Detailed analyses regarding survival prospects following diagnosis of cancer
- Examination of oncological care and long-term quality of life of cancer patients
- Occurrence of second tumours after a different primary cancer
- Evaluation of screening measures as for example mammography-screening or bowel cancer screening, especially coloscopy
- Studies of the connection between social strata and cancer incidence and mortality
- Cooperation with the cancer centers, e. g. in the assessment of the long-term survival of treated patients
- Study on the effectiveness of colonoscopy screening

A detailed list can be found at: www.gekid.de.

In the years to come, the evaluation of the organised screening programs introduced in Germany will present a particular challenge for the population-based cancer registries. Using the data provided by the registries, it will be possible to assess whether screening has had the desired effect of reducing the number of advanced cancers within the population. By linking the registry data with the respective screening program it should also be possible to demonstrate reduction in mortality among participants in such measures.

The National Cancer Plan emphasised the central role of cancer registration in assessing the effects of organised programs for the early detection of cancer. A number of implementational recommendations were adopted in the plan, which may ensure improved coordination in the future between the early recognition programs and the information collected in the cancer registries. These recommendations have been integrated in national laws (Cancer Screening and Cancer Registration Act).

One initial focus in this regard has been the assessment of mammography screening, which had been introduced nationwide by 2009. The population-based cancer registries have already provided detailed basic data for the first evaluation reports on mammography screening (www.mammo-programm.de), and this is being used for quality assurance and an initial assessment of the program. A new task scheduled here is the identification of interval carcinomas (incidence of breast cancer following negative screening examination). First results from other countries have been published already and show that the objectives from European guidelines haven't been achieved.

In 2008, the statutory health insurers introduced screening for skin cancer, the effects of which on the incidence of skin cancer and related mortality can also be investigated using the data from the cancer registries.

A longer-term task of the population-based cancer registries is also to examine the effectiveness of the vaccination program for girls between 9 and 14 years of age against human papillomaviruses (HPV) with the aim of significantly reducing the number of new cases of cervical cancer.

In order to fulfil the stated objectives and tasks of the cancer registries it does not suffice to operate population-based cancer registries in selected regions of Germany. To achieve this it is necessary to operate cancer registries in all federal states nationwide. This has been achieved in the meantime with commencement of registration in Baden-Wuerttemberg in 2009. The Federal Cancer Registry Data Act, which came into force in the same year, further improved the scope for collection and evaluation of anonymised cancer registry data at the national level via the newly established German Centre for Cancer Registry Data at the Robert Koch Institute.

In order to be able to pool information about an individual's cancer condition from different sources, data is collected in such a way that multiple reports on the same person are identifiable. For research purposes it has to be possible to re-establish the link between the data and the individual. However in order to safeguard patients' privacy and their right to control what happens to their data, all population-based registries are required under state legislation to adopt extensive precautions to protect and secure personal data.

Undistorted evaluation of the data is only possible if more than 90 % of all new cancer cases are registered. The cooperation of all physicians and dentists involved in diagnosis, treatment and aftercare is therefore crucial to the significance of data from a population-based cancer registry. Patients are also requested to take an active part in cancer registration. Ask your doctor to report your case to the appropriate cancer registry! This way you too can contribute to improved evaluation of cancer-related developments, cancer research and also help to improve cancer detection, treatment and aftercare.

1.2 Current development of cancer registration in Germany

Since 2009, all new cases of cancer are being systematically registered across the whole of Germany on the basis of regional legislation. As a consequence, the current situation for population-based cancer registration is to be viewed as very positive. For the year 2012 it is estimated that eleven federal States have reached a completeness of at least 90 %. This means that reliable data on new cases of cancer is available today for a population of nearly 55 million people. Across Germany about 95 % of the estimated number of new cases of the disease for 2012 have actually been recorded in the registries – ten years prior to this the figure was still under 60 %, Internationally, barely any other country of comparable population size has achieved such a high rate of registration to date.

Numerous individual initiatives in the federal states to improve cancer registration have contributed to this great result. Population-based cancer registration has also continued to receive support from the Federal Government with the Federal Cancer Registry Data Act of 2009 and the establishment of the German Centre for Cancer Registry Data (ZfKD) within the Robert Koch Institute. Since the end of 2011, all regional cancer registries have been providing the ZfKD with de-personalised data on an annual basis in a standardised format. This collective data forms the basis of the analyses carried out by the ZfKD which are presented in this, the 10th edition of »Cancer in Germany«.

Another milestone in the development of cancer registration in Germany was the adoption of the Cancer Screening and Registration Act (KFRG) in 2013, where significant recommendations from the National Cancer Plan have been implemented. The Act obligates all Federal States to set up a system of advanced clinical cancer registry in addition to the already established population-based cancer registry – a system where detailed data regarding therapy and disease process will be recorded. The last two years have seen the beginnings of the cancer registry transformation supported by the Association of Population-based Cancer Registries in Germany (GEKID) and the Association of German Tumour Centres (ADT). In regions where there are still no clinical cancer registries, usually the population-based cancer registries are being expanded into clinical-epidemiological registries. Where clinical registries already exist, they are being adapted to meet the requirements of the KFRG. New regional cancer registry legislation has been adopted in many federal states, some already working according to specifications contained in the KFRG. It is assumed that all Federal States will fulfil these requirements by the end of 2017.

Additional German cancer registries have applied for their epidemiological cancer data to be included in the current edition of the publication »Cancer Incidence in Five Continents« (Volume X) published by the International Agency for Research on Cancer (IARC) at the WHO in Lyon, France. Only those cancer registries that meet internationally established, strict quality criteria are included here. For the latest reporting period 2003–2007, eight German States have been included. It is foreseeable, however, that for the next reporting period (2008–2012) more cancer registry will achieve the required data quality and will therefore be included in this WHO central publication series.

Data from German cancer register are already available today alongside data from other European countries on ENCR website (European Network for Cancer Registries) which can be found at http://eco.iarc.fr. Here, the German data can be easily compared with the information from other European registries.

GEKID, the membership of which also includes research scientists in the field of cancer epidemiology as well as all of the population-based cancer registries, has, in the past two years, continued to concern itself intensively with improved usage of the cancer registry data. One important result of this work is the updating of GEKID's Interactive Cancer Atlas to reflect current cancer incidence and mortality in the federal states. In addition to data regarding incidence and mortality the atlas now includes details of survival following cancer at regional level. The Atlas can be accessed via the GEKID homepage at www.gekid.de and offers interactive regional comparisons for 23 cancer sites in cartographic form.

Above and beyond purely presenting cancer registry data, the population-based cancer registries and GEKID have participated in planning and implementing epidemiological cancer research projects. Pivotal in this regard was the funding of a programme »Cancer Epidemiology« by the German Cancer Aid. Together with the German Cancer Research Center (DKFZ) in Heidelberg it was possible to conduct exhaustive research into survival following cancer and to publish these findings internationally. Furthermore several significant international publications have emerged from other research projects, some of them addressing the linkage of research datasets with cancer registry data. You can find information on further research projects or current publications on the GEKID website and in the annex to this report.

These examples illustrate that the focus of epidemiological cancer registration in Germany is currently shifting away from the pure collection of data and more toward the active scientific use of the data. This development is of essential importance, because

without in-depth scientific analysis, the knowledge gained from painstakingly collected data would be limited. After all, all of the anonymised data records gathered from all of the registries may now be accessed and used on application via the ZfKD by external researchers, an option which has been taken up to an increasing extent over the past two years. The many contributions by the cancer registries and the ZfKD have also become an important element of Federal Health Reporting.

A completely new era is dawning now with the introduction of the clinical cancer registries. The data from the cancer registries will be useful for comprehensive quality assurance and healthcare research. Thus, the importance of the cancer registry for the oncological research and healthcare and therefore also for the benefit for cancer patients will further increase. Generally speaking, the current developments in cancer registration in Germany are to be seen as positive and to have considerable future potential. In an international context, the build-up of nationwide clinical cancer registration means that Germany will join the top flight in this field.

1.3 Current priorities of the Centre for Cancer Registry Data (ZfKD)

Almost six years after the founding of the Centre for Cancer Registry Data (ZfKD), its start-up phase can be seen as a largely completed. An interactive database has been established at www.krebsdaten.de as well the application process for external use of anonymised data from individual cases. So far, 16 applications have been made, of which almost all were granted without restriction. The past two years have seen the first publications resulting from these projects.

The tasks of the ZfKD arising from the Federal Cancer Registry Data Act (BKRG) (see annex 5.1), include conducting its own analyses and producing scientific publications. In addition to numerous conference contributions a special issue focused on population-based cancer registration was published at the beginning of 2014 in the German Federal Health Gazette (»Bundesgesundheitsblatt«), which included contributions from authors within the cancer registries, the ZfKD, the German Cancer Research Center and university institutions. In its capacity as part of a public-health institute, the ZfKD focuses particularly on those types of cancer which may in principle be influenced through early detection or prevention measures, with regard incidence or mortality. For internationally published papers estimates of the number of cancers attributable to the consumption of tobacco and alcohol in Germany were calculated. The proportion of new cases of cancer associated with smoking or consumption of alcohol across all cancer sites amounted to 16 % and 3 % respectively. This means that a total of about one-fifth of all cancers in Germany is caused just by these two risk factors, which can be influenced by various measures. Further publications on the impact of obesity, and certain chronic infections (particularly human papillomavirus, HPV) are in preparation. Indirectly, clear regional or international differences or rising trends may also indicate factors that could be influenced. Generally, the task of the ZfKD in this regard is to indicate where more research is needed. In this context, in another English-language publication, in-depth analyses on the incidence of vulvar carcinoma were presented, a tumour that has clearly been increasing recently in Germany (cf. annex 5.6).

In addition, the ZfKD addresses research topics, which require a large data base. These relate, for example, to rare tumours, the risk of secondary cancers or the specific analysis of clinically important subgroups of certain types of cancer or oncologic diseases that are not classified as ›malignant‹ under the current international classification of diseases (ICD), for example non-invasive bladder cancers and myelodysplastic syndromes (MDS). Another concern of the ZfKD is to make its data and results available for other researchers. In this sense, the ZfKD sees itself as a service facility for a broad number of scientific disciplines. The growing number of enquiries is proof that this service has come to be increasingly used and appreciated.

Ultimately, the work of the ZfKD should benefit both the population-based registries and the clinical cancer registries currently being established. This includes the joint effort to find a standardised method of data collection as well as achieving uniformity in plausibility checks with regard to international requirements and classifications or their updates. The transition table between ICD-O-3 and ICD-10 developed by the ZfKD together with registry representatives for types of leukaemia and lymphomas has, in the meantime, become part of the testing and conversion software for cancer registry data (IARCcrgTools) after clearance with the results of a British working group.

Even though the ZfKD has not been delegated any direct tasks within the nationwide build up of clinical cancer registration in the next few years, there will be at least one direct reference to this topic in the future: the results of the estimation of data completeness for each registry, according to the method developed by the ZfKD, have been determined a core criterion for the funding of the registries by the German health insurance companies, which means that the ZfKD will have a special responsibility in this regard. Because of this, the methods which had already been

modified some years ago, are being subjected to careful re-examination and in particular the validity of the underlying assumptions are being re-checked as far as possible.

2016 will see the first issue of another series of ZfKD reports to be published every five years using additional data sources to provide comprehensive information about cancer in Germany. In addition to detailed analyses regarding the epidemiology of cancer, these will also deal with aspects of prevention, early detection, care and the consequences of cancer, as well as containing information on the current status of the implementation of the National Cancer Plan. The ZfKD website (www.krebsdaten.de) provides information on additional current projects and activities.

2 Methodological Aspects

2.1 Estimating the degree of capture in the epidemiological cancer registries (Estimation of Completeness)

The usefulness of population-based data with regard to cancer largely depends on the level of completeness with which new cancer cases are registered. Therefore the Centre for Cancer Registry Data (ZfKD) annually checks the completeness of the data from the population-based cancer registries in Germany, since 2010 for all federal states. The estimation is made with the help of an internationally accepted indicator of completeness, namely the ratio of mortality to incidence. This ratio (M/I Index) can largely be assumed to be regionally constant for the respective cancer diagnosis, provided there are no fundamental differences in diagnosis and therapy and therefore also in the survival prospects of cancer patients in Germany. With the help of the M/I-Index in a particular reference region where registration is known to be comprehensive and by using regional mortality figures, the incidence in the respective region examined can be estimated and compared with the actual recorded data. Cases identified through death certificate only (DCO) are not taken into account here. The completeness of the reference region register is also estimated by means of comparison with the expected values.

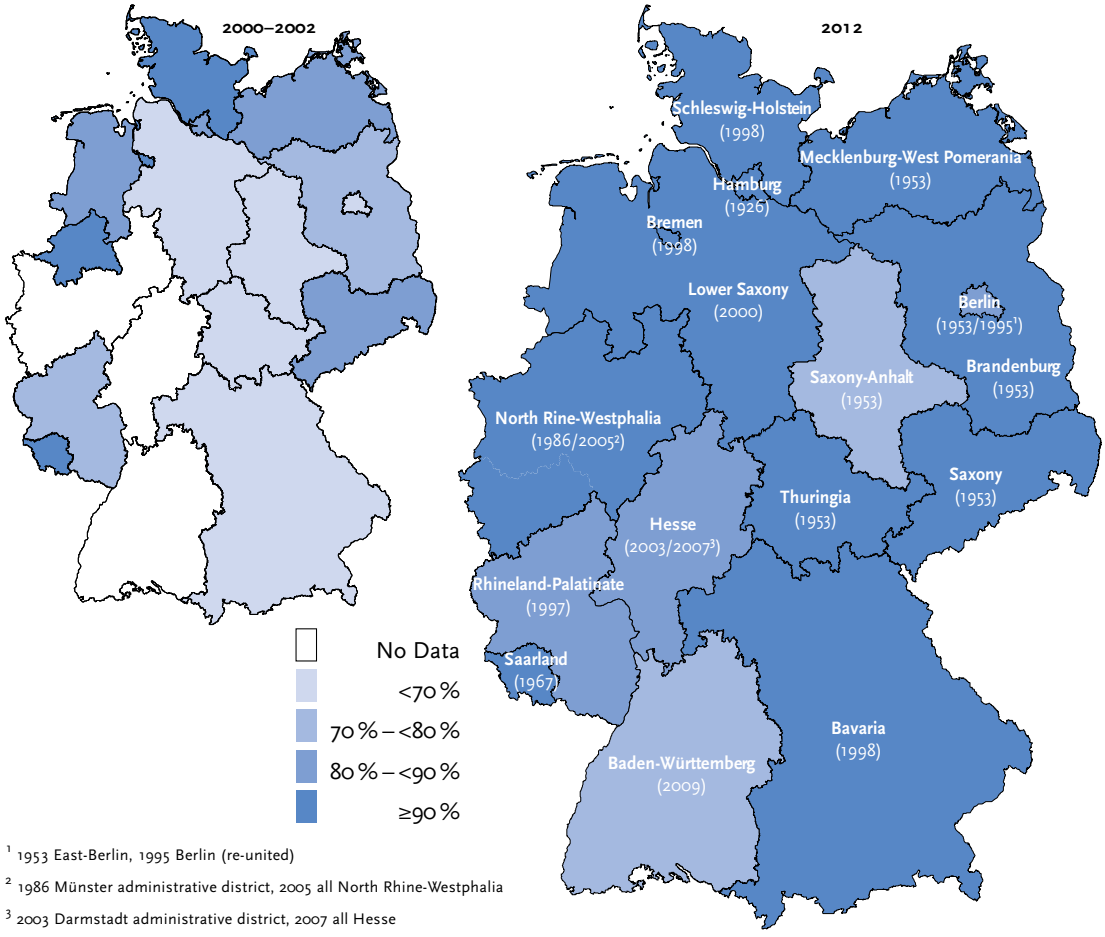
The following inclusion criteria were established for the reference region in 2010.

- Comprehensive cancer registration for a period of at least ten years
- Completeness of more than 90 % for cancer overall over the past ten years (using the previous RKI estimation method) and more than 80 % for all individual years
- Proportion of DCO-cases of less than 15 % for cancer overall over the past ten years or at least from the sixth year since the beginning of registration

These criteria were met by the registries in Saarland, Hamburg, Bremen, Schleswig-Holstein, Lower Saxony, Bavaria, Brandenburg, Mecklenburg-Western Pomerania, Saxony, Thuringia and the administrative district of Münster (North Rhine-Westphalia). It is expected that this pool will grow to include further registries in the next few years.

According to the principle described in the above, expected values are calculated for six age groups for men and women respectively and for 16 diagnosis groups. In order to compensate for random fluctuations the observed and expected values were smoothed using log-linear models.

Figure 2.1.1
Development of the estimated completeness of the population-based cancer registries in Germany 2000 to 2002 and 2010, by federal state or region (showing start of registration)



[1] 1953 East-Berlin, 1995 Berlin (re-united)

[2] 1986 Münster administrative district, 2005 all North Rhine-Westphalia

[3] 2003 Darmstadt administrative district, 2007 all Hesse

If mortality in the region being studied is too low (less than five cases of death per year on average) the modelled (smoothed) incidence in the reference region is used instead of the quotients derived from incidence and mortality for the appropriate age group in order to calculate the expected number of new cases. The estimated degree of completeness for each diagnosis group is the result of the ratio of observed and expected case figures accumulated across all age groups. The completeness for cancer overall is again estimated by summing the observed and expected values for all diagnosis groups.

The procedure described has limitations, especially if the mortality for one type of cancer is low in absolute terms or relative to incidence (testicular cancer, malignant melanoma, thyroid cancer), or if the real ratio of mortality to incidence differs between the regions. This may, for example, be the case if early detection measures are utilised to varying degrees in the federal states or if they are introduced at different points in time, as was the case with mammography-screening.

According to the current estimation, 12 federal states are already achieving an estimated completeness of at least 90 % for 2012, with seven of the states even achieving over 95 % in relation to the aforementioned reference registries. In the last ten years, the degree of capture has consequently increased considerably (Illustration 2.1.1). Any deficits that still exist can in part be explained by the fact that the forwarding of data regarding patients treated outside their state of residence is not yet satisfactorily regulated in all areas. Especially the requirements of the clinical cancer registries should lead to further improvements in the next few years.

2.2 Estimating national incidence for Germany

The estimation of incidence rates for Germany are based on the results of completeness estimation as explained in 2.1. The estimated nationwide figures for new cases for the individual diagnoses and years arise from the summation of the results from the registries with a degree of capture over a certain threshold level and the expected value from the completeness estimation for those regions that were not (yet) deemed to be comprehensive for the respective year.

For all diagnoses except from thyroid cancer and the malignant melanoma, registries with a degree of capture of at least 90 % are considered as complete. Due to strong fluctuations in the ratio of mortality to incidence the threshold level for thyroid cancer and for the malignant melanoma were set to 70 % and 80 %, respectively.

The DCO (Death Certificate Only) cases were included for the comprehensive registries from the sixth year of nationwide registration. For the first five years and for the non-comprehensive registers the DCO-rates from the five reference registries were taken into the calculation (according to site, age and gender). Because of the varying stages of development, North Rhine-Westphalia was divided into three regions for the time being (the administrative district of Münster, Düsseldorf/Cologne and Arnsberg/Detmold).

Because the entire dataset is analysed anew for every estimation of incidence, this may result in changes (usually slight) in the incidence rates from estimation to estimation, which partly can be caused by delayed notification of incident cases and partly by the methodology of the estimation itself.

For the last estimation, the group of reference registries was expanded with respect to the long-lasting high quality of many epidemiological registries in Germany. This expansion lead to a changes in the estimated incidence. Consequently the current estimations for 2010 for ›all cancer sites‹ are about 2 % higher than two years ago which approximately corresponds to the number of late registrations in the registries. Depending on the localisation, the deviation may vary. The estimation for the melanoma for the year 2010 are 6.6 % higher for men than two years before and 8.1 % higher for women. The estimation for malignant neoplasms of soft tissue for men for the year 2010 are about 6 % lower than two years before. Changes in encoding and documentation of leukaemias has resulted in higher incidence rates for women (12 % higher than 2 years before) and for men (10 % higher).

This report presents estimated trends over time since 1999. Since the population-based cancer registries in the densely populated federal states did not commence data capture until between 2002 and 2009, the estimations for recent years are based on a significantly broader data basis than those for the period before 2002 for instance. Although the same methodology was used in each case, estimates for recent years can generally be viewed as more reliable. Assuming that the levels of completeness within the diagnosis groups do not differ significantly, estimations were conducted for the first time for rarer types of cancer according to the same principle. The results are shown in Chapter 3.29 and in even more detail on the website at www.krebsdaten.de.

An estimation of the incidence of non-melanoma skin cancers (C44) is not possible using the method described, amongst other things due to the low mortality. Experience shows that the acquisition of data pertaining to these diseases in population-based cancer registries is difficult since treatment is often on a purely out-patient basis. Consequently, even in an international context there is very little reliable data. However, in recent years some registries in Germany have made successful efforts to also include registered dermatologists in the registration process. This first-time estimation of nationwide incidence figures is thus based on the data of those registries where the age-standardised incidence rate in the past two years deviated by less than 25 % from the federal state with the highest recorded incidence (Schleswig-Holstein, Lower Saxony, North Rhine-Westphalia, Hesse, Mecklenburg-Western Pomerania and the Rhineland Palatinate). The calculation was performed by projecting the pooled, age-specific incidence rates in these states onto the entire German population. However, a great degree of uncertainty still surrounds the incidence estimates for non-melanoma skin cancers and these do not yet allow any reliable statements to be made regarding trends over time, which is why they are not presented in their own chapter. With regard to the presentation of the incidence of cancer in general (chapter 3.1) non-melanoma skin cancers have not, as in previous years, been included for reasons of comparability.

2.3 Indicators and graphical presentations

The following section provides explanations of the measured values used in the results chapters and in the graphical presentations.

Age-specific rates

The age-specific rate is determined by dividing the number of cases of cancer and deaths in a certain age group by the corresponding number of men or women in this age group within the population. The graphical presentation of these rates shows the relationship between age and incidence by gender. The age-specific incidence rates are expressed as the annual number of new cases per 100,000 inhabitants for the respective age group and year.

Age-standardised rates

As the presentation of the age-specific incidence for men and women in this report shows, the cancer incidence rate usually increases considerably with age, so that before comparing incidence or mortality in different states and regions, or within the same population at different times, differences in the age structure of the compared populations must first be removed with the help of age-standardisation. This is achieved through weighting and subsequent summing of the observed age-specific rates. An age-standardised rate indicates the incidence of a type of illness or cause of death in a total of 100,000 people in a pre-defined age structure (standard population). In this report the old European Standard Population has been used.

Cancer incidence and mortality risks

Age-specific incidence rates and mortality rates may be interpreted as measures for the age- and gender-specific risks of developing and dying from a specific malignant tumour within a year. In addition, age and sex specific risks of developing or dying from a specific form of cancer within the next ten years or at some point in the future were calculated. The results are presented both as a percentage and as one in N individuals of the same age and sex. So-called »competing risks« were also taken into consideration, e. g. the probability of a 75-year-old man to die from some other disease within the next ten years. Similarly, the »lifetime risk« was calculated, i. e. the risk of developing a tumour at some point during an entire lifespan. However, only the respective current rates (incidence and mortality rates and general life expectancy) are used in the calculations. No prediction is therefore made regarding the future development of these values. Furthermore, these results are to be viewed as average values for the entire German population and individual risks may differ considerably due to the presence or absence of specific risk factors. The DevCan programme developed by the US National Cancer Institute was used to perform the calculations.

International comparison

In order to be able to classify the estimated cancer incidence and cancer mortality in Germany in an international context, current age-standardised incidence and mortality rates in the countries bordering on Germany as well as the United Kingdom, Finland, and the USA (see Annex for sources). Where figures were available by the editorial dead-line, these results refer to the mean value for 2010 and 2011, otherwise the latest available data or estimations were used for the comparison. For some types of cancer (e. g. bladder cancer, renal cancer) the grouping of diagnoses in accordance with ICD-10 differs somewhat in individual countries from that used in Germany, which slightly limits comparability in some cases (see appropriate footnote).

For countries that haven't been included in the last, 10th edition of the report »Cancer Incidence in five continents« by the International Agency for Research on Cancer (IARC) – namely France, Poland and Switzerland – estimations have been taken from the website of the European Cancer Observatory by the IARC for 2012 (http://eco.iarc.fr/eucan/).

Median age at diagnosis

The median age at which a specific cancer develops according to cancer site and gender was calculated for all cases diagnosed in 2010 and 2011. The inclusion of DCO cases, for which the age at death is used instead of age at diagnosis, inevitably leads to a slight overestimation of this value.

Mortality

Cancer mortality is based on number of deaths in any one year due to cancer according to the official cause-of-death statistics. The deaths are attributed to the underlying cause of death and grouped in terms of age and sex. The mortality rate is expressed as the relationship of the annual number of deaths to the size of the population. The rates are relative to 100,000 people. In this report, the absolute number of deaths, as well as crude and the age-standardised mortality rates from 1999 to 2012 (European Standard) are presented. More up-to-date figures are already available from the German Federal Statistical Office (www.gbe-bund.de) and at www.krebsdaten.de.

Prediction of incidence for 2016

The incidence rates were predicted for 2016 by determining linear trends in estimated age-, gender- and

site-specific logarithmic incidence rates for Germany over the past ten years, and continuing these trends through to 2016 drawing on the current demographic projections from the German Federal Statistical Office. In variation from the above, constant incidence rates were assumed in the case of prostate cancer and for the malignant melanoma for all age groups and for female breast cancer for the 50 to 69 year age group (target group for mammography screening).

Regional comparison

The mean age-standardised incidence rates for 2009 and 2010 (European Standard) from the federal states are expressed in comparison with the corresponding estimates for Germany. Any estimated capture rates of less than 90 % for 2010 are indicated by highlighting the incidence bar. Age-standardised mortality according to site and sex for all federal states is shown in comparison to nationwide mortality in Germany for the same period, using figures from the German Federal Statistical Office (www.gbe-bund.de).

Crude rates

A crude rate of incidence or mortality for a specific cancer site and population is calculated by dividing the total number of all new cases of cancer reported (incidence) or the number of deaths due to cancer (mortality) in a pre-determined time period by the total number of all women and/or men in the relevant population (in this case the residential population of Germany). The result is expressed as the number of new diagnoses or deaths per 100,000 residents per year. In contrast to the age-standardised rates, crude rates are highly dependent on the age-structure of a population.

Survival rates

The results of survival analyses in this report describe the average survival prospects of patients over the age of 15 years at the time of diagnosis given a specific cancer type. Absolute and relative survival rates from one to ten years have been calculated for this purpose. Absolute survival rates represent the proportion of patients who are still alive at a certain time after their diagnosis. For example, an absolute 5-year survival rate of 80 % means that 80 people out of 100 diagnosed with a specific type of cancer have survived the first five years after their diagnosis.

Relative survival rates show cancer-related mortality in terms of the ratio of absolute survival of the cancer patients to the expected survival in the general population of the same age and gender. For example, a relative 5-year survival rate of 100 % means that within 5 years of cancer diagnosis, just as many persons affected have died as would have been expected even without diagnosis. The relative survival rate is always higher than the corresponding absolute rate. It has been calculated using the so called »Ederer II method« using the federal German mortality tables from the Federal Statistical Office.

Like in the last edition of »Cancer in Germany«, the basis for the calculation of survival rate includes data from Hamburg, Lower Saxony, Bremen, the Rhineland-Palatinate, Saarland as well as Mecklenburg-Western Pomerania, Saxony, Thuringia (Joint Cancer Registry) and from the administrative district of Münster (North Rhine-Westphalia). This selection guarantees continuous estimations with high data quality.

In order to make the most up-to-date estimates of survival prospects possible, the so-called »period method« was used. This takes into account the survival of people with cancer who have been alive during a specific period (in this case 2011–2012).

The range quoted for five year survival represents the lowest and highest values in the individual regions included, though for these purposes only regions with a standard error of less than 7 % for the estimated survival were taken into account in the analysis. If this criterion was not met by at least seven regions, no range details have been presented. Presumably, the presented range only to a small extent reflects ›real‹ differences in the quality of care. Differences in data quality or in the proportion of DCO cases may play a role, as well as random fluctuations, especially for smaller federal states. Methodological differences between registries may also influence results, in particular efforts to conduct trace-back research on DCO cases, which is not performed in all federal states.

Overall, it can be assumed that the estimated survival rates quoted for Germany are slightly over-estimated, at least for those types of cancer with worse prognoses, but this is probably the case for most of the international results published too.

The calculation of survival 10 years after diagnosis is based on considerably lower numbers than the calculation of survival 5 years after diagnosis. For that reason, the registry-specific 10-year-survival is more uncertain than the 5-year-survival. Therefore, values in the range of relative 10-year-survival can be slightly above those for 5-year-survival.

Distribution of stages of tumours

The extent of a solid malignant tumour at the point of diagnosis in the years 2011 to 2012 was evaluated using the TNM-classification. Given the data situation, only the distribution of T stages (tumour size) are presented here. Included was data encoded according to the 7th Edition of the TNM-classification, valid since the beginning of 2010. For the respective sites, those registries were included in the evaluation where

the proportion of missing values (including DCO cases) was less than 50 %. For sites where fewer than four federal states were able to fulfil this criterion, the stages have not been presented.

5-year prevalence

The 5-year prevalence refers to the number of people living at a given time (here 31 December 2012) who had been newly diagnosed with cancer within the previous five years, i. e. between 2008 and 2012. The prevalence is calculated using the Pisani method from the estimated incidence rates for Germany and the absolute survival rates calculated using the Kaplan-Meier method (according to age, sex, site, and calendar year) for the regions listed under ›survival rates‹ (see above).

3 Results

3.0 Overview of incident cancer cases and cancer deaths

Table 3.0.1
Estimated numbers of incident cancer cases in Germany 2012

		No. of incident cases		Incidence rate[1]	
Cancer site	**ICD-10**	**Men**	**Women**	**Men**	**Women**
Oral cavity and pharynx	C00–C14	9,290	3,650	17.9	6.0
Oesophagus	C15	5,030	1,510	9.0	2.2
Stomach	C16	9,180	6,460	15.6	8.2
Colon and rectum	C18–C21	33,740	28,490	57.1	36.8
Liver	C22	6,020	2,560	10.2	3.4
Gallbladder and biliary tract	C23, C24	2,170	2,780	3.6	3.4
Pancreas	C25	8,250	8,480	14.0	10.6
Larynx	C32	3,110	490	5.7	0.9
Lung	C33, C34	34,490	18,030	59.1	27.7
Malignant melanoma of the skin	C43	10,400	10,420	19.2	19.2
Mesothelioma	C45	1,260	300	2.0	0.4
Soft tissue not incl. Mesothelioma	C46–C49	1,800	1,710	3.5	2.9
Breast	C50	620	69,550	1.1	117.4
Vulva	C51		3,190		4.5
Cervix	C53		4,640		9.3
Uterus	C54, C55		10,930		16.6
Ovaries	C56		7,380		11.4
Prostate	C61	63,710		106.7	
Testis	C62	4,020		10.2	
Kidney	C64	9,500	5,530	16.9	8.0
Bladder	C67	11,270	4,140	18.4	5.0
Central nervous system	C70–C72	3,960	3,220	7.9	5.6
Thyroid gland	C73	1,820	4,390	3.8	9.3
Hodgkin's lymphoma	C81	1,240	990	2.9	2.3
Non-Hodgkin lymphomas	C82–C88	8,580	7,570	15.4	11.0
Multiple myeloma	C90	3,490	2,850	5.8	3.7
Leukaemias	C91–C95	7,180	5,460	13.3	8.2
Other cancer sites		11,960	11,190	21.0	15.1
Total cancer[2]	**C00–C97 w/o C44**	**252,060**	**225,890**	**440.2**	**348.9**

[1] age-standardised (European standard) [2] not including non-melanoma skin cancer (C44)

Figure 3.0.1
Most frequent tumour sites as a percentage of all new cancer cases in Germany 2012 (not including non-melanoma skin cancer)

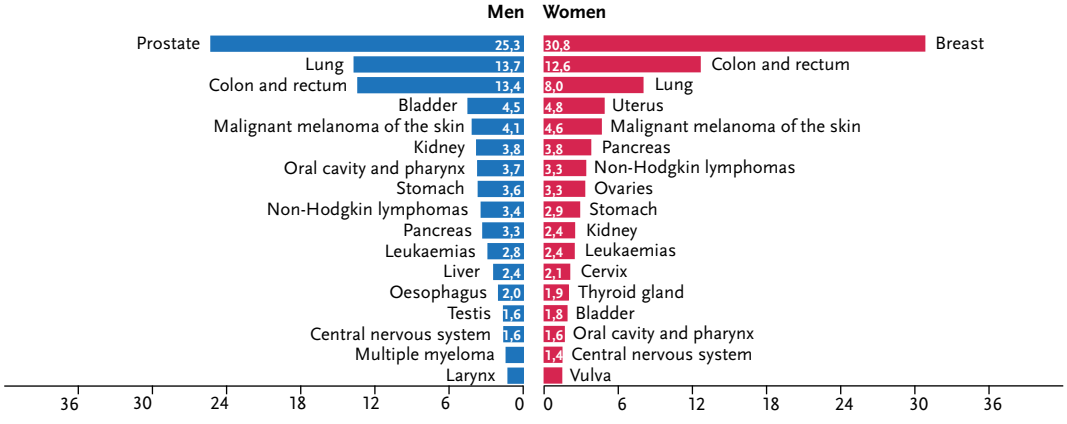
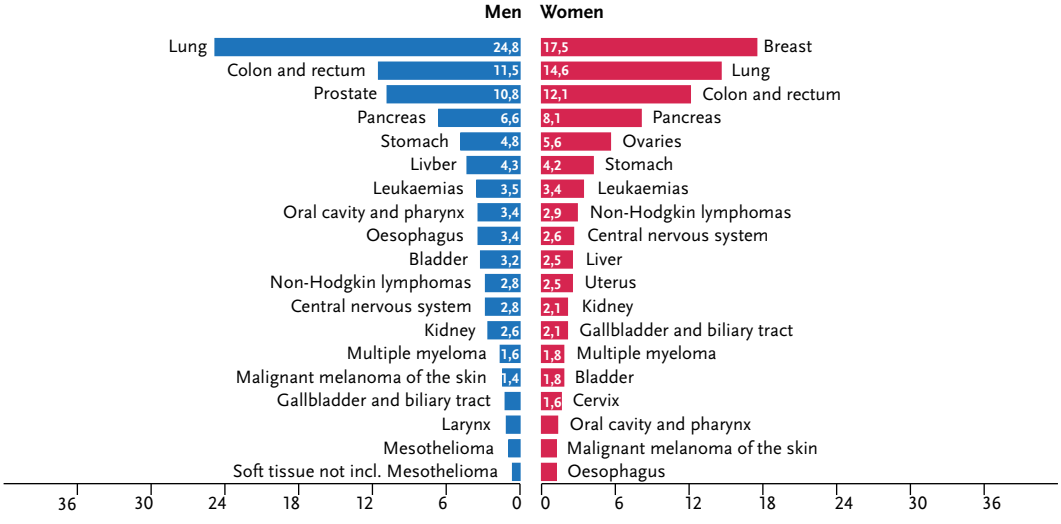


Table 3.0.2
Number of deaths from cancer in Germany 2012
Source: Official cause of death statistics, Federal Statistical Office, Wiesbaden

		No. of deaths		Mortality rate[1]	
Cancer site	**ICD-10**	**Men**	**Women**	**Men**	**Women**
Oral cavity and pharynx	C00–C14	4,090	1,303	7.7	1.9
Oesophagus	C15	4,072	1,188	7.2	1.6
Stomach	C16	5,770	4,208	9.5	4.9
Colom and rectum	C18–C21	13,772	12,200	22.4	13.3
Liver	C22	5,117	2,553	8.4	3.0
Gallbladder and biliary tract	C23, C24	1,415	2,122	2.3	2.4
Pancreas	C25	7,936	8,184	13.1	9.6
Larynx	C32	1,265	178	2.2	0.3
Lung	C33, C34	29,713	14,752	49.8	21.3
Malignant melanoma of the skin	C43	1,627	1,248	2.8	1.7
Mesothelioma	C45	1,085	275	1.7	0.3
Soft tissue not incl. Mesothelioma	C46–C49	747	794	1.3	1.1
Breast	C50	150	17,748	0.3	23.9
Vulva	C51		827		0.9
Cervix	C53		1,617		2.6
Uterus	C54, C55		2,515		3.0
Ovaries	C56		5,646		7.5
Prostate	C61	12,957		20.1	
Testis	C62	179		0.4	
Kidney	C64	3,125	2,131	5.1	2.4
Bladder	C67	3,791	1,826	6.0	1.9
Central nervous system	C70–C72	3,293	2,591	6.1	4.0
Thyroid gland	C73	330	419	0.6	0.5
Hodgkin's lymphoma	C81	219	158	0.4	0.2
Non-Hodgkin lymphomas	C82–C88	3,407	2,955	5.5	3.3
Multiple myeloma	C90	1,956	1,870	3.1	2.1
Leukaemias	C91–C95	4,155	3,445	6.8	4.0
Other cancer sites		9,546	8,453	15.9	9.7
Total cancer[2]	**C00–C97 w/o C44**	**119,717**	**101,206**	**198.6**	**127.4**

[1] age-standardised (European standard) [2] not including non-melanoma skin cancer (C44)

Figure 3.0.2
Most frequent tumour sites when cancer was the cause of death in Germany 2012



3.1 All cancer sites

Table 3.1.1
Overview of key epidemiological parameters for Germany, ICD-10 C00–C97 without C44

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	259,090	229,720	252,060	225,890	266,800	231,900
Crude incidence rate[1]	661.3	559.0	641.3	549.3	666.2	559.8
Standardised incidence rate[1,2]	460.0	356.2	440.2	348.9	437.8	345.2
Median age at diagnosis	70	69	70	69		
Deaths	119,368	101,546	119,717	101,206		
Crude mortality rate[1]	304.6	247.1	304.6	246.1		
Standardised mortality rate[1,2]	202.7	129.7	198.6	127.4		
5-year prevalence	813,100	789,100	810,300	790,500		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	52 (47–55)	59 (55–63)	40 (34–42)	48 (44–50)		
Relative survival rate (2011–2012)[3]	62 (56–65)	67 (62–70)	57 (51–61)	62 (58–65)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

›All cancer sites‹ refers here to all malignant neoplasms including lymphomas and leukaemias.

A ›Malignant Neoplasm‹ is defined by the ›International Statistical Classification of Disease and Related Health Problems‹ (ICD-10, Chapter C). This classification is prone to temporal trends and does not always reflect the clinical course of the disease: there are non-invasive papillary tumours of the urinary bladder and certain neoplasms of the hematopoietic system (for example myelodysplastic syndrome) that constitute more harms and complaints to the concerned than some malignant neoplasms of the thyroid gland. In line with normal international practice, non-melanoma skin cancers (white skin cancer) are not included in the above. Estimates regarding the frequency of this widespread yet seldom life-threatening disease can be found in chapter 3.29.

Cancer can occur in all kinds of organs in the body and can originate from different types of cell. The origin of most types of cancers are the internal or external body surfaces. Approximately 70 % are adenocarcinomas originating in glandular tissue. Around a further 15 % are squamous-cell carcinomas, malignant tumours of the transitional epithelium (urothelium carcinoma) and small-cell carcinoma, which occur for example in the lung. Alongside leukaemias and lymphomas, malignant tumours also have their origins, for example, in the support cells of the nervous system (glia cells) or under pigment-producing cells (melanomas). Rarer forms of cancer include those originating in connective tissue, such as mesothelioma and various sarcomas.

According to our estimates a total of approximately 478,000 new cases of cancer were diagnosed in Germany in 2012. Of these, approximately 252,100 were in men and 225,900 in women.

Just over half of all cases relate to the mammary gland (70,200), the prostate (63,700), the bowel (62,200) or the lungs (52,500) (Tab. 3.0.1).

Between 2002 and 2012 the number of new cancer cases increased among men by around 13 % and in women by 10 %. The decisive factor influencing this was the changing demographic structure of the population (increase in the proportion of older people), which was more pronounced among men than women. The development in age-standardised incidence rates indicates that without these changes there would have been decreasing incidence figures among men (by 4 %) and an increase of around 5 % in women. The latter can be explained to a significant extent by a decreasing trend of lung cancer in men versus an increase in women (cf. Chapter 3.10).

The age-standardised mortality rates have decreased by 13 % in men and by 9 % in women. Because of the demographic change, the absolute number of cancer deaths increases instead by 10 % in males and 2 % in females. The proportion of deaths attributed to cancer as underlying cause of death remained constant since the end of the 1990s (22 % in women and

28 % in men) indicating that the achievements of the war against cancer contributed to the increase of life expectancy of about two or three years.

Currently every second man (51 %) and 43 % of all women can be expected to develop cancer in the course of their life. Every fourth man and every fifth woman dies of cancer. The relationship between cancer incidence and age varies between men and women. Women under the age of 55 years reveal higher incidence rates than men of the same age. In the higher age groups this relationship reverses. In the over 65 year age group the incidence rates among men are almost twice as high as those among women.

The relative 5-year survival rates compare the higher mortality of cancer patients to that of the general population of the same age (100 % indicating similarity). They range from favourable values above 90 % for malignant melanoma of the skin, testicular cancer, and prostate cancer, through to survival rates of less than 20 % for lung, liver and pancreatic cancer and mesothelioma (Figure 3.1.0). During the last thirty years the prognosis for cancer patients in Germany overall has improved considerably. Current estimations using the period method show 5-year relative survival rates of 62 % for men and 67 % for women in patients diagnosed in 2011 and 2012. The improved overall cancer survival rates are due in part to shifts in the localisation spectrum, for example the decline in cases of stomach cancer and lung cancer among men (for which the prognoses are poor) and a larger proportion of colorectal, breast, and prostate cancer with relatively better prognoses. The most obvious improvements in the survival rates of adult cancer patients over the last 25 years have been achieved in malignant tumours of the mammary gland, the bowel and the prostate.

Risk factors and early detection

The aetiology of many cancers is not known, and in other cases, known risk factors cannot be influenced. Prevention strategies are therefore only available for a few tumour types. However, these include types of cancer which affect large numbers of people. The World Health Organization estimates that more than 30 % of all cancer cases could be avoided with preventive measures.

Among avoidable risk factors, tobacco consumption is the most important. According to estimates by the Centre for Cancer Registry Data, a total of around 15 % of all cancer cases in Germany in 2008 were to be attributed to smoking. Also the roles of excess weight and lack of exercise have long been known from observational epidemiological investigations. Possible underlying biological mechanisms are becoming clearer due to the most recent research into the metabolic syndrome. This chronic »metabolic imbalance« is linked with hypertension, high blood cholesterol and hyperglycaemia. Inflammatory processes in adipose tissue are also suspected of being involved in the development of cancer.

Among individual nutrition-related factors, alcohol consumption plays an important role. Low quantities of fruit, vegetables, and dietary fiber, often combined with a high intake of red meat, have been identified as risk factors for a number of frequently occurring types of cancer. However it has not always been possible in observational studies to separate the influence of specific foodstuffs and their constituents from that of the energy balance.

Also among the avoidable risk factors for developing cancer is the ultraviolet fraction of sunlight (UV radiation). Many people, particularly in Germany, overestimate the influence of hazardous substances and impurities in foodstuffs, as well as environmental factors or toxic exposure at the workplace. However, in certain individual cases these factors can also play a substantial role in the development of cancer, even here. Examples here are radon, the regionally occurring noble gas, which is thought to be responsible for up to ten percent of lung cancer cases in Germany, or earlier occupational exposure to asbestos, which because of the long latency period is still causing mesothelioma of the pleura or peritoneum even today. Even medical procedures may impact on the cancer risk in individual cases. Potential risks include diagnostic procedures and therapies involving exposure to radiation, cytostatic agents used in chemotherapy, and hormone replacement therapy for menopausal women, which has been identified as a risk factor for breast cancer.

Chronic infections are now known to be risk factors for some widespread forms of cancer. Vaccinations or the treatment of causal factors can contribute to the reduction of cancer risk. This has been established for vaccinations against hepatitis viruses as a risk factor for liver cancer, and it is hoped that vaccination against human papilloma viruses will have a similar effect reducing the incidence rate for cervical carcinoma.

In addition to avoidable risk factors, genetic causes may also increase the risk of developing cancer. To date, however, only very few of these genetic mutations have been clearly identified. The respective relevant risk factors for specific types of cancer are presented in more detail in the individual sections.

The early detection programmes supported by the statutory health insurance companies in Germany screen for cancer of the skin and bowel, as well as breast and cervical cancer in women, and prostate cancer for men. These early detection measures are presented in the individual sections.

Figure 3.1.0
Relative 5-/10-year survival rates, by tumour sites and sex, Germany 2011–2012 (period analysis)

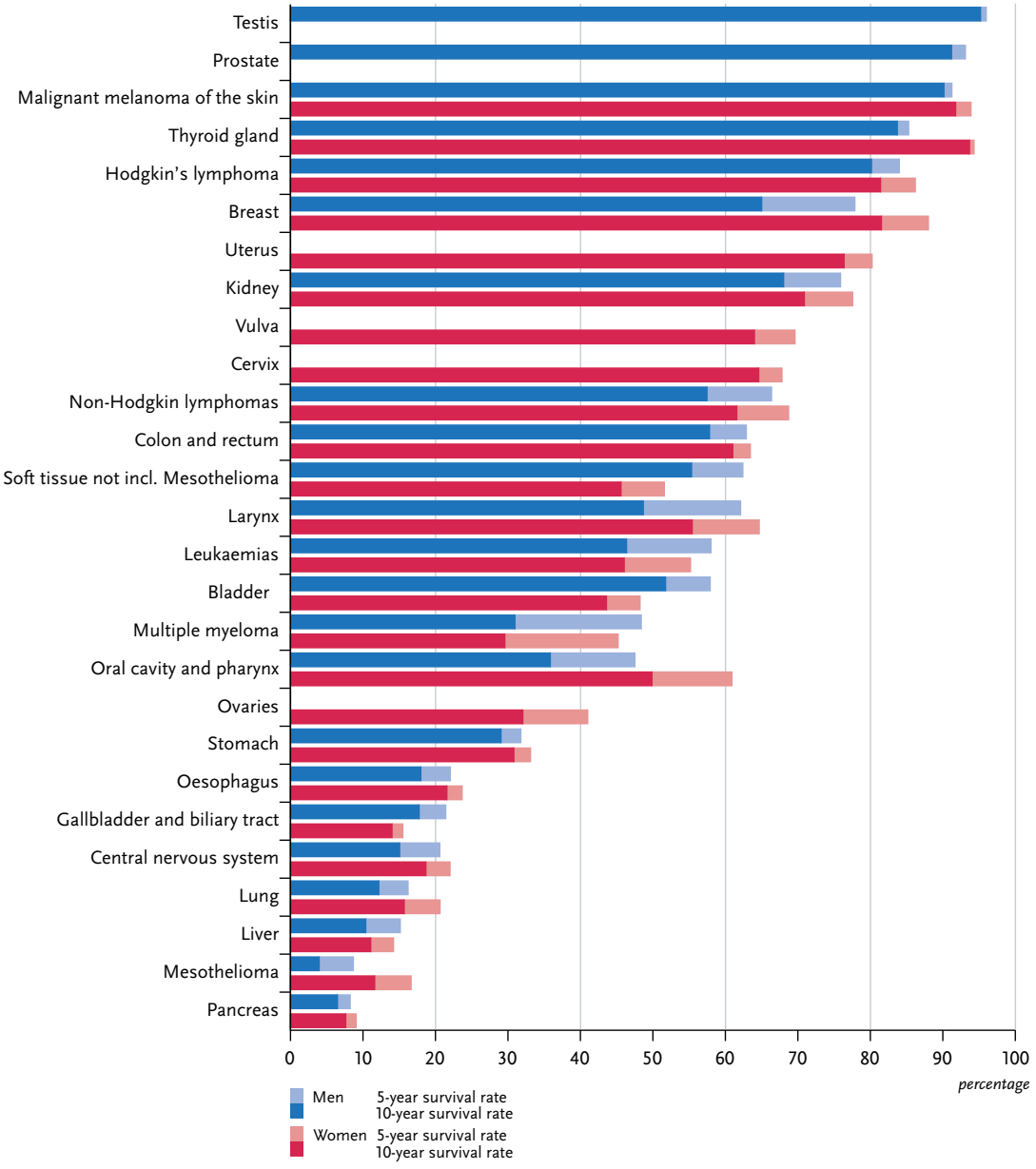


Figure 3.1.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C00–C97 without C44, Germany 1999–2012
per 100,000 (European standard)

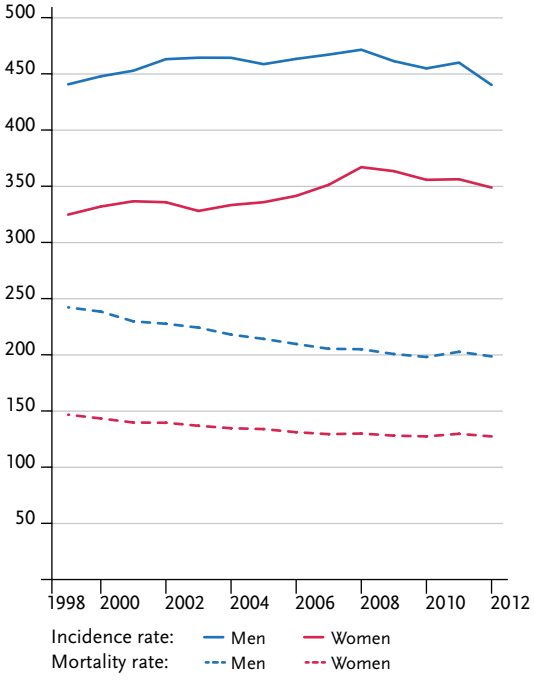


Figure 3.1.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C00–C97 without C44, Germany 1999–2012

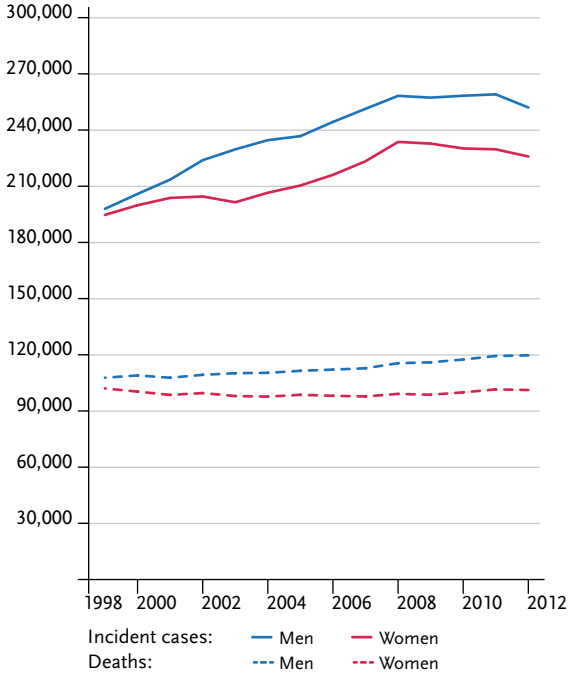


Figure 3.1.2
Age-specific incidence rates by sex, ICD-10 C00–C97 without C44, Germany 2011–2012
per 100,000

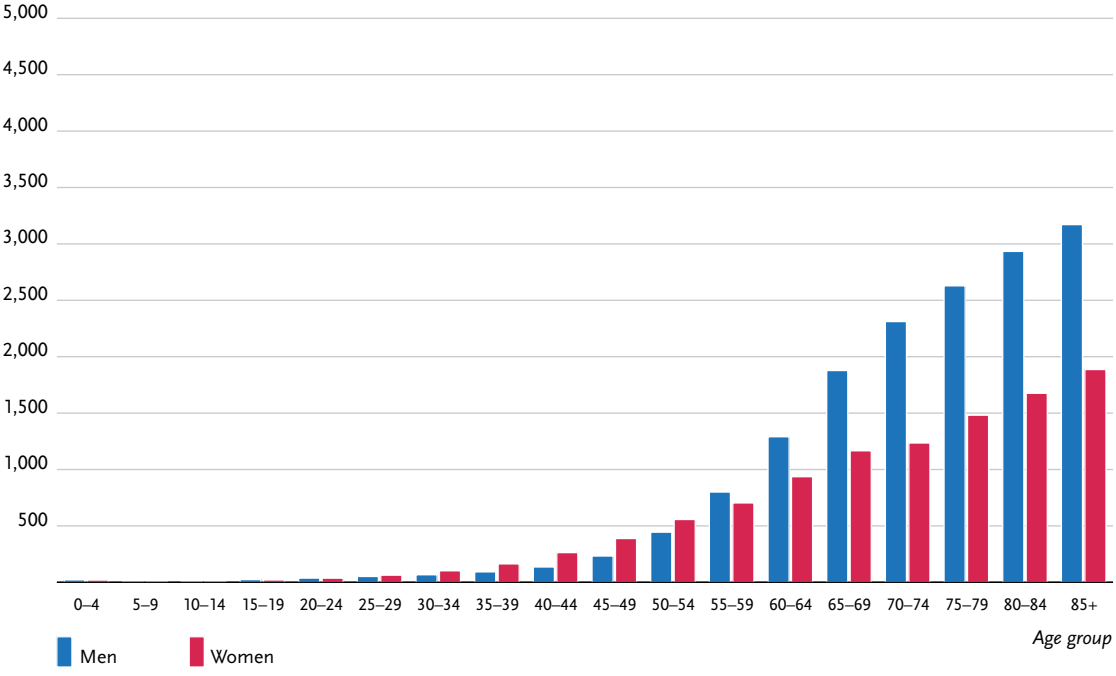


Table 3.1.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C00–C97 without C44, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	1.2 %	(1 in 86)	50.7 %	(1 in 2)	0.3 %	(1 in 390)	26.2 %	(1 in 4)
45 years	3.4 %	(1 in 29)	50.6 %	(1 in 2)	1.2 %	(1 in 85)	26.3 %	(1 in 4)
55 years	10.3 %	(1 in 10)	50.2 %	(1 in 2)	3.8 %	(1 in 26)	26.1 %	(1 in 4)
65 years	20.6 %	(1 in 5)	47.5 %	(1 in 2)	7.9 %	(1 in 13)	24.7 %	(1 in 4)
75 years	27.4 %	(1 in 4)	39.9 %	(1 in 3)	12.9 %	(1 in 8)	21.3 %	(1 in 5)
Lifetime risk			50.5 %	(1 in 2)			26.0 %	(1 in 4)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	2.2 %	(1 in 46)	42.7 %	(1 in 2)	0.3 %	(1 in 310)	20.4 %	(1 in 5)
45 years	4.8 %	(1 in 21)	41.5 %	(1 in 2)	1.1 %	(1 in 93)	20.2 %	(1 in 5)
55 years	8.5 %	(1 in 12)	39.0 %	(1 in 3)	2.6 %	(1 in 38)	19.5 %	(1 in 5)
65 years	12.9 %	(1 in 8)	34.2 %	(1 in 3)	4.9 %	(1 in 20)	17.8 %	(1 in 6)
75 years	16.3 %	(1 in 6)	26.5 %	(1 in 4)	8.0 %	(1 in 13)	14.6 %	(1 in 7)
Lifetime risk			43.1 %	(1 in 2)			20.3 %	(1 in 5)

Figure 3.1.3
Distribution of T-stages at first diagnosis by sex
Not included because tumour stages are site-specific.

Figure 3.1.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C97 without C44, Germany 2011–2012

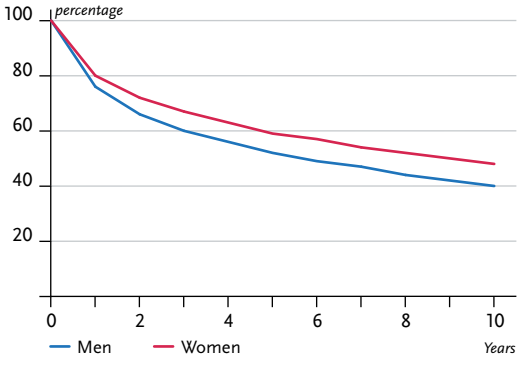


Figure 3.1.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C97 without C44, Germany 2011–2012

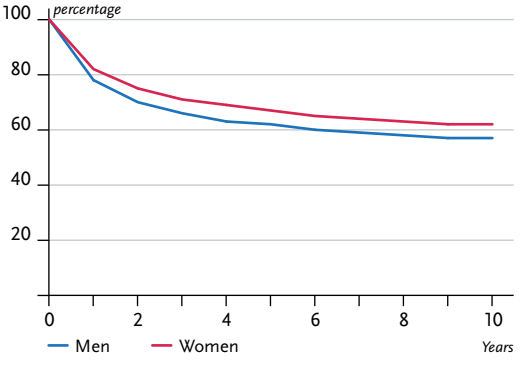


Figure 3.1.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C00–C97 without C44, 2011–2012
per 100,000 (European standard)

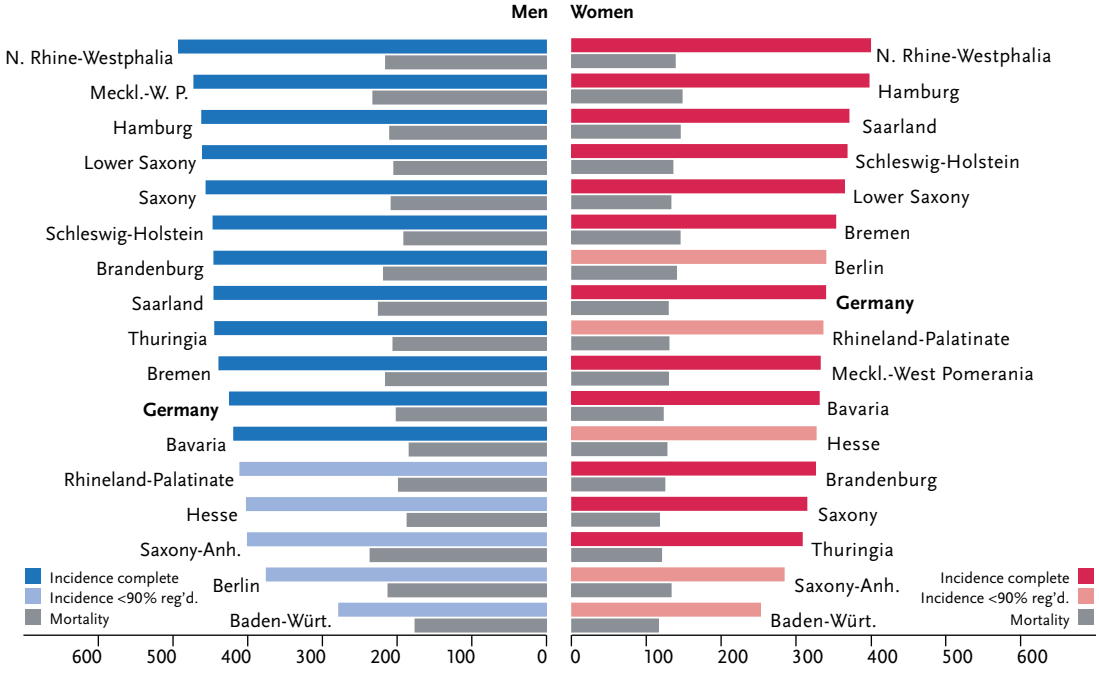
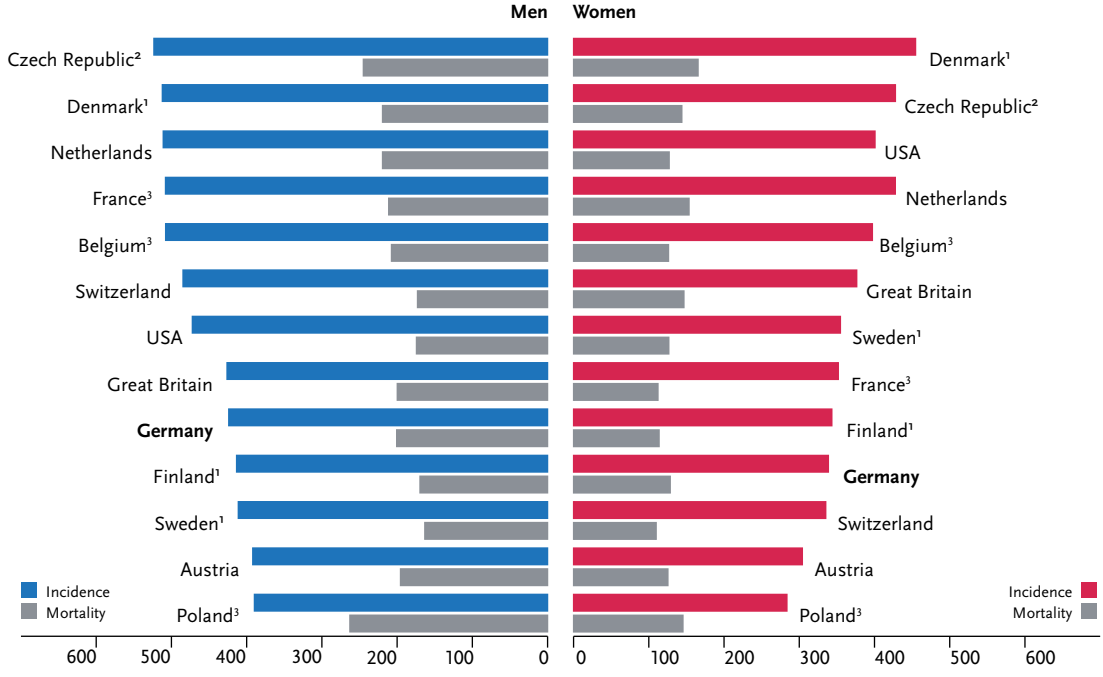


Figure 3.1.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C00–C97 without C44, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ data incl. D09.0–1, D30.1–9, D35.2–4, D41.1–9, D32–D33, D42–D43, D44.3–5, D46–D47 but excl. C44 and C46.0
² data for incidence incl. D00–D09
³ data for mortality incl. C44

3.2 Oral cavity and pharynx

Table 3.2.1
Overview of key epidemiological parameters for Germany, ICD-10 C00–C14

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	10,000	3,900	9,290	3,650	10,000	4,200
Crude incidence rate[1]	25.52	9.48	23.64	8.87	25.0	10.1
Standardised incidence rate[1,2]	19.5	6.5	17.9	6.0	18.1	6.5
Median age at diagnosis	62	65	62	66		
Deaths	4,064	1,322	4,090	1,303		
Crude mortality rate[1]	10.37	3.22	10.41	3.17		
Standardised mortality rate[1,2]	7.7	2.0	7.7	1.9		
5-year prevalence	29,000	12,400	28,700	12,400		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	43 (41–46)	55 (48–60)	29 (27–32)	40 (32–45)		
Relative survival rate (2011–2012)[3]	48 (46–50)	61 (53–67)	36 (34–38)	50 (41–55)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Cancer of the oral cavity and the pharynx is made up of a heterogeneous group of malignant neoplasms. In addition to 90% squamous-cell carcinomas, somewhat more than 5% of cases are adenocarcinomas, for example of the salivary glands.

The most favourable 5-year-survival rates are associated with cancer of the lips and salivary glands, whereas comparatively unfavourable survival prospects exist for cancers of the floor of the mouth, the tongue and the lower part of the throat (hypopharynx). Women had the more favourable 5-year survival at 61% compared to men with 48%. Contributing toward this among women is a lower proportion of cancers of the floor of the mouth, tongue and hypopharynx that are encouraged mainly by the consumption of alcohol and tobacco. One in every three tumours in women is diagnosed in the early stages (T1), but only one in every four cases in men.

The fact that men in general develop cancer more frequently and on average four years earlier than women (men aged 62, women at the age of 66) is probably connected with tobacco and alcohol consumption. The incidence and mortality rates for cancers of the oral cavity and throat have not significantly changed since the year 2000. For men, the mortality rate has fallen a little, while among women the incidence has increased slightly. Significant regional differences are to be reported, especially among men: For example, the death rates in Mecklenburg-Western Pomerania are currently about twice as high as those in Schleswig-Holstein or in southern Germany.

Risk factors

The most important triggers for cancer of the oral cavity and pharynx are tobacco and alcohol consumption. The combination of both factors is particularly harmful. Another risk factor of major importance is an infection with human papilloma virus (HPV), especially if high risk human papilloma viruses are involved. It is assumed that 40% of all malignancies of the pharynx can be attributed to these viruses. Their contribution to the onset of cancer of oral cavity is less. Further possible risk factors can be a one-sided, vitamin deficient diet with excessive meat consumption. Inadequate oral hygiene and mechanical irritations, for example due to poorly fitting dentures, are also possible risk factors. Exposure to sunlight can contribute to carcinoma of the lips. Contact with sawdust or some chemicals – mostly in an occupational context – can increase the risk of developing tumours, especially in the nasopharynx. Epstein-Barr viruses are regarded as a further viral risk factor, in particular for nasopharyngeal carcinoma. People with type 2 diabetes, a marked immunodeficiency or rare pre-existing conditions may also have an increased risk. There are also clear indications that a genetic predisposition plays a role in the development of carcinoma in the head and neck areas.

Figure 3.2.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C00–C14, Germany 1999–2012
per 100,000 (European standard)

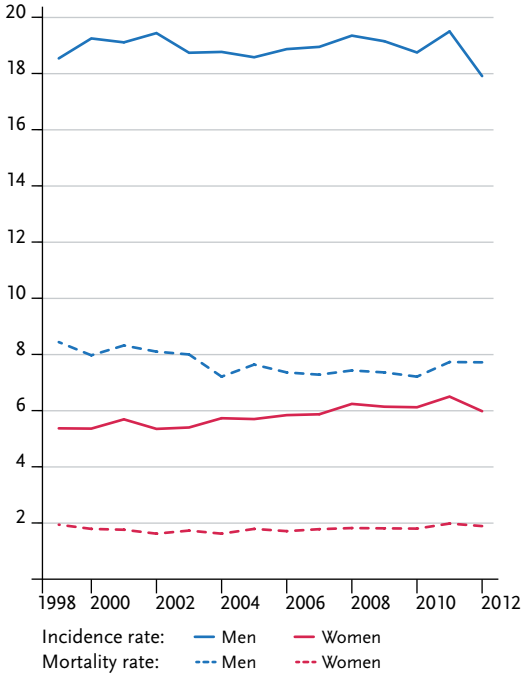


Figure 3.2.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C00–C14, Germany 1999–2012

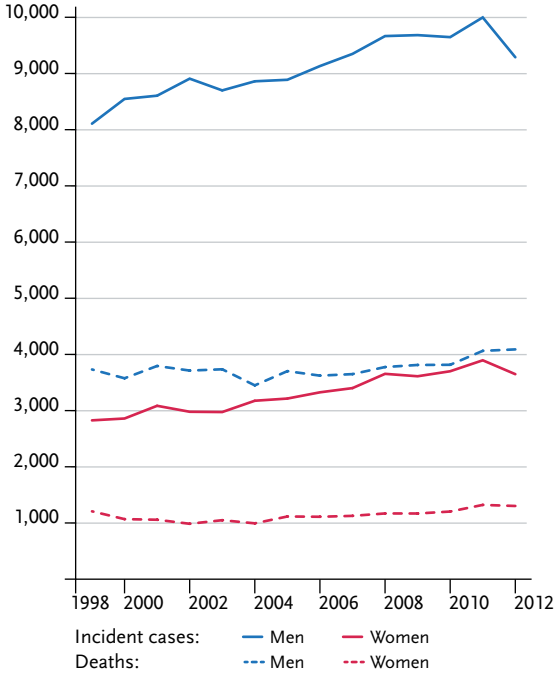


Figure 3.2.2
Age-specific incidence rates by sex, ICD-10 C00–C14, Germany 2011–2012
per 100,000

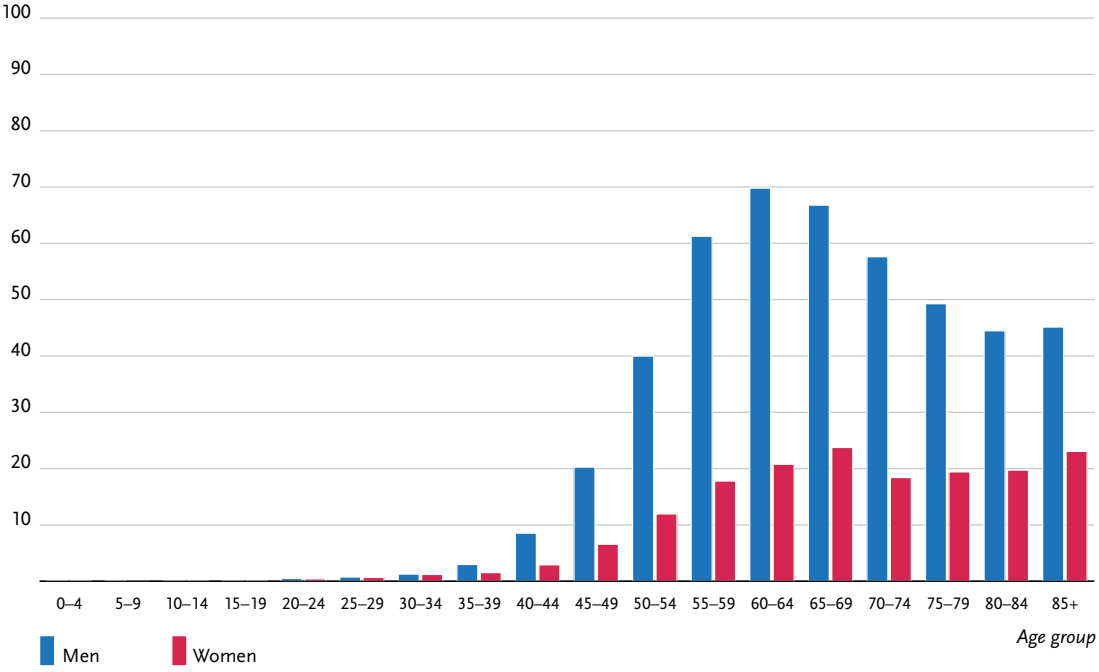


Table 3.2.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C00–C14, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1 %	(1 in 1,500)	1.7 %	(1 in 59)	<0.1 %	(1 in 6,000)	0.8 %	(1 in 130)
45 years	0.3 %	(1 in 350)	1.7 %	(1 in 61)	0.1 %	(1 in 960)	0.8 %	(1 in 130)
55 years	0.6 %	(1 in 170)	1.4 %	(1 in 70)	0.3 %	(1 in 390)	0.7 %	(1 in 150)
65 years	0.5 %	(1 in 180)	0.9 %	(1 in 110)	0.3 %	(1 in 380)	0.5 %	(1 in 210)
75 years	0.4 %	(1 in 280)	0.5 %	(1 in 210)	0.2 %	(1 in 550)	0.3 %	(1 in 360)
Lifetime risk			1.7 %	(1 in 59)			0.8 %	(1 in 130)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 4,800)	0.7 %	(1 in 150)	<0.1 %	(1 in 27,000)	0.3 %	(1 in 390)
45 years	0.1 %	(1 in 1,100)	0.7 %	(1 in 150)	<0.1 %	(1 in 4,800)	0.3 %	(1 in 400)
55 years	0.2 %	(1 in 560)	0.6 %	(1 in 170)	0.1 %	(1 in 1,800)	0.2 %	(1 in 420)
65 years	0.2 %	(1 in 510)	0.4 %	(1 in 230)	0.1 %	(1 in 1,400)	0.2 %	(1 in 520)
75 years	0.2 %	(1 in 630)	0.3 %	(1 in 380)	0.1 %	(1 in 1,300)	0.1 %	(1 in 730)
Lifetime risk			0.7 %	(1 in 150)			0.3 %	(1 in 390)

Figure 3.2.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C00–C14, Germany 2011–2012

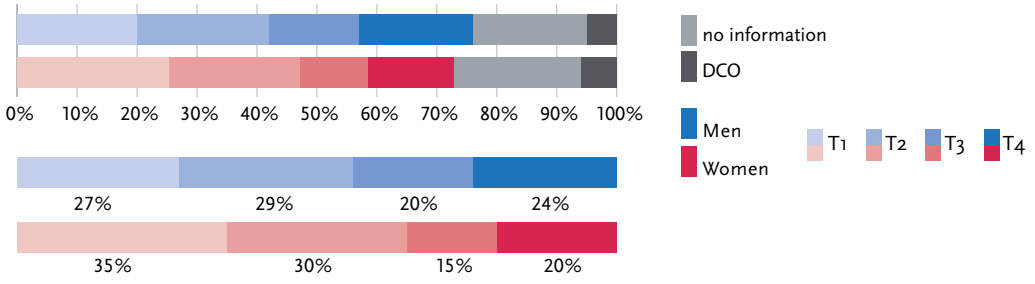


Figure 3.2.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C14, Germany 2011–2012

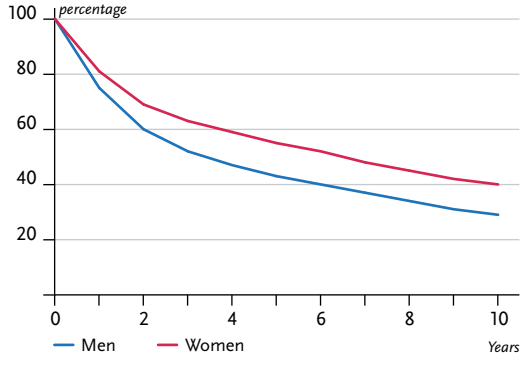


Figure 3.2.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C14, Germany 2011–2012

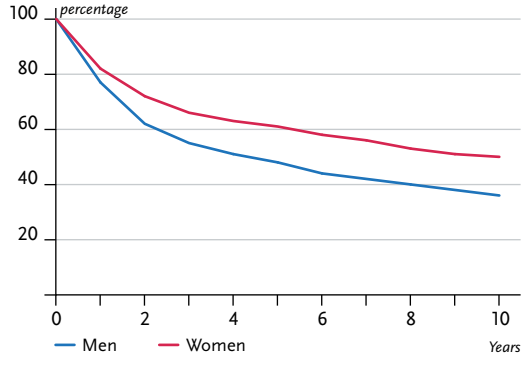


Figure 3.2.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C00–C14, 2011–2012
per 100,000 (European standard)

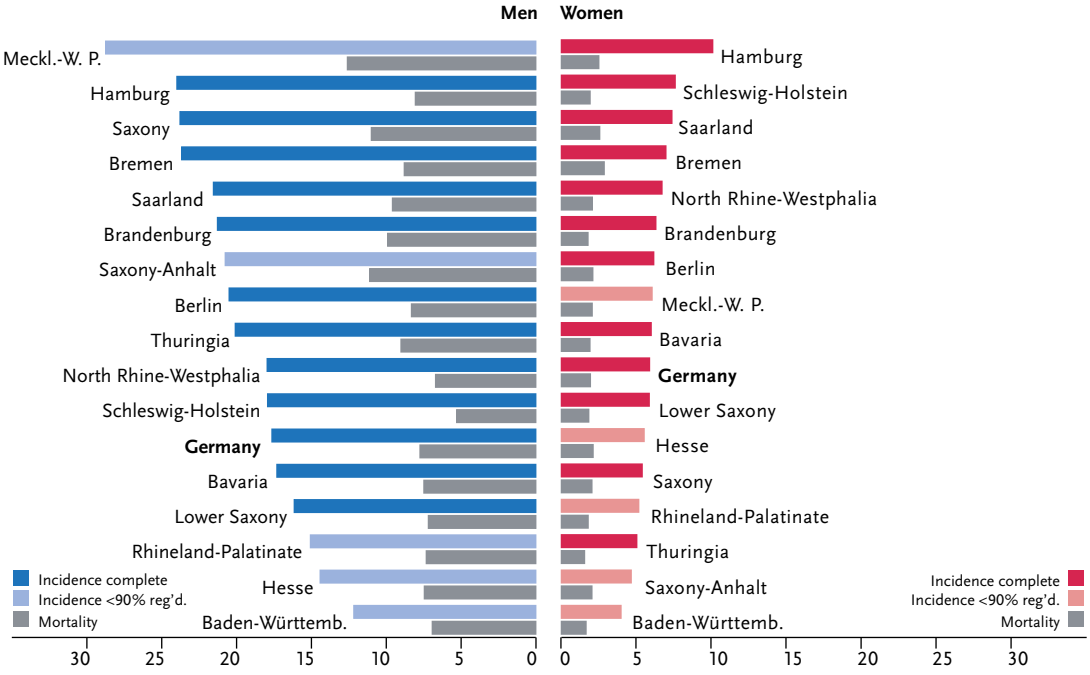
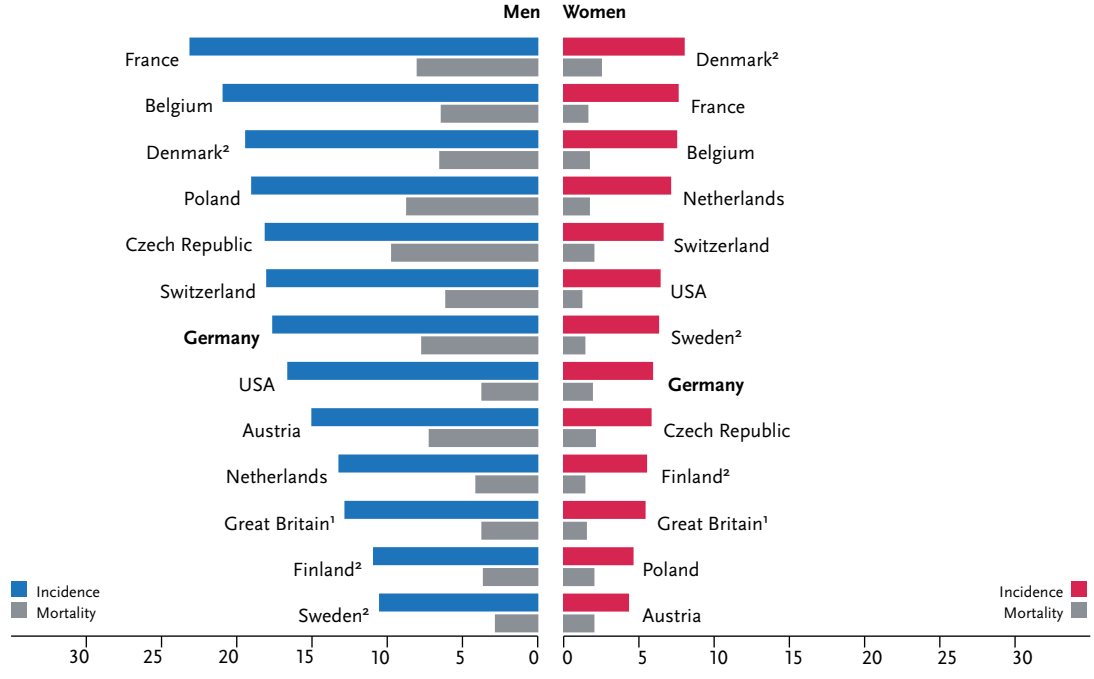


Figure 3.2.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C00–C14, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] data without C07, C08, C11
[2] data without C10.1

3.3 Oesophagus

Table 3.3.1
Overview of key epidemiological parameters for Germany, ICD-10 C15

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	4,950	1,410	5,030	1,510	5,600	1,600
Crude incidence rate[1]	12.6	3.4	12.8	3.7	13.9	3.9
Standardised incidence rate[1,2]	9.1	2.0	9.0	2.2	9.3	2.2
Median age at diagnosis	67	71	67	71		
Deaths	3,966	1,172	4,072	1,188		
Crude mortality rate[1]	10.1	2.9	10.4	2.9		
Standardised mortality rate[1,2]	7.1	1.6	7.2	1.6		
5-year prevalence	8,600	2,300	8,800	2,400		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	19 (9–25)	21 (10–27)	14 (6–18)	16 (6–26)		
Relative survival rate (2011–2012)[3]	22 (11–28)	24 (12–31)	18 (9–25)	22 (9–35)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In Germany, cancers of the oesophagus cause about 3 % of all cancer deaths among men and approximately 1 % among women, though their share of all cancer cases is lower. In Germany, men are diagnosed with cancer of the oesophagus around four to five times more frequently than women and at an average age of 67, typically four years earlier.

Squamous-cell carcinomas account for 50 % to 60 % of all cases of cancer of the oesophagus. In recent years, the proportion of adenocarcinomas, which are almost exclusively found in the lower third of the oesophagus, has risen to more than one third of cases.

The age-standardised incidence and mortality rates have continued to increase in women since the turn of the millennium and have remained virtually unchanged in men. Only women aged between 60 and 70 years of age show increases.

Despite improvements in recent years, the oesophageal carcinoma ranks among those cancers with rather unfavourable survival prospects. The relative 5-year survival rates are currently 22 % for men and 24 % for women. In line with the unfavourable survival rates only around one in every seven tumours is diagnosed whilst still at an early stage (T1).

Risk factors

The most important risk factors for the development of the more frequent squamous-cell carcinoma in the oesophagus include alcohol and tobacco consumption. In combination, the two factors reinforce one another. Studies have also shown that those affected, often eat little fruit and vegetables.

Adenocarcinomas, which are somewhat less frequent, often originate in combination with a gastro-oesophageal reflux disease (long-term flow of gastric juices back into the oesophagus, chronic heartburn). This leads to changes to the mucous lining of the lower part of the oesophagus, causing a Barrett's oesophagus, which is regarded as a precursor to cancer. Also in the case of adenocarcinoma, a consumption below the average of fruit and vegetables increases the risk of developing the disease.

Recently, adenocarcinomas of the oesophagus have been associated with smoking, being overweight and possibly also with type 2 diabetes. Family clusters of cases are known, and genetic predisposition is involved as investigations show. The possible influence of the human papilloma viruses is a topic of controversial debate.

Figure 3.3.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C15, Germany 1999–2012
per 100,000 (European standard)

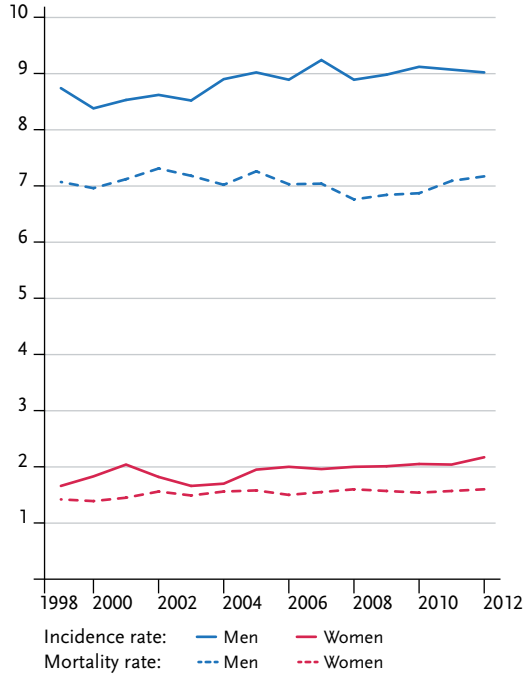


Figure 3.3.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C15, Germany 1999–2012

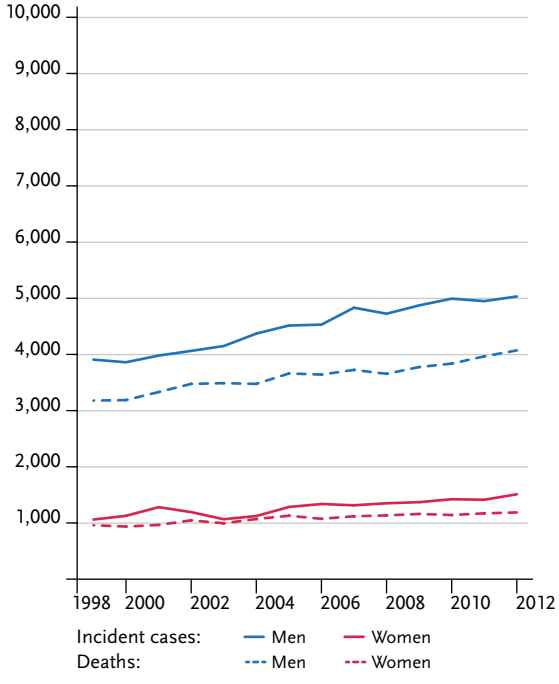


Figure 3.3.2
Age-specific incidence rates by sex, ICD-10 C15, Germany 2011–2012
per 100,000

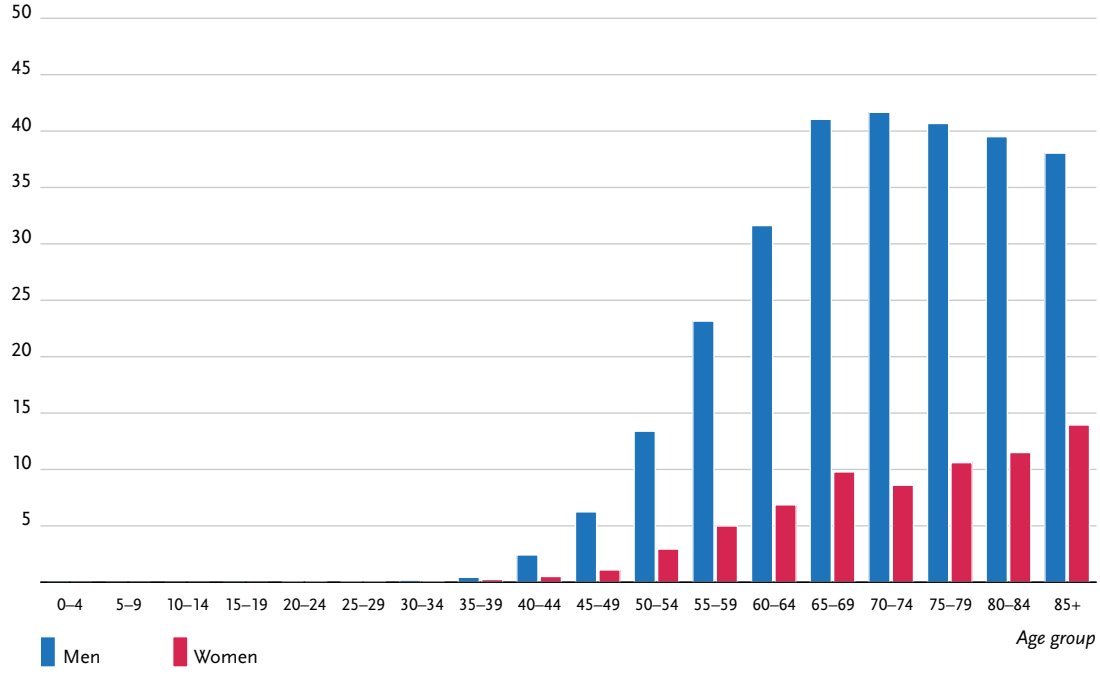


Table 3.3.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C15, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 6,700)	1.0%	(1 in 100)	<0.1%	(1 in 10,200)	0.8%	(1 in 120)
45 years	0.1%	(1 in 1,000)	1.0%	(1 in 100)	0.1%	(1 in 1,500)	0.8%	(1 in 120)
55 years	0.3%	(1 in 380)	0.9%	(1 in 110)	0.2%	(1 in 500)	0.8%	(1 in 130)
65 years	0.4%	(1 in 270)	0.7%	(1 in 140)	0.3%	(1 in 340)	0.6%	(1 in 160)
75 years	0.3%	(1 in 310)	0.4%	(1 in 230)	0.3%	(1 in 330)	0.4%	(1 in 230)
Lifetime risk			1.0%	(1 in 100)			0.8%	(1 in 130)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 24,700)	0.3%	(1 in 340)	<0.1%	(1 in 40,700)	0.2%	(1 in 420)
45 years	<0.1%	(1 in 4,400)	0.3%	(1 in 340)	<0.1%	(1 in 7,800)	0.2%	(1 in 420)
55 years	0.1%	(1 in 1,700)	0.3%	(1 in 360)	<0.1%	(1 in 2,300)	0.2%	(1 in 440)
65 years	0.1%	(1 in 1,100)	0.2%	(1 in 430)	0.1%	(1 in 1,500)	0.2%	(1 in 510)
75 years	0.1%	(1 in 1,100)	0.2%	(1 in 630)	0.1%	(1 in 1,300)	0.1%	(1 in 680)
Lifetime risk			0.3%	(1 in 340)			0.2%	(1 in 420)

Figure 3.3.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C15, Germany 2011–2012

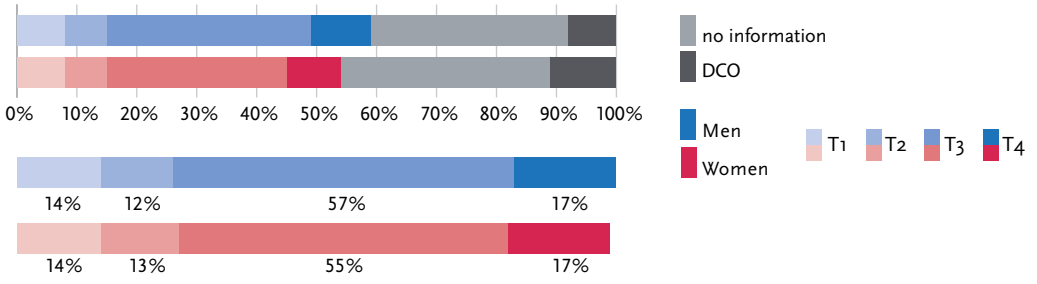


Figure 3.3.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C15, Germany 2011–2012

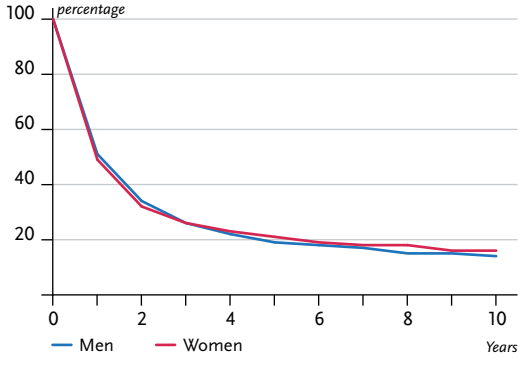


Figure 3.3.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C15, Germany 2011–2012

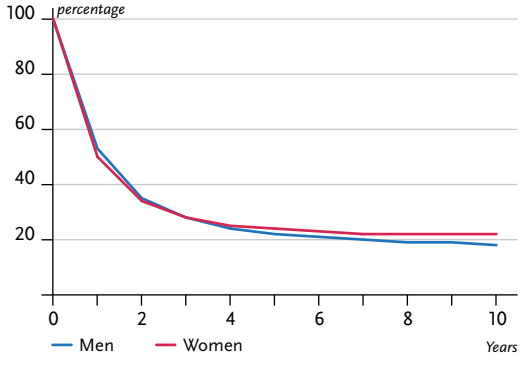


Figure 3.3.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C15, 2011–2012
per 100,000 (European standard)

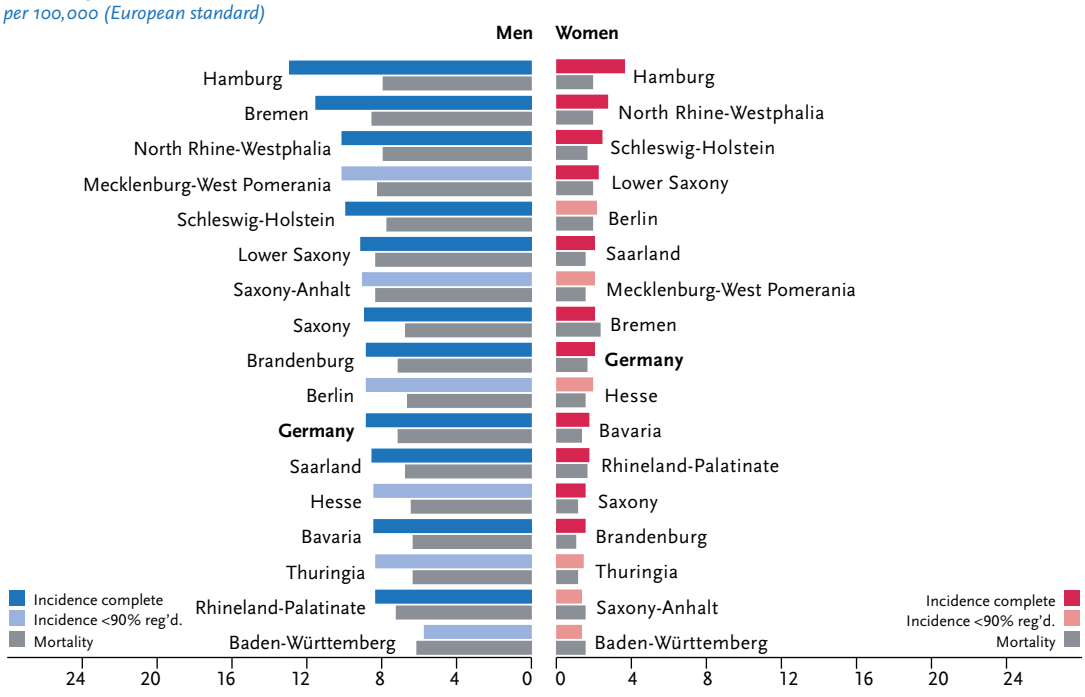
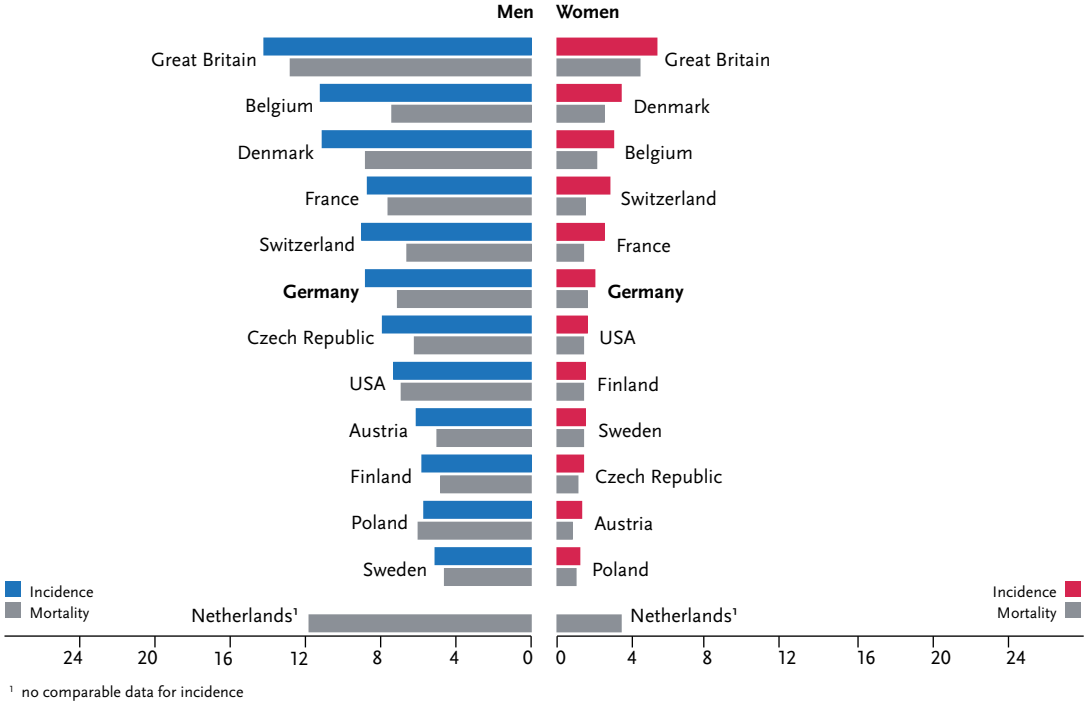


Figure 3.3.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C15, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data for incidence

3.4 Stomach

Table 3.4.1
Overview of key epidemiological parameters for Germany, ICD-10 C16

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	9,800	6,640	9,180	6,460	9,200	6,400
Crude incidence rate[1]	25.0	16.2	23.4	15.7	23.1	15.4
Standardised incidence rate[1,2]	17.0	8.6	15.6	8.3	14.4	7.9
Median age at diagnosis	71	75	72	75		
Deaths	5,691	4,399	5,770	4,208		
Crude mortality rate[1]	14.5	10.7	14.7	10.2		
Standardised mortality rate[1,2]	9.7	5.2	9.5	4.9		
5-year prevalence	20,100	14,200	19,800	13,900		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	26 (24–29)	28 (24–32)	19 (16–23)	20 (17–26)		
Relative survival rate (2011–2012)[3]	32 (30–34)	33 (28–39)	29 (25–34)	31 (25–45)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Histologically, various forms of adenocarcinomas predominate in the stomach and some are only to be found there, such as signet ring cell carcinoma (15 %) and certain neuro-endocrine carcinoma. Particularly noteworthy are the (mucosa-associated) MALT lymphomas originating in the stomach mucosa that are increasingly counted among the low-grade non-Hodgkin lymphoma. In addition to carcinomas, mesenchymal and mixed tumours occur only rarely.

Men on average are diagnosed with stomach cancer at the age of 72, women not until the age of 75 – both later than for cancer in general. Seventy-five-year-old men and women are at greatest risk of falling ill with stomach cancer within the following ten years. Still more than 1% of the population die from stomach cancer.

For decades in Germany – as in other industrialised nations – there has been a steady decline in the incidence and mortality rates for stomach cancer. This trend has continued even after the turn of the Millennium in all age ranges.

The relative 5-year-survival rates are around 30 % for both men and women. Although the 5-year-survival prospects for stomach cancer have recently improved, they still tend to be unfavourable in comparison to other forms of cancer. Only in just over half of all cases is the tumour stage noted on diagnosis. These statistics reveal that about two-thirds of these cancers are discovered at a late stage (T3 or T4).

Risk factors

A bacterial infection of the stomach with Helicobacter pylori is the most important risk factor for stomach cancer, as this can probably strengthen the effects of other risks. Smoking and excessive alcohol consumption also increase the risk of stomach cancer. The relationships between dietary factors and the risk of stomach cancer are complex. In general, a diet with a low fruit and vegetable content and high animal product content is associated with a higher risk. There are indications that chronic heartburn or gastro-oesophageal reflux increases the risk for certain forms of tumour at the transition from the stomach to the oesophagus. Being overweight can also promote these carcinomas. Low socio-economic status and past stomach surgery continue to be associated with an increased frequency of stomach cancer.

First-degree relatives of patients have a risk two to three times higher than the general population. It is not always clear whether this is due to a shared lifestyle, to the transmission of Helicobacter pylori within the family, or to hereditary gene mutations. In the case of young patients, it can be useful for relatives to receive genetic advice. The same applies for members of families with rare hereditary colorectal cancer (HNPCC, Lynch syndrome).

Pernicious anaemia and several other pre-existing diseases constitute risk factors that affect only comparatively few people. Among the mostly benign stomach polyps, only the rare adenoma is regarded as a precursor to cancer.

Figure 3.4.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C16, Germany 1999–2012
per 100,000 (European standard)

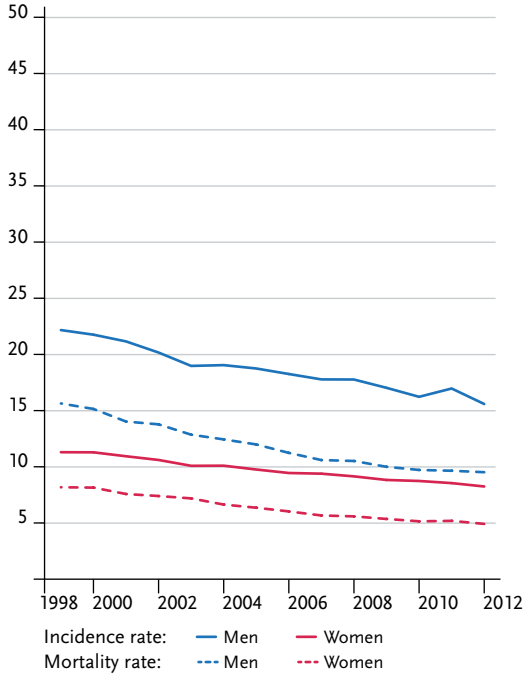


Figure 3.4.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C16, Germany 1999–2012

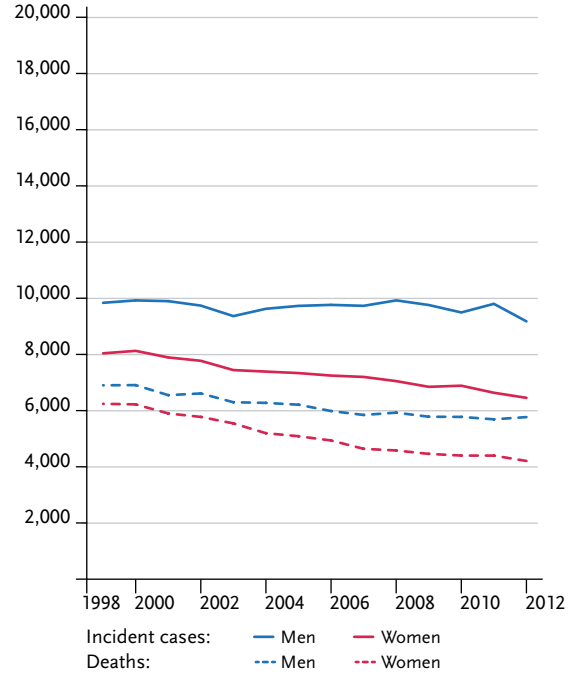


Figure 3.4.2
Age-specific incidence rates by sex, ICD-10 C16, Germany 2011–2012
per 100,000

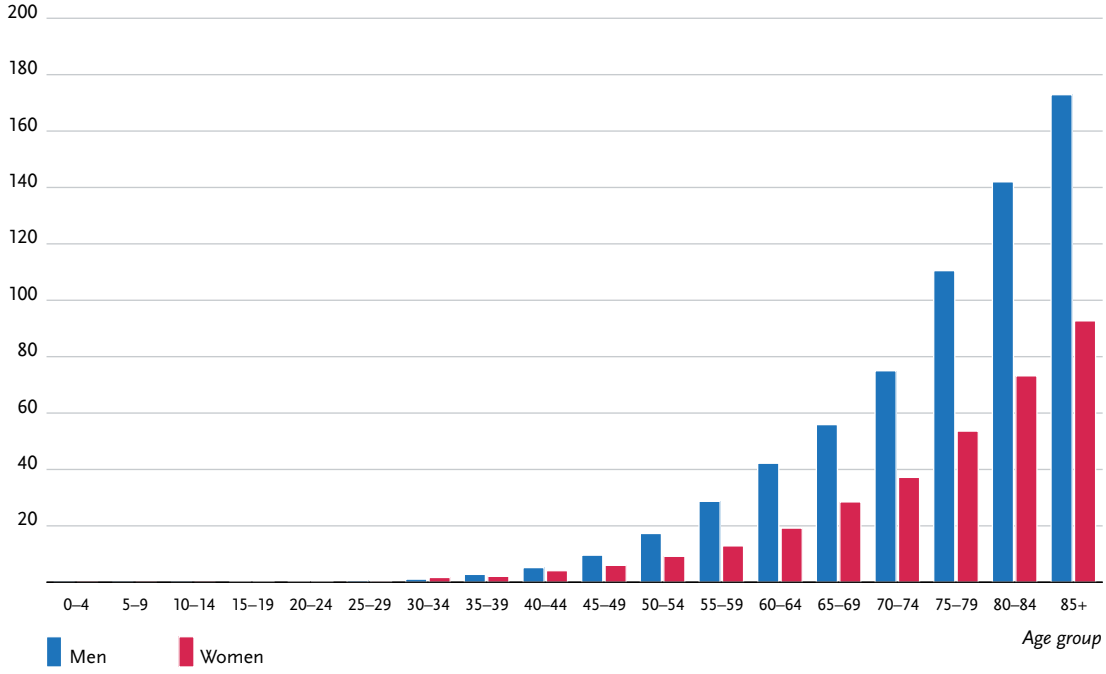


Table 3.4.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C16, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 2,600)	1.9%	(1 in 52)	<0.1%	(1 in 4,800)	1.3%	(1 in 78)
45 years	0.1%	(1 in 770)	1.9%	(1 in 52)	0.1%	(1 in 1,500)	1.3%	(1 in 78)
55 years	0.3%	(1 in 300)	1.9%	(1 in 54)	0.2%	(1 in 600)	1.3%	(1 in 79)
65 years	0.6%	(1 in 180)	1.7%	(1 in 59)	0.3%	(1 in 300)	1.2%	(1 in 82)
75 years	0.9%	(1 in 110)	1.4%	(1 in 70)	0.7%	(1 in 150)	1.1%	(1 in 90)
Lifetime risk			1.9%	(1 in 52)			1.3%	(1 in 79)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 3,200)	1.3%	(1 in 78)	<0.1%	(1 in 6,900)	0.9%	(1 in 120)
45 years	0.1%	(1 in 1,400)	1.3%	(1 in 79)	<0.1%	(1 in 2,700)	0.9%	(1 in 120)
55 years	0.2%	(1 in 640)	1.2%	(1 in 82)	0.1%	(1 in 1,200)	0.8%	(1 in 120)
65 years	0.3%	(1 in 320)	1.1%	(1 in 89)	0.2%	(1 in 580)	0.8%	(1 in 130)
75 years	0.5%	(1 in 190)	0.9%	(1 in 110)	0.4%	(1 in 280)	0.7%	(1 in 140)
Lifetime risk			1.3%	(1 in 77)			0.9%	(1 in 120)

Figure 3.4.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C16, Germany 2011–2012

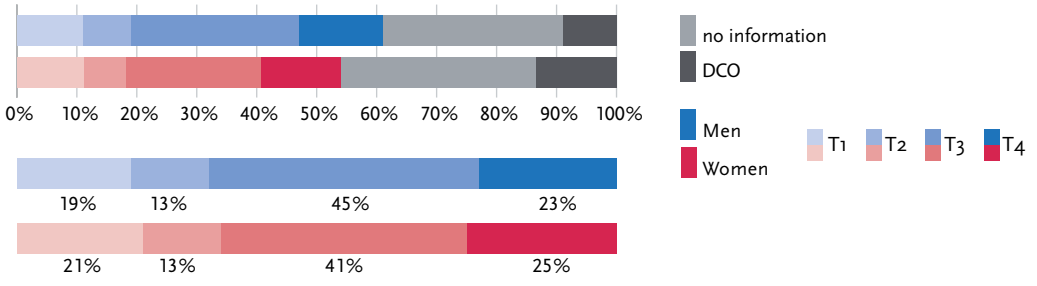


Figure 3.4.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C16, Germany 2011–2012

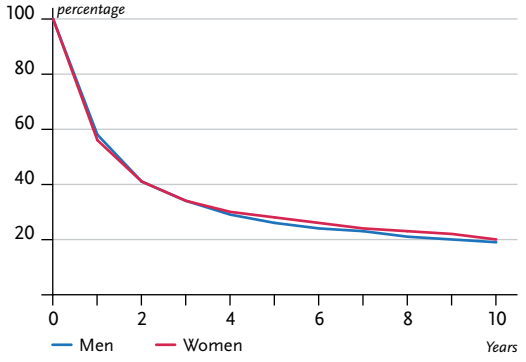


Figure 3.4.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C16, Germany 2011–2012

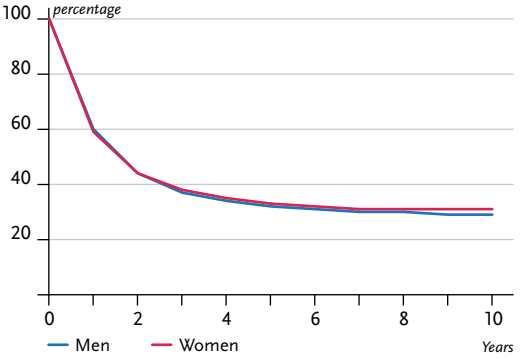


Figure 3.4.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C16, 2011–2012
per 100,000 (European standard)

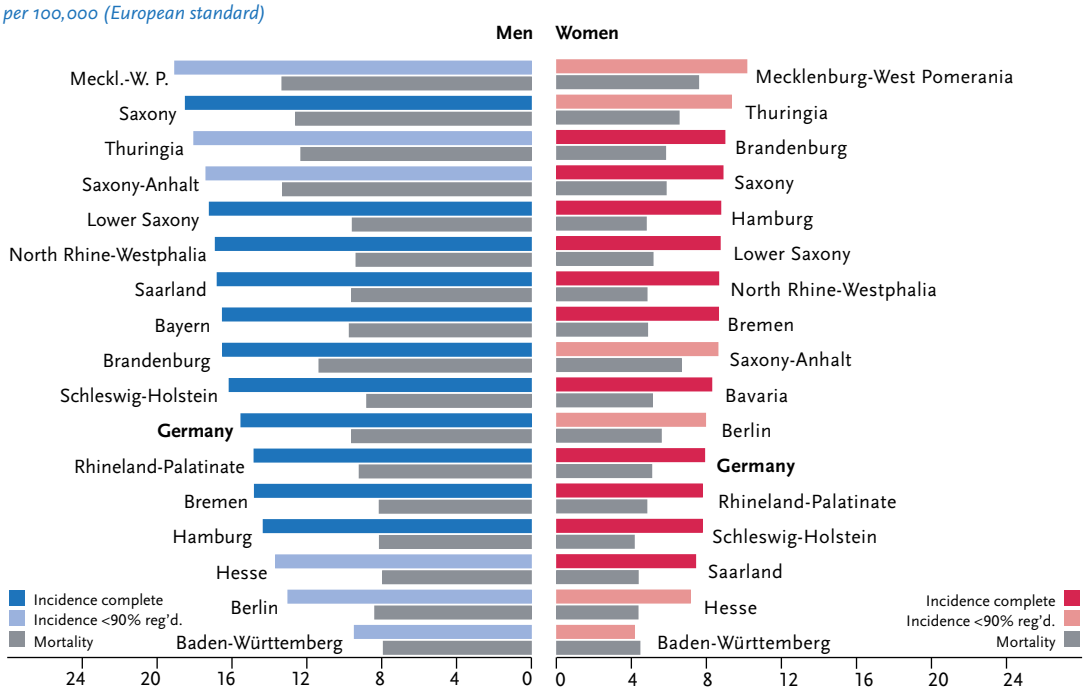
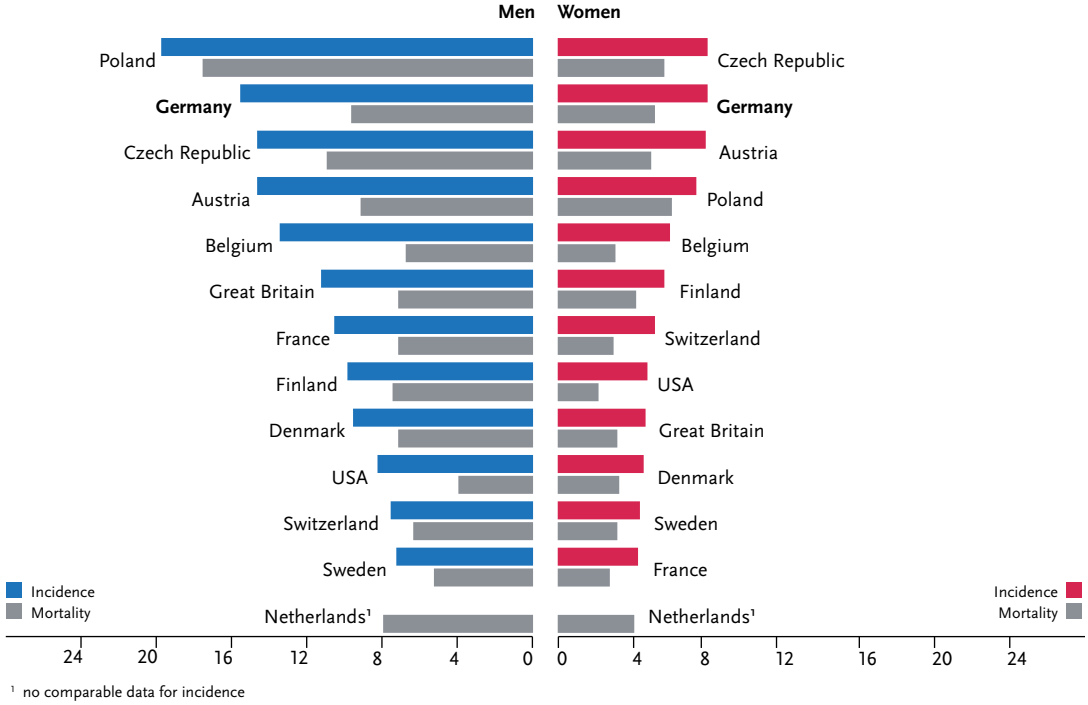


Figure 3.4.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C16, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data for incidence

3.5 Colon and rectum

Table 3.5.1
Overview of key epidemiological parameters for Germany, ICD-10 C18–C21

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	34,460	29,330	33,740	28,490	33,400	27,600
Crude incidence rate[1]	88.0	71.4	85.8	69.3	83.5	66.6
Standardised incidence rate[1,2]	59.5	37.9	57.1	36.8	52.7	33.9
Median age at diagnosis	71	75	72	75		
Deaths	13,863	12,439	13,772	12,200		
Crude mortality rate[1]	35.4	30.3	35.0	29.7		
Standardised mortality rate[1,2]	23.2	13.7	22.4	13.3		
5-year prevalence	117,700	98,800	116,200	97,200		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	52 (50–55)	52 (49–56)	38 (35–42)	40 (37–44)		
Relative survival rate (2011–2012)[3]	63 (60–66)	63 (58–68)	58 (55–61)	61 (54–70)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

About every eighth case of cancer of females and males in Germany affects colon or rectum. In 2012 about 33,740 men and 28,500 women were diagnosed with bowel cancer. In life one of fourteen men and one of eighteen women will eventually be diagnosed with bowel cancer but one of thirty-two men and one of thirty-nine women die of bowel cancer only.

Almost two thirds of tumours were located in the colon, some 30 % affected the shorter rectum, while the remainder were located at the junction between the colon and the rectum (rectosigmoid), respectively the anal canal. The rare cases of – for instance neuroendocrine – cancer in the longest part of the bowel the upper intestine (C17) are not included here, in line with international practice. Histologically, besides squamous-cell carcinomas of the anus and rare neuroendrocrine tumours (approx. 1%), almost all tumours are adenocarcinomas (approx. 85 %).

The risk of developing the disease increases steadily with advancing age up to very old age. Correspondingly the median age at diagnosis is 72 years for men and 75 years for women. More than half of those affected were diagnosed after the age of 70 years, with only about 10 % before 55 years of age, i. e. before qualifying for the colonoscopy offered in the early detection programme. The age-standardised incidence rates for women and men are decreasing since 2002, even the number of cases is on the decrease. The age-standardised mortality rates for men and women have declined by more than 20 % in the past 10 years. The relative survival rates are approximately 63 % for men and for women.

Risk factors and early detection

A number of factors increase the risk of colorectal cancer. Smoking and being overweight are the principal risk factors, followed by insufficient exercise and a diet low in fibre. People who regularly consume alcohol or eat a lot of red meat or processed meats made from red meat are more prone to develop colorectal cancer. First-degree relatives of colorectal cancer patients are themselves affected with an above-average frequency. There is a very high risk of developing colorectal cancer early in life in the case of rare inherited diseases such as familial adenomatous polyposis (FAP) or Lynch syndrome (hereditary non-polyposis colorectal cancer, HNPCC).

Chronic inflammatory bowel diseases also slightly increase the risk of developing this cancer.

As part of the early detection directive, people between 50 and 54 years of age with statutory health insurance can have an annual test for blood in the stool. From the age of 55 years they are entitled to a colonoscopy examination, in the course of which colon polyps, which may develop into malignant tumours, can also be removed. If there are no pathological findings, they are entitled to a further colonoscopy ten years later. As an alternative to colonoscopy, insured persons can have the above-mentioned stool test every two years, with entitlement to a follow-up colonoscopy where clarification is required. Special provisions are made for people with an increased risk.

Figure 3.5.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C18–C21, Germany 1999–2012
per 100,000 (European standard)

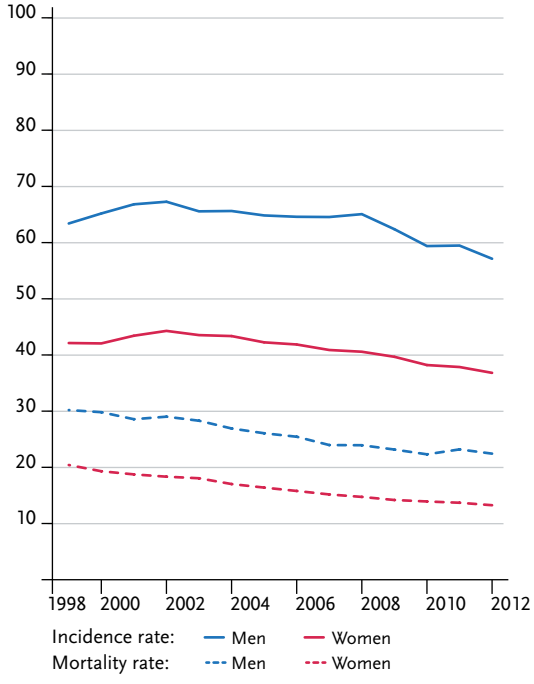


Figure 3.5.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C18–C21, Germany 1999–2012

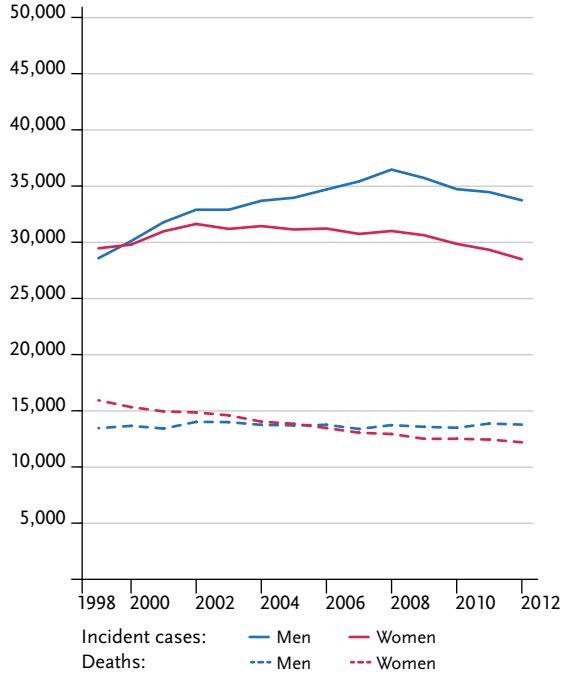


Figure 3.5.2
Age-specific incidence rates by sex, ICD-10 C18–C21, Germany 2011–2012
per 100,000

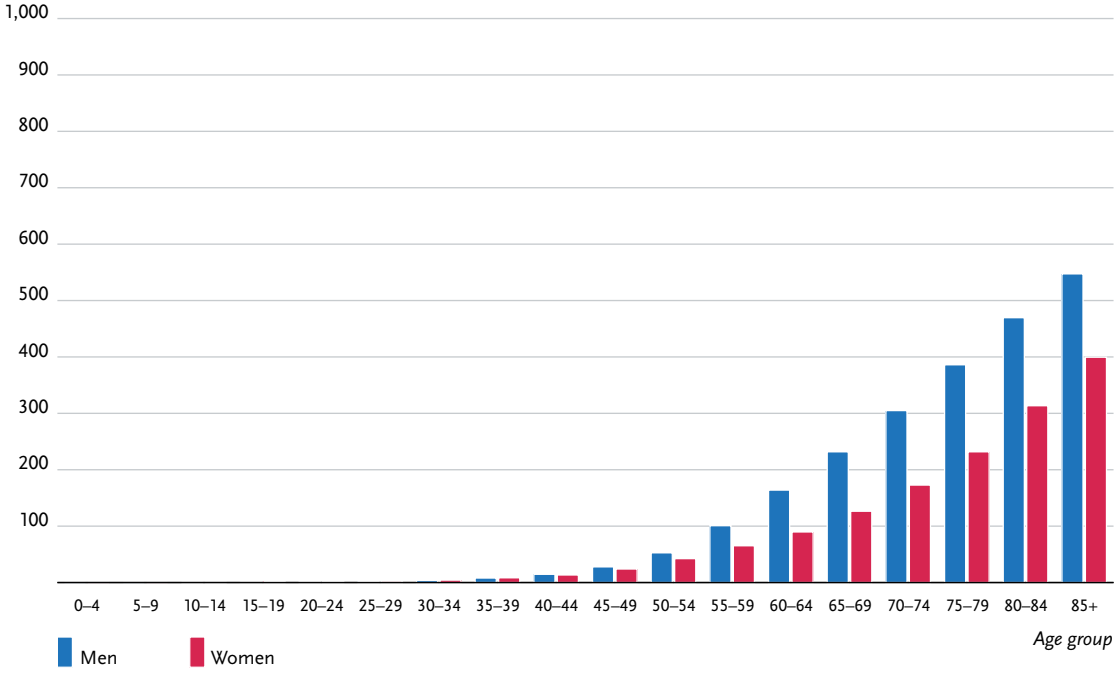


Table 3.5.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C18–C21, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 840)	7.0%	(1 in 14)	<0.1%	(1 in 4,100)	3.1%	(1 in 32)
45 years	0.4%	(1 in 250)	7.0%	(1 in 14)	0.1%	(1 in 890)	3.1%	(1 in 32)
55 years	1.2%	(1 in 80)	6.9%	(1 in 15)	0.4%	(1 in 260)	3.1%	(1 in 32)
65 years	2.4%	(1 in 41)	6.3%	(1 in 16)	0.9%	(1 in 110)	3.1%	(1 in 33)
75 years	3.3%	(1 in 31)	4.9%	(1 in 20)	1.6%	(1 in 62)	2.8%	(1 in 36)
Lifetime risk			6.9%	(1 in 14)			3.1%	(1 in 32)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 800)	5.7%	(1 in 18)	<0.1%	(1 in 5,000)	2.6%	(1 in 39)
45 years	0.3%	(1 in 300)	5.6%	(1 in 18)	0.1%	(1 in 1,200)	2.6%	(1 in 39)
55 years	0.8%	(1 in 130)	5.4%	(1 in 19)	0.2%	(1 in 500)	2.5%	(1 in 39)
65 years	1.4%	(1 in 71)	4.9%	(1 in 20)	0.5%	(1 in 210)	2.5%	(1 in 40)
75 years	2.3%	(1 in 44)	4.0%	(1 in 25)	1.1%	(1 in 93)	2.3%	(1 in 44)
Lifetime risk			5.7%	(1 in 18)			2.6%	(1 in 39)

Figure 3.5.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C18–C21, Germany 2011–2012

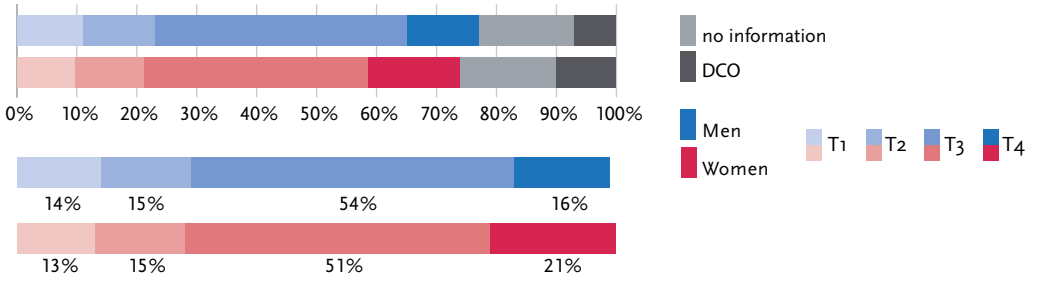


Figure 3.5.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C18–C21, Germany 2011–2012

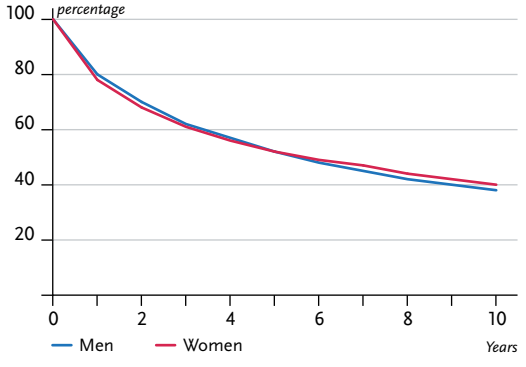


Figure 3.5.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C18–C21, Germany 2011–2012

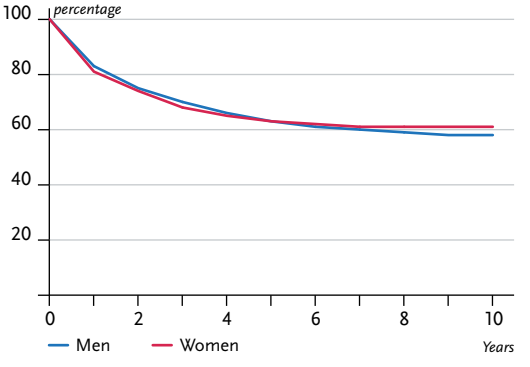


Figure 3.5.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C18–C21, 2011–2012
per 100,000 (European standard)

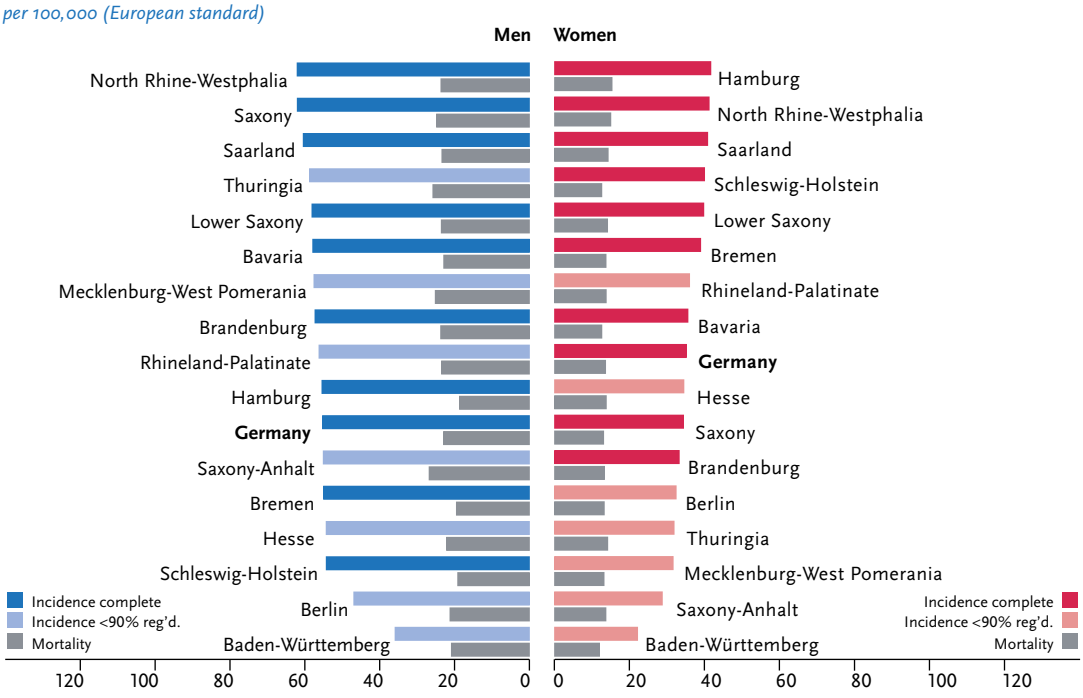
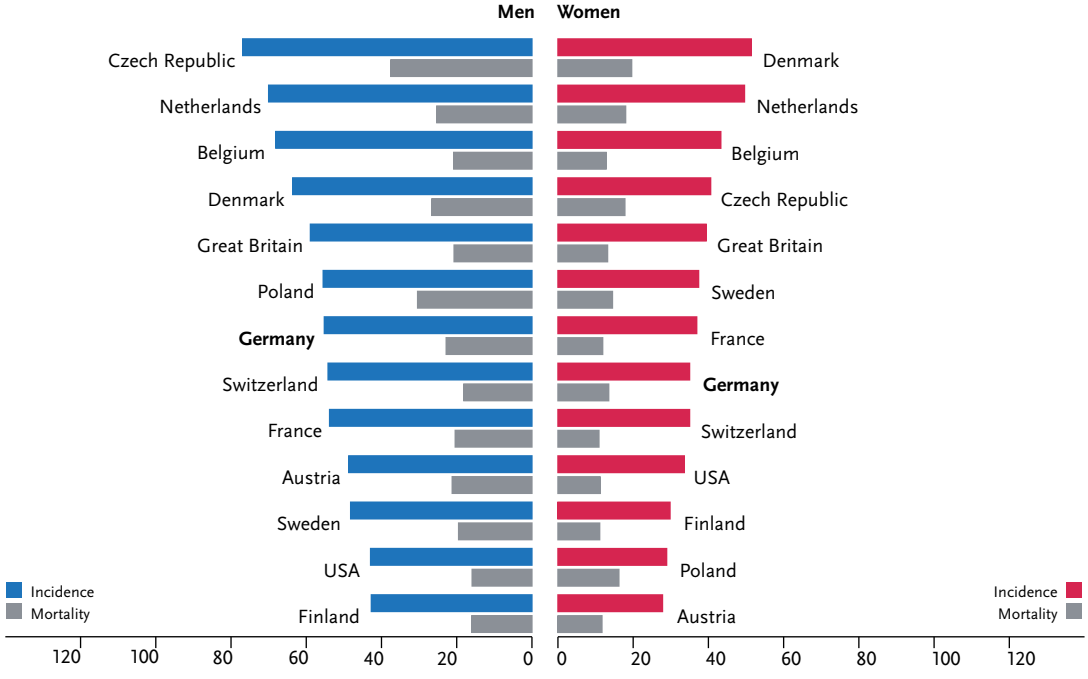


Figure 3.5.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C18–C21, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.6 Liver

Table 3.6.1
Overview of key epidemiological parameters for Germany, ICD-10 C22

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	5,880	2,600	6,020	2,560	6,600	2,900
Crude incidence rate[1]	15.0	6.3	15.3	6.2	16.6	7.0
Standardised incidence rate[1,2]	10.1	3.4	10.2	3.4	10.5	3.6
Median age at diagnosis	71	74	71	74		
Deaths	5,011	2,551	5,117	2,553		
Crude mortality rate[1]	12.8	6.2	13.0	6.2		
Standardised mortality rate[1,2]	8.4	3.1	8.5	3.0		
5-year prevalence	7,800	2,800	7,900	2,900		

	after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	13 (9–15)	13 (6–17)	7 (4–10)	8 (0–11)	
Relative survival rate (2011–2012)[3]	15 (10–17)	14 (8–19)	10 (7–14)	11 (0–14)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Liver cancer is relatively uncommon, but in view of its poor prognosis it ranks among the ten most frequent causes of death due to cancer for both men and women. There are approximately 8,600 new cases in Germany every year, and roughly the same number of deaths. The median age at diagnosis is 71 years for men and 74 years for women. Only about 4 % of cases are diagnosed before 45 years of age. One in 84 men and one in 200 women in Germany develop a malignant liver tumour in the course of their life.

Some 66 % of malignant tumours develop from liver cells (hepatocellular carcinoma), and almost 21 % from cells in the intrahepatic bile ducts (cholangiocarcinoma). This proportion is significantly higher for women.

Since 1980, the mortality rate for men has risen steadily by a total of 52 %, even after age-standardisation, while it has remained more or less unchanged for women in the same period. The increased mortality rate in men was independent of the histology of the tumour. The age-standardised incidence rate for liver cancer in men has increased by about 20 % since 1999.

Currently, incidence and mortality rates in the north-western federal states are somewhat lower than in the rest of Germany. In an international comparison, the highest incidence and mortality rates are to be observed in France and in The United States.

In Germany, the relative 5-year-survival rates for women and for men are around 15 %.

Risk factors and early detection

Cirrhosis of the liver is the most important risk factor for liver cancer. In Germany, the most common causes for the development of cirrhosis of the liver are high alcohol consumption levels and/or chronic hepatitis C virus infection. Non-alcoholic fatty liver disease also increases the risk of liver cancer. These may, for example, occur as a consequence of diabetes mellitus and/or due to metabolic syndrome. In turn, the trigger for metabolic syndrome is very often obesity.

A chronic infection with the hepatitis B virus, even without cirrhosis of the liver, is also a risk factor for liver cancer. Tobacco consumption is associated with an increased risk, as well. Besides, contamination of food with Aflatoxin B1 (mould fungus poisoning) increases the risk of liver cancer. Finally, hereditary metabolic diseases such as haemochromatosis can also increase this risk.

Early detection examinations for the general population are not included in the statutory health insurance screening programmes. It is recommended that regular ultrasound check-ups be offered to all patients with cirrhosis of the liver, chronic hepatitis B or C infections, or with fatty liver disease. Blood tests (for alpha-fetoprotein) are only of minor relevance.

Figure 3.6.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C22, Germany 1999–2012
per 100,000 (European standard)

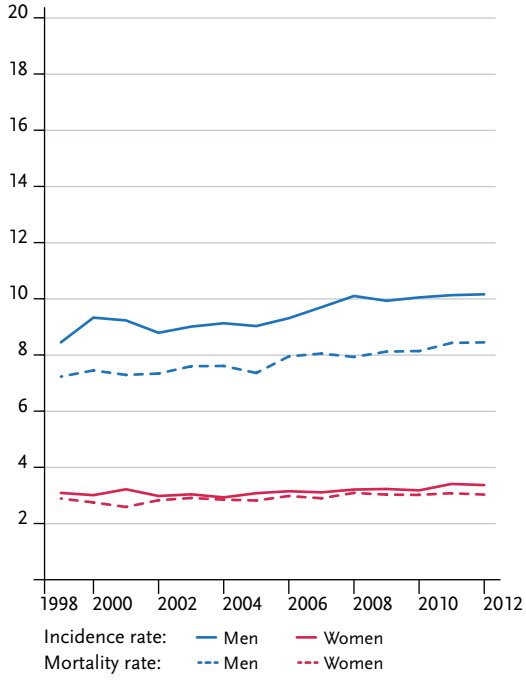


Figure 3.6.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C22, Germany 1999–2012

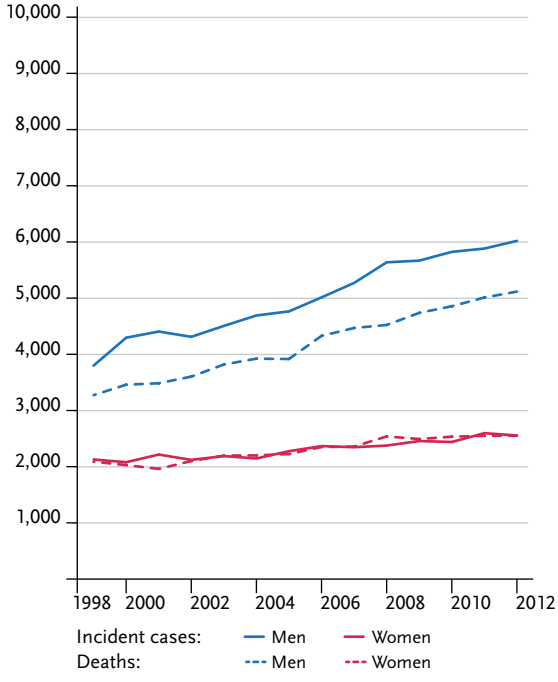


Figure 3.6.2
Age-specific incidence rates by sex, ICD-10 C22, Germany 2011–2012
per 100,000

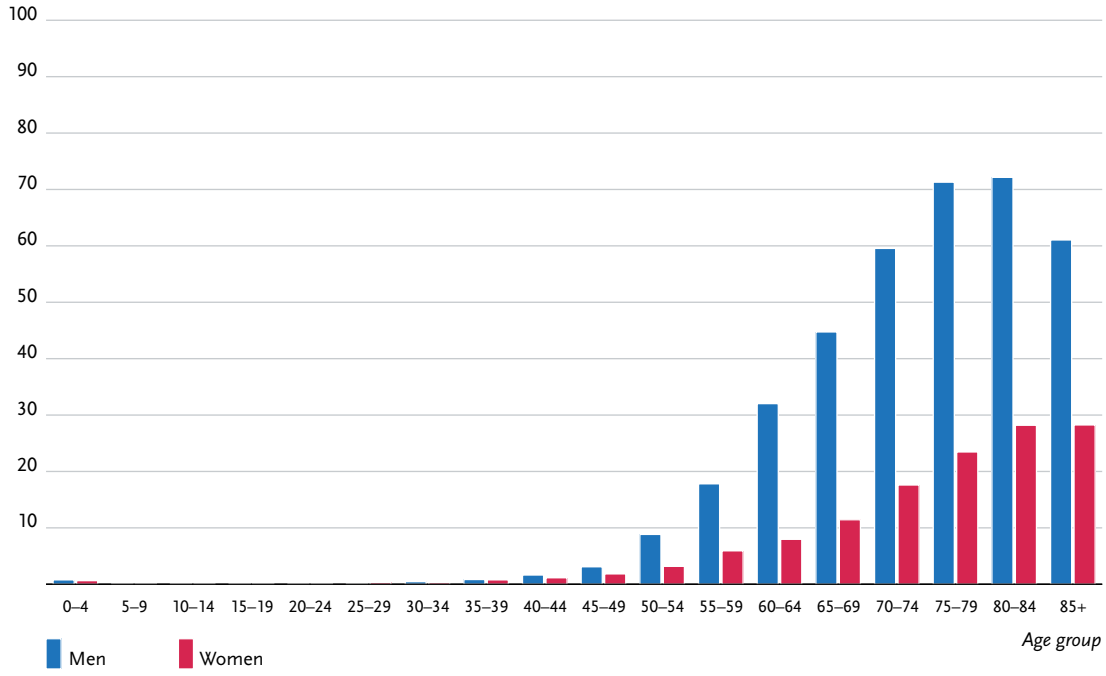


Table 3.6.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C22, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 7,900)	1.2 %	(1 in 83)	<0.1 %	(1 in 11,800)	1.1 %	(1 in 94)
45 years	0.1 %	(1 in 1,600)	1.2 %	(1 in 83)	<0.1 %	(1 in 2,300)	1.1 %	(1 in 94)
55 years	0.2 %	(1 in 430)	1.2 %	(1 in 84)	0.2 %	(1 in 550)	1.1 %	(1 in 94)
65 years	0.5 %	(1 in 210)	1.1 %	(1 in 94)	0.4 %	(1 in 260)	1.0 %	(1 in 100)
75 years	0.5 %	(1 in 190)	0.7 %	(1 in 140)	0.5 %	(1 in 190)	0.7 %	(1 in 140)
Lifetime risk			1.2 %	(1 in 84)			1.1 %	(1 in 95)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 10,400)	0.5 %	(1 in 200)	<0.1 %	(1 in 16,600)	0.5 %	(1 in 190)
45 years	<0.1 %	(1 in 3,900)	0.5 %	(1 in 200)	<0.1 %	(1 in 5,600)	0.5 %	(1 in 200)
55 years	0.1 %	(1 in 1,400)	0.5 %	(1 in 210)	0.1 %	(1 in 1,800)	0.5 %	(1 in 200)
65 years	0.1 %	(1 in 740)	0.4 %	(1 in 230)	0.1 %	(1 in 780)	0.5 %	(1 in 210)
75 years	0.2 %	(1 in 480)	0.3 %	(1 in 300)	0.2 %	(1 in 430)	0.4 %	(1 in 250)
Lifetime risk			0.5 %	(1 in 200)			0.5 %	(1 in 190)

Figure 3.6.3
Distribution of T-stages at first diagnosis by sex
Not presented due to the large proportion of missing data.

Figure 3.6.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C22, Germany 2011 – 2012

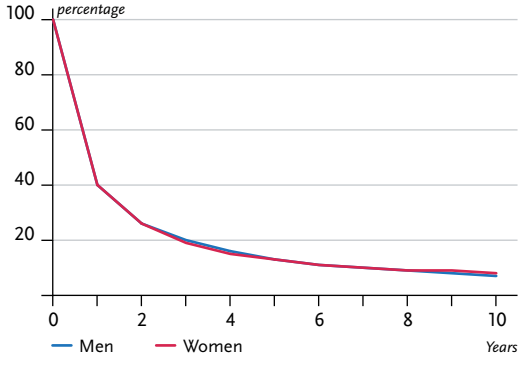


Figure 3.6.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C22, Germany 2011 – 2012

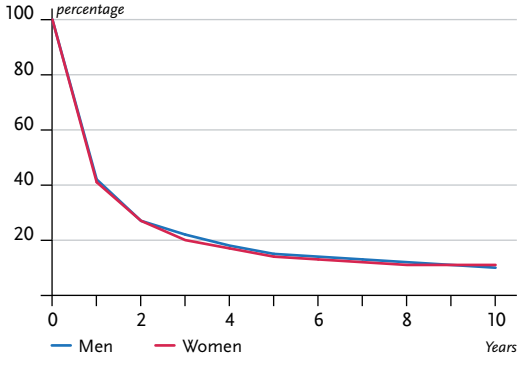


Figure 3.6.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C22, 2011–2012
per 100,000 (European standard)

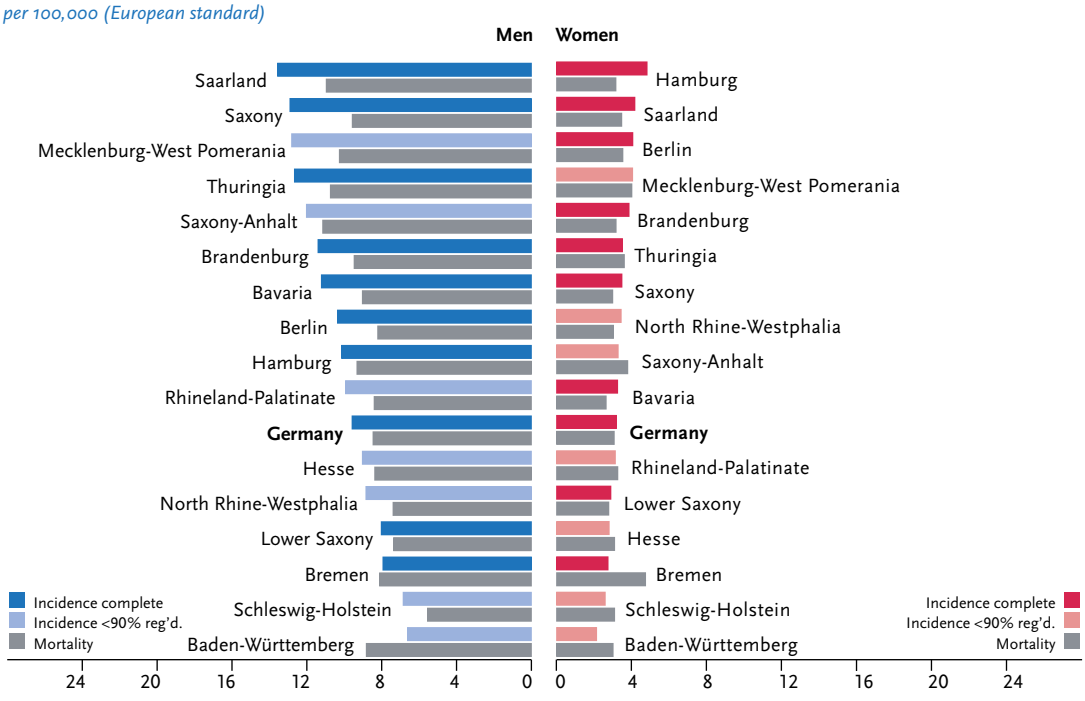
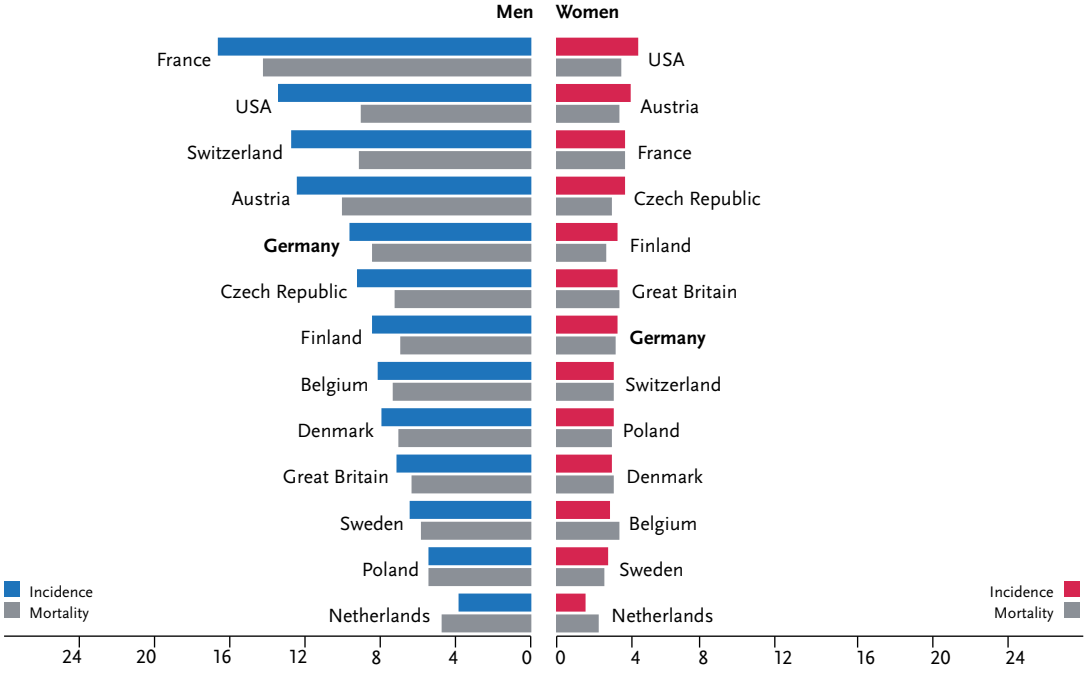


Figure 3.6.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C22, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.7 Gall bladder and biliary tract

Table 3.7.1
Overview of key epidemiological parameters for Germany, ICD-10 C23–C24

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	2,350	3,050	2,170	2,780	2,400	2,600
Crude incidence rate[1]	6.0	7.4	5.5	6.8	5.9	6.2
Standardised incidence rate[1,2]	3.9	3.7	3.6	3.4	3.7	3.0
Median age at diagnosis	73	76	72	76		
Deaths	1,421	2,149	1,415	2,122		
Crude mortality rate[1]	3.6	5.2	3.6	5.2		
Standardised mortality rate[1,2]	2.4	2.4	2.3	2.4		
5-year prevalence	3,700	3,900	3,700	3,800		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	18 (9–41)	13 (7–19)	12 (5–17)	9 (2–15)		
Relative survival rate (2011–2012)[3]	21 (10–48)	15 (9–23)	18 (8–26)	14 (3–26)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In Germany, about 4,950 new cases of malignant tumours of the gall bladder (approx. 37 %) and of the biliary tract outside the liver (63 %) were diagnosed in 2012. Women develop gall bladder carcinomas more frequently, whereas tumours in the extra hepatic biliary tracts are diagnosed more frequently in men.

Histologically, the majority of these are adenocarcinomas. Other histological variants such as squamous-cell carcinomas or hybrid forms are rare. As with liver cancer, the risk of developing this type increases steadily with age. The lifetime risk is about 0.6 % for women and 0.5 % for men.

Since 1999 the age-standardised incidence rate in Germany has declined for women (especially for gall bladder carcinomas) and remained largely unchanged for men. However, because of demographic changes the absolute number of new cases has increased slightly among men. The age-standardised mortality rates for the same period have decreased constantly in both genders.

The survival prospects with malignant tumours of the gall bladder and biliary tract are generally poor, yet better than for liver cancer. The relative 5-year survival rate for women is 15 % and 21 % for men. Details with regard to tumour stage at point of diagnosis exist for approximately 60 % of gall bladder cases registered, most of which were diagnosed in stage T2 and T3.

Risk factors and early detection

The triggers for carcinomas of the gall bladder and biliary tract are not absolutely clear. Overweight is considered to be a risk factor for both. The presence of gallstones can be a risk for gall bladder carcinomas. In the current scientific debate, chronic inflammatory diseases of the biliary tract, such as a primary sclerosing cholangitis (PSC), choledochal cysts, the inflammatory bowel disease ulcerative colitis, liver diseases as a result of the high consumption of alcohol, hepatitis-C virus infection, and HIV infection, Diabetes and smoking are all deemed to be possible risk factors. A further risk factor, especially in Asia, is an infection with the parasitic liver flukes Clonorchis sinensis or Opisthorchis viverrini.

Various markers are being tested for their suitability for early detection among persons at risk, however, without any practical consequences. There is no screening programme on offer for the general population. Often, however, early stage diagnosis is made upon removing the gall bladder for other reasons.

Figure 3.7.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C23–C24, Germany 1999–2012
per 100,000 (European standard)

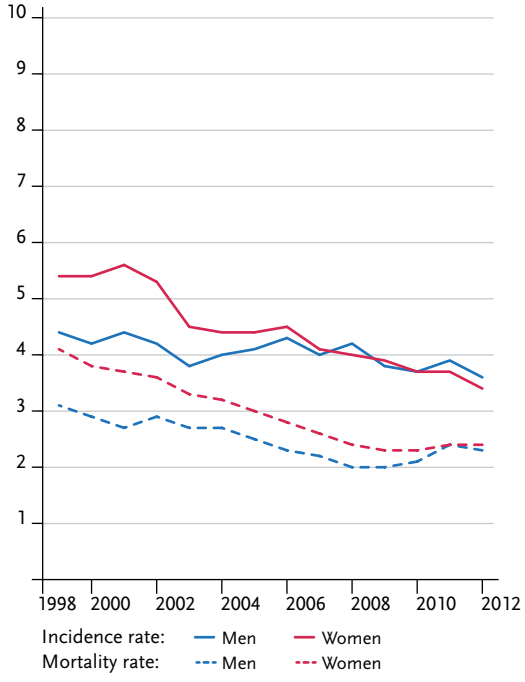


Figure 3.7.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C23–C24, Germany 1999–2012

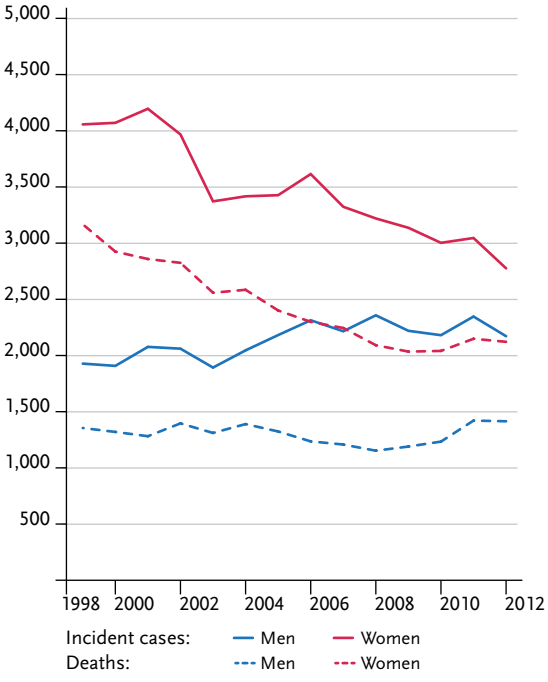


Figure 3.7.2
Age-specific incidence rates by sex, ICD-10 C23–C24, Germany 2011–2012
per 100,000

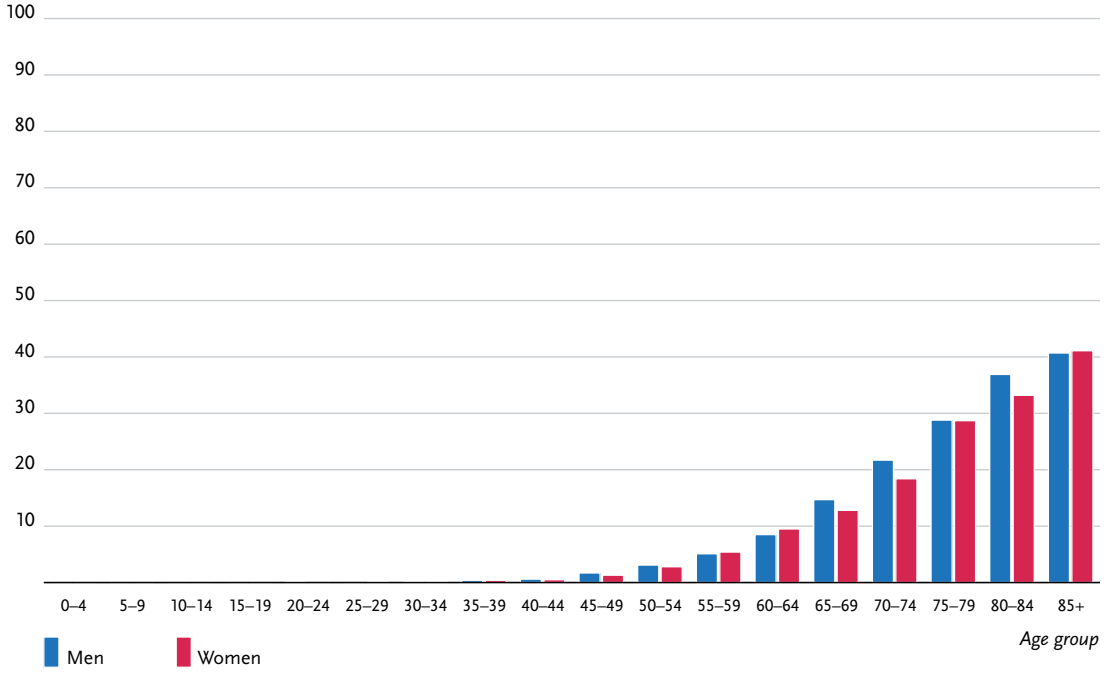


Table 3.7.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C23–C24, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 16,600)	0.5 %	(1 in 220)	<0.1 %	(1 in 42,800)	0.3 %	(1 in 320)
45 years	<0.1 %	(1 in 4,200)	0.5 %	(1 in 220)	<0.1 %	(1 in 9,800)	0.3 %	(1 in 320)
55 years	0.1 %	(1 in 1,500)	0.5 %	(1 in 220)	<0.1 %	(1 in 2,900)	0.3 %	(1 in 320)
65 years	0.2 %	(1 in 660)	0.4 %	(1 in 230)	0.1 %	(1 in 1,000)	0.3 %	(1 in 320)
75 years	0.2 %	(1 in 430)	0.4 %	(1 in 290)	0.2 %	(1 in 590)	0.3 %	(1 in 370)
Lifetime risk			0.5 %	(1 in 220)			0.3 %	(1 in 320)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 24,200)	0.6 %	(1 in 180)	<0.1 %	(1 in 75,000)	0.4 %	(1 in 230)
45 years	<0.1 %	(1 in 4,900)	0.6 %	(1 in 180)	<0.1 %	(1 in 8,900)	0.4 %	(1 in 230)
55 years	0.1 %	(1 in 1,400)	0.6 %	(1 in 180)	<0.1 %	(1 in 2,100)	0.4 %	(1 in 230)
65 years	0.1 %	(1 in 710)	0.5 %	(1 in 200)	0.1 %	(1 in 1,000)	0.4 %	(1 in 240)
75 years	0.2 %	(1 in 400)	0.4 %	(1 in 240)	0.2 %	(1 in 520)	0.3 %	(1 in 290)
Lifetime risk			0.6 %	(1 in 180)			0.4 %	(1 in 230)

Figure 3.7.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 only C23, Germany 2011–2012

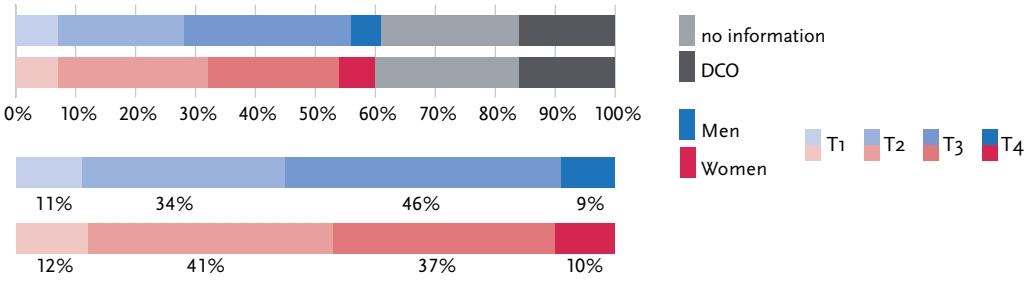


Figure 3.7.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C23–C24, Germany 2011–2012

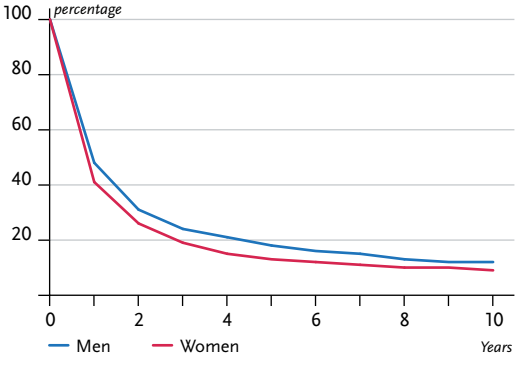


Figure 3.7.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C23–C24, Germany 2011–2012

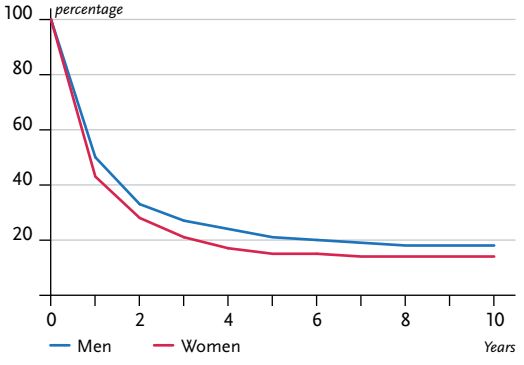


Figure 3.7.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C23–C24, 2011–2012
per 100,000 (European standard)

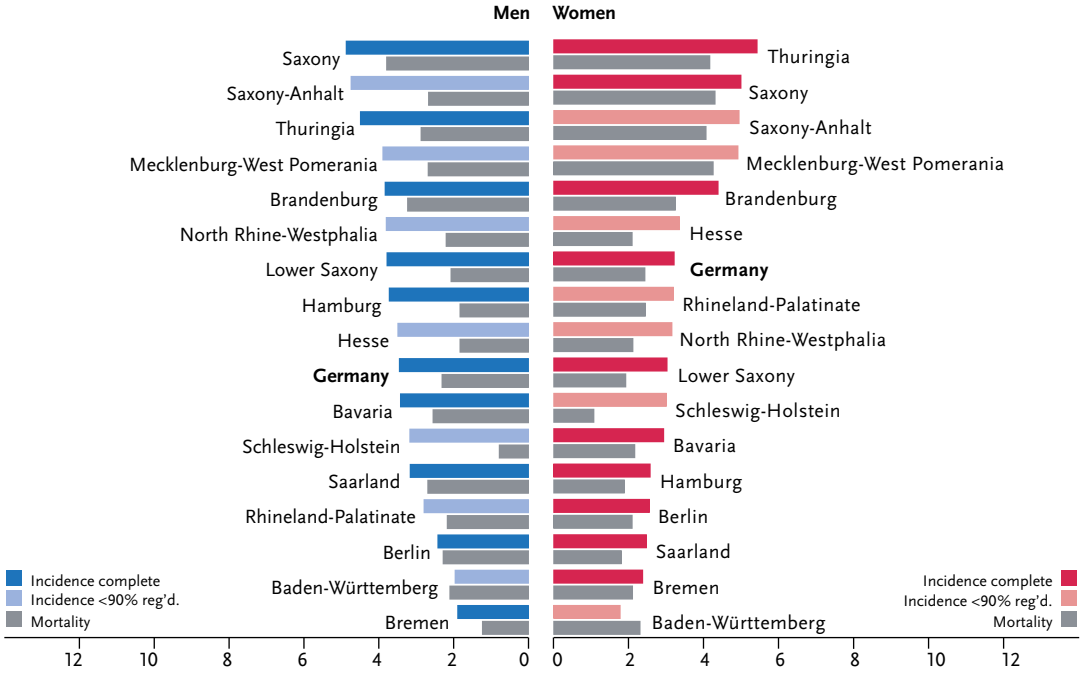
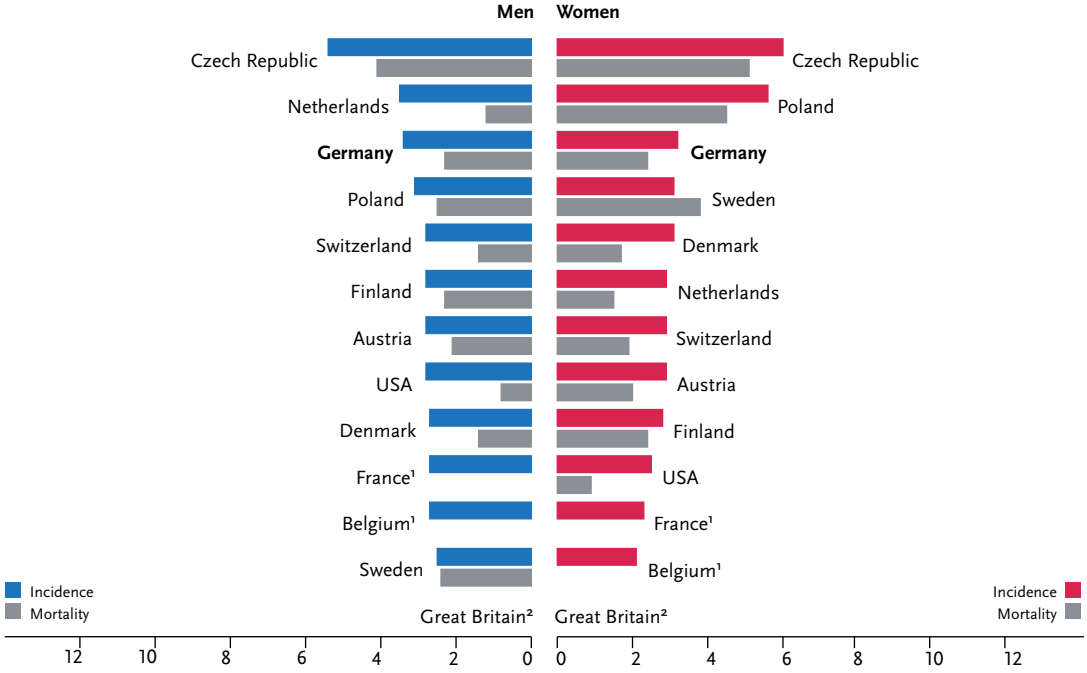


Figure 3.7.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C23–C24, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data for mortality
² no comparable data

3.8 Pancreas

Table 3.8.1
Overview of key epidemiological parameters for Germany, ICD-10 C25

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	8,280	8,420	8,250	8,480	9,100	9,500
Crude incidence rate[1]	21.1	20.5	21.0	20.6	22.7	23.0
Standardised incidence rate[1,2]	14.2	10.5	14.0	10.6	14.3	11.3
Median age at diagnosis	71	75	71	75		
Deaths	7,812	8,128	7,936	8,184		
Crude mortality rate[1]	19.9	19.8	20.2	19.9		
Standardised mortality rate[1,2]	13.2	9.6	13.1	9.6		
5-year prevalence	7,700	7,900	7,800	8,100		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	7 (5–10)	8 (4–11)	5 (3–6)	6 (4–7)		
Relative survival rate (2011–2012)[3]	8 (5–11)	9 (5–13)	6 (4–9)	8 (5–10)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

The pancreas produces hormones (endocrinal function of islet cells) as well as digestive juices (exocrine function). The vast majority of malignant tumours in the pancreas originate in the exocrine portion of the pancreas. In 2012 more than 16,700 people were diagnosed with pancreatic cancer. In line with the unfavourable prognosis, almost that many people also died of the disease. The age-standardised incidence and mortality rates among men have remained almost constant since the late 1990s, whereas the rates among women are slightly increasing. The absolute number of new cases and deaths has risen steadily among both, men and women. In the early stages, malignant neoplasms of the pancreas frequently cause no or only nonspecific symptoms, thus the tumour is frequently only detected late. Accordingly, the relative 5-year survival rate is extremely unfavourable. In Germany it is 8 % for men and 9 % for women, although the rare malignant islet cell tumours have a significantly better prognosis. The pancreatic carcinoma thus has the lowest survival rate of all forms of cancer and is the fourth most frequent cause of death due to cancer.

The median age at diagnosis is 71 years for men and 75 years for women.

Risk factors

Smoking tobacco is a proven risk factor and passive smoking also plays a part. Obesity (adipositas) and type 2 diabetes mellitus also have a negative bearing. Further lifestyle-related factors have not been conclusively proven. It is believed that high consumption of processed meat goods, eating smoked or grilled foods, as well as high alcohol consumption levels can increase the risk of pancreatic cancer. Patients with chronic inflammation of the pancreas (pancreatitis) also have an increased risk. First-degree relatives of patients with a pancreatic carcinoma have a statistically higher risk of developing the cancer themselves. It is not clear, whether this is due to a hereditary predisposition or shared lifestyle. An inheritable risk does indeed appear to play a part for some patients at least. Research is being conducted to establish which genes are involved. The risk of developing this cancer is higher for people affected by certain, rare, genetic cancer syndromes. It is not yet fully clear what role is played by environmental factors or occupational exposure to harmful substances. The contact with pesticides, herbicides and fungicides may increase the risk of pancreatic carcinoma. Also an exposure to chlorinated hydrocarbons, chromium and chromium compounds, electromagnetic fields and fuel vapours may also increase the risk.

Figure 3.8.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C25, Germany 1999–2012
per 100,000 (European standard)

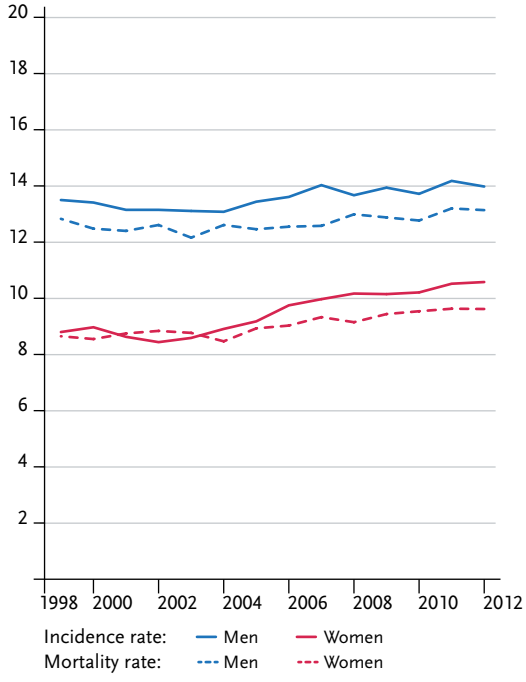


Figure 3.8.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C25, Germany 1999–2012

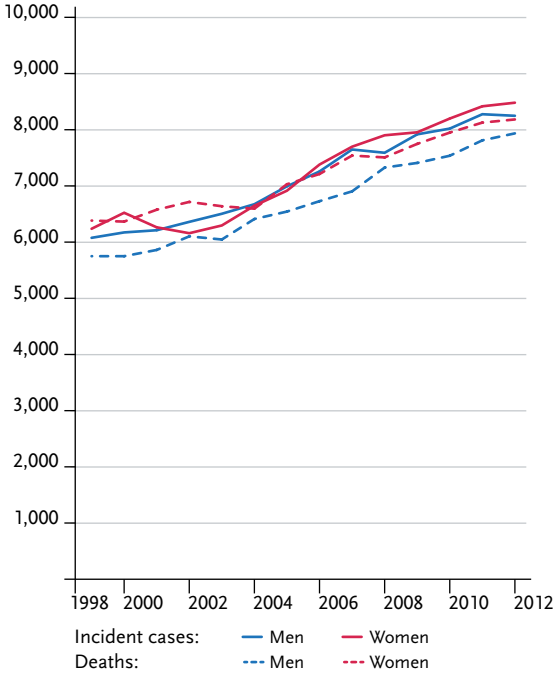


Figure 3.8.2
Age-specific incidence rates by sex, ICD-10 C25, Germany 2011–2012
per 100,000

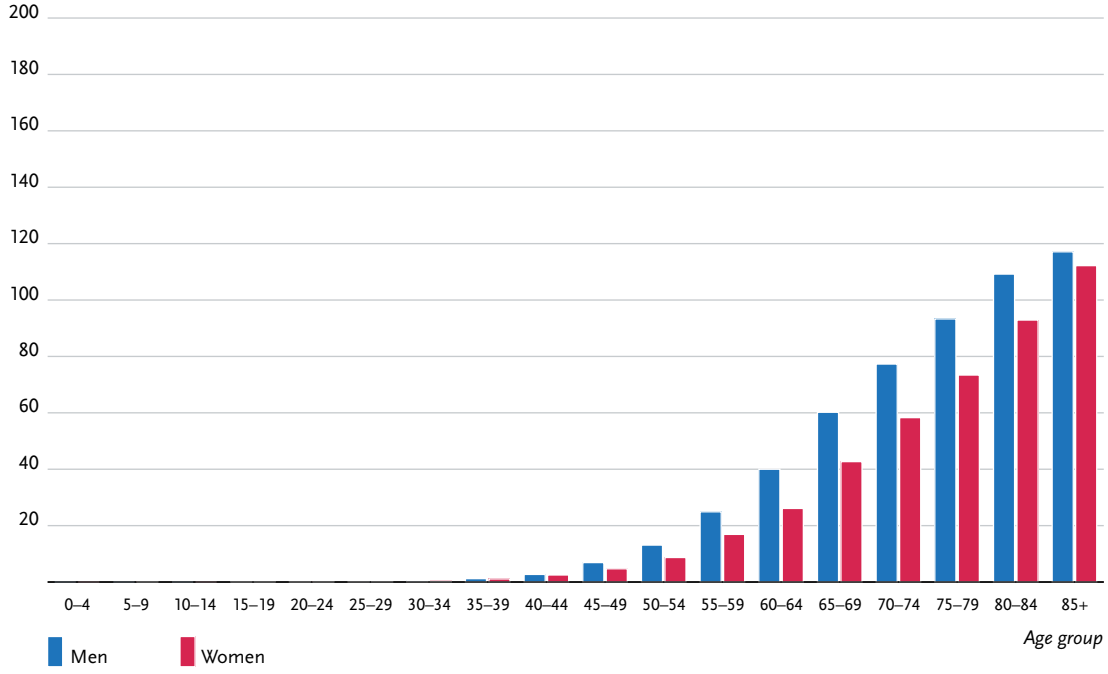


Table 3.8.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C25, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 4,900)	1.7%	(1 in 59)	<0.1%	(1 in 8,700)	1.7%	(1 in 60)
45 years	0.1%	(1 in 1,000)	1.7%	(1 in 59)	0.1%	(1 in 1,200)	1.7%	(1 in 59)
55 years	0.3%	(1 in 310)	1.7%	(1 in 60)	0.3%	(1 in 360)	1.7%	(1 in 60)
65 years	0.6%	(1 in 160)	1.5%	(1 in 68)	0.6%	(1 in 180)	1.5%	(1 in 65)
75 years	0.7%	(1 in 130)	1.1%	(1 in 91)	0.8%	(1 in 120)	1.2%	(1 in 82)
Lifetime risk			1.7%	(1 in 60)			1.7%	(1 in 61)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 5,600)	1.7%	(1 in 59)	<0.1%	(1 in 12,200)	1.7%	(1 in 60)
45 years	0.1%	(1 in 1,500)	1.7%	(1 in 59)	0.1%	(1 in 1,900)	1.7%	(1 in 60)
55 years	0.2%	(1 in 470)	1.7%	(1 in 60)	0.2%	(1 in 550)	1.7%	(1 in 60)
65 years	0.5%	(1 in 210)	1.5%	(1 in 66)	0.4%	(1 in 230)	1.6%	(1 in 64)
75 years	0.7%	(1 in 140)	1.2%	(1 in 85)	0.7%	(1 in 140)	1.3%	(1 in 79)
Lifetime risk			1.7%	(1 in 59)			1,7%	(1 in 60)

Figure 3.8.3
Distribution of T-stages at first diagnosis by sex
Not presented due to the large proportion of missing data.

Figure 3.8.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C25, Germany 2011–2012

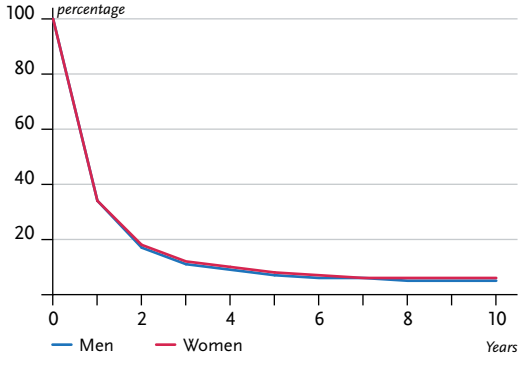


Figure 3.8.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C25, Germany 2011–2012

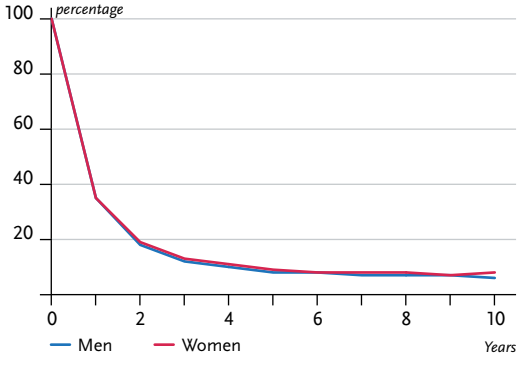


Figure 3.8.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C25, 2011–2012
per 100,000 (European standard)

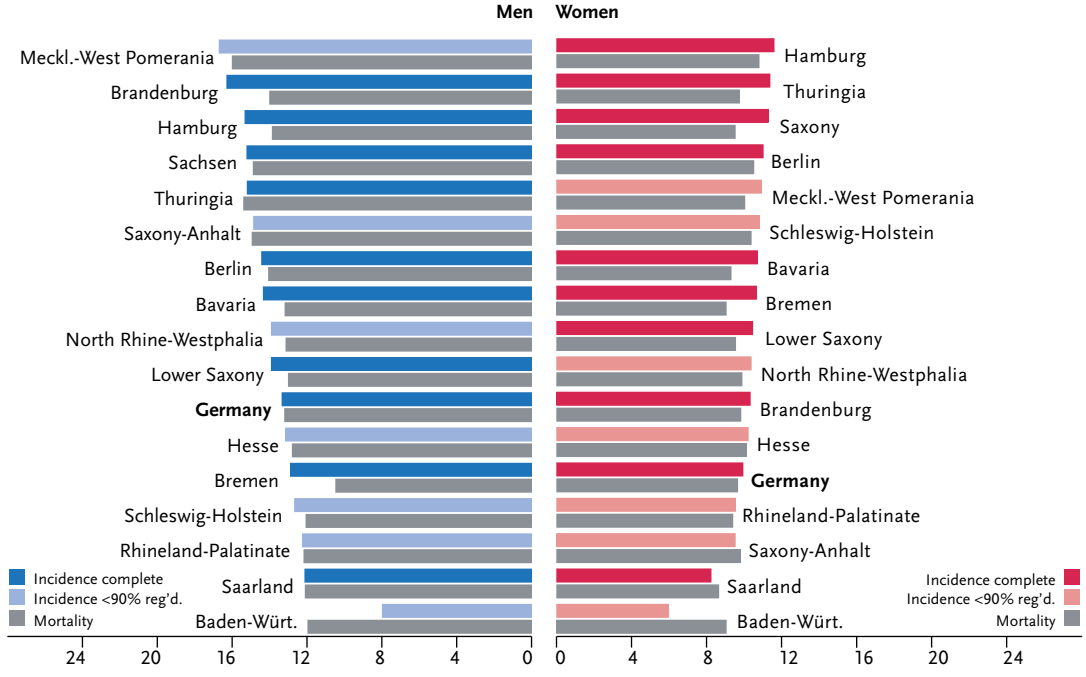
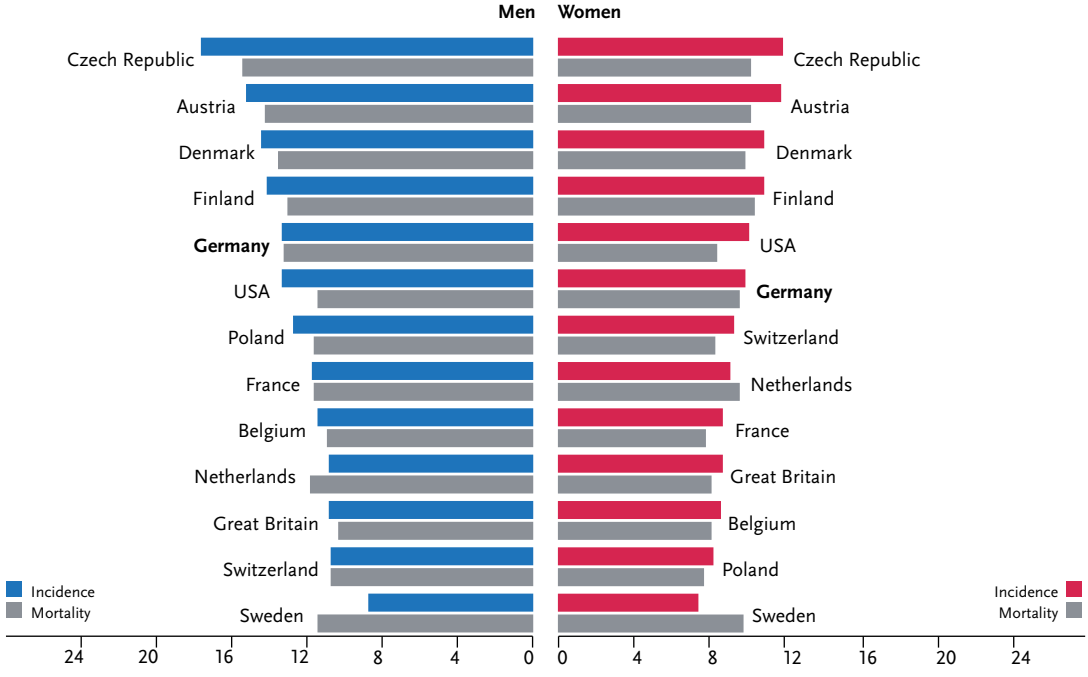


Figure 3.8.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C25, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.9 Larynx

Table 3.9.1
Overview of key epidemiological parameters for Germany, ICD-10 C32

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	3,160	510	3,110	490	3,200	600
Crude incidence rate[1]	8.1	1.2	7.9	1.2	8.0	1.4
Standardised incidence rate[1,2]	5.9	0.9	5.7	0.9	5.4	1.0
Median age at diagnosis	66	65	66	64		
Deaths	1,333	212	1,265	178		
Crude mortality rate[1]	3.4	0.5	3.2	0.4		
Standardised mortality rate[1,2]	2.4	0.3	2.2	0.3		
5-year prevalence	11,600	1,800	11,400	1,800		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	55 (51–63)	60	37 (29–43)	46		
Relative survival rate (2011–2012)[3]	62 (58–73)	65	49 (38–58)	55		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Laryngeal cancer is almost exclusively due to squamous cell carcinoma. Men are affected by laryngeal cancer considerably more frequently than women due to higher consumption of tobacco and alcohol at all ages. Currently in Germany, one in every 170 men develops cancer of the larynx compared to only one in every 1,100 women (lifetime risk). The median age of diagnosis in women is 64 years and in men 66 years and thus in each case four to five years earlier than for cancer in general.

Incidence and mortality rates among men have been declining since as early as the 1980s. After significant increases in the 1980s and 1990s the rates among women have remained unchanged since the turn of the millennium. After the year 2000, this led to an increase in the number of mortalities and new cases among women, especially in older age groups – whilst numbers of new cases among men remained unchanged.

The relative 5-year-survival rates for men and women do not differ significantly with rates of 62 % and 65 % respectively. The percentage of earlier tumour stages on diagnosis among men is somewhat more favourable at a figure of 42 % T1 compared to a figure for women of 38 %.

Risk factors

Smoking is the most important risk factor for the development of laryngeal cancer. Alcohol consumption also increases the probability of developing this cancer, whereby the combination of both factors is particularly harmful. The influences of lifestyle, diet, or environmental factors are not yet completely clear, because in the majority of cases the influence of tobacco and alcohol consumption overshadows other effects. However, there are indications that increased consumption of red meat, as well as a vitamin-deficient diet may increase risk. There is a known link between tumours of the larynx and occupational exposure to asbestos, nickel or polycyclic aromatic hydrocarbons. The role of infections with human papillomaviruses (HPV) has not been completely clarified to date. There are indications that infections with Helicobacter pylori may also be of significance. First-degree relatives of patients have a higher risk of developing laryngeal cancer, but it is not clear in detail, whether this is attributable to risk-genes which are directly involved in the development of the tumour or to genes which determine the individual susceptibility to carcinogens.

Figure 3.9.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C32, Germany 1999–2012
per 100,000 (European standard)

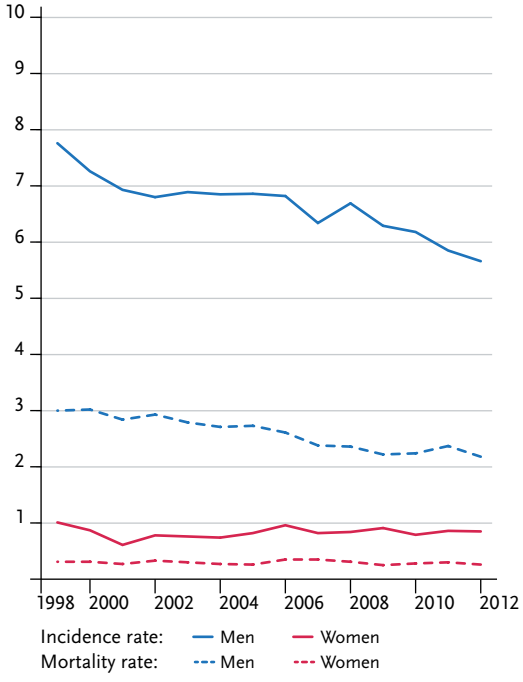


Figure 3.9.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C32, Germany 1999–2012

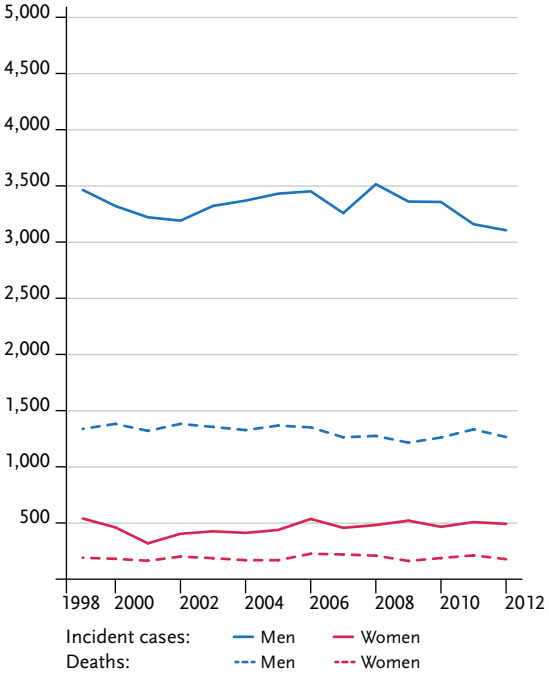


Figure 3.9.2
Age-specific incidence rates by sex, ICD-10 C32, Germany 2011–2012
per 100,000

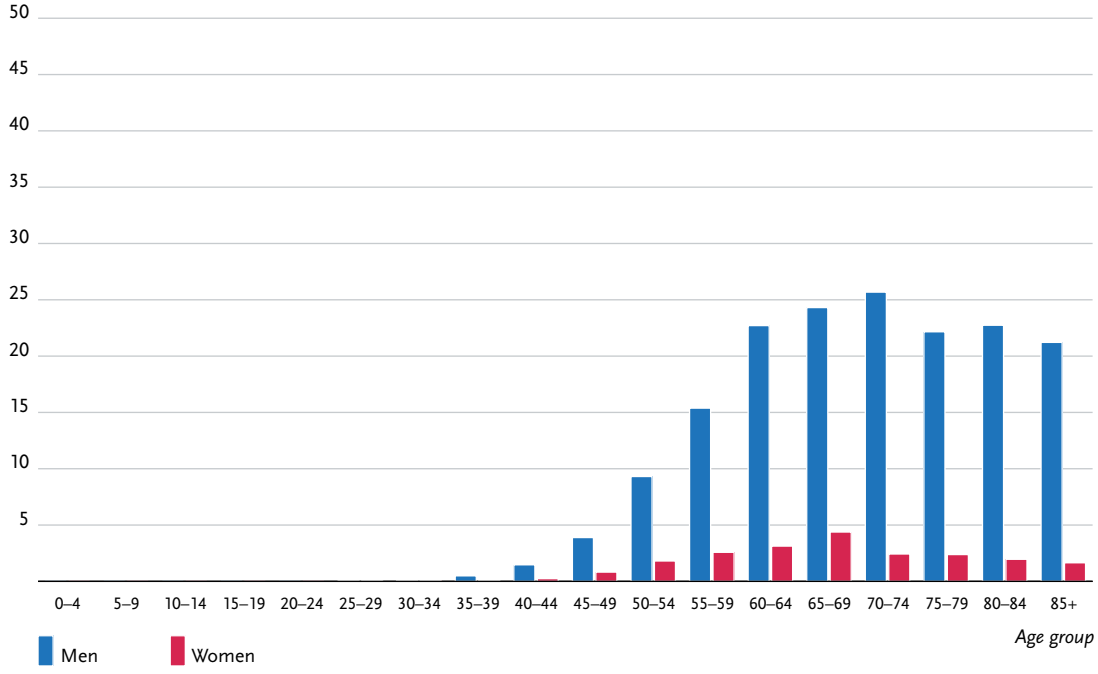


Table 3.9.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C32, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 9,200)	0.6 %	(1 in 170)	<0.1 %	(1 in 52,800)	0.3 %	(1 in 390)
45 years	0.1 %	(1 in 1,500)	0.6 %	(1 in 170)	<0.1 %	(1 in 5,400)	0.3 %	(1 in 390)
55 years	0.2 %	(1 in 570)	0.5 %	(1 in 180)	0.1 %	(1 in 1,700)	0.2 %	(1 in 400)
65 years	0.2 %	(1 in 440)	0.4 %	(1 in 250)	0.1 %	(1 in 1,100)	0.2 %	(1 in 480)
75 years	0.2 %	(1 in 590)	0.2 %	(1 in 430)	0.1 %	(1 in 950)	0.2 %	(1 in 650)
Lifetime risk			0.6 %	(1 in 170)			0.3 %	(1 in 400)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 60,700)	0.1 %	(1 in 1,100)	<0.1 %	(1 in 216,800)	<0.1 %	(1 in 2,800)
45 years	<0.1 %	(1 in 7,600)	0.1 %	(1 in 1,100)	<0.1 %	(1 in 47,900)	<0.1 %	(1 in 2,800)
55 years	<0.1 %	(1 in 3,400)	0.1 %	(1 in 1,300)	<0.1 %	(1 in 14,700)	<0.1 %	(1 in 3,000)
65 years	<0.1 %	(1 in 3,300)	0.1 %	(1 in 1,900)	<0.1 %	(1 in 8,700)	<0.1 %	(1 in 3,500)
75 years	<0.1 %	(1 in 5,700)	<0.1 %	(1 in 4,100)	<0.1 %	(1 in 8,300)	<0.1 %	(1 in 5,200)
Lifetime risk			0.1 %	(1 in 1,100)			<0.1 %	(1 in 2,900)

Figure 3.9.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C32, Germany 2011–2012

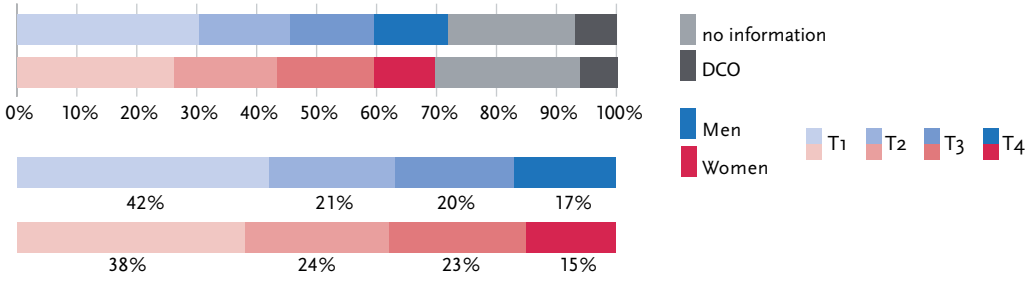


Figure 3.9.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C32, Germany 2011–2012

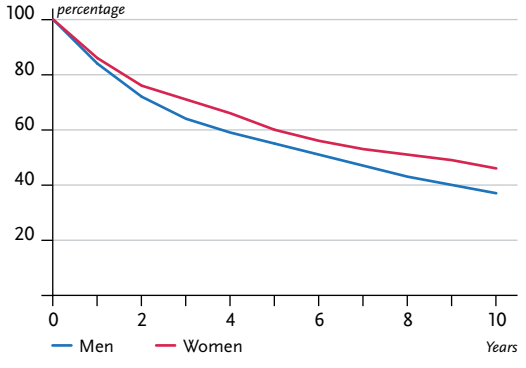


Figure 3.9.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C32, Germany 2011–2012

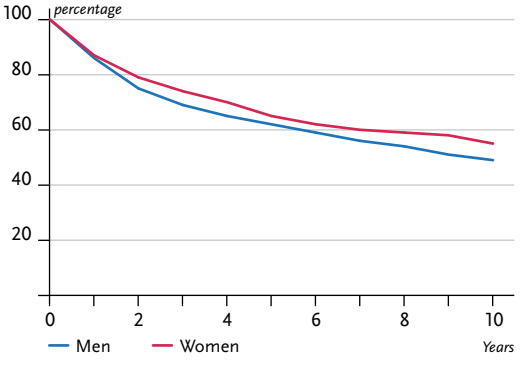


Figure 3.9.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C32, 2011–2012
per 100,000 (European standard)

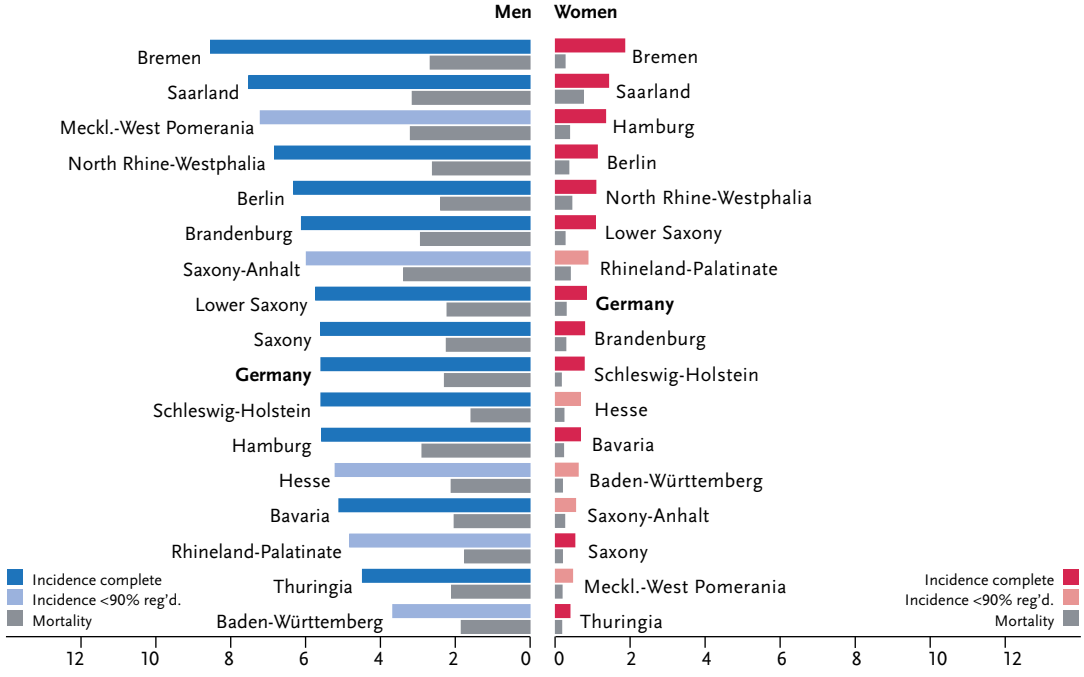
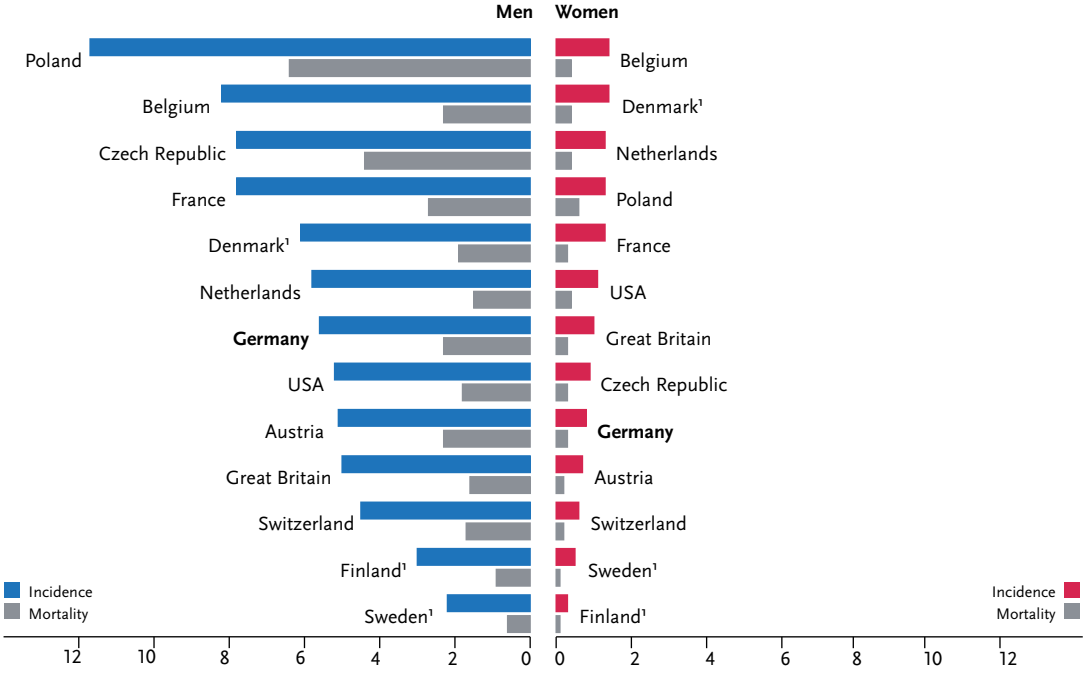


Figure 3.9.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C32, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] data with C10.1 (Anterior surface of epiglottis)

3.10 Lung

Table 3.10.1
Overview of key epidemiological parameters for Germany, ICD-10 C33–C34

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	35,270	17,710	34,490	18,030	35,000	20,300
Crude incidence rate[1]	90.0	43.1	87.8	43.9	87.5	49.1
Standardised incidence rate[1,2]	61.3	27.4	59.1	27.7	56.0	30.1
Median age at diagnosis	70	68	70	69		
Deaths	29,653	14,291	29,713	14,752		
Crude mortality rate[1]	75.7	34.8	75.6	35.9		
Standardised mortality rate[1,2]	50.6	20.9	49.8	21.3		
5-year prevalence	49,600	28,700	49,000	29,200		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	14 (12–16)	19 (14–24)	9 (7–11)	13 (9–17)		
Relative survival rate (2011–2012)[3]	16 (14–19)	21 (16–26)	12 (10–15)	16 (11–22)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In 2012 about 18,000 women and 34,500 men were diagnosed with malignant lung tumours and about 14,800 woman and 29,700 men died of the disease. Lung cancer therefore remains by far the commonest cause of death due to cancer among men in Germany, accounting for 25 % of deaths due to cancer, while it is the second most common among women (15 %).

The age-standardised incidence and mortality rates show opposing trends for men and for women. Among women they have risen continuously since the end of the 1990s, while for men the rates decreased over the same period. These differing trends for the two sexes can be attributed to a change in smoking habits dating back some time and will probably continue in future. In terms of prognosis, lung cancer is one of the more unfavourable cancers, with relatively low 5-year survival rates of about 21 % for women and 16 % for men. Histologically, three main types are distinguished. Adenocarcinomas account for a third of all cases, while squamous-cell and small-cell lung carcinomas each account for about a quarter of cases. Due to the tendency to metastasise early, small cell carcinomas have the worst prognosis. In comparison with international data, the highest incidence rates can be identified among women from Denmark and men from Poland.

Risk factors and early detection

Exposure to tobacco smoke has long been recognised as the main risk factor for lung cancer. Up to nine out of ten cases of lung cancer in men, and at least six out of ten cases in women are attributable to active smoking. Passive smoke inhalation also increases the risk of cancer and is a major contributor to indoor pollution.

Other risk factors play a comparatively minor role. About 9 to 15 out of 100 cases of lung cancer are attributable to exposure to various carcinogenic substances, including asbestos, polycyclic aromatic hydrocarbons and quartz and nickel dust. In areas with a high natural exposure to radon in buildings, the risk of lung cancer is higher for occupants, particularly in lower storeys. This also applies for occupational exposure to radon or other sources of ionising radiation. Diesel exhaust fumes are the most important risk factor among air pollutants. An impact of other environmental pollutants (e. g. particulate matter) is presumed to exist, but the extent of this is still the subject of research. The same applies for the influence of genetic factors. There is also a relationship between infection with human papillomavirus (HPV) or Epstein-Barr virus (EBV) and the development of lung carcinomas.

To date there is no established means of screening for lung cancer. The role that examinations, such as a regular computed tomography, could have for risk groups is being explored in clinical trials.

Figure 3.10.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C33–C34, Germany 1999–2012
per 100,000 (European standard)

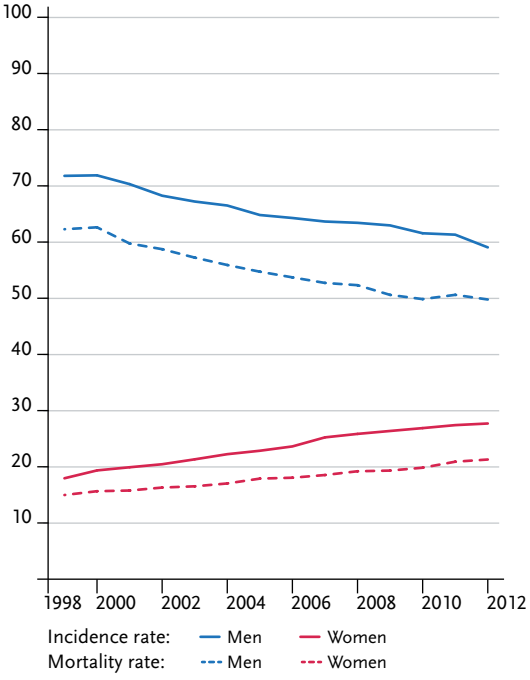


Figure 3.10.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C33–C34, Germany 1999–2012

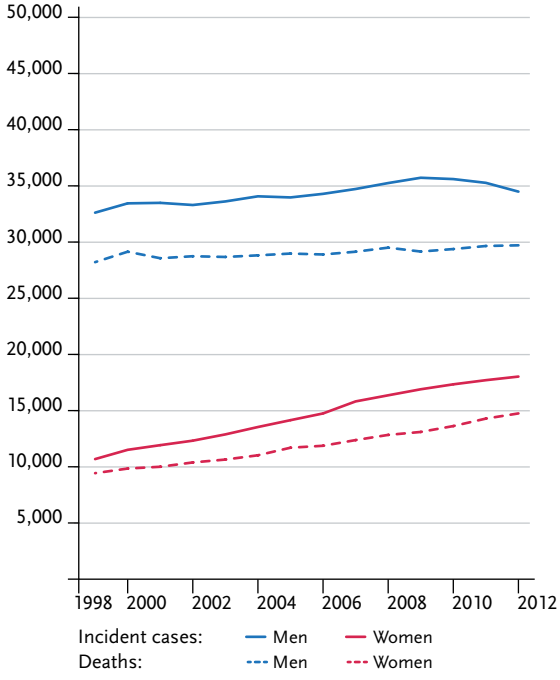


Figure 3.10.2
Age-specific incidence rates by sex, ICD-10 C33–C34, Germany 2011–2012
per 100,000

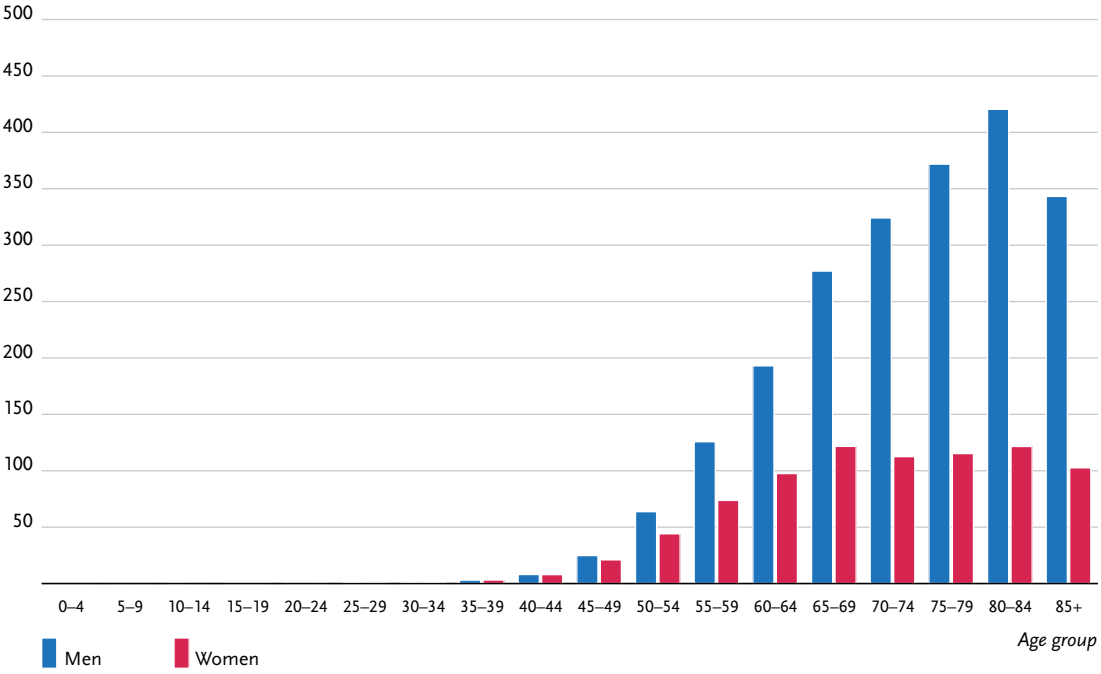


Table 3.10.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C33–C34, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 1,600)	6.9%	(1 in 14)	<0.1%	(1 in 2,600)	6.1%	(1 in 16)
45 years	0.4%	(1 in 220)	6.9%	(1 in 14)	0.3%	(1 in 310)	6.2%	(1 in 16)
55 years	1.5%	(1 in 66)	6.8%	(1 in 15)	1.1%	(1 in 87)	6.1%	(1 in 16)
65 years	2.6%	(1 in 38)	5.8%	(1 in 17)	2.2%	(1 in 45)	5.5%	(1 in 18)
75 years	3.0%	(1 in 34)	4.0%	(1 in 25)	2.8%	(1 in 35)	4.1%	(1 in 24)
Lifetime risk			6.8%	(1 in 15)			6.1%	(1 in 17)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 1,700)	3.4%	(1 in 29)	<0.1%	(1 in 2,800)	2.9%	(1 in 35)
45 years	0.3%	(1 in 300)	3.4%	(1 in 30)	0.2%	(1 in 450)	2.8%	(1 in 35)
55 years	0.8%	(1 in 120)	3.1%	(1 in 32)	0.6%	(1 in 170)	2.7%	(1 in 37)
65 years	1.1%	(1 in 89)	2.4%	(1 in 42)	0.9%	(1 in 110)	2.2%	(1 in 46)
75 years	1.0%	(1 in 100)	1.5%	(1 in 69)	0.9%	(1 in 110)	1.5%	(1 in 68)
Lifetime risk			3.4%	(1 in 29)			2.8%	(1 in 35)

Figure 3.10.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C33–C34, Germany 2011–2012

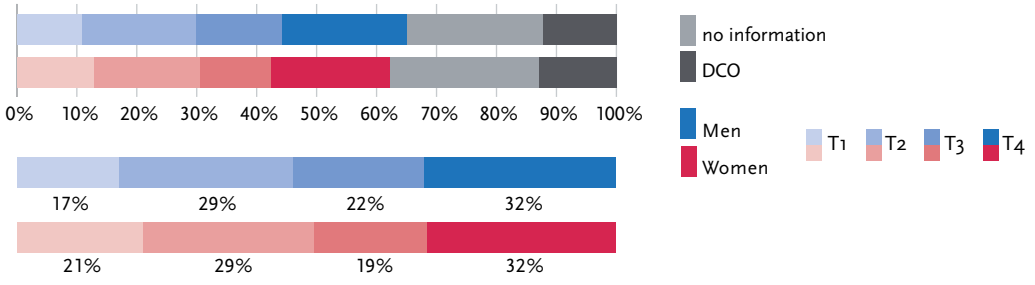


Figure 3.10.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C33–C34, Germany 2011–2012

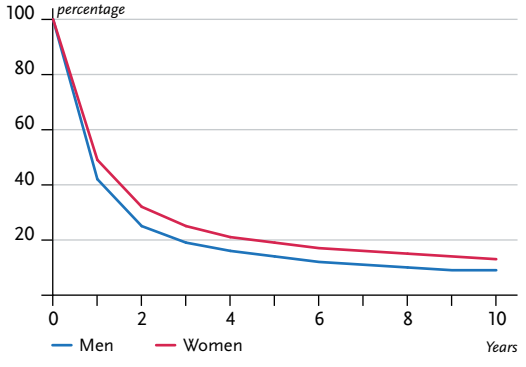


Figure 3.10.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C33 – C34, Germany 2011–2012

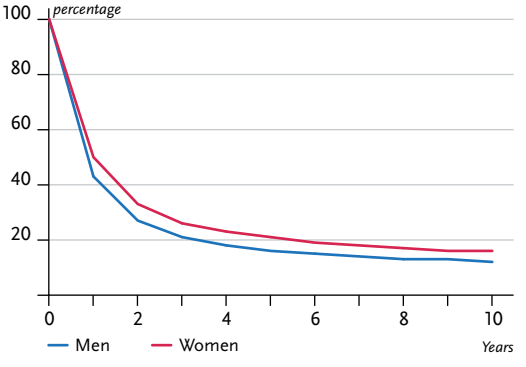


Figure 3.10.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C33–C34, 2011–2012
per 100,000 (European standard)

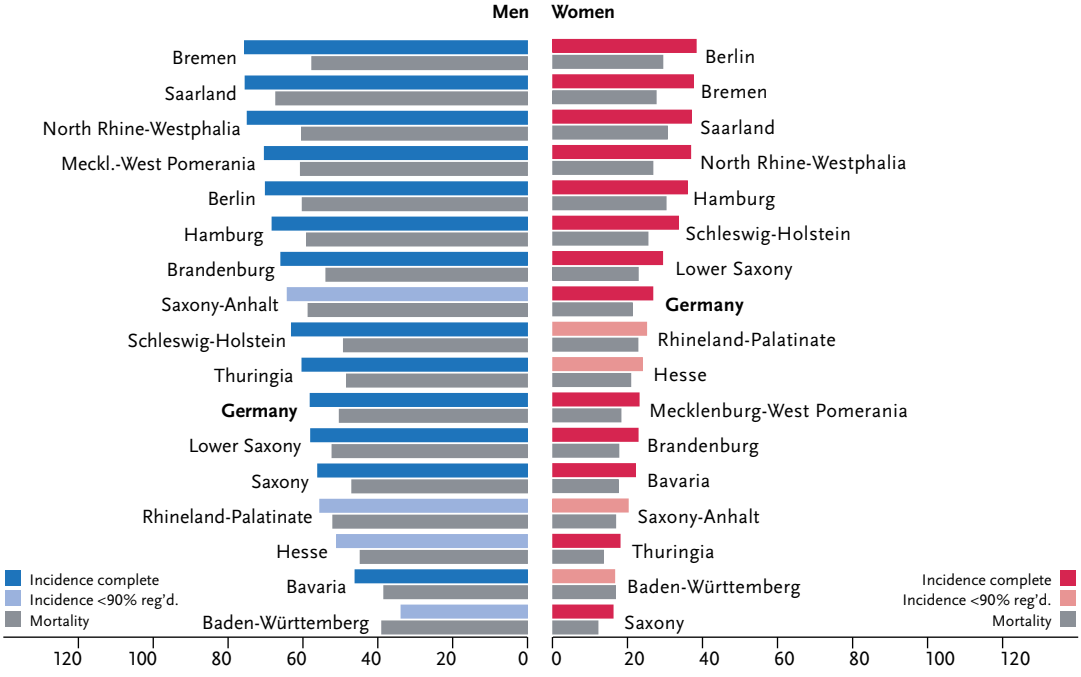
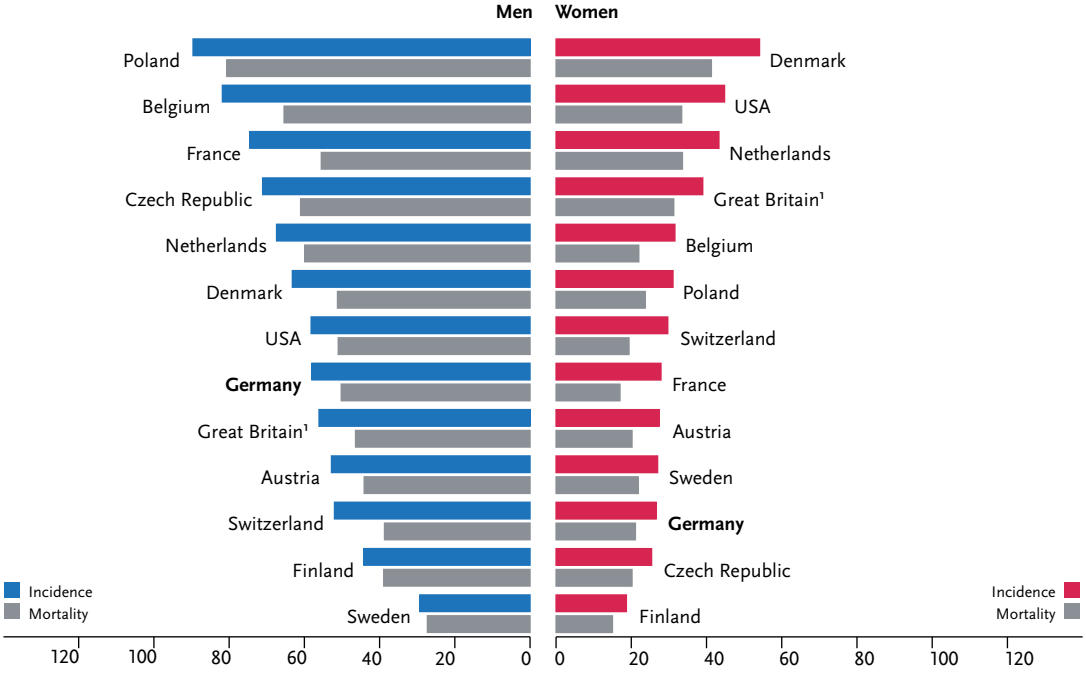


Figure 3.10.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C33–C34, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ Data for incidence for England only

3.11 Malignant melanoma of the skin

Table 3.11.1
Overview of key epidemiological parameters for Germany, ICD-10 C43

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	10,540	10,510	10,400	10,420	12,300	12,200
Crude incidence rate[1]	26.9	25.6	26.5	25.3	30.8	29.4
Standardised incidence rate[1,2]	19.9	19.5	19.2	19.2	21.4	22.2
Median age at diagnosis	66	59	67	59		
Deaths	1,709	1,212	1,627	1,248		
Crude mortality rate[1]	4.4	3.0	4.1	3.0		
Standardised mortality rate[1,2]	3.0	1.7	2.8	1.7		
5-year prevalence	42,800	45,400	45,000	47,100		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	79 (73–84)	86 (79–89)	67 (62–72)	75 (68–79)		
Relative survival rate (2011–2012)[3]	91 (85–96)	94 (86–97)	90 (83–97)	92 (85–96)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In 2012, about 20,800 people were newly diagnosed in Germany with malignant melanoma of the skin, which constitutes a share of 4% of all new cases of cancer.

The median age of women at diagnosis is currently 59 years, which is comparatively low. The median age of men at diagnosis is eight years higher.

Since the 1980s, the age-standardized incidence rates of women and men have more than tripled. The jump since 2008 in both sexes is probably the result of skin cancer screening being introduced in July of that year in Germany. Overall, mortality rates remained largely unchanged over the observed period.

From a histological point of view, it is possible to distinguish between different subtypes of malignant melanoma. The dominant type is the superficial spreading melanoma (SSM), which is associated with a favourable prognosis. Other forms, in particular the nodular and amelanotic melanoma, are to be seen as having considerably less favourable prognoses.

Currently, the relative 5-year survival rate in Germany for women with malignant melanoma of the skin is 94% and for men 91%. The tumour stage at diagnosis also contributes to what have in the meantime become very favourable survival rates. Two-thirds of all melanomas are discovered while still at an early tumour stage (T1).

Risk factors and early detection

The most important endogenous risk factor for the development of a malignant melanoma is the number of pigmented moles a person has. These malignoma occur in people with lighter skin types rather than in those with darker complexions. If family members are already suffering from this type of skin cancer (at least 2 first-degree relatives) it may indicate the presence of gene mutations. Depending on the mutation, the risk of developing a malignant melanoma can be increased to a varying extent. Even if you have ever had a melanoma, there is an increased risk of developing another.

The most important exogenous risk factor is ultraviolet (UV) radiation. This is true for natural sunlight and artificial UV radiation for example from a solarium/sunbed. Exposure to the sun during childhood and adolescence and so-called intermittent sun exposure (as is typical during summer holidays) increase the risk in particular. Being exposed to artificial UV radiation in the workplace, for example during welding work, could possibly also be a risk factor.

In mid-2008, new screening regulations were introduced in Germany for skin cancer within the framework of legislation on the early detection of cancer. Men and women above 35 years of age with statutory health insurance are entitled to a skin examination every two years by a suitably trained doctor (dermatologist, general practitioner, etc.).

Figure 3.11.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C43, Germany 1999–2012
per 100,000 (European standard)

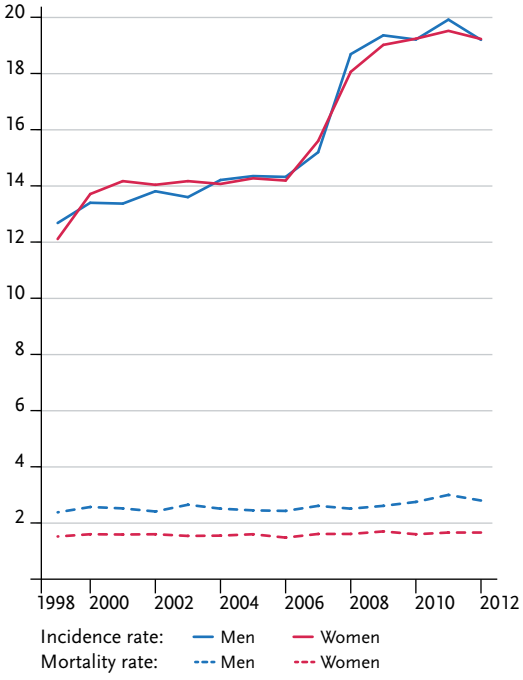


Figure 3.11.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C43, Germany 1999–2012

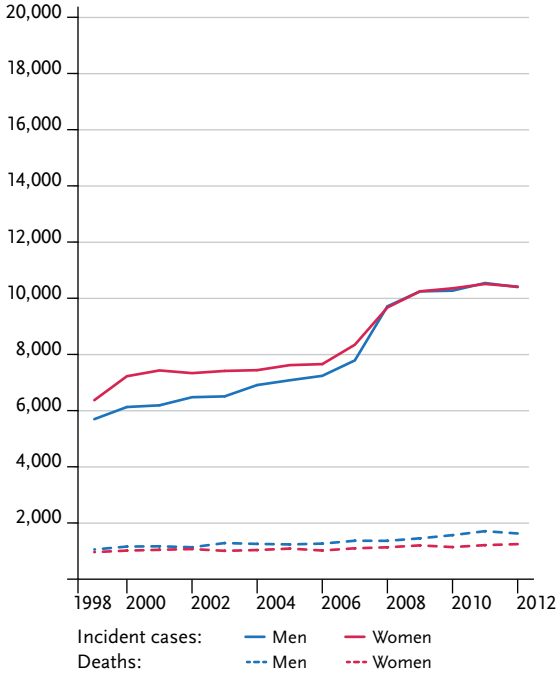


Figure 3.11.2
Age-specific incidence rates by sex, ICD-10 C43, Germany 2011–2012
per 100,000

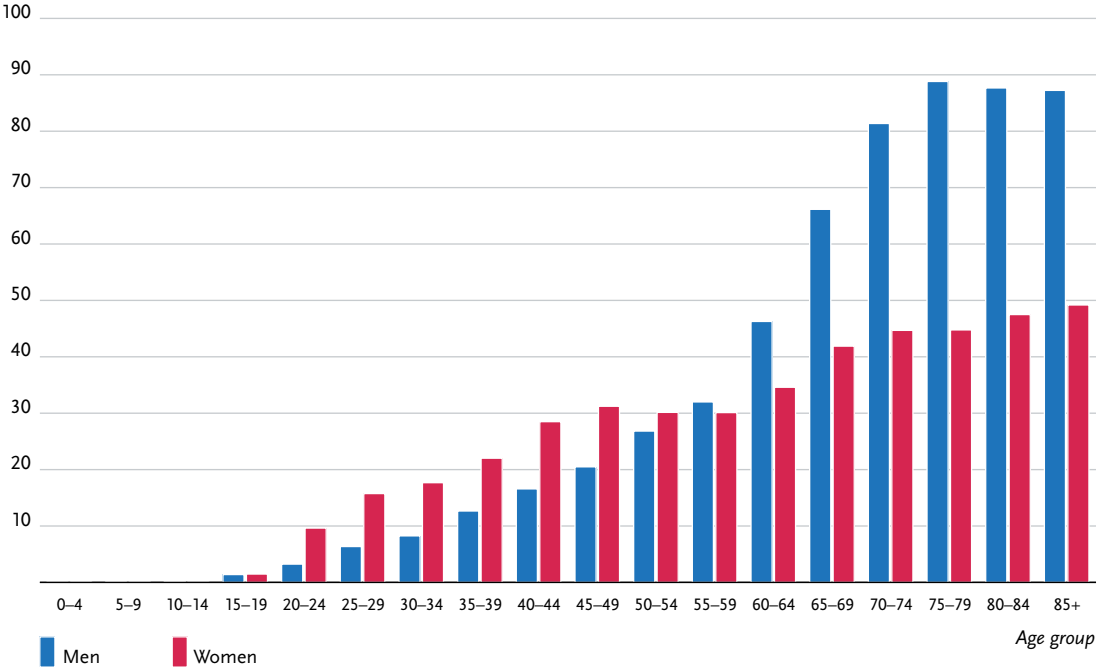


Table 3.11.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C43, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1 %	(1 in 720)	1.9 %	(1 in 52)	<0.1 %	(1 in 9,900)	0.3 %	(1 in 290)
45 years	0.2 %	(1 in 430)	1.8 %	(1 in 55)	<0.1 %	(1 in 4,100)	0.3 %	(1 in 300)
55 years	0.4 %	(1 in 270)	1.7 %	(1 in 60)	0.1 %	(1 in 2,000)	0.3 %	(1 in 310)
65 years	0.7 %	(1 in 150)	1.4 %	(1 in 70)	0.1 %	(1 in 1,000)	0.3 %	(1 in 330)
75 years	0.7 %	(1 in 140)	1.0 %	(1 in 100)	0.2 %	(1 in 650)	0.3 %	(1 in 390)
Lifetime risk			2.0 %	(1 in 50)			0.3 %	(1 in 290)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.2 %	(1 in 410)	1.7 %	(1 in 58)	<0.1 %	(1 in 11,000)	0.2 %	(1 in 410)
45 years	0.3 %	(1 in 330)	1.5 %	(1 in 67)	<0.1 %	(1 in 4,600)	0.2 %	(1 in 420)
55 years	0.3 %	(1 in 310)	1.2 %	(1 in 82)	<0.1 %	(1 in 3,200)	0.2 %	(1 in 450)
65 years	0.4 %	(1 in 240)	0.9 %	(1 in 110)	<0.1 %	(1 in 2,100)	0.2 %	(1 in 500)
75 years	0.4 %	(1 in 260)	0.6 %	(1 in 160)	0.1 %	(1 in 1,100)	0.2 %	(1 in 580)
Lifetime risk			1.9 %	(1 in 52)			0,2 %	(1 in 400)

Figure 3.11.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C43, Germany 2011 – 2012

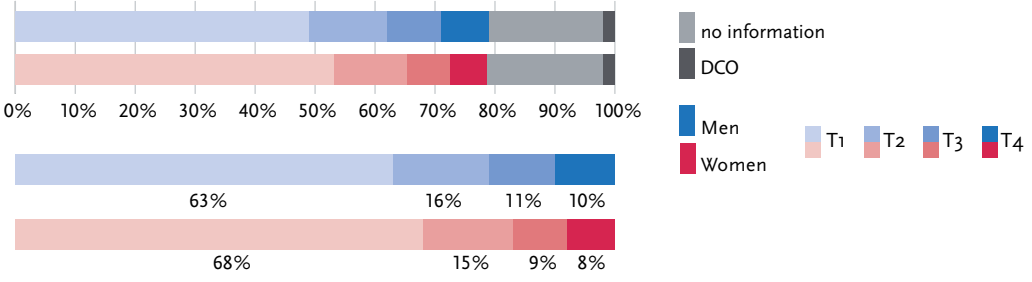


Figure 3.11.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C43, Germany 2011 – 2012

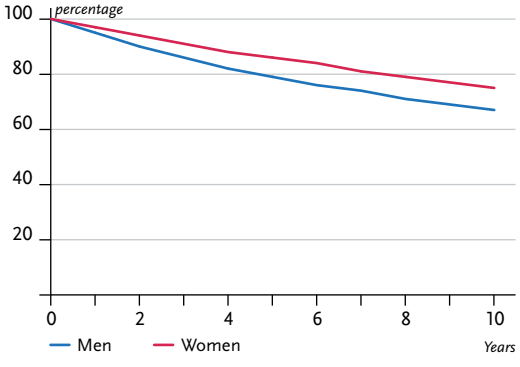


Figure 3.11.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C43, Germany 2011 – 2012

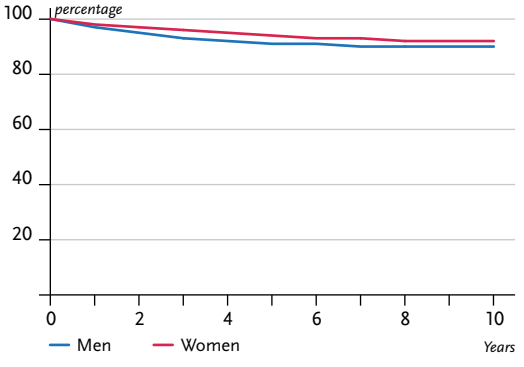


Figure 3.11.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C43, 2011–2012
per 100,000 (European standard)

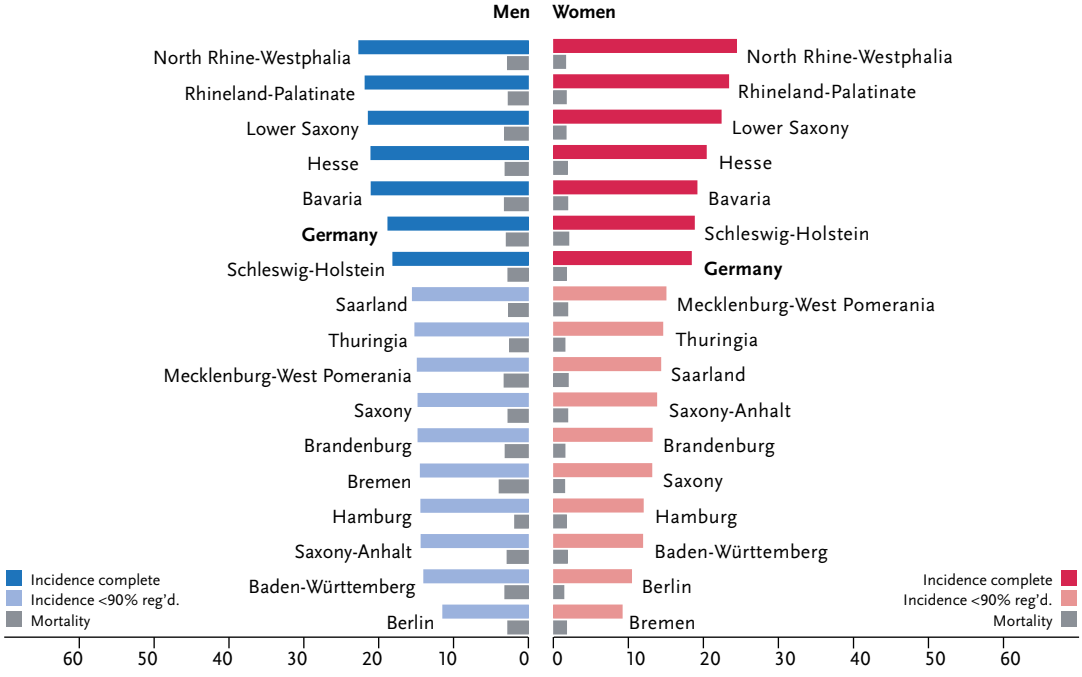
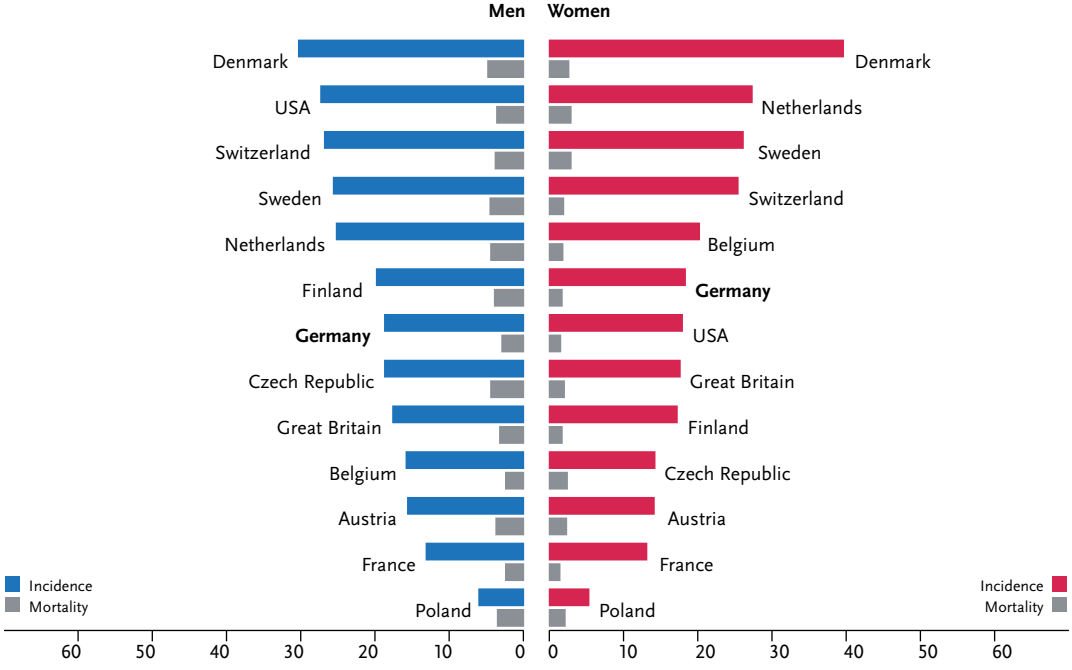


Figure 3.11.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C43, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.12 Mesothelioma

Table 3.12.1
Overview of key epidemiological parameters for Germany, ICD-10 C45

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	1,310	360	1,260	300	1,400	400
Crude incidence rate[1]	3.3	0.9	3.2	0.7	3.4	0.9
Standardised incidence rate[1,2]	2.1	0.5	2.0	0.4	2.0	0.5
Median age at diagnosis	73	74	73	73		
Deaths	1,147	287	1,085	275		
Crude mortality rate[1]	2.9	0.7	2.8	0.7		
Standardised mortality rate[1,2]	1.9	0.4	1.7	0.3		
5-year prevalence	1,800	600	1,700	500		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	7	15	2	9		
Relative survival rate (2011–2012)[3]	9	17	4	12		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Malignant mesothelioma refer to a rare soft tissue tumour (in the cells of the mesothelium), mainly occurring in men of advanced age. The most frequently affected site is the pleura (pleural mesothelioma) – around 90 %.

Because of the long-term latency, no evidence of a reduction in age-standardised incidence and mortality rates is to be noted even 20 years after the ban on asbestos processing (see right). Meanwhile, the incidence and mortality rates in men under the age of 65 years are falling, whereas they are still increasing in men over the age of 75. In Germany, in 2012 approximately 1,260 men and 300 women were diagnosed.

Clear regional differences with high incidence and mortality rates, especially in Hamburg and Bremen can be explained by high exposure to asbestos among former shipyard workers. Comparatively high rates in England and the Netherlands can be interpreted in a similar way.

With relative 5-year survival rates of 9 % in men and 17 % in women, mesothelomia belong to the types of cancer with very unfavourable prognosis, which to date has not been significantly affected by screening (early detection programmes) of occupationally at-risk persons.

Risk factors

Even today, asbestos and above all the inhalation of asbestos fibres are still responsible for the majority of newly diagnosed cases. Admittedly, the processing of asbestos in Germany was restricted in the early 1980s and completely banned since 1993. However, there is a latency period of on average 30 years between exposure beginning and the manifestation of the illness. Approximately 900 newly diagnosed cases per year are being recognised by employers' liability insurance associations. The occupational groups affected include metalworkers, welders, electricians, installers, roofers, bricklayers, construction workers, automotive engineers and tilers. Even if there is no known vocational exposure to asbestos, mesotheliomas are often asbestos-related. In autopsy studies high concentrations of asbestos fibres are often found in the lung tissue even without any corresponding vocational history.

Loosely bound asbestos with high fibre content is particularly dangerous. In contrast, asbestos cement (commonly referred to as ›Eternit‹, after a manufacturer), which is to be found even today both in and on buildings, is deemed to be largely safe, provided it remains intact and does not weather.

Further risk factors only play a minor role. These can be the exposition to other fibres as for example Erionit or a radiation therapy of breast or abdomen.

Figure 3.12.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C45, Germany 1999–2012
per 100,000 (European standard)

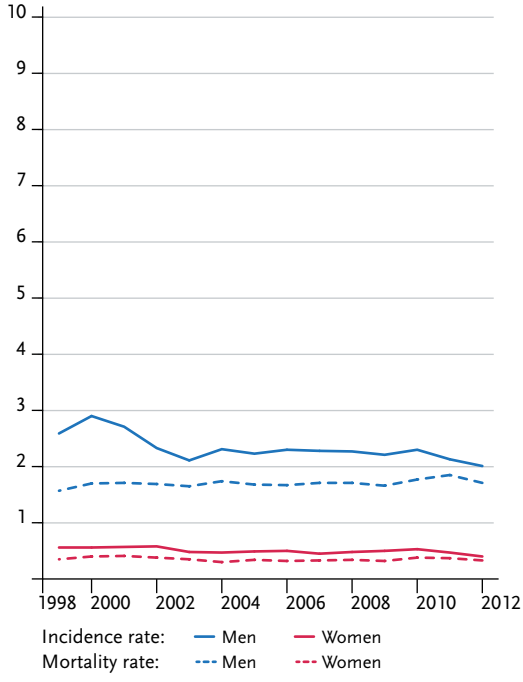


Figure 3.12.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C45, Germany 1999–2012

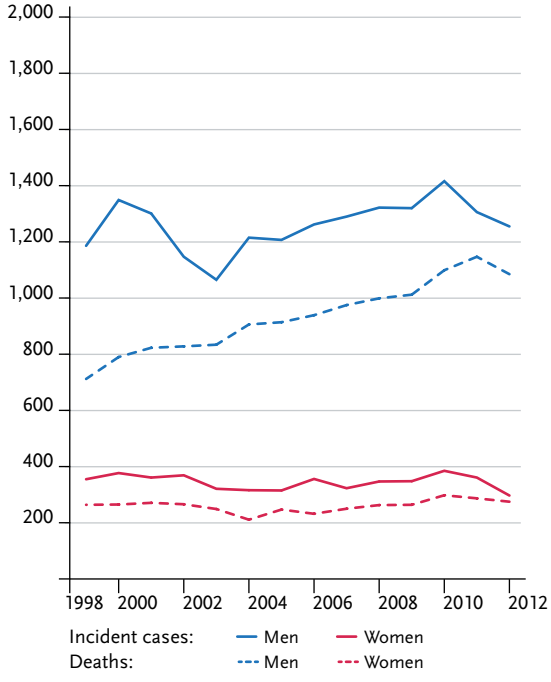


Figure 3.12.2
Age-specific incidence rates by sex, ICD-10 C45, Germany 2011–2012
per 100,000

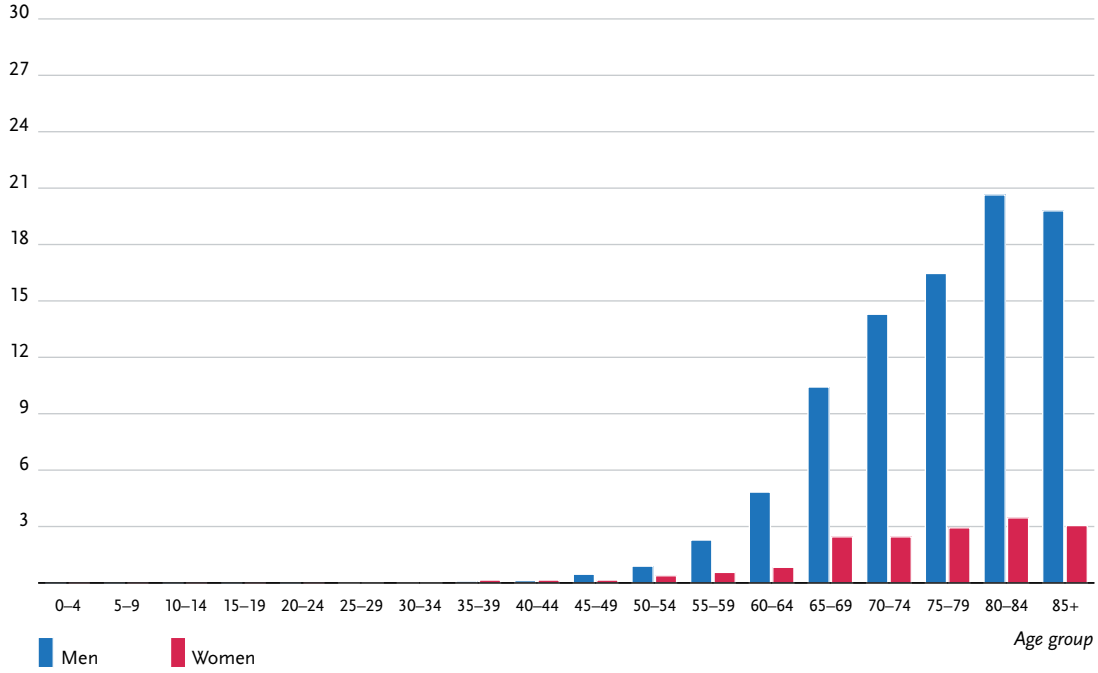


Table 3.12.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C45, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**			**ever**	**in the next ten years**			**ever**
35 years	<0.1 %	(1 in 100,300)	0.3 %	(1 in 380)	<0.1 %	(1 in 78,600)	0.2 %	(1 in 430)
45 years	<0.1 %	(1 in 13,400)	0.3 %	(1 in 380)	<0.1 %	(1 in 17,300)	0,2 %	(1 in 420)
55 years	<0.1 %	(1 in 2,800)	0.3 %	(1 in 380)	<0.1 %	(1 in 3,800)	0,2 %	(1 in 420)
65 years	0.1 %	(1 in 930)	0.3 %	(1 in 390)	0.1 %	(1 in 1,200)	0,2 %	(1 in 420)
75 years	0.1 %	(1 in 740)	0.2 %	(1 in 540)	0.1 %	(1 in 750)	0,2 %	(1 in 520)
Lifetime risk			0.3 %	(1 in 390)			0,2 %	(1 in 430)
Women aged	**in the next ten years**			**ever**	**in the next ten years**			**ever**
35 years	<0.1 %	(1 in 72,600)	0.1 %	(1 in 1,700)	<0.1 %	(1 in 358,200)	0,1 %	(1 in 1,800)
45 years	<0.1 %	(1 in 35,500)	0.1 %	(1 in 1,700)	<0.1 %	(1 in 45,400)	0,1 %	(1 in 1,800)
55 years	<0.1 %	(1 in 13,000)	0.1 %	(1 in 1,800)	<0.1 %	(1 in 18,000)	0,1 %	(1 in 1,900)
65 years	<0.1 %	(1 in 5,000)	0.1 %	(1 in 2,000)	<0.1 %	(1 in 6,100)	0,1 %	(1 in 2,000)
75 years	<0.1 %	(1 in 4,400)	<0.1 %	(1 in 2,900)	<0.1 %	(1 in 3,700)	<0,1 %	(1 in 2,600)
Lifetime risk			0.1 %	(1 in 1,700)			0,1 %	(1 in 1,800)

Figure 3.12.3
Distribution of T-stages at first diagnosis by sex
Not presented due to the large proportion of missing data.

Figure 3.12.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C45, Germany 2011 – 2012

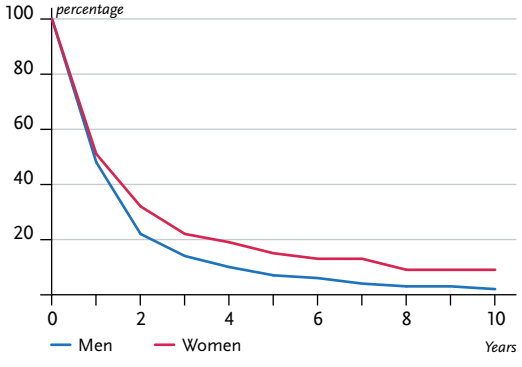


Figure 3.12.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C45, Germany 2011 – 2012

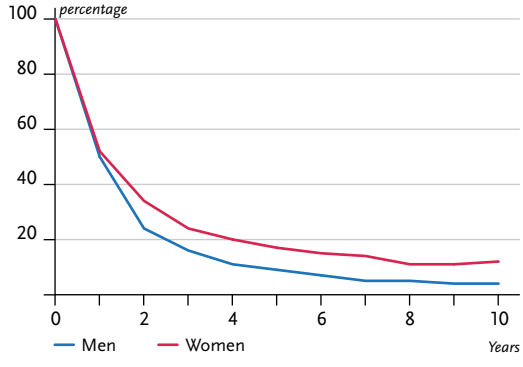


Figure 3.12.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C45, 2011–2012
per 100,000 (European standard)

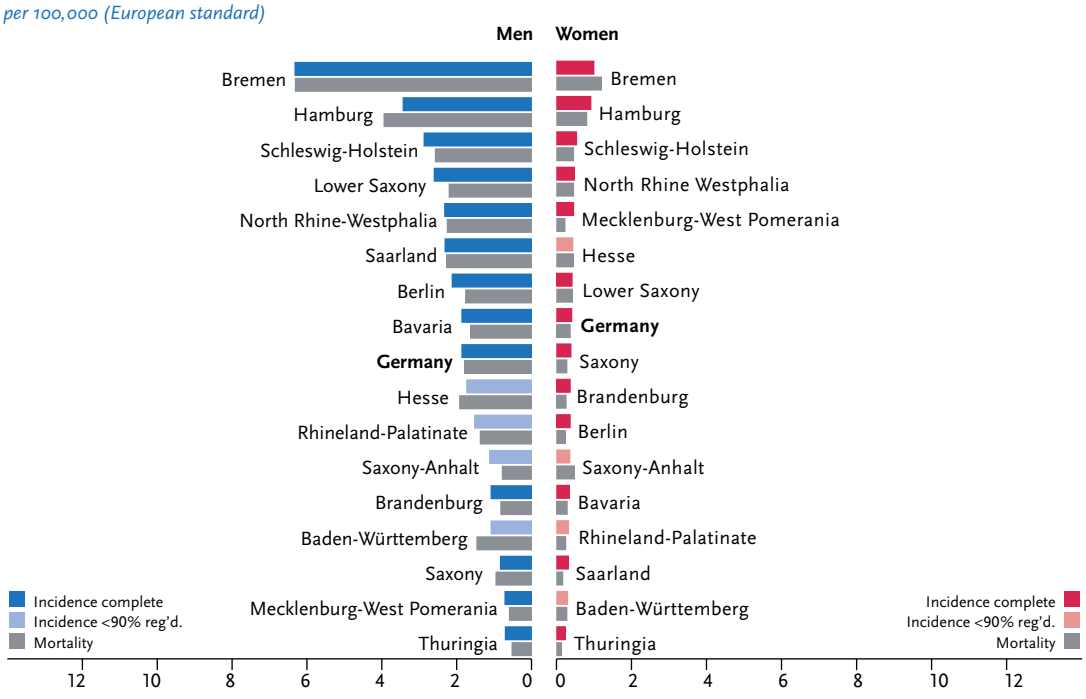
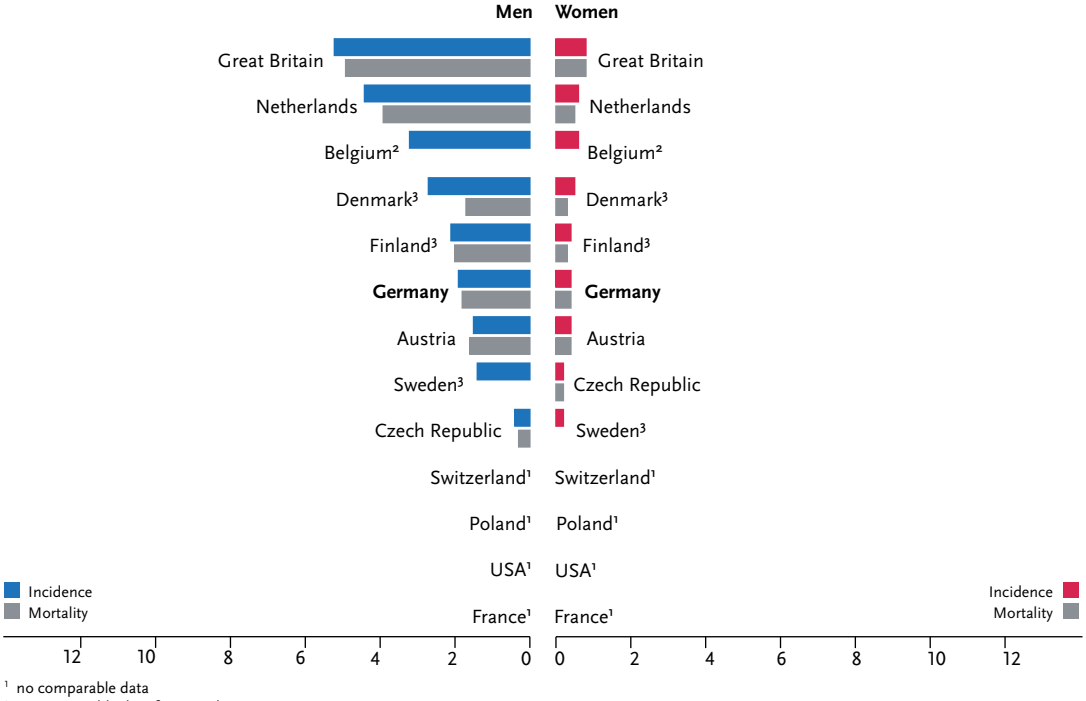


Figure 3.12.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C45, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] no comparable data
[2] no comparable data for mortality
[3] data incl. C38.4 (Malignant neoplasm of Pleura)

3.13 Soft tissue without mesothelioma

Table 3.13.1
Overview of key epidemiologic parameters for Germany, ICD-10 C46–C49

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	1,900	1,860	1,800	1,710	2,100	1,900
Crude incidence rate[1]	4.9	4.5	4.6	4.2	5.0	4.5
Standardised incidence rate[1,2]	3.8	3.1	3.5	2.9	3.8	3.1
Median age at diagnosis	66	68	65	69		
Deaths	750	871	747	794		
Crude mortality rate[1]	1.9	2.1	1.9	1.9		
Standardised mortality rate[1,2]	1.4	1.3	1.3	1.1		
5-year prevalence	6,300	5,700	6,300	5,600		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	54	46	40	35		
Relative survival rate (2011–2012)[3]	62	52	55	46		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

This disease group includes the rare Kaposi sarcoma, occurring mainly on the skin and malignant tumours of the peripheral nerves, connective and other soft tissue such as the peritoneum and retroperitoneal soft tissue behind it. In almost 90% of cases these are sarcomas, which in contrast to carcinomas do not develop from epithelial or glandular tissue, but from connective tissue structures, which also include fatty tissue and muscles. Conversely, around 45% of all sarcomas are, according to ICD-10, assigned to other organs, this relates, for example, to sarcomas of the gastro-intestinal tract, the female genitalia and the breast. About 800 of the approximate total of 3,500 new cases of malignant soft tissue tumours are accounted for in lower extremities. The two most prevalent forms of soft tissue sarcoma in adulthood are the leiomyosarcoma originating in smooth muscle and liposarcoma (fatty tissue tumour). The embryonic rhabdomyosarcoma (RMS) and Ewing's sarcomas occur almost exclusively in children and adolescents.

Age-standardised incidence and mortality rates for malignant soft tissue tumours have been almost constant since 1999 in Germany. The conspicuously high mortality in Berlin and Brandenburg is probably attributable to coding differences, since it only refers to tumours of the peritoneum or retro-peritoneum (C48).

Risk factors

In most cases, no cause can be found for the emergence of a soft tissue sarcoma. Exposure to radiation can increase the risk of soft tissue sarcomas. This is evident, for example, in atom bomb survivors in Japan. Even after previous radiation therapy, a sarcoma in the irradiated body region can be observed in rare cases. Furthermore, sarcomas can occur in cases of rare congenital genetic mutations. An example is neurofibromatosis, where malignant peripheral nerve sheath tumours are observed more frequently.

The human herpes virus type 8 (HHV8) is regarded as the clear cause of the Kaposi sarcoma. In patients with severe immune deficiency, the Epstein-Barr virus (EBV) is possibly also involved in the development of soft tissue sarcomas. Beyond the above, there is no clear evidence to date that viruses play a significant role in the development of soft tissue sarcomas.

Environmental toxins and chemicals may contribute to the development of sarcomas. Being discussed here, among other things are phenoxyacetic acid herbicides, chlorinated phenolics and dioxins. Vinyl chloride increases the risk of angiosarcoma.

In addition, it is presumed that chronic inflammation may promote the emergence of soft tissue sarcomas. After a mastectomy (breast removal), chronic lymphedema may result, in rare cases, in the emergence of an angiosarcoma (Stewart Treves Syndrome).

Figure 3.13.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C46–C49, Germany 1999–2012
per 100,000 (European standard)

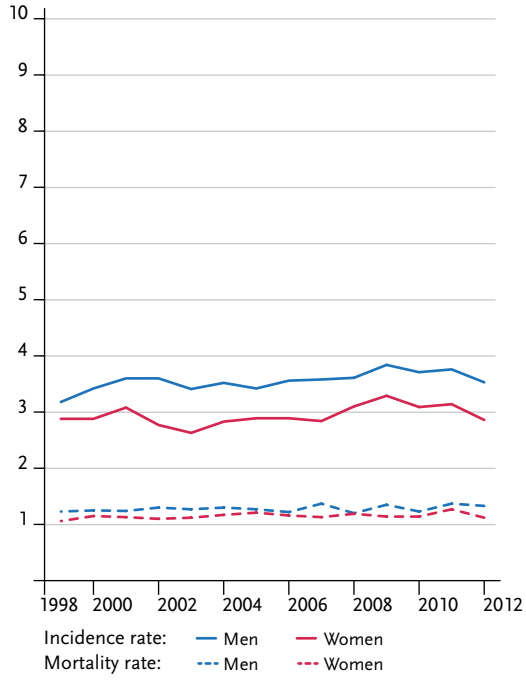


Figure 3.13.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C46–C49, Germany 1999–2012

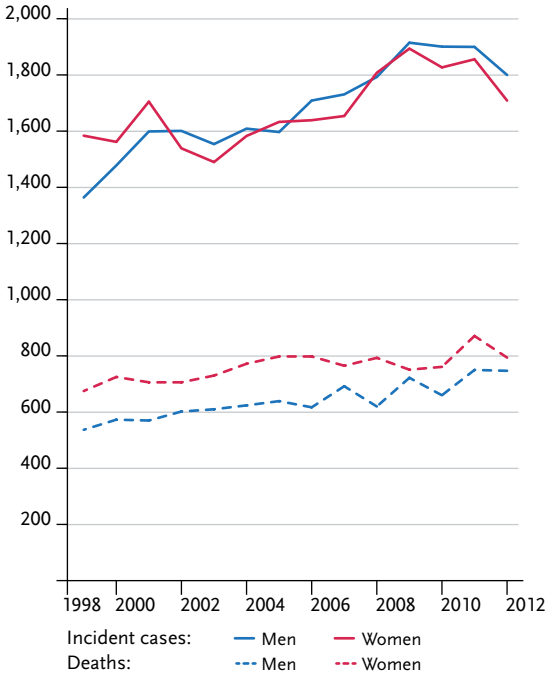


Figure 3.13.2
Age-specific incidence rates by sex, ICD-10 C46–C49, Germany 2011–2012
per 100,000

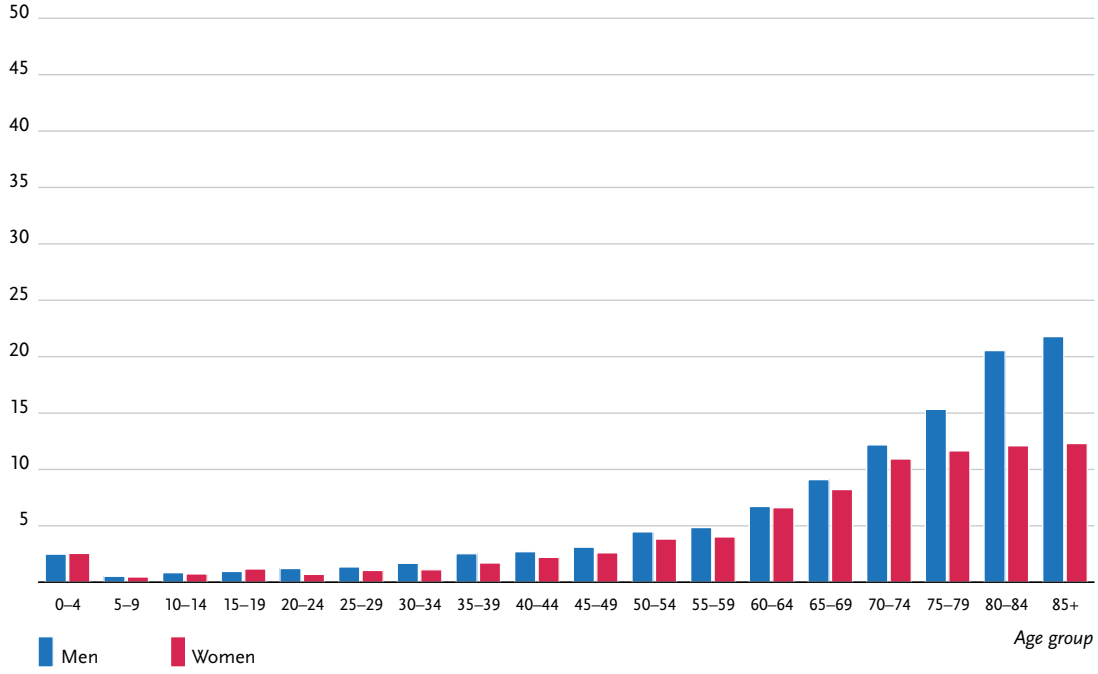


Table 3.13.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C46–C49, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**			**ever**	**in the next ten years**			**ever**
35 years	<0.1 %	(1 in 4,700)	0.3 %	(1 in 310)	<0.1 %	(1 in 12,600)	0.2 %	(1 in 650)
45 years	<0.1 %	(1 in 2,700)	0.3 %	(1 in 330)	<0.1 %	(1 in 8,700)	0.1 %	(1 in 680)
55 years	0.1 %	(1 in 1,800)	0.3 %	(1 in 360)	<0.1 %	(1 in 4,600)	0.1 %	(1 in 710)
65 years	0.1 %	(1 in 880)	0.2 %	(1 in 400)	<0.1 %	(1 in 2,500)	0.1 %	(1 in 756)
75 years	0.1 %	(1 in 760)	0.2 %	(1 in 510)	0.1 %	(1 in 1,300)	0.1 %	(1 in 860)
Lifetime risk			0.4 %	(1 in 280)			0.2 %	(1 in 630)
Women aged	**in the next ten years**			**ever**	**in the next ten years**			**ever**
35 years	<0.1 %	(1 in 5,800)	0.3 %	(1 in 340)	<0.1 %	(1 in 16,400)	0.2 %	(1 in 660)
45 years	<0.1 %	(1 in 3,300)	0.3 %	(1 in 350)	<0.1 %	(1 in 8,900)	0.1 %	(1 in 680)
55 years	0.1 %	(1 in 1,900)	0.3 %	(1 in 390)	<0.1 %	(1 in 5,100)	0.1 %	(1 in 720)
65 years	0.1 %	(1 in 1,200)	0.2 %	(1 in 460)	<0.1 %	(1 in 2,600)	0.1 %	(1 in 800)
75 years	0.1 %	(1 in 1,000)	0.2 %	(1 in 660)	0.1 %	(1 in 1,700)	0.1 %	(1 in 1,000)
Lifetime risk			0.3 %	(1 in 300)			0.2 %	(1 in 640)

Figure 3.13.3
Distribution of T-stages at first diagnosis by sex
Not presented due to the large proportion of missing data.

Figure 3.13.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C46–C49, Germany 2011–2012

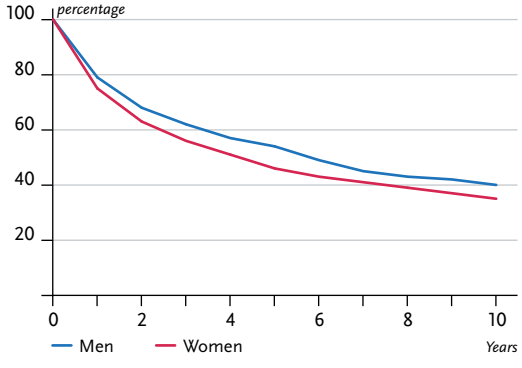


Figure 3.13.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C46–C49, Germany 2011–2012

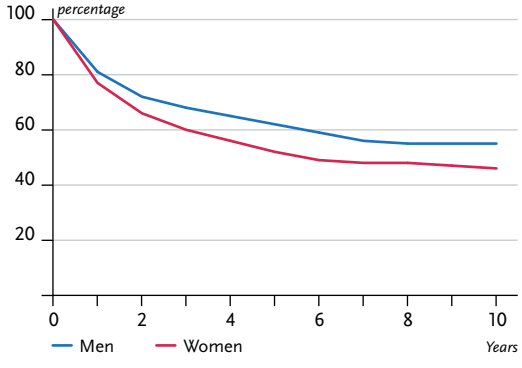


Figure 3.13.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C46–C49, 2011–2012
per 100,000 (European standard)

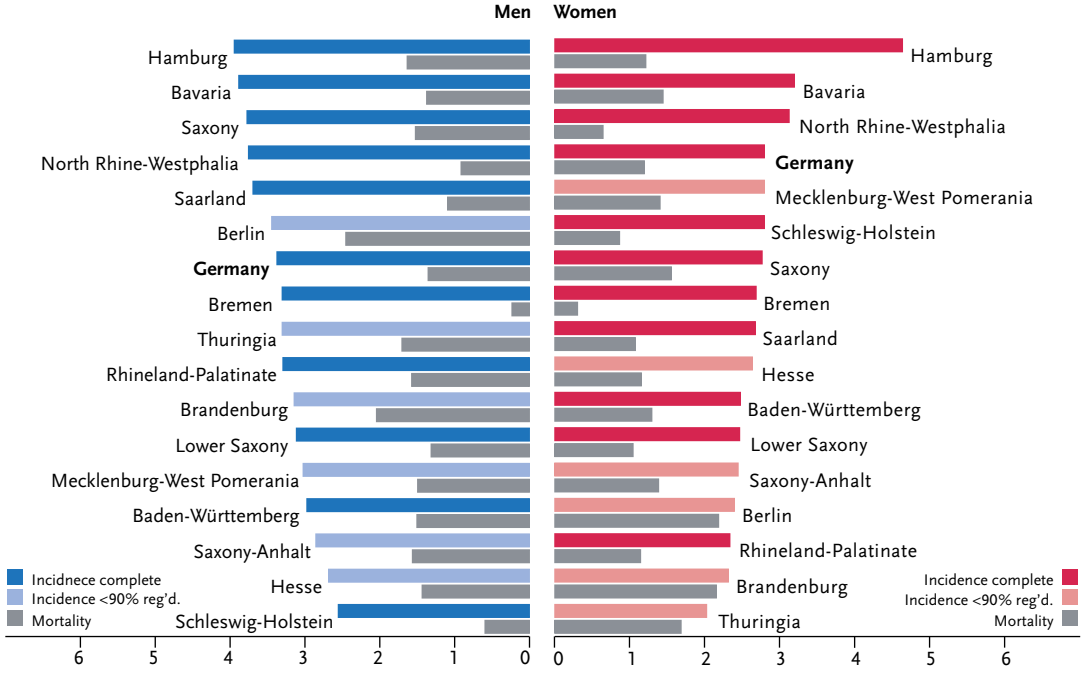
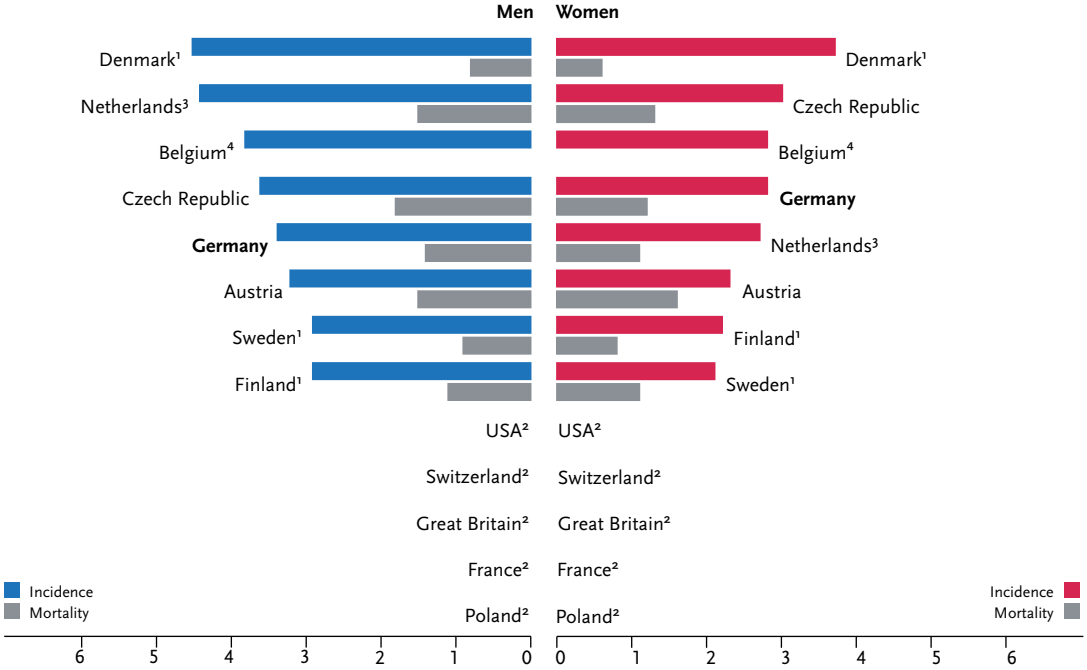


Figure 3.13.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C46–C49, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] data for C46.1 and C49 only
[2] no comparable data
[3] data incl. C38 (malignant neoplasm of heart, mediastinum and pleura)
[4] no comparable data for mortality

3.14 Breast

Table 3.14.1
Overview of key epidemiological parameters for Germany, ICD-10 C50

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	600	70,190	620	69,550	700	65,500
Crude incidence rate[1]	1.5	170.8	1.6	169.1	1.7	158.1
Standardised incidence rate[1,2]	1.0	119.0	1.1	117.4	1.1	106.6
Median age at diagnosis	71	64	71	64		
Deaths	159	17,815	150	17,748		
Crude mortality rate[1]	0.4	43.4	0.4	43.2		
Standardised mortality rate[1,2]	0.3	24.6	0.3	23.9		
5-year prevalence	2,200	316,800	2,300	317,200		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	64	80 (76–81)	43	66 (62–68)		
Relative survival rate (2011–2012)[3]	78	88 (83–89)	65	82 (79–83)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

With some 70,000 new cases currently being diagnosed annually, breast cancer is by far the most common form of cancer among women. There are also an additional 5,500 in situ tumours annually. According to current incidence figures, about one woman in eight will develop breast cancer in the course of her life. Almost three in every ten women are younger than 55 years at diagnosis.

The incidence and mortality rates in eastern Germany are still significantly lower than in the western part. Only the rates for women under 55 years have become more or less similar. Following the introduction of mammography screening in 2005, the incidence rates in Germany initially spiked, although since 2009 they have started to fall again slightly. It is very likely that through the screening some tumours that have been diagnosed would otherwise have gone unrecognised for the entire life of the patient (overdiagnosis). Despite the increased incidence, fewer women die of breast cancer now than ten years ago. The prospects of survival have improved considerably due to advances in therapy. It will be some years until it is possible to tell if screening leads to a further reduction in breast cancer mortality. So far, it seems that incidence rates of advanced tumours have declined slightly in the screening age groups, indicating that a reduction in mortality might follow.

Risk factors and early detection

Early first menses and late last menses, childless-ness, and having a first child late are all associated with an increased risk of breast cancer. Conversely, numerous or early births and longer periods of breast-feeding reduce the risk of breast cancer. Hormone replacement therapy during and after menopause increases the risk of breast cancer, especially if it involves a combination of oestrogen and progestogen. Ovulation inhibitors containing hormones (»the pill«), on the other hand, have only a minor influence on the incidence rate. Studies have shown an increased risk associated with being overweight and with lack of exercise after menopause, and alcohol is also a proven risk factor. There are indications that active and passive smoking increase the risk slightly before menopause.

In addition, women with very dense breast tissue or with certain benign breast neoplasms (lobular neoplasias and atypical ductal hyperplasias) have an increased risk. Having family clusters of breast or ovarian cancer is also a risk factor. In approximately half of these cases (5–10 % of all cases of breast cancer) the high family incidence results from a mutation in the »classic« breast cancer genes BRCA1 and BRCA2.

The statutory early detection programme offers women above 30 years of age an annual palpation examination by a physician. Between 2005 and 2009 the quality assured Mammography Screening Programme was introduced in Germany, and women between 50 and 69 years of age are invited to an X-ray examination of the breasts every two years.

Figure 3.14.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C50, Germany 1999–2012
per 100,000 (European standard)

Figure 3.14.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C50, Germany 1999–2012

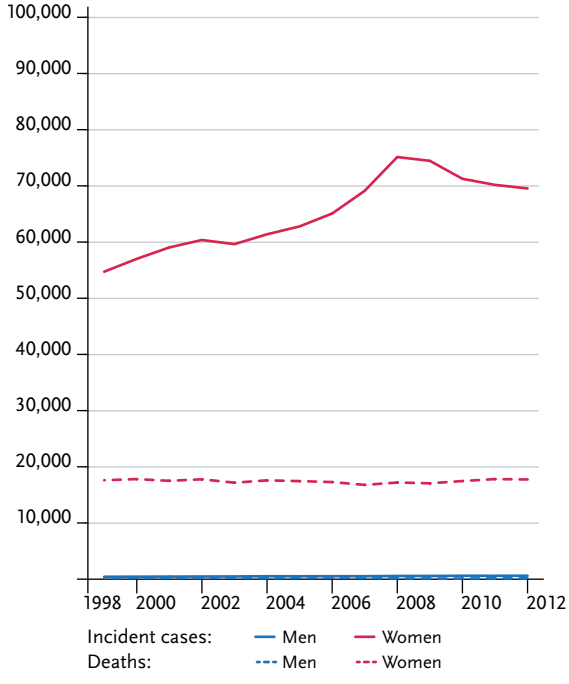


Figure 3.14.2
Age-specific incidence rates by sex, ICD-10 C50, Germany 2011–2012
per 100,000

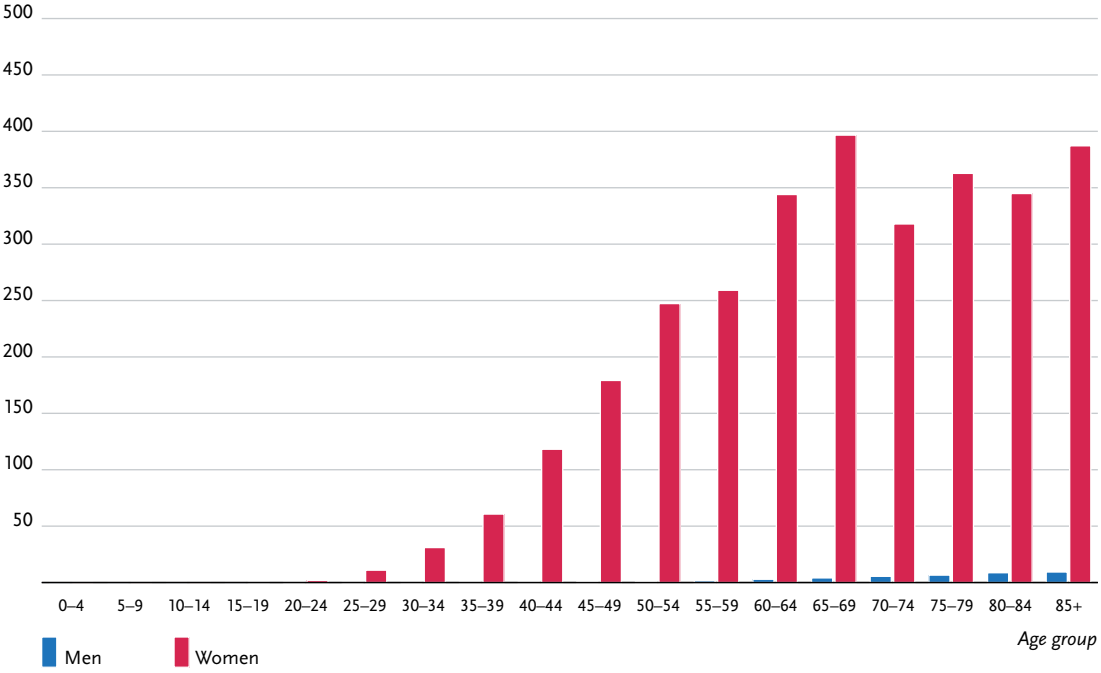


Table 3.14.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C50, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 28,800)	0.1%	(1 in 790)	<0.1%	(1 in 92,800)	<0.1%	(1 in 3,100)
45 years	<0.1%	(1 in 11,600)	0.1%	(1 in 800)	<0.1%	(1 in 68,100)	<0.1%	(1 in 3,200)
55 years	<0.1%	(1 in 4,400)	0.1%	(1 in 820)	<0.1%	(1 in 21,700)	<0.1%	(1 in 3,200)
65 years	<0.1%	(1 in 2,400)	0.1%	(1 in 920)	<0.1%	(1 in 10,500)	<0.1%	(1 in 3,400)
75 years	0.1%	(1 in 1,900)	0.1%	(1 in 1,200)	<0.1%	(1 in 5,900)	<0.1%	(1 in 3,900)
Lifetime risk			0.1%	(1 in 790)			<0.1%	(1 in 3,100)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.9%	(1 in 110)	12.7%	(1 in 8)	0.1%	(1 in 990)	3.5%	(1 in 28)
45 years	2.1%	(1 in 48)	12.0%	(1 in 8)	0.3%	(1 in 380)	3.4%	(1 in 29)
55 years	3.0%	(1 in 33)	10.3%	(1 in 10)	0.5%	(1 in 190)	3.2%	(1 in 31)
65 years	3.5%	(1 in 28)	7.9%	(1 in 13)	0.9%	(1 in 120)	2.9%	(1 in 35)
75 years	3.3%	(1 in 31)	5.1%	(1 in 20)	1.2%	(1 in 81)	2.3%	(1 in 44)
Lifetime risk			12.8%	(1 in 8)			3.5%	(1 in 29)

Figure 3.14.3
Distribution of T-stages at first diagnosis for all women and women between 50 and 69 years (top: all cases; bottom: only valid reports) ICD-10 C50, Germany 2011–2012

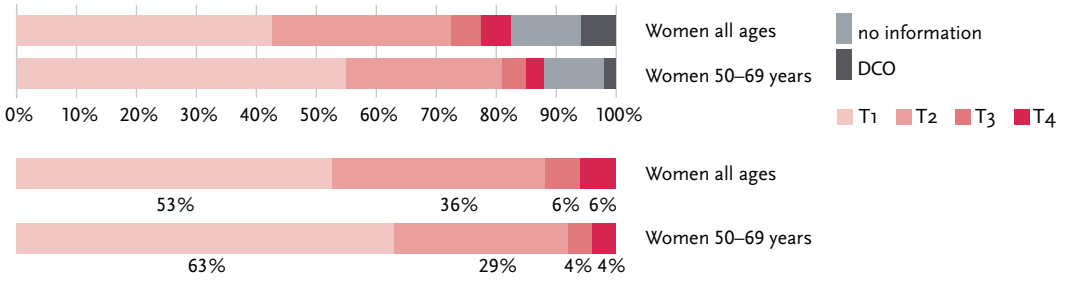


Figure 3.14.4a
Absolute survival rates up to 10 years after first diagnosis, women, ICD-10 C50, Germany 2011–2012

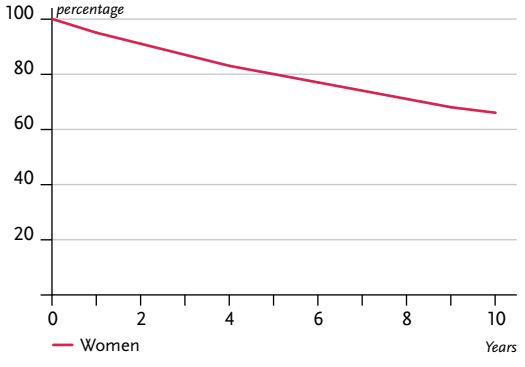


Figure 3.14.4b
Relative survival rates up to 10 years after first diagnosis, women, ICD-10 C50, Germany 2011–2012

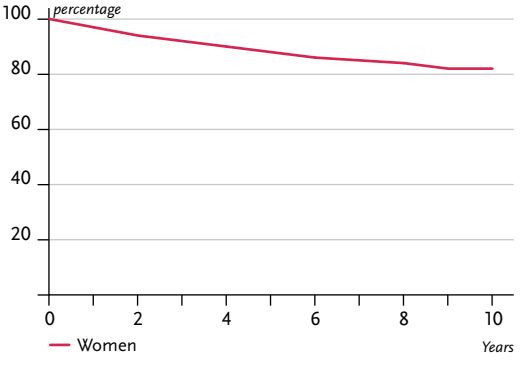


Figure 3.14.5
Registered age-standardised incidence and mortality rates in German federal states, women, ICD-10 C50, 2011–2012
per 100,000 (European standard)

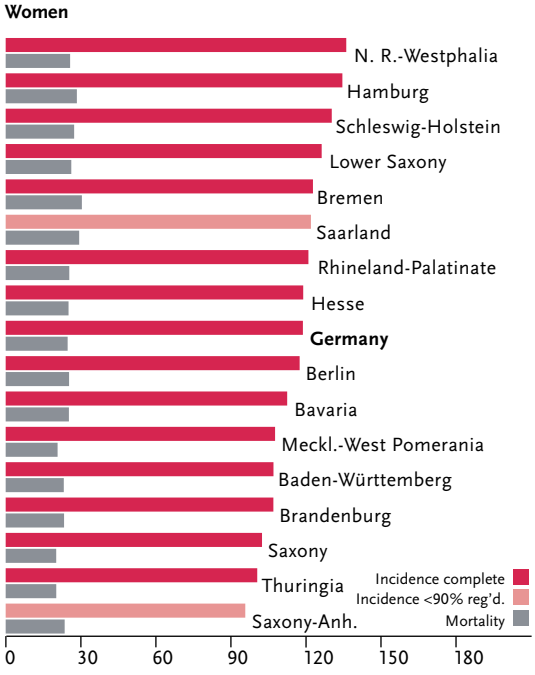
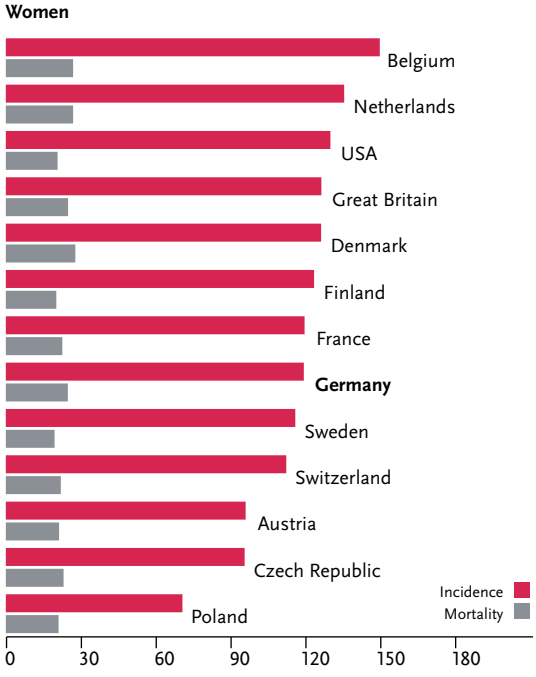


Figure 3.14.6
International comparison of age-standardised incidence and mortality rates, women, ICD-10 C50, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.15 Vulva

Table 3.15.1
Overview of key epidemiological parameters for Germany, ICD-10 C51

	2011	2012	Prediction for 2016
	Women	Women	Women
Incident cases	3,160	3,190	4,400
Crude incidence rate[1]	7.7	7.7	10.6
Standardised incidence rate[1,2]	4.6	4.5	6.1
Median age at diagnosis	72	72	
Deaths	860	827	
Crude mortality rate[1]	2.1	2.0	
Standardised mortality rate[1,2]	1.0	0.9	
5-year prevalence	10,900	11,200	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	59 (47–70)	44 (32–53)	
Relative survival rate (2011–2012)[3]	70 (58–81)	64 (50–89)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

A significant increase in the number of vulvar carcinomas has been observed in Germany in recent years. In 2012 some 3,200 women were diagnosed with this carcinoma. Just ten years ago there were fewer than half as many cases. The mortality rate has not decreased in recent years, in contrast to the mortality rates for most other gynaecological tumours. Latest data shows that about 830 women die of this disease every year.

The increase in the incidence rate is observed in young women in particular, although the majority of the burden of disease is still accounted for by women over 70 years of age. Median age at diagnosis is 72 years. The relative 5-year survival rate after diagnosis of a malignant vulvar tumour is 70 %. The vast majority of invasive carcinomas are diagnosed at an early tumour stage (T1), although lymph nodes are already affected in one of every five of these cases. There are significant regional differences in both the incidence and the mortality rates. The Saarland has by far the highest incidence and mortality rates among Germany's federal states. Germany has a broadly comparable mortality rate at a higher incidence rate than its neighbours, although data was not available for comparison in all neighbouring countries.

Risk factors and prevention

The majority of vulvar carcinomas are squamous-cell carcinomas (90 %). A distinction is made between two types of these carcinomas: non-keratinising and keratinising squamous-cell carcinomas. The former involve chronic infection with the human papillomavirus (HPV), while the keratinising carcinomas develop independent of HPV.

HPV-dependent vulvar carcinomas and their pre-cancerous conditions (usual-type vulvar intraepithelial neoplasia, uVIN) occur predominantly in younger women. In contrast, HPV-independent carcinomas usually occur in older women, and these are the commonest type of vulvar carcinoma (65 % to 80 % of cases). Significant risk factors for this type of carcinoma and its precancerous conditions (differentiated VIN, dVIN) are in particular degenerative and chronic inflammatory skin diseases such as Lichen sclerosus.

Further risk factors are smoking and alcohol abuse. Long-standing immunosuppression, e. g. following organ transplants or in case of HIV infection, can facilitate infection with HPV and thus increase the risk. The presence of other cancers or their precursors in the genital area, for example cervical cancer, also constitutes a risk factor for vulvar carcinoma. The incidence in particular of HPV-related precursors to vulvar carcinoma has increased in recent years. One possible means of preventing these precancerous conditions and carcinomas is HPV vaccination.

Figure 3.15.1a
Age-standardised incidence and mortality rates, ICD-10 C51, Germany 1999–2012
per 100,000 (European standard)

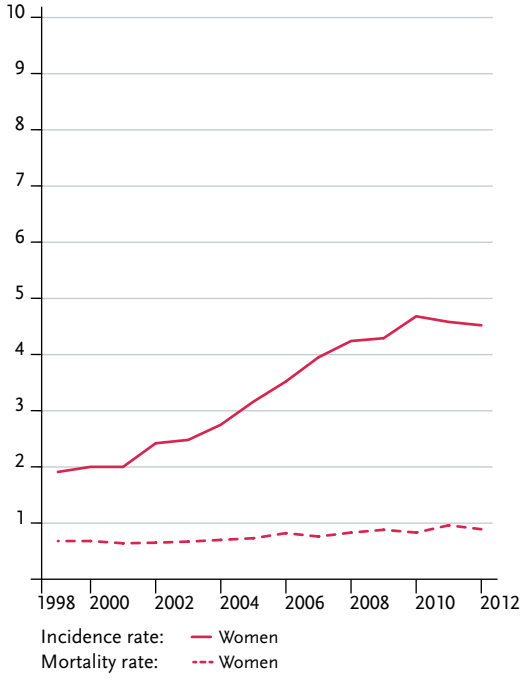


Figure 3.15.1b
Absolute numbers of incident cases and deaths, ICD-10 C51, Germany 1999–2012

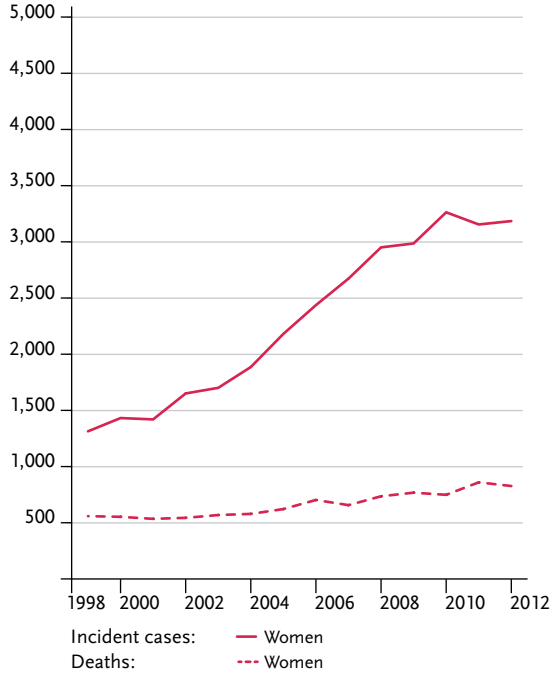


Figure 3.15.2
Age-specific incidence rates, ICD-10 C51, Germany 2011–2012
per 100,000

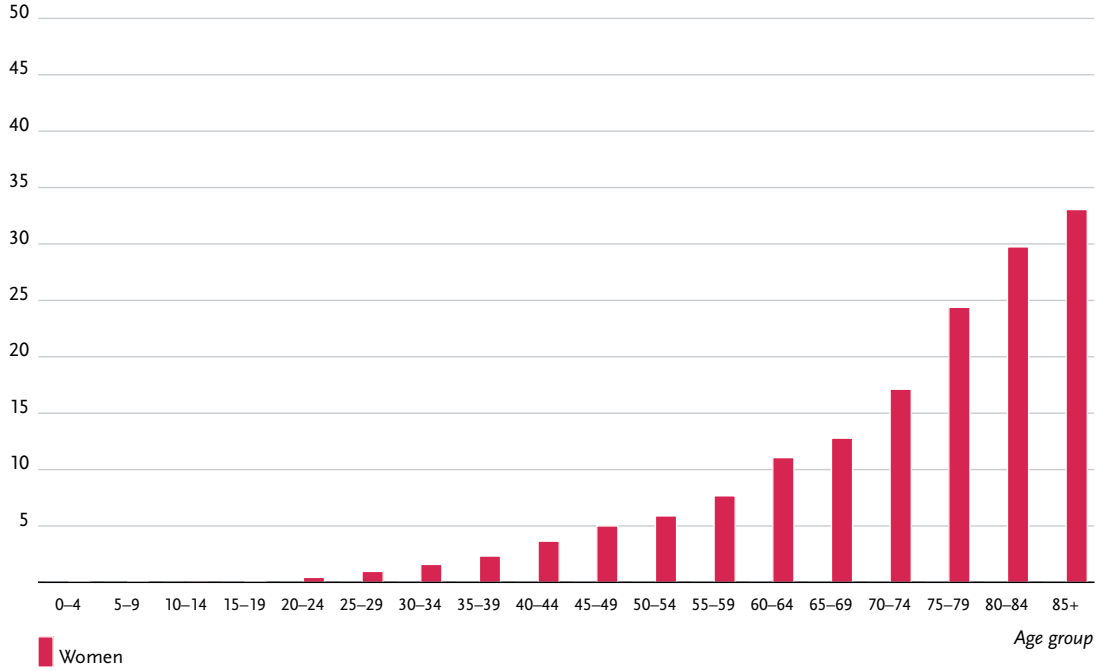


Table 3.15.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C51, database 2012

	Risk of developing cancer				Mortality risk			
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 3,300)	0.6%	(1 in 160)	<0.1%	(1 in 47,300)	0.2%	(1 in 570)
45 years	0.1%	(1 in 1,900)	0.6%	(1 in 170)	<0.1%	(1 in 15,700)	0.2%	(1 in 580)
55 years	0.1%	(1 in 1,100)	0.5%	(1 in 180)	<0.1%	(1 in 8,900)	0.2%	(1 in 590)
65 years	0.1%	(1 in 690)	0.5%	(1 in 210)	<0.1%	(1 in 3,200)	0.2%	(1 in 600)
75 years	0.2%	(1 in 440)	0.4%	(1 in 270)	0.1%	(1 in 1,300)	0.2%	(1 in 650)
Lifetime risk			0.6%	(1 in 160)			0.2%	(1 in 580)

Figure 3.15.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C51, Germany 2011–2012

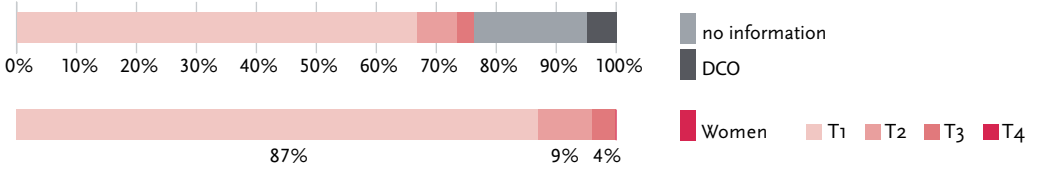


Figure 3.15.4a
Absolute survival rates up to 10 years after first diagnosis,
ICD-10 C51, Germany 2011–2012

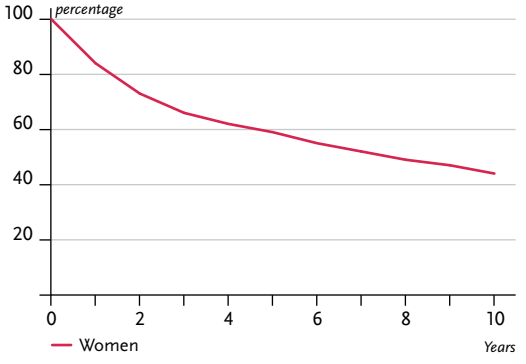


Figure 3.15.4b
Relative survival rates up to 10 years after first diagnosis,
ICD-10 C51, Germany 2011–2012

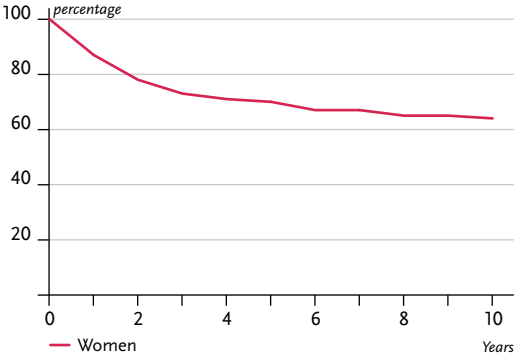


Figure 3.15.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C51, 2011–2012
per 100,000 (European standard)

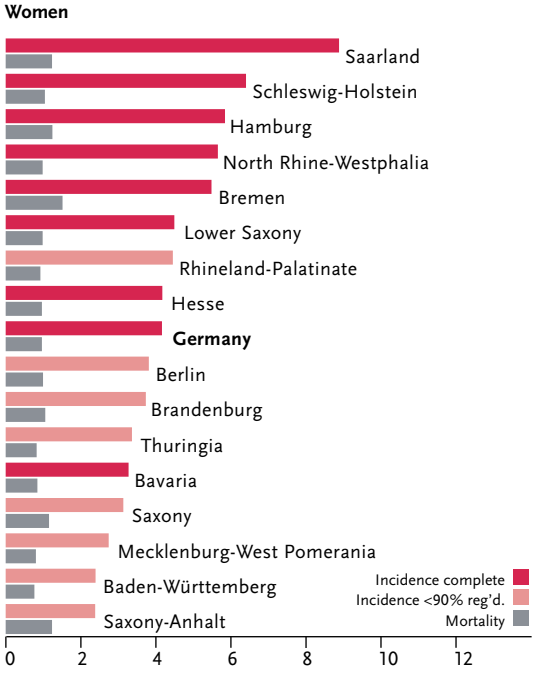
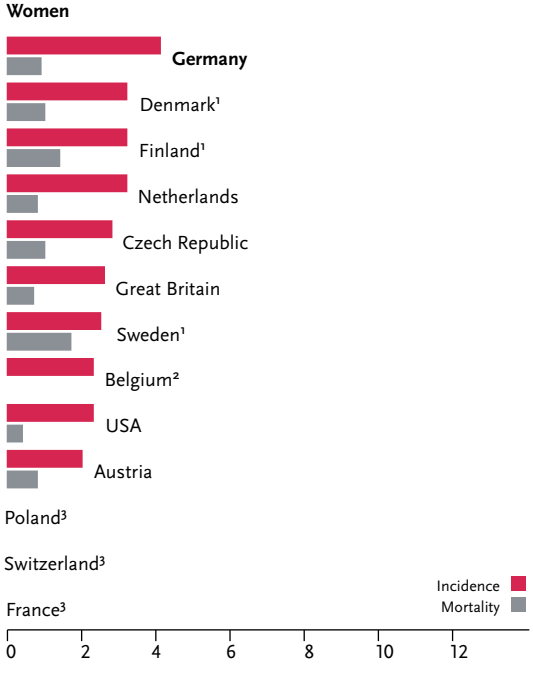


Figure 3.15.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C51, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] incl. C52, C57.7, C57.8 and C57.9
[2] no comparable data for mortality
[3] no comparable data

3.16 Cervix

Table 3.16.1
Overview of key epidemiological parameters for Germany, ICD-10 C53

	2011	2012	Prediction for 2016
	Women	Women	Women
Incident cases	4,720	4,640	4,300
Crude incidence rate[1]	11.5	11.3	10.4
Standardised incidence rate[1,2]	9.4	9.3	8.5
Median age at diagnosis	54	53	
Deaths	1,626	1,617	
Crude mortality rate[1]	4.0	3.9	
Standardised mortality rate[1,2]	2.6	2.6	
5-year prevalence	18,200	17,900	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	65 (60–71)	58 (55–65)	
Relative survival rate (2011–2012)[3]	68 (62–74)	65 (60–71)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In 2012 about 4,600 women were diagnosed with cervical carcinoma in Germany. About three quarters of cervical carcinomas are of squamous-cell origin. Adenocarcinomas (approx. 20%) have a more proximate origin at the transition from uterus to cervix.

The incidence rates for invasive cervical carcinomas have remained largely stable since the late 1990s at a markedly lower level than in the 1980s. The highest incidence rates are currently found among women between 40 and 59 years of age. The median age at diagnosis for invasive cancer is 53 years. The median age at diagnosis for in situ carcinomas is just 34 years. These are diagnosed considerably more often than invasive carcinomas, a result of the cervical cancer early detection examinations, aimed at identifying and treating cancer precursors.

Currently, about 1,600 women in Germany die of cervical cancer every year. The relative 5-year survival rate after diagnosis of an invasive cervical tumour is 68%.

Incidence rates significantly differ between federals states within Germany as well as between countries. The federal state of Saarland has one of the highest cervical cancer incidence rates in Germany, comparable to incidence rates in Denmark. Denmark is one of the neighboring countries with the highest incidence rates at moderate mortality rates, whereas Switzerland and Finland have some of the lowest incidence rates and low mortality rates.

Risk factors and early detection

The main cause of cervical cancer is infection with the human papillomavirus (HPV). The majority of women are infected with HPV at some point in their life. Usually the infection is transient and disappears without further effect, but in some cases it persists and a cervical carcinoma can develop, especially with virus subtypes from the high risk group (e. g. HPV 16 or 18). Further risk factors are smoking, infections in the genital area with other sexually transmitted pathogens such as herpes simplex or chlamydia, becoming sexually active at a young age, numerous births, and a severely impaired immune system. Taking oral contraceptives (»the pill«) over a long period of time is also associated with a slightly higher risk of developing cervical cancer. However, the risk falls again when oral contraceptives are discontinued, and after approximately ten years these women seem no more at-risk than women who never took oral contraceptives.

Women in Germany aged 20 years and above are entitled to an annual cervical smear test (PAP smear). In March 2007, the German Standing Committee on Vaccination Recommendations (STIKO) proposed vaccinating girls between 9 and 14 years of age against HPV 16 and 18, which are responsible for about 70% of all cervical carcinomas. It has been proved that the vaccination can prevent the development of preliminary stages of cervical cancer. However, the vaccination does not supersede the PAP smear, as it only protects against two of the most common high-risk papilloma viruses.

Figure 3.16.1a
Age-standardised incidence and mortality rates, ICD-10 C53, Germany 1999–2012
per 100,000 (European standard)

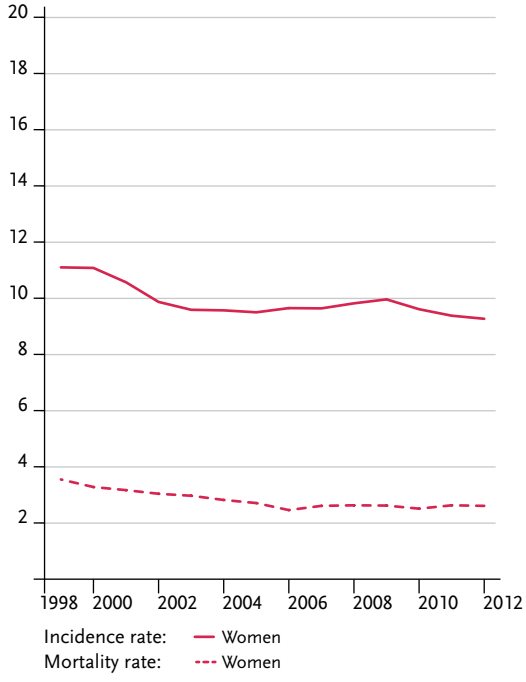


Figure 3.16.1b
Absolute numbers of incident cases and deaths, ICD-10 C53, Germany 1999–2012

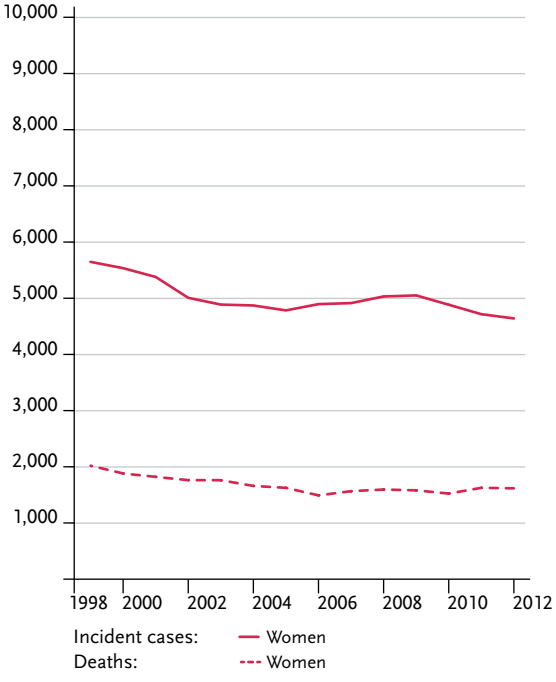


Figure 3.16.2
Age-specific incidence rates, ICD-10 C53, Germany 2011–2012
per 100,000

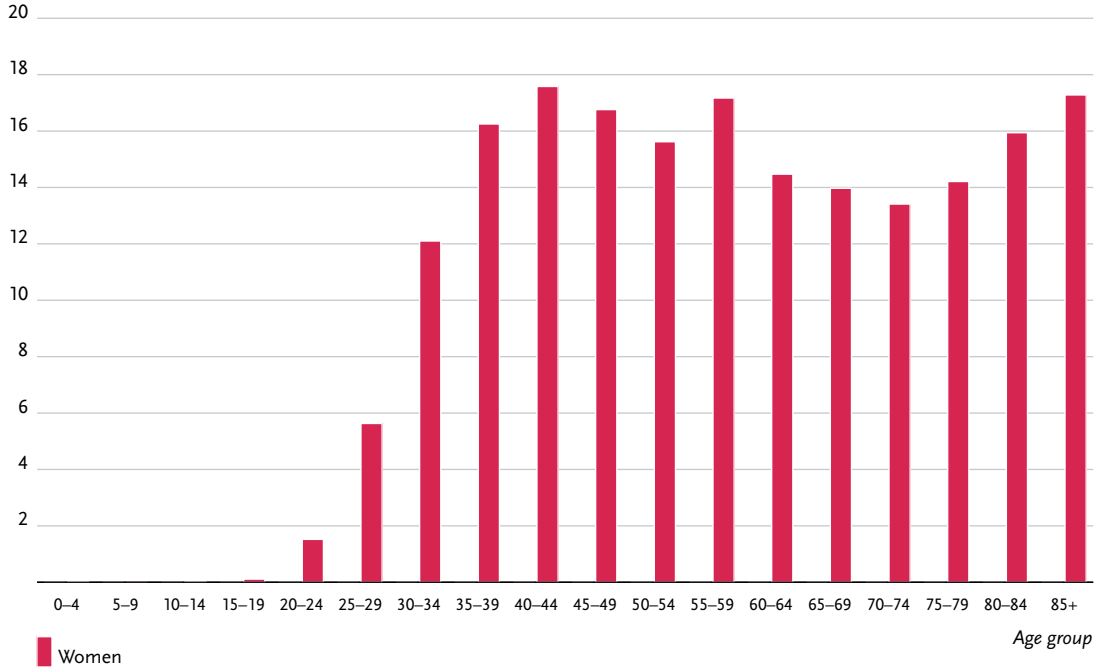


Table 3.16.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C53, database 2012

	Risk of developing cancer				Mortality risk			
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
15 years	<0.1 %	(1 in 9,100)	0.8 %	(1 in 120)	<0.1 %	(1 in 353,400)	0.3 %	(1 in 330)
25 years	0.1 %	(1 in 1,100)	0.8 %	(1 in 120)	<0.1 %	(1 in 12,700)	0.3 %	(1 in 330)
35 years	0.2 %	(1 in 620)	0.8 %	(1 in 130)	<0.1 %	(1 in 4,800)	0.3 %	(1 in 340)
45 years	0.2 %	(1 in 620)	0.6 %	(1 in 170)	<0.1 %	(1 in 2,200)	0.3 %	(1 in 360)
55 years	0.2 %	(1 in 650)	0.4 %	(1 in 230)	0.1 %	(1 in 1,600)	0.2 %	(1 in 420)
65 years	0.1 %	(1 in 750)	0.3 %	(1 in 330)	0.1 %	(1 in 1,600)	0.2 %	(1 in 530)
75 years	0.1 %	(1 in 820)	0.2 %	(1 in 520)	0.1 %	(1 in 1,300)	0.1 %	(1 in 710)
Lifetime risk			0.8 %	(1 in 120)			0.3 %	(1 in 330)

Figure 3.16.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C53, Germany 2011 – 2012

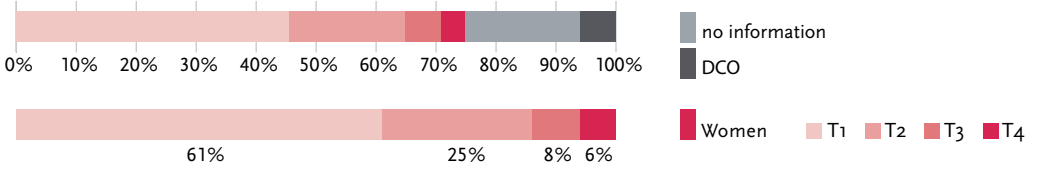


Figure 3.16.4a
Absolute survival rates up to 10 years after first diagnosis, ICD-10 C53, Germany 2011 – 2012

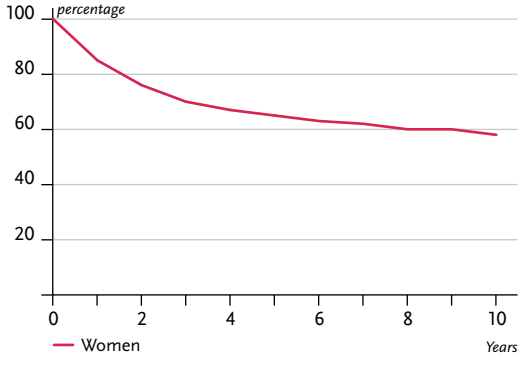


Figure 3.16.4b
Relative survival rates up to 10 years after first diagnosis, ICD-10 C53, Germany 2011 – 2012

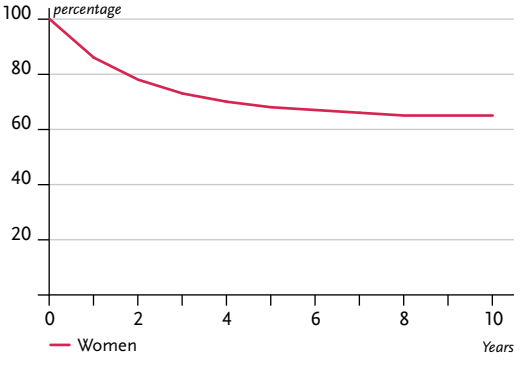


Figure 3.16.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C53, 2011–2012
per 100,000 (European standard)

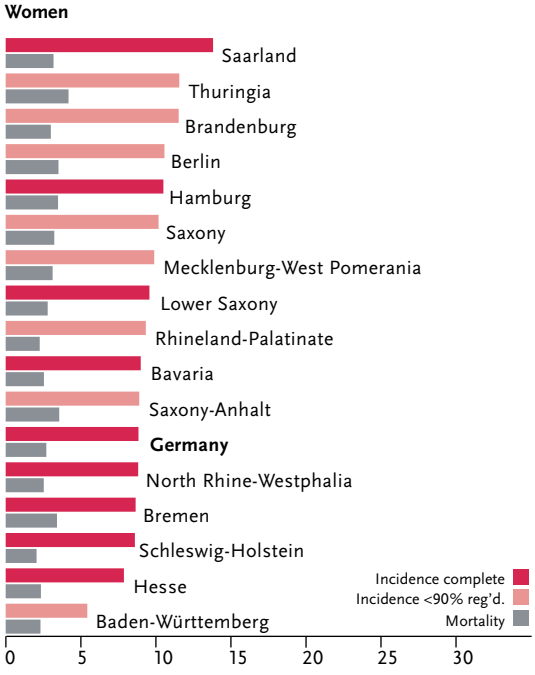


Figure 3.16.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C53, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)

3.17 Uterus

Table 3.17.1
Overview of key epidemiological parameters for Germany, ICD-10 C54–C55

	2011	2012	Prediction for 2016
	Women	Women	Women
Incident cases	11,140	10,930	10,800
Crude incidence rate[1]	27.1	26.6	26.2
Standardised incidence rate[1,2]	16.9	16.6	15.8
Median age at diagnosis	69	69	
Deaths	2,442	2,515	
Crude mortality rate[1]	5.9	6.1	
Standardised mortality rate[1,2]	3.0	3.0	
5-year prevalence	45,900	45,600	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	71 (66–73)	58 (55–61)	
Relative survival rate (2011–2012)[3]	80 (75–82)	76 (73–78)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

With approximately 10,930 newly diagnosed cases every year, accounting for 4.8 % of all malignant neoplasms, uterine cancer is the fourth most common form of cancer among women and the most common cancer of the female genital organs. Due to the good prognosis, the proportion of all deaths the cancer accounts for is markedly lower, at just 2.5 %.

One in 49 women develops cancer of the uterus in the course of her life, and one in 200 dies of it. The incidence rate for cancer of the uterus has fallen slightly, while the age-standardised mortality rate has recently remained almost constant. The median age at diagnosis is 69 years. Histologically, cancers of the uterus are mostly endometrial (i. e. originating from the lining of the uterus) adenocarcinomas. Approximately 80 % of the carcinomas are diagnosed at an early stage (T1).

Uterine carcinomas are one of the types of cancer with a favourable prognosis. The relative 5-year survival rate in Germany is approximately 80 %.

Regional differences within Germany are relatively small. Internationally, higher incidence rates have been observed in Eastern Europe, Scandinavia and also in the US.

Risk factors

About 80 % of endometrial carcinomas are hormone-dependent, and the long-term influence of oestrogen is a risk factor. Thus early first menses (menarche), late onset of menopause (climacterium), childlessness, and diseases of the ovaries, such as polycystic ovary syndrome (PCOS), all have the effect of increasing the risk. Oestrogen as monotherapy during menopause also increases the risk, although when combined with progesterone it does not. Oral contraceptives (»the pill«), in particular oestrogen-progesterone combinations, reduce the risk. For hormone-dependent tumours, lifestyle risk factors also play a role, particularly overweight and lack of exercise. Women with type 2 diabetes mellitus are more frequently affected. Women with breast cancer who have been treated with tamoxifen often develop endometrial hyperplasia and thus have a higher risk of developing a uterine carcinoma.

Gene mutations that can lead to hereditary non-polyposis colorectal carcinoma (HNPPC) also contribute to an increased risk of uterine cancer.

For the rarer oestrogen-independent types of this tumour (15 % of endometrial carcinoma), advanced age is a risk-factor. Exposure of the uterus to radiation can also increase the risk. Study results do not permit conclusive interpretation of the roles played by lifestyle and genetic factors in oestrogen-independent tumours.

Figure 3.17.1a
Age-standardised incidence and mortality rates, ICD-10 C54–C55, Germany 1999–2012
per 100,000 (European standard)

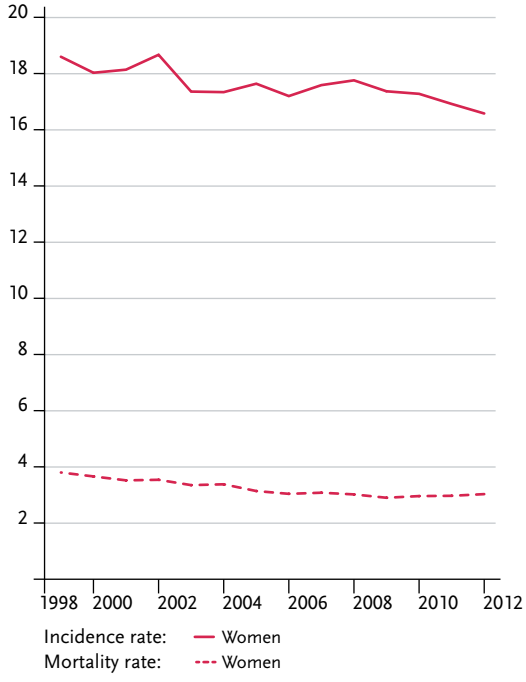


Figure 3.17.1b
Absolute numbers of incident cases and deaths, ICD-10 C54–C55, Germany 1999–2012

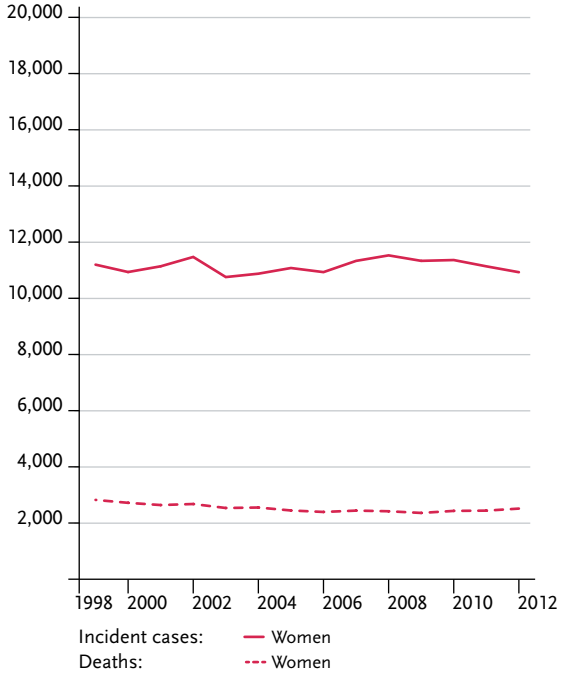


Figure 3.17.2
Age-specific incidence rates, ICD-10 C54–C55, Germany 2011–2012
per 100,000

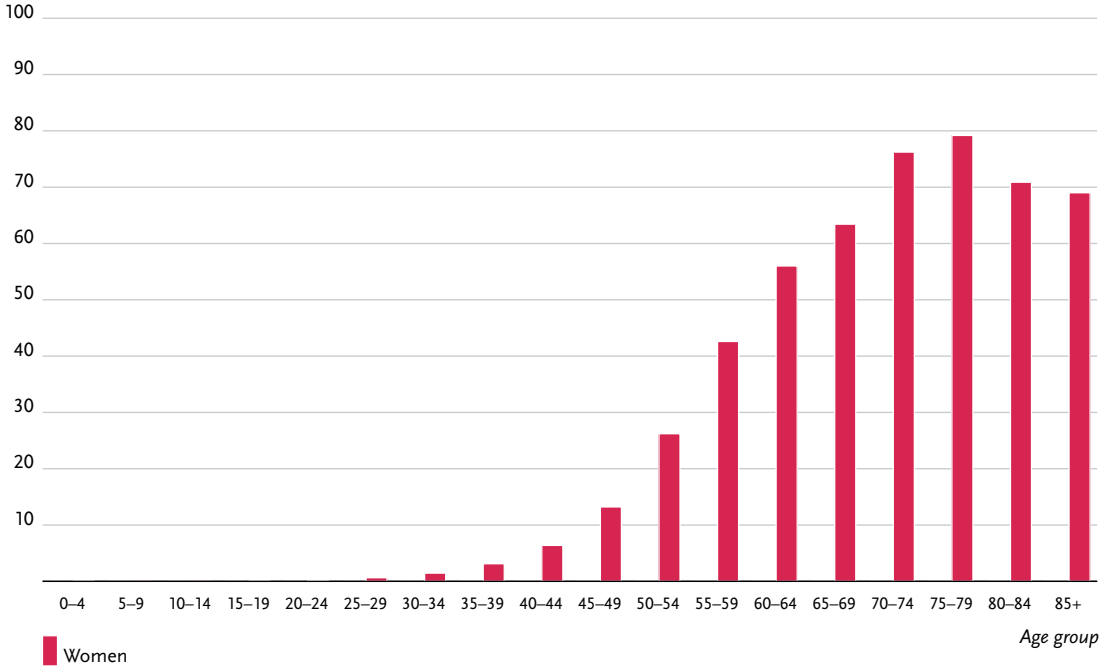


Table 3.17.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C54–C55, database 2012

	Risk of developing cancer				Mortality risk			
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 2,100)	2.1%	(1 in 49)	<0.1%	(1 in 22,900)	0.5%	(1 in 200)
45 years	0.2%	(1 in 500)	2.0%	(1 in 49)	<0.1%	(1 in 5,400)	0.5%	(1 in 200)
55 years	0.5%	(1 in 210)	1.9%	(1 in 53)	0.1%	(1 in 1,700)	0.5%	(1 in 200)
65 years	0.6%	(1 in 150)	1.5%	(1 in 68)	0.1%	(1 in 730)	0.5%	(1 in 220)
75 years	0.6%	(1 in 160)	0.9%	(1 in 110)	0.2%	(1 in 490)	0.4%	(1 in 270)
Lifetime risk			2.1%	(1 in 49)			0.5%	(1 in 200)

Figure 3.17.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C54–C55, Germany 2011–2012

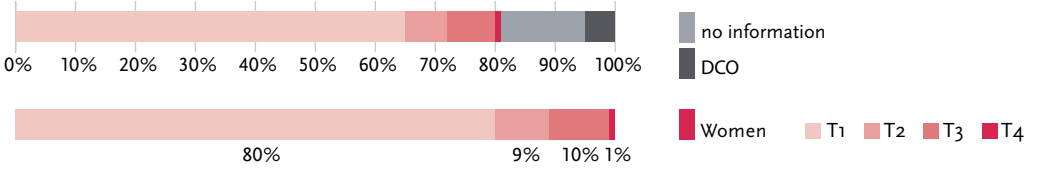


Figure 3.17.4a
Absolute survival rates up to 10 years after first diagnosis,
ICD-10 C54–C55, Germany 2011–2012

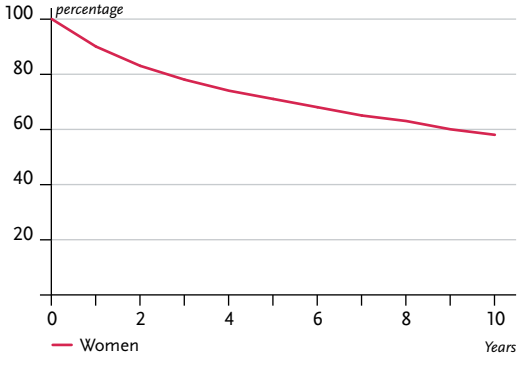


Figure 3.17.4b
Relative survival rates up to 10 years after first diagnosis,
ICD-10 C54–C55, Germany 2011–2012

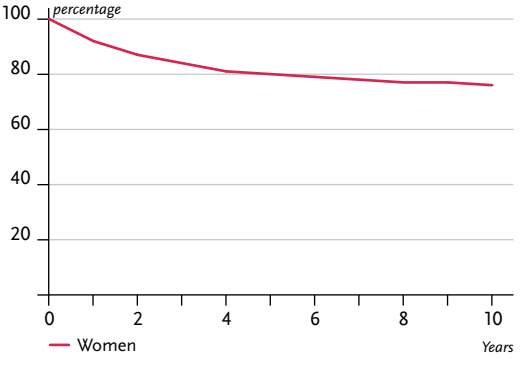


Figure 3.17.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C54 – C55, 2011 – 2012
per 100,000 (European standard)

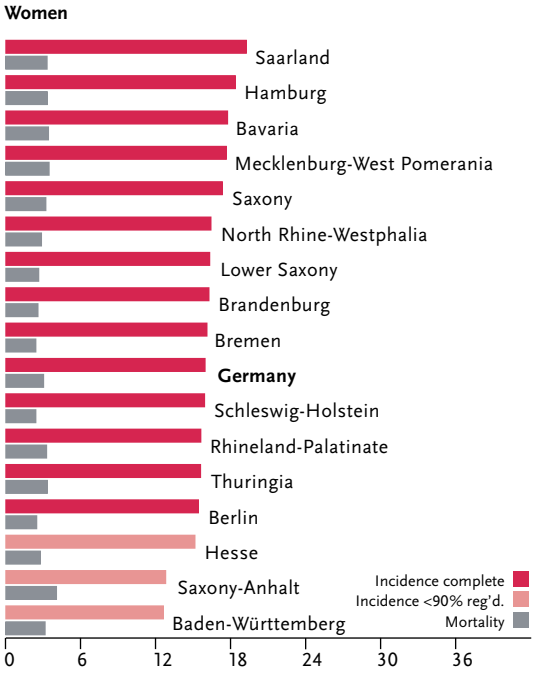
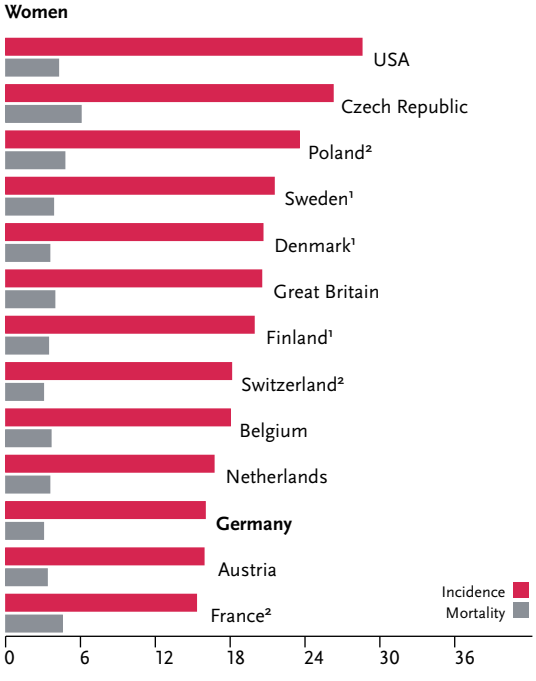


Figure 3.17.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C54 – C55, 2011 – 2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ incl. C58
² data for incidence for C54 only

3.18 Ovaries

Table 3.18.1
Overview of key epidemiological parameters for Germany, ICD-10 C56

	2011	2012	Prediction for 2016
	Women	Women	Women
Incident cases	7,750	7,380	7,200
Crude incidence rate[1]	18.9	18.0	17.3
Standardised incidence rate[1,2]	12.1	11.4	10.7
Median age at diagnosis	69	69	
Deaths	5,837	5,646	
Crude mortality rate[1]	14.2	13.7	
Standardised mortality rate[1,2]	7.9	7.5	
5-year prevalence	21,800	21,300	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	38 (33–41)	27 (23–29)	
Relative survival rate (2011–2012)[3]	41 (36–45)	32 (27–36)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Ovarian cancer accounts for 3.3 % of all malignant neoplasms among women and 5.6 % of all female deaths due to cancer. The incidence rates increase continually up to the age of 85 years, while the median age at diagnosis is 69 years. Histologically, malignant tumours of the ovaries are predominantly adenocarcinomas. The rare germ cell tumours of the ovaries occur in younger women. One in approximately 72 women develops ovarian cancer in the course of her lifetime.

Since the millennium, incidence and mortality rates in Germany have continued to fall significantly, also absolute numbers of incident cases decrease. Differences in the age-standardised incidence rates between German federal states exist, whereas regional mortality rates do not differ.

Since diagnosis often only occurs at a late tumour stage, the survival prospects for patients with ovarian cancer are relatively unfavourable. The relative 5-year survival rate is currently around 41 %.

Risk factors

The risk of developing ovarian cancer increases with age. Among the lifestyle-related risk factors, obesity (adipositas) plays a part. There are important associations with hormonal factors: childlessness and infertility increase the risk of developing ovarian cancer, while numerous births and longer periods of breast-feeding reduce the risk. It has not been conclusively proved whether early first menses (menarche) or late onset of menopause (climacterium) also lead to an increased risk. Hormonal factors probably also increase the risk for women with polycystic ovaries. Hormone replacement therapy (particularly with oestrogen monotherapy) for women after menopause is also a risk factor. In contrast, hormonal ovulation inhibitors (»the pill«) protect against ovarian cancer. Sterilisation by means of tubal ligation also reduces the risk of developing this cancer.

The risk of ovarian cancer is higher for women with first-degree relatives diagnosed with breast or ovarian cancer and for women who themselves have been diagnosed with breast, uterine or colorectal cancer. Underlying genetic mutations, above all of BRCA1 and BRCA2, considerably increase the risk, but they only play a part in one out of ten diseased women.

Figure 3.18.1a
Age-standardised incidence and mortality rates, ICD-10 C56, Germany 1999–2012
per 100,000 (European standard)

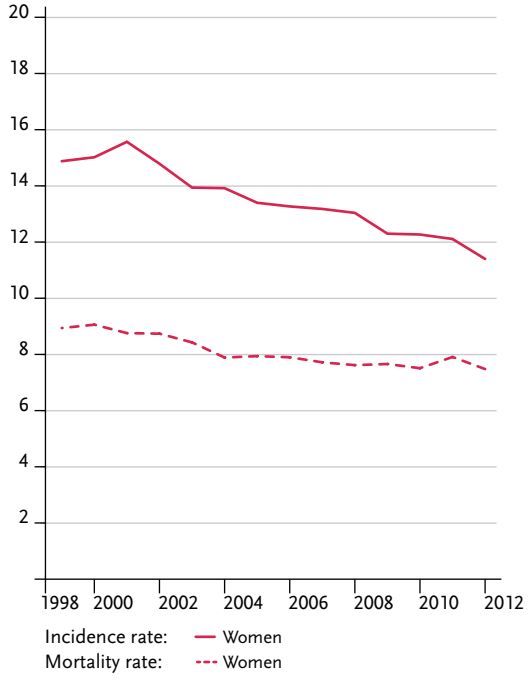


Figure 3.18.1b
Absolute numbers of incident cases and deaths, ICD-10 C56, Germany 1999–2012

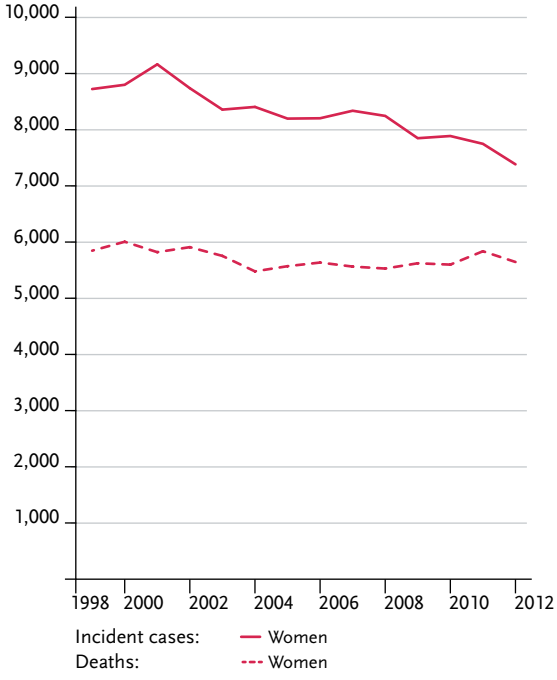


Figure 3.18.2
Age-specific incidence rates, ICD-10 C56, Germany 2011–2012
per 100,000

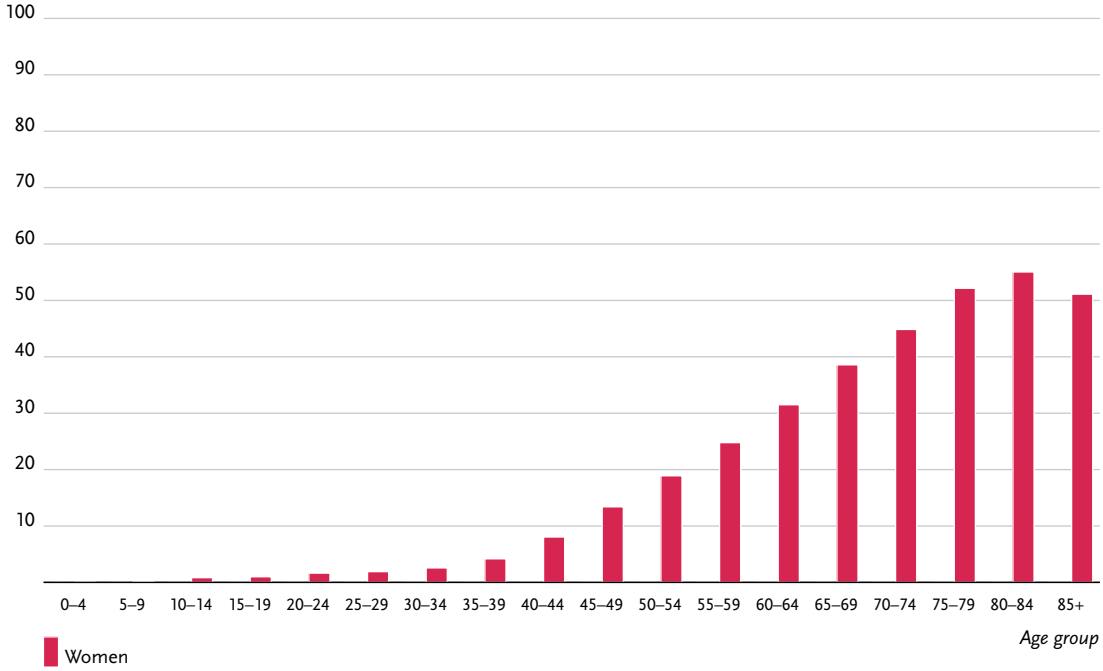


Table 3.18.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C56, database 2012

	Risk of developing cancer				Mortality risk			
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in1,500)	1.4%	(1 in 73)	<0.1%	(1 in 5,300)	1.1%	(1 in 91)
45 years	0.2%	(1 in 660)	1.3%	(1 in 76)	0.1%	(1 in 1,400)	1.1%	(1 in 92)
55 years	0.3%	(1 in 380)	1.2%	(1 in 84)	0.2%	(1 in 630)	1.0%	(1 in 96)
65 years	0.4%	(1 in 260)	1.0%	(1 in 103)	0.3%	(1 in 320)	0.9%	(1 in 110)
75 years	0.4%	(1 in 230)	0.7%	(1 in 150)	0.4%	(1 in 220)	0.7%	(1 in 140)
Lifetime risk			1.4%	(1 in 72)			1.1%	(1 in 91)

Figure 3.18.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C56, Germany 2011–2012

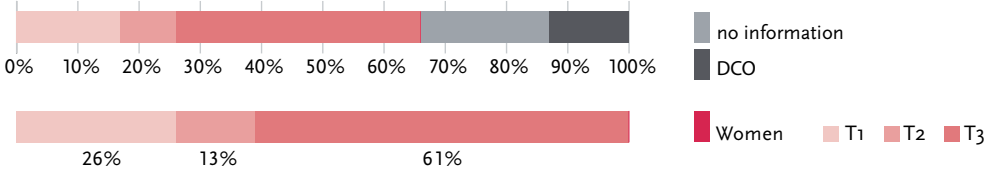


Figure 3.18.4a
Absolute survival rates up to 10 years after first diagnosis,
ICD-10 C56, Germany 2011–2012

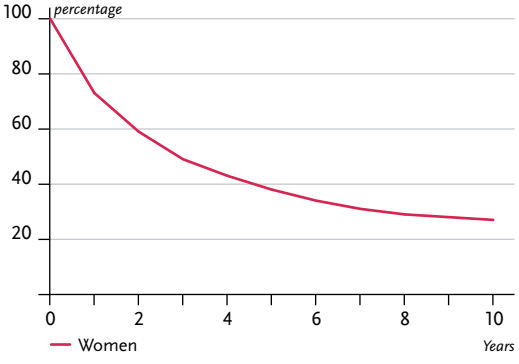


Figure 3.18.4b
Relative survival rates up to 10 years after first diagnosis,
ICD-10 C56, Germany 2011–2012

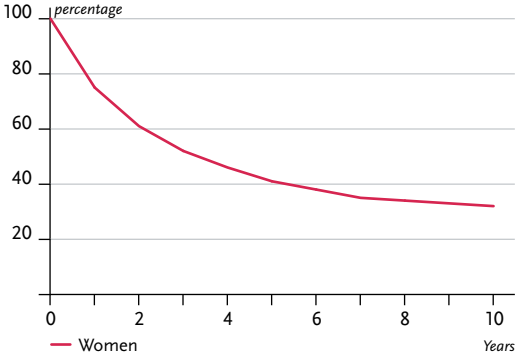


Figure 3.18.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C56, 2011–2012
per 100,000 (European standard)

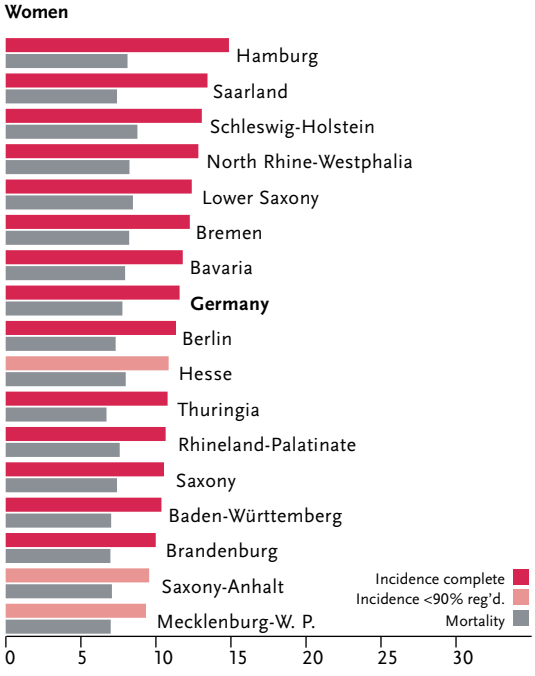
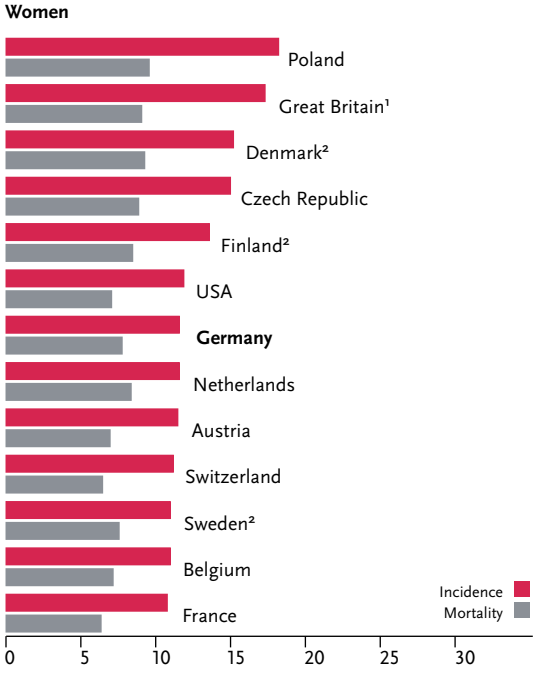


Figure 3.18.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C56, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ incl. C57
² incl. C57.0 to C57.4

3.19 Prostate

Table 3.19.1
Overview of key epidemiological parameters for Germany, ICD-10 C61

	2011	2012	Prediction for 2016
	Men	Men	Men
Incident cases	66,660	63,710	66,900
Crude incidence rate[1]	170.2	162.1	167.1
Standardised incidence rate[1,2]	113.4	106.7	106.7
Median age at diagnosis	71	71	
Deaths	13,324	12,957	
Crude mortality rate[1]	34.0	33.0	
Standardised mortality rate[1,2]	21.2	20.1	
5-year prevalence	291,000	287,100	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	78 (75–81)	60 (55–64)	
Relative survival rate (2011–2012)[3]	93 (90–95)	91 (87–94)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Prostate cancer is the most common cancer and the third most common cause of death due to cancer among men in Germany. The number of new cases has risen steadily for a long time, but decreases since 2010 (67,300 cases) and was about 63,700 cases in 2012. After increasing for almost two decades, the age-standardised incidence rate has remained largely constant since 2003 and actually decreases slightly since 2008. Similar trends can also be observed in most other Western industrialised nations and may be attributable to the introduction of the prostate specific antigen test (PSA test) in the late 1980s as an (unorganised) screening method. In contrast to the incidence rate, the age-standardised mortality rate reduced continuously until 2007 and is leveling off since then. Internationally, Germany is one of the countries with a comparatively low incidence.

Prostate cancer occurs seldom in people under 50 years of age. For a 35-year old man, the risk of being diagnosed with prostate cancer within the next ten years is less than 0.1 %, while for a 75-year old man it is approximately 6 %.

The relative 5-year survival rate for prostate cancer is currently 93 %. Deaths may, however, still occur after a longer course of the disease, e. g. through recurrence. Three out of four tumours were diagnosed at an early stage (T1 or T2).

Risk factors and early detection

Little is known about the causes of prostate carcinoma development and the factors influencing its course. Age is an important risk factor. Moreover, the disease more often occurs among men with black African origin than among European or white North American men and relatively seldom among Asian men. The presence of clustered cases among close relatives has now been adequately proved as a risk factor, although there is no understanding of the hereditary gene mutations involved. The male sex hormone (testosterone) also clearly plays a part.

Despite extensive research, there are few reliable findings relating to lifestyle, diet, or the environment. However, it is thought that diet, body weight and physical activity may have an influence on the development of the prostate carcinoma. A large-scale cancer prevention study has shown that taking vitamin E as a dietary supplement increases the risk of developing prostate cancer.

For men above 45 years of age, the cancer early detection directive in Germany currently recommends an annual interview focusing on complaints and other health-related changes, an examination of the external sexual organs, as well as a palpation examination of the prostate and the lymph nodes. The test for PSA in the blood is not covered by the statutory health insurance, as to date the benefit of the PSA test has not been irrefutably proven.

Figure 3.19.1a
Age-standardised incidence and mortality rates, ICD-10 C61, Germany 1999–2012
per 100,000 (European standard)

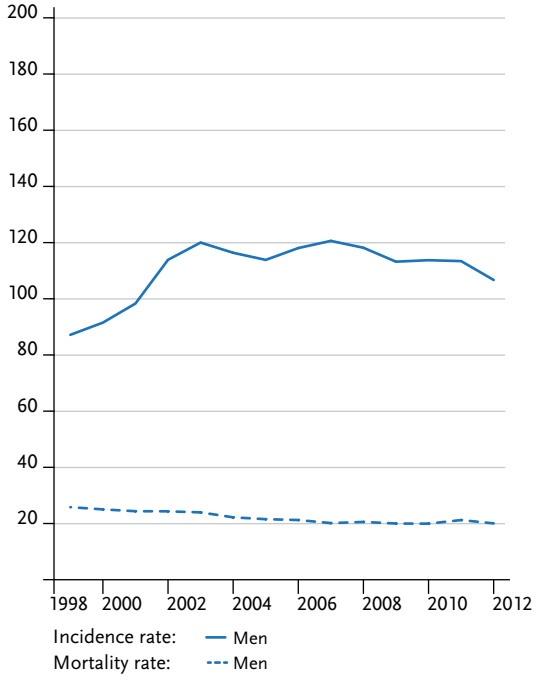


Figure 3.19.1b
Absolute numbers of incident cases and deaths, ICD-10 C61, Germany 1999–2012

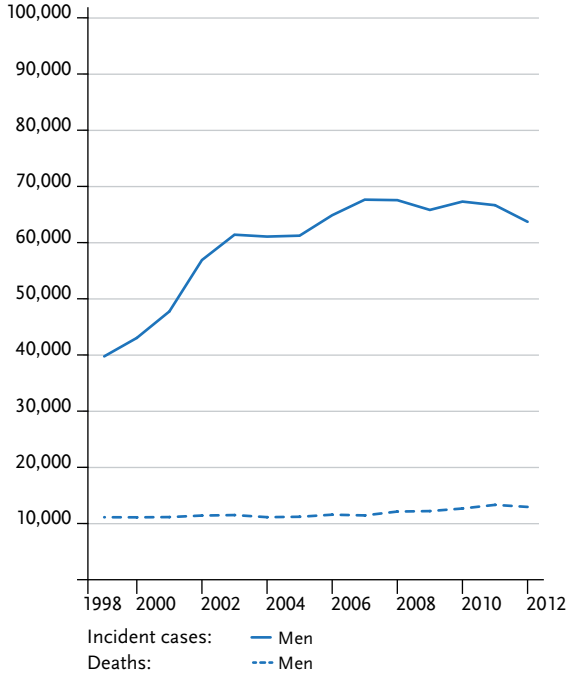


Figure 3.19.2
Age-specific incidence rates, ICD-10 C61, Germany 2011–2012
per 100,000

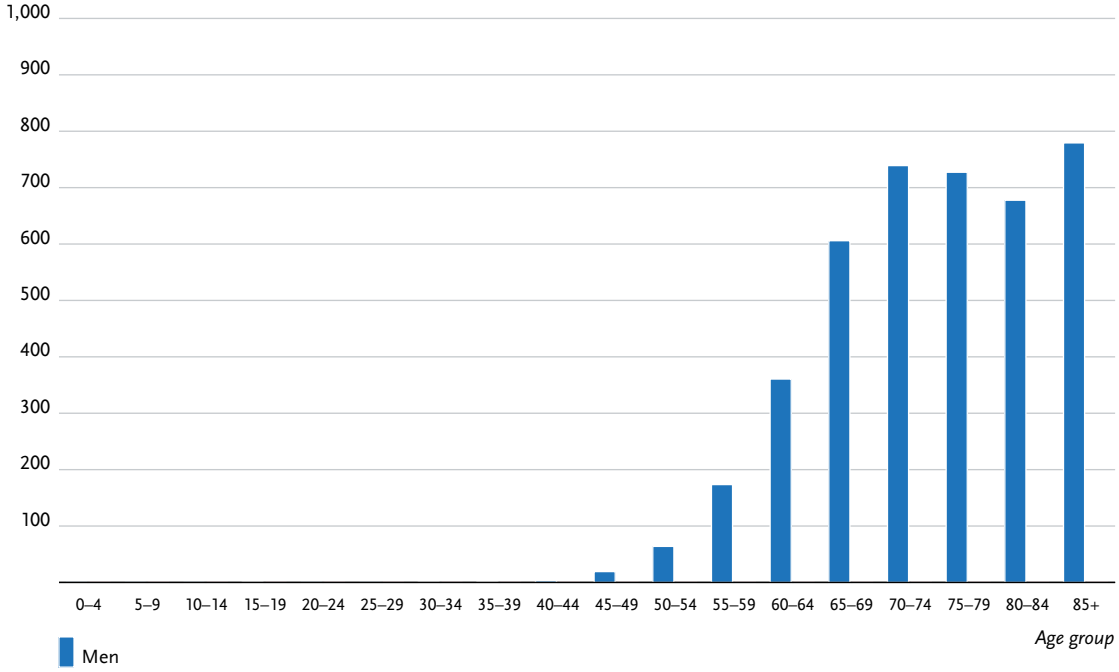


Table 3.19.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C61, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 3,900)	13.0 %	(1 in 8)	<0.1 %	(1 in 59,100)	3.3 %	(1 in 30)
45 years	0.4 %	(1 in 220)	13.1 %	(1 in 8)	<0.1 %	(1 in 4,500)	3.4 %	(1 in 30)
55 years	2.5 %	(1 in 39)	13.3 %	(1 in 8)	0.2 %	(1 in 580)	3.5 %	(1 in 29)
65 years	5.9 %	(1 in 17)	12.2 %	(1 in 8)	0.7 %	(1 in 140)	3.7 %	(1 in 27)
75 years	5.9 %	(1 in 17)	8.3 %	(1 in 12)	1.9 %	(1 in 54)	3.8 %	(1 in 27)
Lifetime risk			12.8 %	(1 in 8)			3.3 %	(1 in 30)

Figure 3.19.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C61, Germany 2011 – 2012

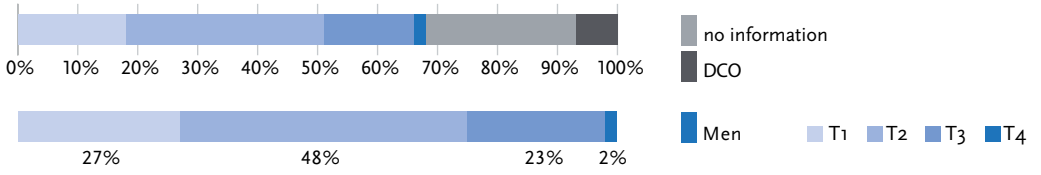


Figure 3.19.4a
Absolute survival rates up to 10 years after first diagnosis,
ICD-10 C61, Germany 2011 – 2012

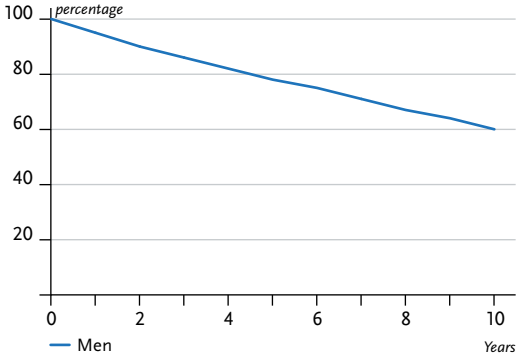


Figure 3.19.4b
Relative survival rates up to 10 years after first diagnosis,
ICD-10 C61, Germany 2011 – 2012

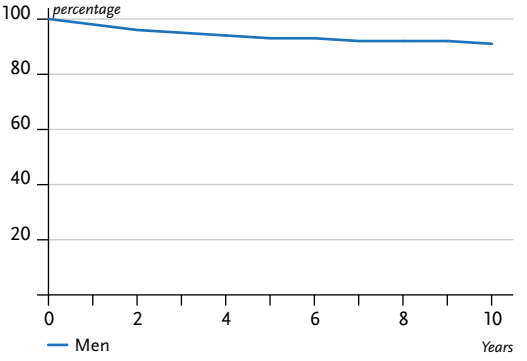


Figure 3.19.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C61, 2011–2012
per 100,000 (European standard)

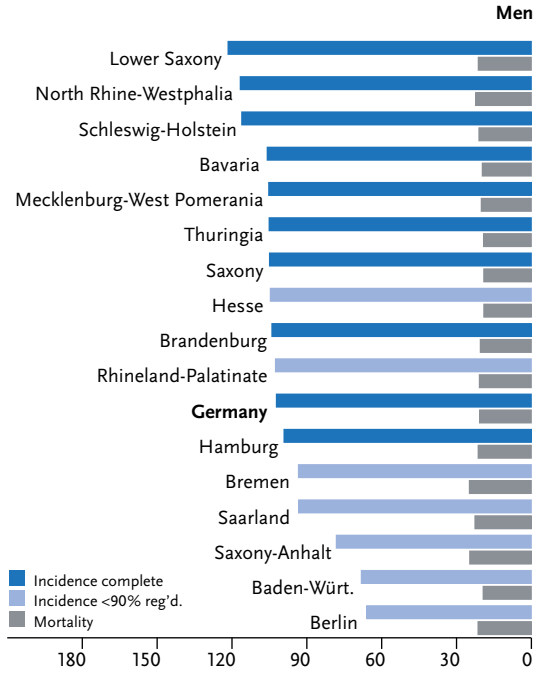
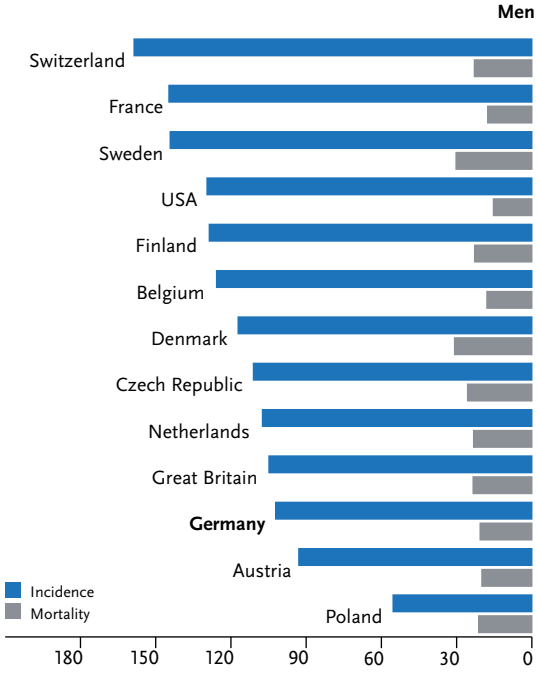


Figure 3.19.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C61, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.20 Testicle

Table 3.20.1
Overview of key epidemiological parameters for Germany, ICD-10 C62

	2011	2012	Prediction for 2016
	Men	Men	Men
Incident cases	4,010	4,020	4,200
Crude incidence rate[1]	10.2	10.2	10.5
Standardised incidence rate[1,2]	10.2	10.2	10.5
Median age at diagnosis	38	38	
Deaths	170	179	
Crude mortality rate[1]	0.4	0.5	
Standardised mortality rate[1,2]	0.4	0.4	
5-year prevalence	19,700	19,500	
	after 5 years	*after 10 years*	
Absolute survival rate (2011–2012)[3]	94 (90–96)	92 (87–94)	
Relative survival rate (2011–2012)[3]	96 (92–98)	95 (90–98)	

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In 2012 about 4,020 men in Germany were diagnosed with testicular cancer. It accounts for 1.6 % of all cases of cancer in men, making it a relatively rare tumour.

In contrast to almost all other types of cancer, most cases are diagnosed at a comparatively young age, namely between 25 and 45 years of age. In this age group, testicular cancer is the most common malignant tumour in men. Correspondingly, the median age at diagnosis is 38 years.

The age-standardised incidence rate has remained almost constant recently, levelling off after decades during which a steady increase was observed in Germany and other European countries. Over 90 % of testicular tumours are diagnosed in the early stages T1 or T2. Histologically, testicular cancers are predominantly germ cell tumours, of which approximately two thirds are seminomas. Approximately one case in six is a malignant teratoma or a combination of the latter types.

Since the introduction of cis-platinum in chemotherapy for testicular cancer over 30 years ago, this disease has become one of the malignant neoplasms with more favourable prognoses (5-year survival rate most recently 96 %) and a low mortality (179 deaths in 2012).

Risk factors and early detection

A proven risk factor for testicular cancer is cryptorchidism (undescended testis), even after this has been properly treated. Men who have already had cancer or a preliminary stage of cancer in one testicle have an increased risk of developing a tumour in the other testicle. In a small proportion of cases there may be a genetic predisposition. Sons and brothers (especially twin brothers) of patients with testicular cancer have a significantly higher risk of developing the disease. A hypothesis is that the predisposition for the most frequently occurring germ cell tumours in the testes may have its origin in cells which are scattered during the embryonic stage, and which then undergo a malignant development in puberty. A birth weight below 2500 g or above 4500 g as well as tall stature are also being discussed as possible risk factors. The causes of the increase in incidence observed in former decades are not clearly understood. The current view is that lifestyle and environmental factors play no part in the development of testicular cancer. Rather an early diagnosis is correlated with the stage and a better prognosis. Thus, adolescents and men are advised to carry out regular self-examination by palpation of the testes. The statutory early detection program offers men above 45 years of age an annual examination of the sexual organs.

Figure 3.20.1a
Age-standardised incidence and mortality rates, ICD-10 C62, Germany 1999–2012
per 100,000 (European standard)

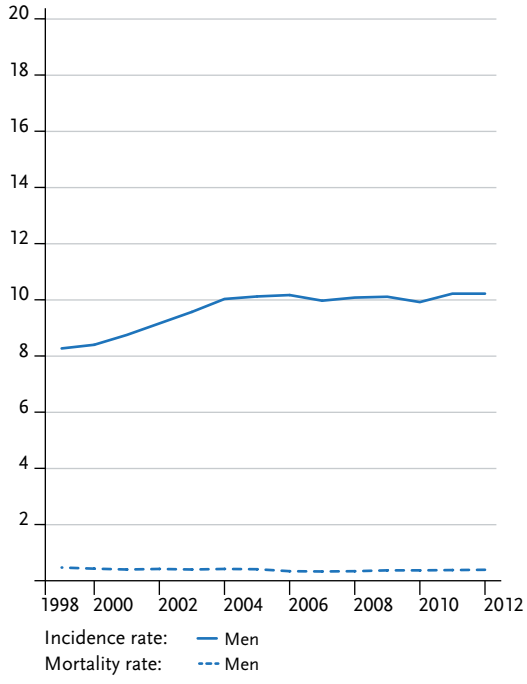


Figure 3.20.1b
Absolute numbers of incident cases and deaths, ICD-10 C62, Germany 1999–2012

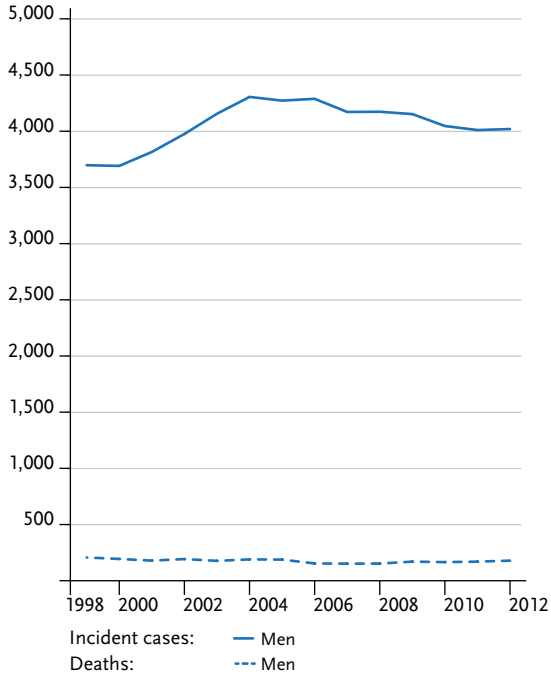


Figure 3.20.2
Age-specific incidence rates, ICD-10 C62, Germany 2011–2012
per 100,000

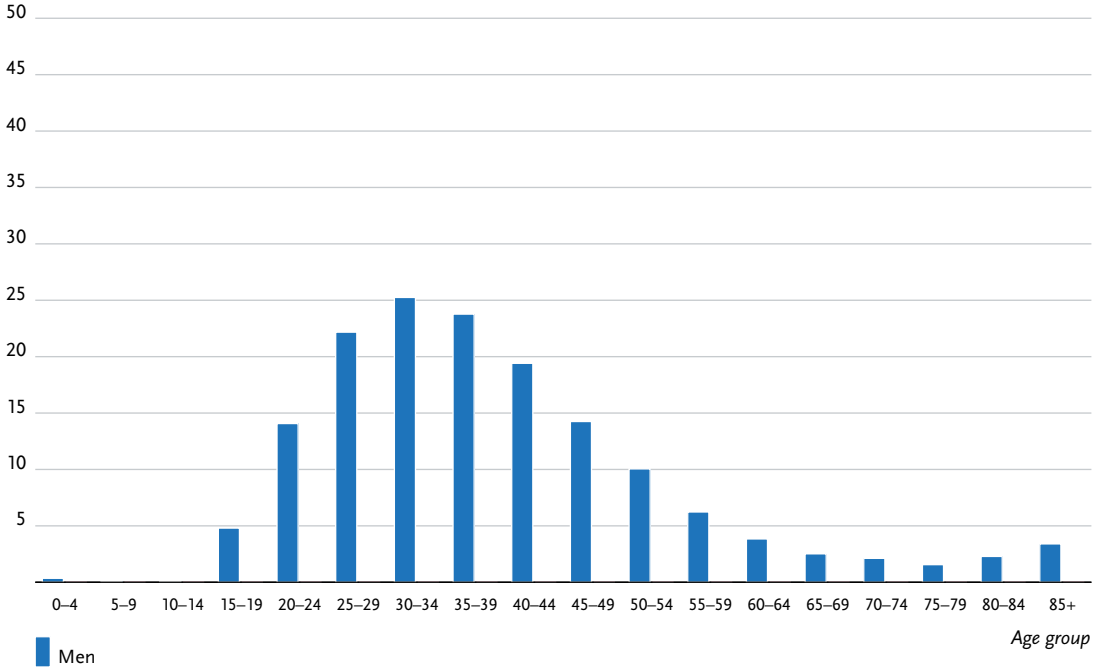


Table 3.20.2
Cancer incidence and mortality risks in Germany by age, ICD-10 C62, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
15 years	0.1%	(1 in 990)	0.7%	(1 in 140)	<0.1%	(1 in 78,400)	<0.1%	(1 in 2,800)
25 years	0.2%	(1 in 440)	0.6%	(1 in 160)	<0.1%	(1 in 22,300)	<0.1%	(1 in 2,900)
35 years	0.2%	(1 in 470)	0.4%	(1 in 240)	<0.1%	(1 in 15,300)	<0.1%	(1 in 3,300)
45 years	0.1%	(1 in 830)	0.2%	(1 in 480)	<0.1%	(1 in 17,200)	<0.1%	(1 in 4,200)
55 years	0.1%	(1 in 1,900)	0.1%	(1 in 1,100)	<0.1%	(1 in 19,400)	<0.1%	(1 in 5,300)
65 years	<0.1%	(1 in 4,900)	<0.1%	(1 in 2,400)	<0.1%	(1 in 30,100)	<0.1%	(1 in 6,600)
75 years	<0.1%	(1 in 6,600)	<0.1%	(1 in 3,700)	<0.1%	(1 in 14,600)	<0.1%	(1 in 6,700)
Lifetime risk			0.8%	(1 in 130)			<0,1%	(1 in 2,800)

Figure 3.20.3
Distribution of T-stages at first diagnosis (top: all cases; bottom: only valid reports)
ICD-10 C62, Germany 2011–2012

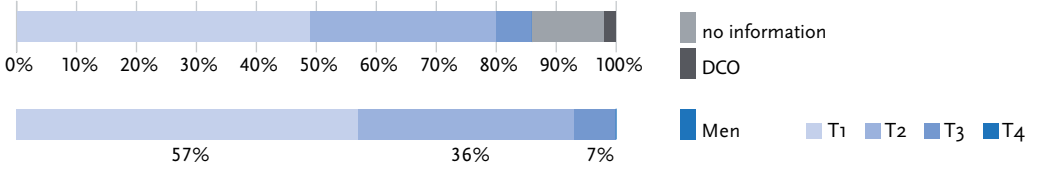


Figure 3.20.4a
Absolute survival rates up to 10 years after first diagnosis, ICD-10 C62, Germany 2011–2012

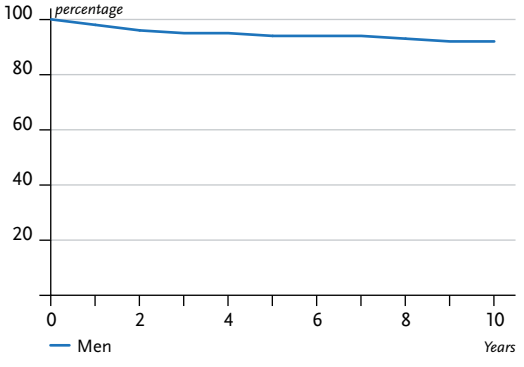


Figure 3.20.4b
Relative survival rates up to 10 years after first diagnosis, ICD-10 C62, Germany 2011–2012

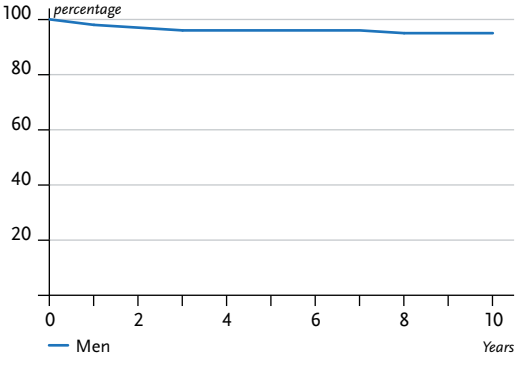


Figure 3.20.5
Registered age-standardised incidence and mortality rates in German federal states, ICD-10 C62, 2011–2012
per 100,000 (European standard)

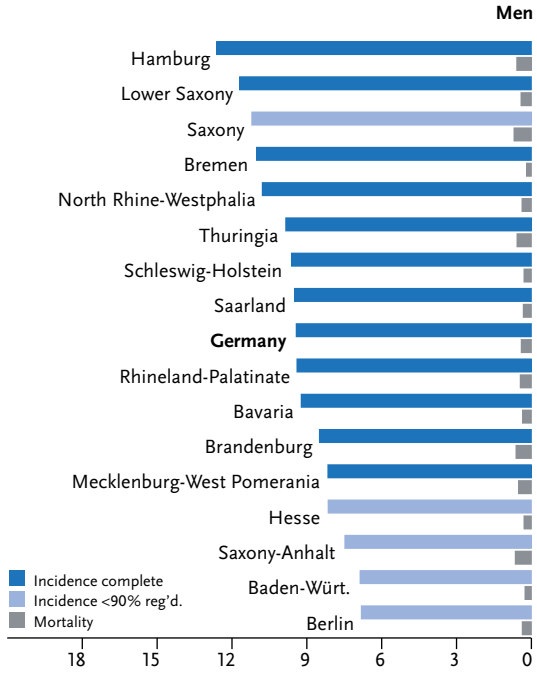
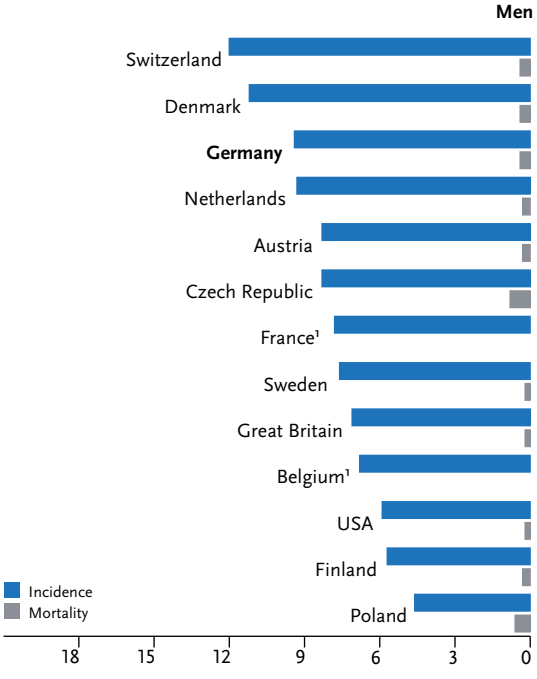


Figure 3.20.6
International comparison of age-standardised incidence and mortality rates, ICD-10 C62, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data for mortality

3.21 Kidney

Table 3.21.1
Overview of key epidemiological parameters for Germany, ICD-10 C64

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	9,320	5,600	9,500	5,530	10,400	6,100
Crude incidence rate[1]	23.8	13.6	24.2	13.5	26.1	14.8
Standardised incidence rate[1,2]	16.9	8.1	16.9	8.0	17.4	8.2
Median age at diagnosis	68	72	68	72		
Deaths	3,223	2,104	3,125	2,131		
Crude mortality rate[1]	8.2	5.1	8.0	5.2		
Standardised mortality rate[1,2]	5.4	2.4	5.1	2.4		
5-year prevalence	35,200	22,000	35,800	21,900		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	66 (61–69)	69 (58–75)	50 (43–54)	54 (46–59)		
Relative survival rate (2011–2012)[3]	76 (71–79)	78 (66–84)	68 (60–73)	71 (62–78)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentage (lowest and highest value of the included German federal states)

Epidemiology

Malignant neoplasms of the kidney can develop from various tissues. Among all types of kidney tumours in adults, renal cell carcinomas (hypernephromas) occur most frequently, account for 90 % of all cases. In contrast, nephroblastomas (Wilms' tumours), lymphomas or sarcomas of the kidney are more frequent in children.

The absolute number of incident cases has been rising continuously since the end of the 1990s for men, while a decrease can be observed for women since the year 2009. In contrast, the age-standardised incidence rates have remained at a fairly constant level for men and women over the whole period, although the incidence rate for men is twice as high as in women. As far as the age-standardised mortality rates are concerned, a slightly downward trend is observed for both sexes.

The median age at diagnosis is 68 years for men and 72 years for women.

The prognosis for kidney carcinoma is comparatively favourable, the relative 5-year survival rate for kidney tumours is approx. 76 % in men and 78 % in women. Around three-quarters of all tumours are diagnosed at a relatively early stage (T1 and T2). In regional and/or international comparison, relatively high incidence and mortality rates are apparent in the eastern federal states, as well as in the neighbouring Czech Republic.

Risk factors

Smoking and passive smoking, as well as hypertension and obesity are the most important risk factors. Furthermore, a lack of physical activity seems to increase the risk of developing kidney cancer.

On the whole, chronic renal insufficiency, regardless of cause, may promote carcinogenesis in the kidney. It can be caused for example by nephrotoxic medications or repeated inflammations of the urinary tract. Also following a kidney transplant, the immuno-suppressed patient has an increased risk of developing a renal cell carcinoma.

Familial predisposition probably only plays a role in relatively few cases. Approximately three per cent of renal cell carcinomas occur in patients with complex hereditary diseases such as those affected by Hippel-Lindau syndrome. These genetic renal cell carcinomas are often multifocal and occur more often at a younger age than kidney cancers in patients without a genetic disposition.

Figure 3.21.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C64, Germany 1999–2012
per 100,000 (European standard)

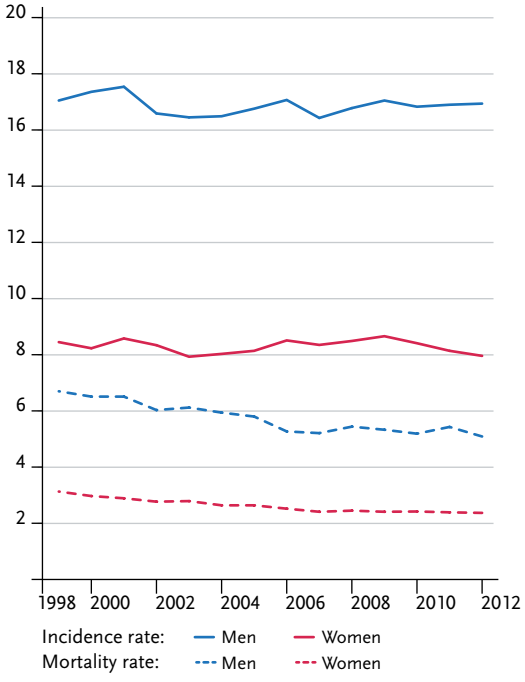


Abbildung 3.21.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C64, Germany 1999–2012

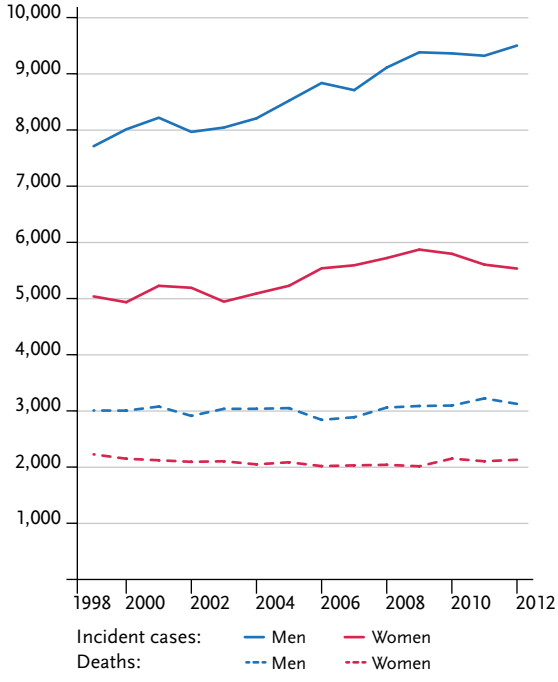


Figure 3.21.2
Age-specific incidence rates by sex, ICD-10 C64, Germany 2011–2012
per 100,000

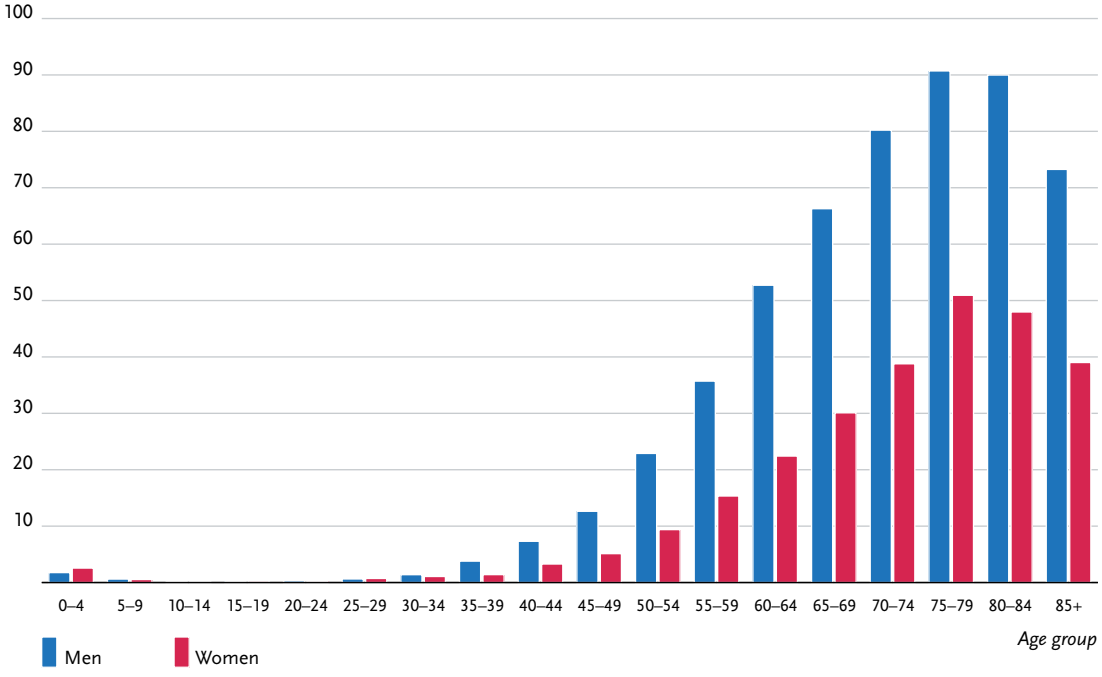


Table 3.21.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C64, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 1,700)	1.8%	(1 in 55)	<0.1%	(1 in 18,000)	0.7%	(1 in 150)
45 years	0.2%	(1 in 570)	1.8%	(1 in 56)	<0.1%	(1 in 3,200)	0.7%	(1 in 150)
55 years	0.4%	(1 in 240)	1.7%	(1 in 59)	0.1%	(1 in 1,000)	0.7%	(1 in 150)
65 years	0.7%	(1 in 150)	1.4%	(1 in 71)	0.2%	(1 in 510)	0.7%	(1 in 150)
75 years	0.7%	(1 in 140)	0.9%	(1 in 110)	0.4%	(1 in 270)	0.6%	(1 in 170)
Lifetime risk			1.8%	(1 in 55)			0.7%	(1 in 150)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 3,900)	1.0%	(1 in 96)	<0.1%	(1 in 28,200)	0.4%	(1 in 230)
45 years	0.1%	(1 in 1,400)	1.0%	(1 in 97)	<0.1%	(1 in 8,800)	0.4%	(1 in 230)
55 years	0.2%	(1 in 560)	1.0%	(1 in 100)	<0.1%	(1 in 2,900)	0.4%	(1 in 230)
65 years	0.3%	(1 in 300)	0.8%	(1 in 120)	0.1%	(1 in 1,000)	0.4%	(1 in 240)
75 years	0.4%	(1 in 250)	0.6%	(1 in 170)	0.2%	(1 in 480)	0.4%	(1 in 270)
Lifetime risk			1.1%	(1 in 94)			0.4%	(1 in 230)

Figure 3.21.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C64, Germany 2011–2012

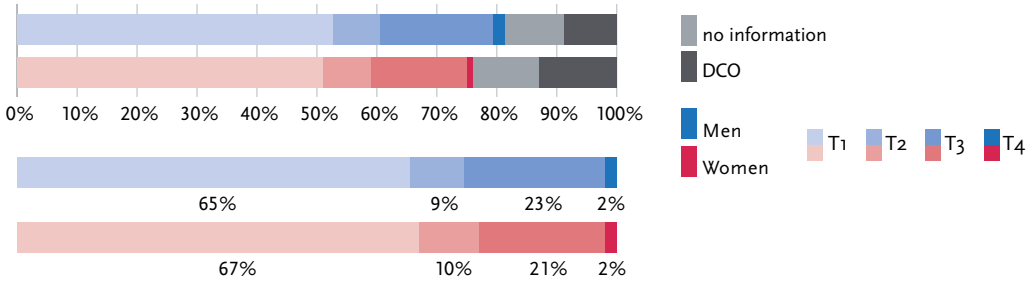


Figure 3.21.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C64, Germany 2011–2012

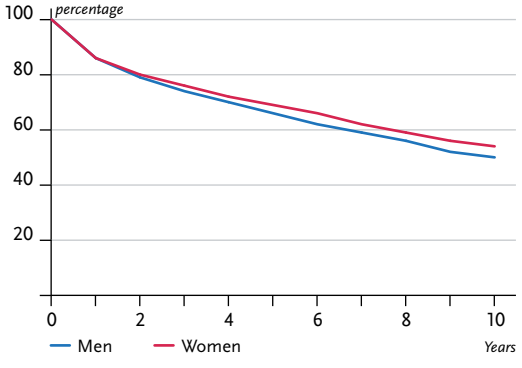


Figure 3.21.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C64, Germany 2011–2012

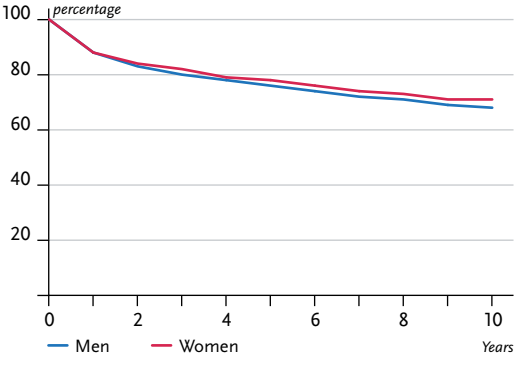


Figure 3.21.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C64, 2011–2012
per 100,000 (European standard)

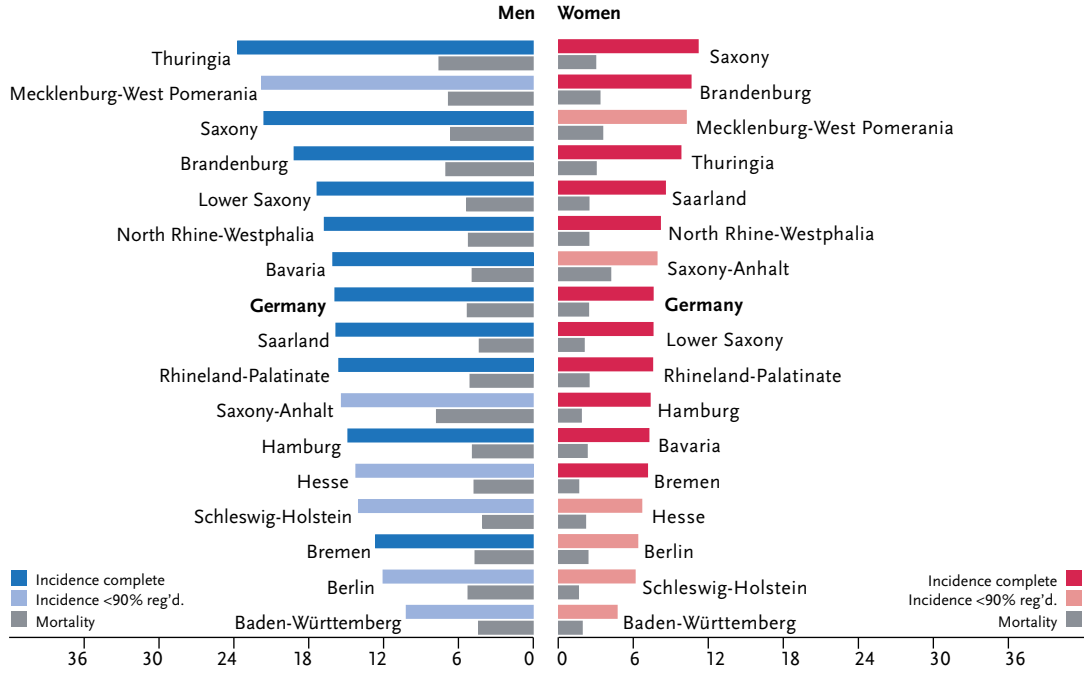
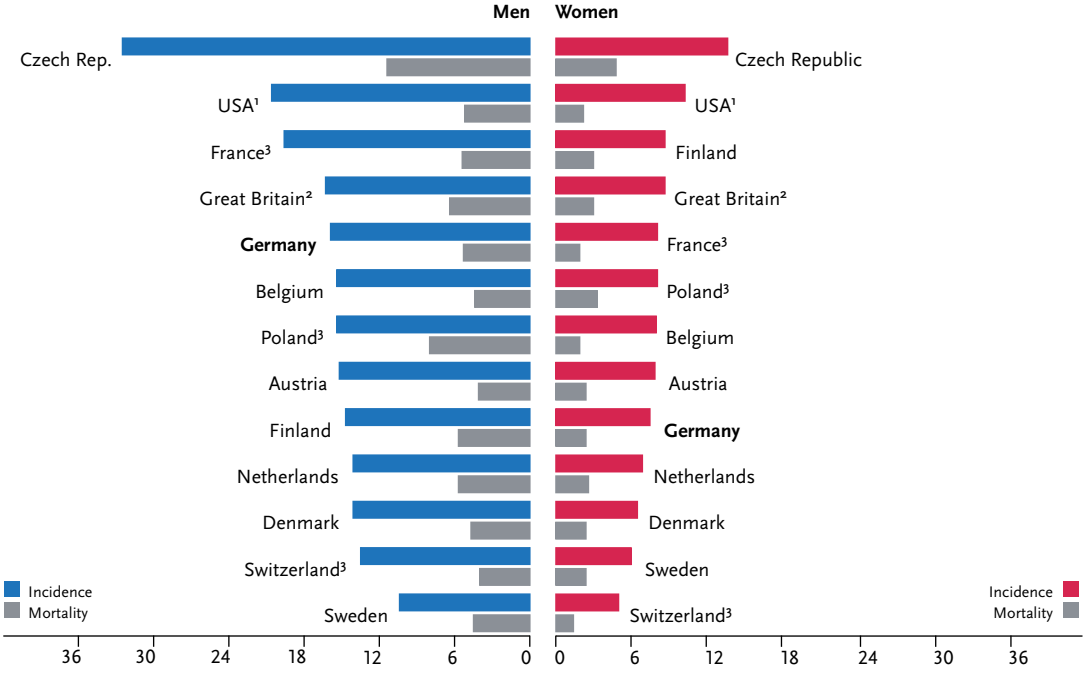


Figure 3.21.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C64, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] incl. C65
[2] incl. C65, C66, C68
[3] data for incidence incl. C65, C66

3.22 Bladder

Table 3.22.1
Overview of key epidemiological parameters for Germany, ICD-10 C67

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	11,480 (22,430)[4]	4,330 (7,380)[4]	11,270 (21,810)[4]	4,140 (7,100)[4]	11,900	4,500
Crude incidence rate[1]	29.3 (57.3)[4]	10.5 (17.9)[4]	28.7 (55.5)[4]	10.1 (17.3)[4]	29.8	10.7
Standardised incidence rate[1,2]	19.2 (37.8)[4]	5.2 (9.6)[4]	18.4 (36.0)[4]	4.9 (9.1)[4]	17.7	5.1
Median age at diagnosis	73 (73)[4]	76 (74)[4]	74 (73)[4]	76 (75)[4]		
Deaths	4,046	1,891	3,791	1,826		
Crude mortality rate[1]	10.3	4.6	9.6	4.4		
Standardised mortality rate[1,2]	6.6	1.9	6.0	1.9		
5-year prevalence	35,500 (79,900)[4]	11,100 (24,400)[4]	35,100 (80,500)[4]	10,800 (24,400)[4]		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	46 (44–53)	39 (33–52)	32 (27–36)	28 (22–37)		
Relative survival rate (2011–2012)[3]	58 (54–66)	48 (41–64)	52 (48–58)	44 (36–57)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)
[4] in parentheses: including in situ tumours and neoplasms of uncertain or unknown behavior (D09,0, D41,4)

Epidemiology

Some 15,400 people, one quarter of them women, were newly diagnosed with an invasive bladder carcinoma in Germany in 2012. In addition, about 13,500 were diagnosed with non-invasive papillary carcinoma or in situ tumours of the bladder. The latter in particular, exhibit a high tendency of progression and recurrence and are thus of particular clinical relevance, despite the fact that they currently do not rank among malignant tumours according to ICD-10. The majority of bladder cancer cases are carcinomas of the urothelium, which frequently occur simultaneously at various places in the bladder and urinary tract.

Incidence rates increase steadily with age. For men, the age-standardised incidence and mortality rates show a clear downward trend since the 1990s, probably due to a decline in tobacco consumption, but possibly also because of a reduction in occupational exposure to carcinogens (see right). For women, both rates have remained relatively stable over the years, whereby they are much lower compared to men. The mortality rate for bladder cancer is higher in the eastern federal states than in the western parts of Germany, above all among men. The higher relative 5-year survival rates for men (58 %) compared with women (48 %) relate to the more favourable distribution of tumour stages at diagnosis (47 % vs. 37 % T1 tumours).

Risk factors

Tobacco consumption is a key risk factor for the development of cancer of the bladder. Passive smoking also contributes to an increase in risk. The risk is further increased by exposure to some chemical substances such as aromatic amines, which play a role especially for certain occupational groups. The known hazardous substances have largely been eliminated from industrial processes and workplaces in Europe. However, there is a long latency period between exposure and the development of cancer, so that bladder carcinomas caused by occupational exposure will continue to be registered. Cytostatic drugs used in chemotherapy and local radiation therapy can increase the risk. The risk potential for some other pharmaceuticals is currently being debated. In 2013 the International Agency for Research on Cancer (IARC) classified pioglitazone hydrochloride, an anti-diabetic agent, as probably carcinogenic to humans (Class 2A) with regard to cancer of the bladder. According to the IARC, air pollution is also associated with a higher risk of bladder cancer.

Furthermore, arsenic and chrome in drinking water increase the risk for developing a carcinoma of the bladder. Chronic inflammatory damage to the mucosa of the bladder also increases the risk of bladder cancer.

Family clusters have been observed. Furthermore, there are indications that genetic factors play a direct role in the occurrence of bladder cancer, by increasing the susceptibility to carcinogens.

Figure 3.22.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C67, Germany 1999–2012
per 100,000 (European standard)

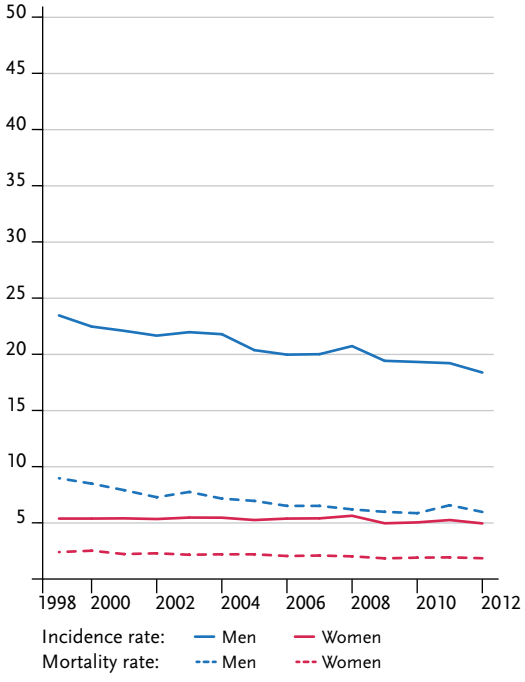


Figure 3.22.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C67, Germany 1999–2012

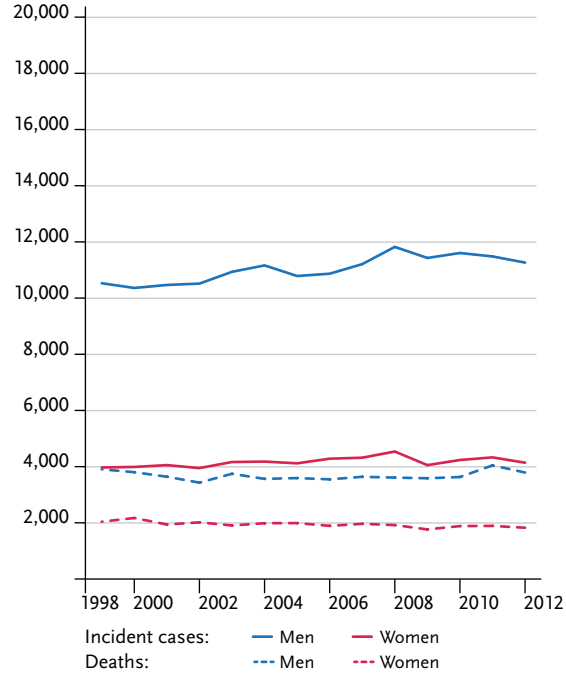


Figure 3.22.2
Age-specific incidence rates by sex, ICD-10 C67, Germany 2011–2012
per 100,000

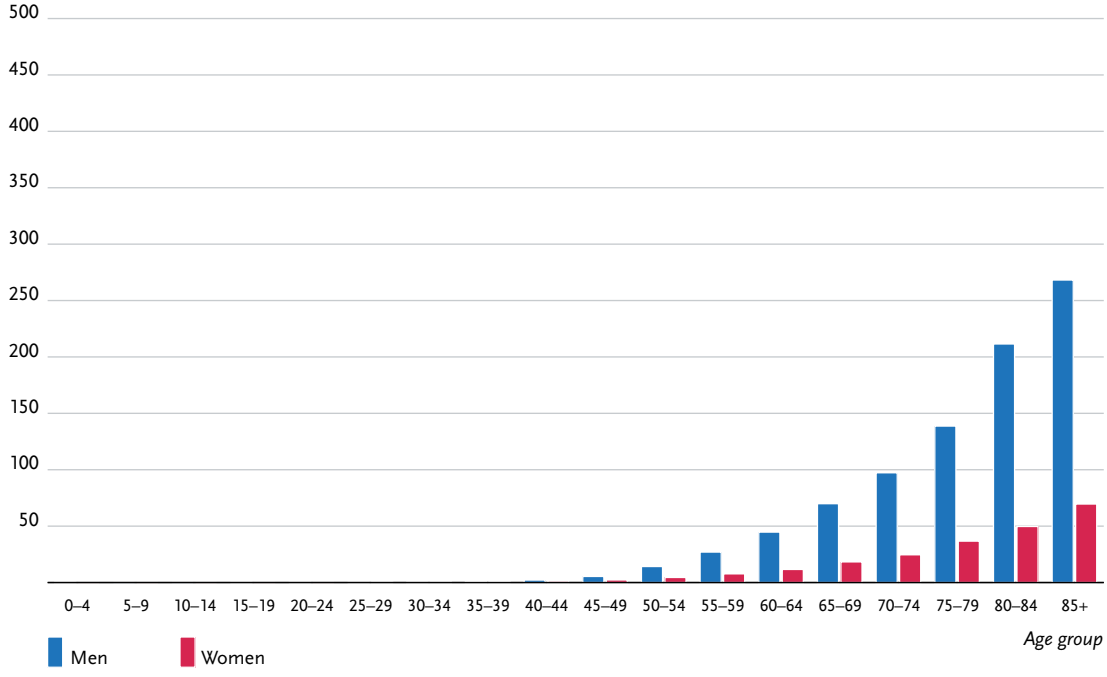


Table 3.22.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C67, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 6,700)	2.5%	(1 in 40)	<0.1%	(1 in 41,100)	1.0%	(1 in 100)
45 years	0.1%	(1 in 1,000)	2.5%	(1 in 40)	<0.1%	(1 in 6,000)	1.0%	(1 in 100)
55 years	0.3%	(1 in 300)	2.5%	(1 in 40)	0.1%	(1 in 1,500)	1.0%	(1 in 100)
65 years	0.8%	(1 in 130)	2.4%	(1 in 41)	0.2%	(1 in 550)	1.0%	(1 in 97)
75 years	1.3%	(1 in 78)	2.1%	(1 in 48)	0.5%	(1 in 190)	1.0%	(1 in 93)
Lifetime risk			2.5%	(1 in 41)			1.0%	(1 in 110)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 11,500)	0.8%	(1 in 120)	<0.1%	(1 in 34,700)	0.4%	(1 in 250)
45 years	<0.1%	(1 in 2,900)	0.8%	(1 in 120)	<0.1%	(1 in 13,700)	0.4%	(1 in 250)
55 years	0.1%	(1 in 1,100)	0.8%	(1 in 120)	<0.1%	(1 in 4,100)	0.4%	(1 in 250)
65 years	0.2%	(1 in 500)	0.8%	(1 in 130)	0.1%	(1 in 1,600)	0.4%	(1 in 260)
75 years	0.4%	(1 in 280)	0.6%	(1 in 160)	0.2%	(1 in 600)	0.4%	(1 in 270)
Lifetime risk			0.8%	(1 in 120)			0.4%	(1 in 260)

Figure 3.22.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C67, Germany 2011–2012

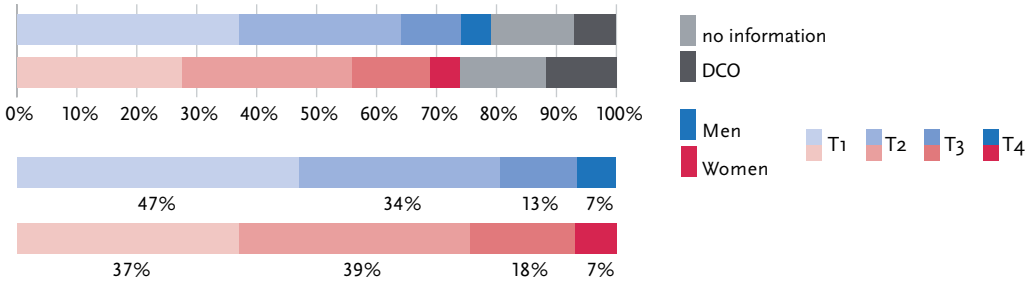


Figure 3.22.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C67, Germany 2011–2012

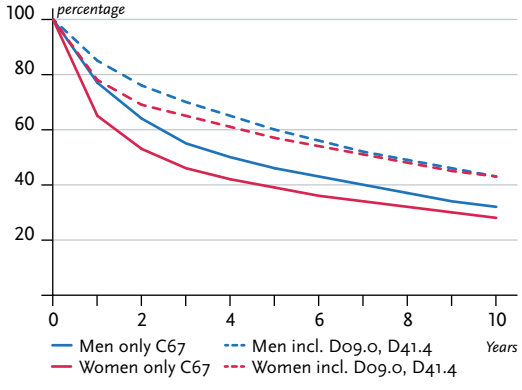


Figure 3.22.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C67, Germany 2011–2012

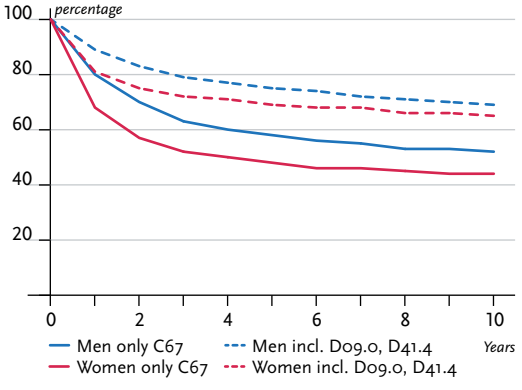


Figure 3.22.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C67, 2011–2012
per 100,000 (European standard)

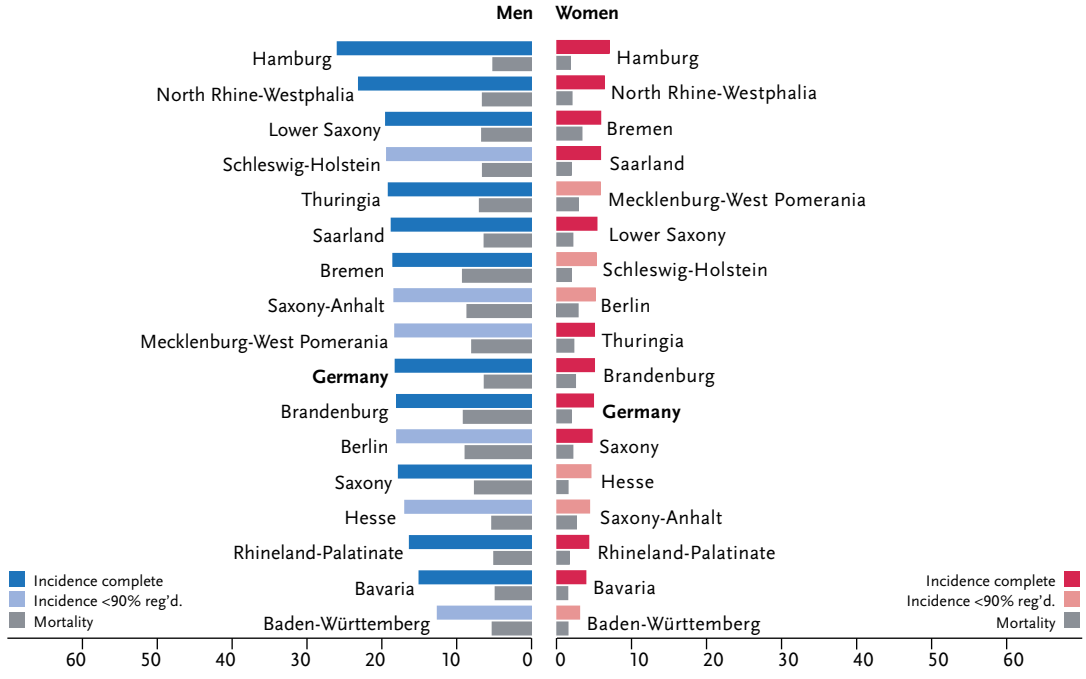
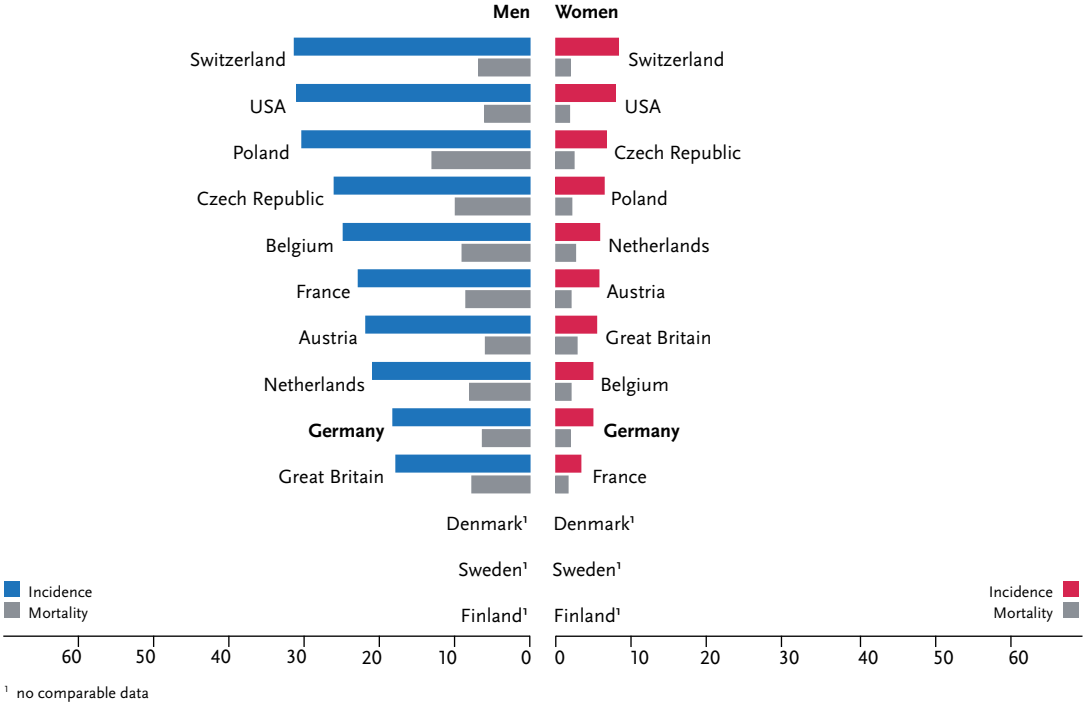


Figure 3.22.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C67, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data

3.23 Central nervous system

Table 3.23.1
Overview of key epidemiological parameters for Germany, ICD-10 C70–C72

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	3,900	3,180	3,960	3,220	4,200	3,400
Crude incidence rate[1]	10.0	7.7	10.1	7.8	10.5	8.2
Standardised incidence rate[1,2]	8.0	5.6	7.9	5.6	8.0	5.6
Median age at diagnosis	62	66	63	66		
Deaths	3,124	2,623	3,293	2,591		
Crude mortality rate[1]	8.0	6.4	8.4	6.3		
Standardised mortality rate[1,2]	6.0	4.1	6.1	4.0		
5-year prevalence	6,900	5,400	6,900	5,300		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	19 (14–25)	21 (16–26)	13 (3–21)	17 (12–21)		
Relative survival rate (2011–2012)[3]	21 (14–27)	22 (17–28)	15 (4–24)	19 (13–23)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Cancers of the central nervous system (CNS) predominantly affect the brain, including the brain stem. The remaining 5% are cancers of the meninges, cranial nerves, and the spinal nerves in the cauda equina. Malignant neoplasms of the central nervous system originate from glial cells, nerve sheaths and meninges. Histologically, approximately two thirds are accounted for by glioblastomas, as well as astrocytomas in particular (15%) and other gliomatous tumours.

In 2012 nearly 7,200 people developed cancer of the central nervous system in Germany, of whom around 3,200 were women and 4,000 men. Men show higher incidence and mortality rates in all age groups than women and have a median age at diagnosis of 63 years, 3 years younger than for women with 66 years, though CNS tumours eventually occur at earlier age – even during their first years – in both sexes as well.

Following increases in mortality rates through the 1980s to the mid-1990s, especially among the more advanced age groups, no major changes of the rates are seen since the millennium in Germany. However, with the demographic change, the absolute number of malignant neoplasms occurring in men has continued to rise, significantly steeper than in women.

The relative 5-year survival rates for patients with cancer of the central nervous system have improved slightly and are currently at 21% and 22% respectively, although for example survival with glioblastomas of the brain is at 8% considerably worse.

Risk factors

The causes of the various brain tumours are still largely unclear. The only exceptions are the rare hereditary tumour syndromes, which are associated with a significantly higher risk of brain tumours. Following therapeutic radiation of the scalp in childhood (from 1910–late 1950s due to tinea capitis) there is a slightly higher risk of developing a brain tumour after a long period of latency. Computed tomography during childhood may also marginally increase the risk of a brain tumour. In contrast, there is no indication from available data that either the use of ionising radiation in diagnostic imaging procedures as for x-ray of the teeth causes any discernible risk.

Further, current thinking is that neither environmental factors nor electromagnetic radiation (mobile telephones) contribute to an increased risk. There is similarly no evidence that viruses or toxic substances cause brain tumours in humans. First-degree relatives of patients with brain tumours have a slightly higher risk to develope a brain tumour themselves. Genetic mutations are presumably also involved in this marginal familial increased risk.

Figure 3.23.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C70–C72, Germany 1999–2012
per 100,000 (European standard)

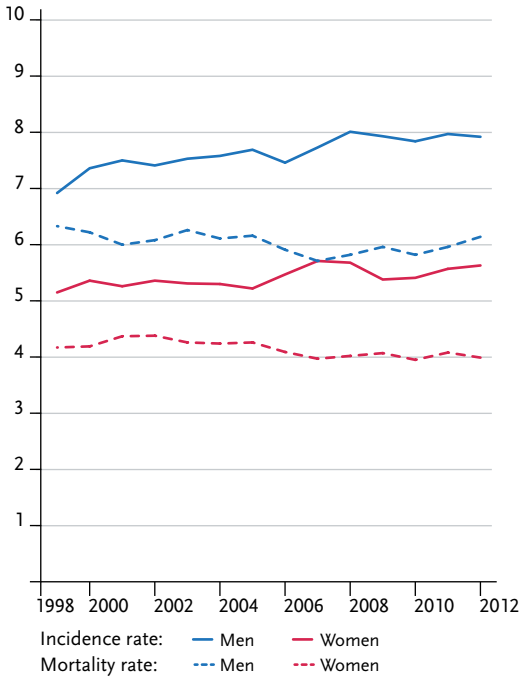


Figure 3.23.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C70–C72, Germany 1999–2012

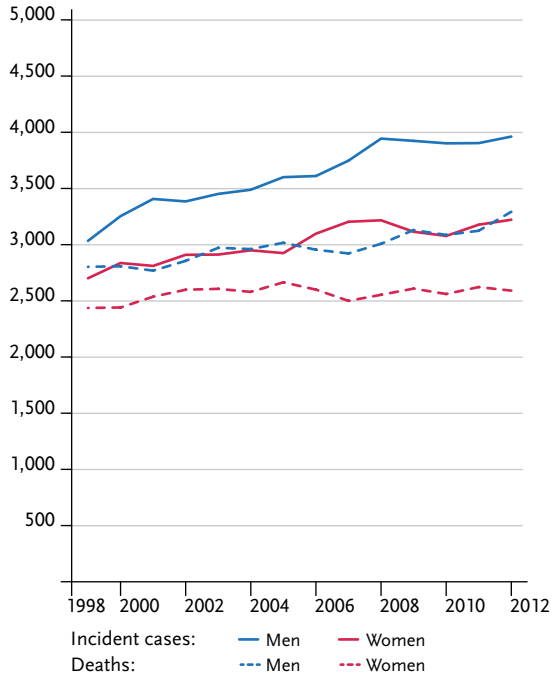


Figure 3.23.2
Age-specific incidence rates by sex, ICD-10 C70 – C72, Germany 2011–2012
per 100,000

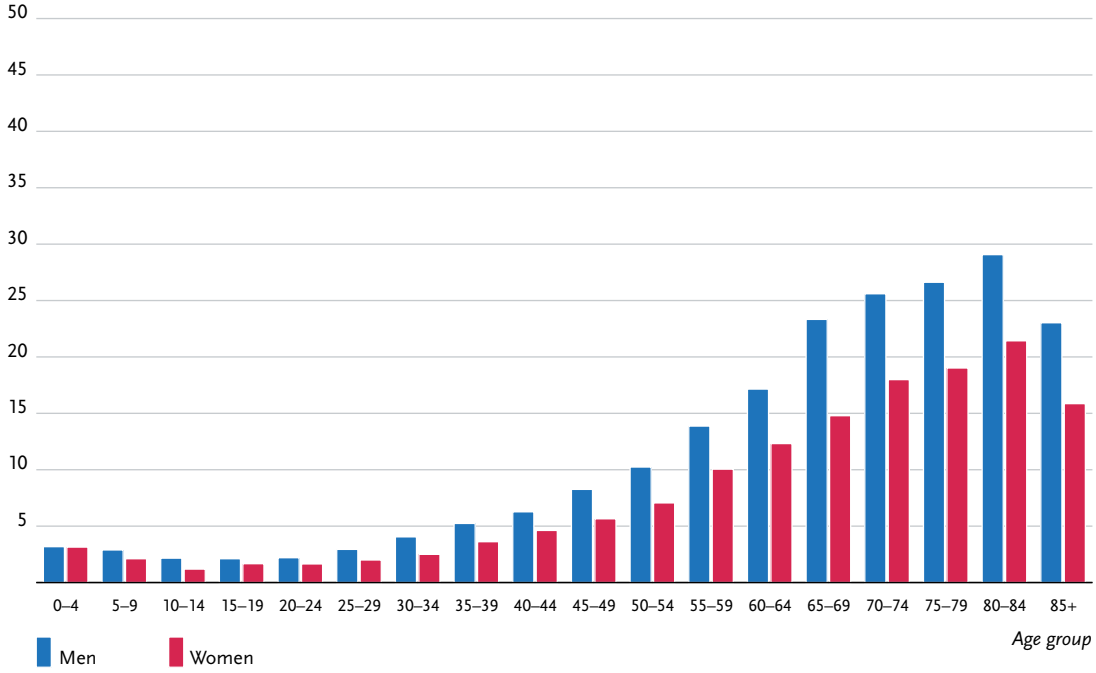


Table 3.23.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C70–C72, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1 %	(1 in 1,800)	0.7 %	(1 in 150)	<0.1 %	(1 in 3,100)	0.6 %	(1 in 160)
45 years	0.1 %	(1 in 1,100)	0.6 %	(1 in 160)	0.1 %	(1 in 1,500)	0.6 %	(1 in 170)
55 years	0.1 %	(1 in 690)	0.6 %	(1 in 180)	0.1 %	(1 in 760)	0.5 %	(1 in 190)
65 years	0.2 %	(1 in 450)	0.5 %	(1 in 220)	0.2 %	(1 in 500)	0.5 %	(1 in 220)
75 years	0.2 %	(1 in 460)	0.3 %	(1 in 340)	0.2 %	(1 in 440)	0.3 %	(1 in 320)
Lifetime risk			0.8 %	(1 in 130)			0.6 %	(1 in 160)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1 %	(1 in 2,700)	0.5 %	(1 in 180)	<0.1 %	(1 in 4,800)	0.5 %	(1 in 210)
45 years	0.1 %	(1 in 1,500)	0.5 %	(1 in 190)	<0.1 %	(1 in 2,300)	0.5 %	(1 in 220)
55 years	0.1 %	(1 in 920)	0.5 %	(1 in 220)	0.1 %	(1 in 1,100)	0.4 %	(1 in 230)
65 years	0.2 %	(1 in 660)	0.4 %	(1 in 270)	0.1 %	(1 in 690)	0.4 %	(1 in 280)
75 years	0.2 %	(1 in 590)	0.2 %	(1 in 410)	0.2 %	(1 in 620)	0.2 %	(1 in 420)
Lifetime risk			0.6 %	(1 in 160)			0.5 %	(1 in 200)

Figure 3.23.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for tumours of the central nervous system.

Figure 3.23.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C70–C72, Germany 2011–2012

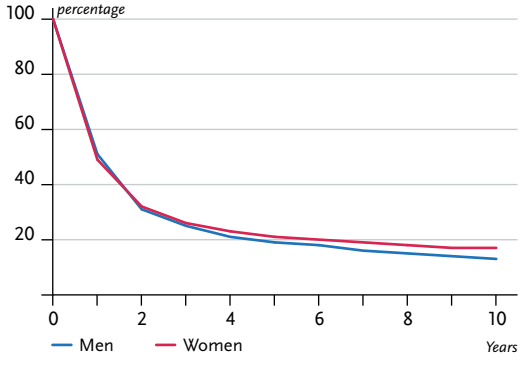


Figure 3.23.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C70–C72, Germany 2011–2012

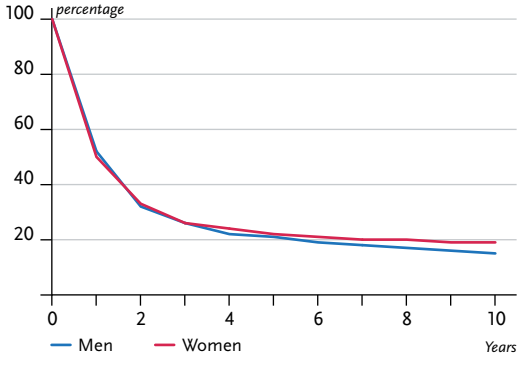


Figure 3.23.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C70–C72, 2011–2012
per 100,000 (European standard)

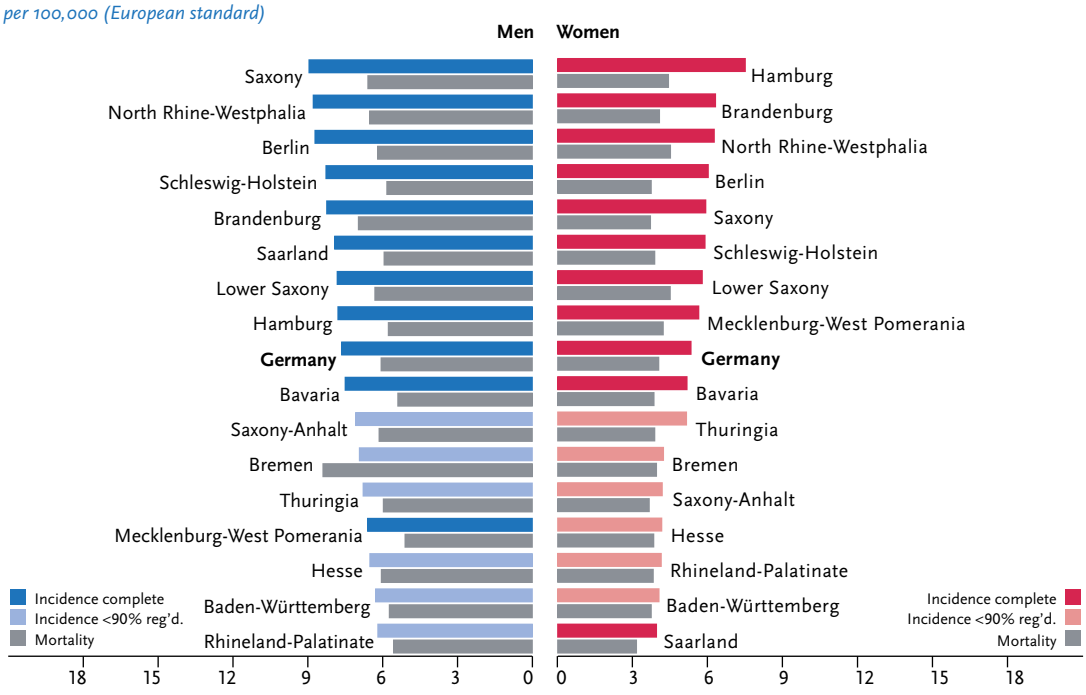
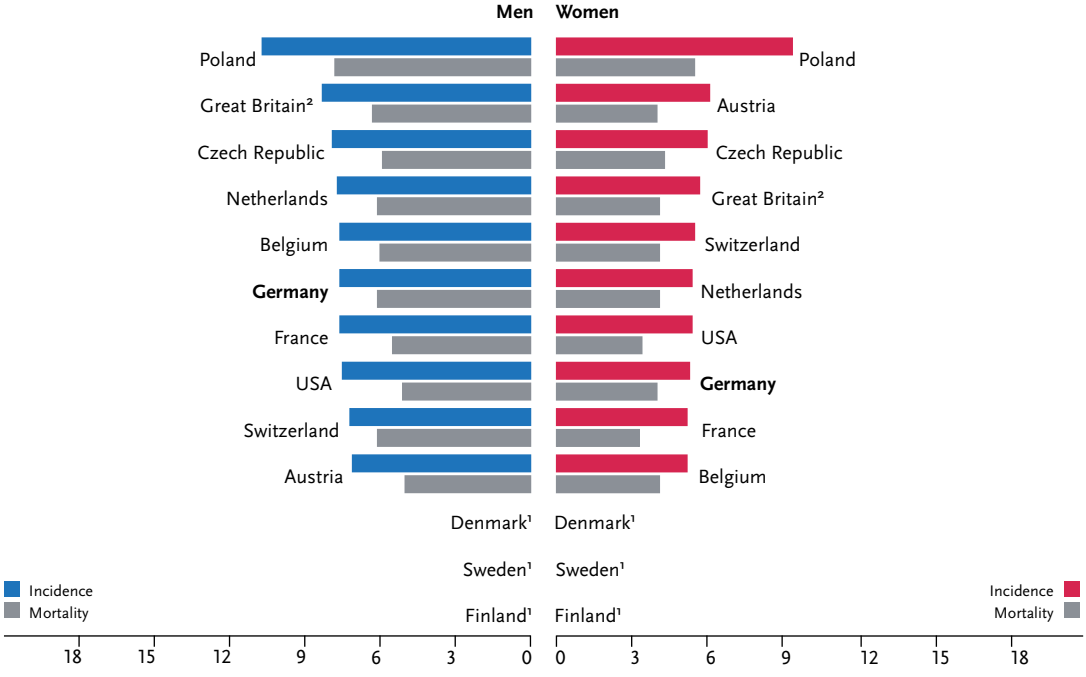


Figure 3.23.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C70–C72, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] no comparable data
[2] incl. C75.1 to C75.3

3.24 Thyroid gland

Table 3.24.1
Overview of key epidemiological parameters for Germany, ICD-10 C73

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	1,830	4,540	1,820	4,390	2,100	5,200
Crude incidence rate[1]	4.7	11.1	4.6	10.7	5.2	12.4
Standardised incidence rate[1,2]	3.9	9.5	3.8	9.3	4.3	11.1
Median age at diagnosis	55	51	56	51		
Deaths	336	388	330	419		
Crude mortality rate[1]	0.9	0.9	0.8	1.0		
Standardised mortality rate[1,2]	0.6	0.5	0.6	0.5		
5-year prevalence	7,600	20,300	7,700	20,700		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	79 (66–89)	91 (82–95)	71 (59–82)	85 (79–91)		
Relative survival rate (2011–2012)[3]	85 (72–95)	94 (86–99)	84 (68–94)	94 (89–99)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Annually in Germany approximately 4,390 women and 1,820 men are diagnosed with thyroid cancer. The median age at diagnosis is 51 years for women and 56 for men, though the cancer does also occur at a younger age, especially in women.

In the period from 1999 to 2012, the mortality rates in both men and women in Germany have decreased slightly, whilst the age-standardised incidence rates for both sexes have increased considerably. Papillary carcinomas – very favourable from the point of view of prognosis – were exclusively responsible for this increase, predominantly in younger adults. This trend is observed in other countries to a similar extent and is most likely attributable to improved examination methods (e. g. ultrasound) which are used in the course of clarifying other thyroid disorders or other internal illnesses. Within Germany, the highest incidence rates by far in both men and women are to be observed in Bavaria, Berlin and North Rhine-Westphalia, which corresponds with similarly high rates in Austria and France, and for women also in Czech Republic.

The majorities of cancers of the thyroid gland are diagnosed at an early stage (T1), especially among women (63 % of all thyroid cancers) and have a favourable prognosis with relative 5-year survival rates of 94 % among women and 85 % among men. Anaplastic carcinomas constitute an exception to this (12 %).

Risk factors

By now it is confirmed that environmental ionizing radiation increases the risk for thyroid cancer. Especially in childhood, the thyroid gland is radiation-sensitive. Thus, the risk for thyroid cancer increases, if the thyroid gland is in the radiation field during radiotherapy. The intake of radioactive iodine, e. g. after the nuclear accident in Chernobyl, also increases the risk of thyroid cancer.

There is no clear proof of other environmental, dietary or lifestyle factors. It is also unclear why women are more frequently affected than men. Many patients have a history of iodine deficiency or benign thyroid complaints such as struma (goitre) and adenoma, which increase the risk of developing thyroid carcinomas. About a quarter of patients with a rare medullary thyroid carcinoma have hereditary genetic mutations with autosomal dominant inheritance. Medullary thyroid carcinomas can also occur together with other endocrine tumours – as part of a so-called type 2 multiple endocrine neoplasia (MEN 2). A genetic component is also suspected for papillary thyroid carcinomas.

Figure 3.24.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C73, Germany 1999–2012
per 100,000 (European standard)

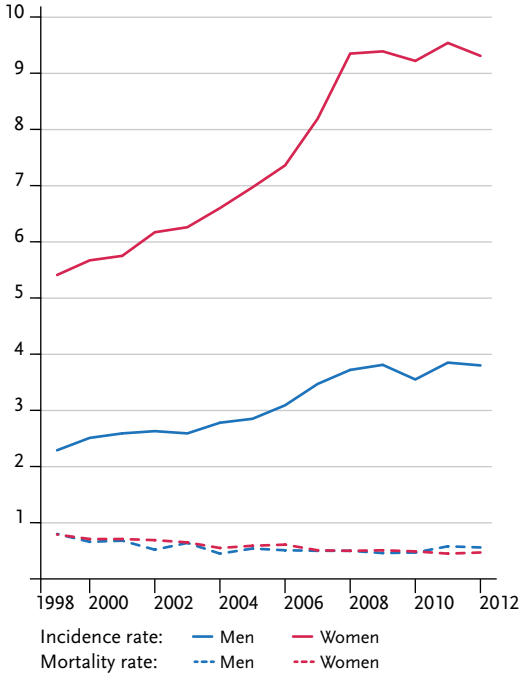


Figure 3.24.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C73, Germany 1999–2012

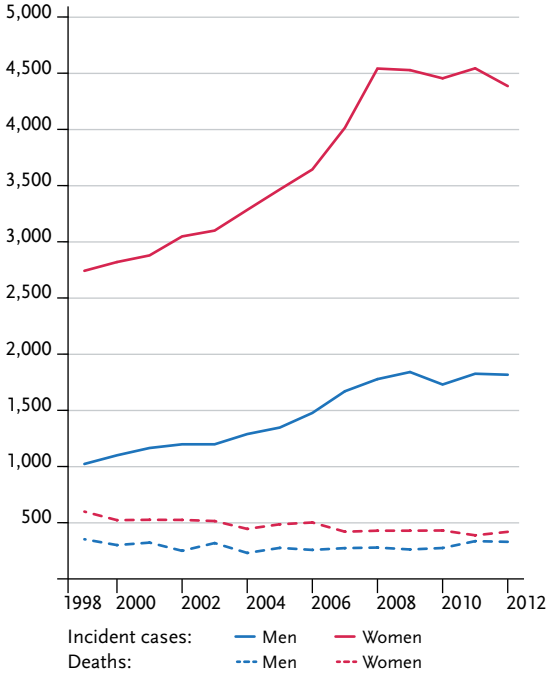


Figure 3.24.2
Age-specific incidence rates by sex, ICD-10 C73, Germany 2011–2012
per 100,000

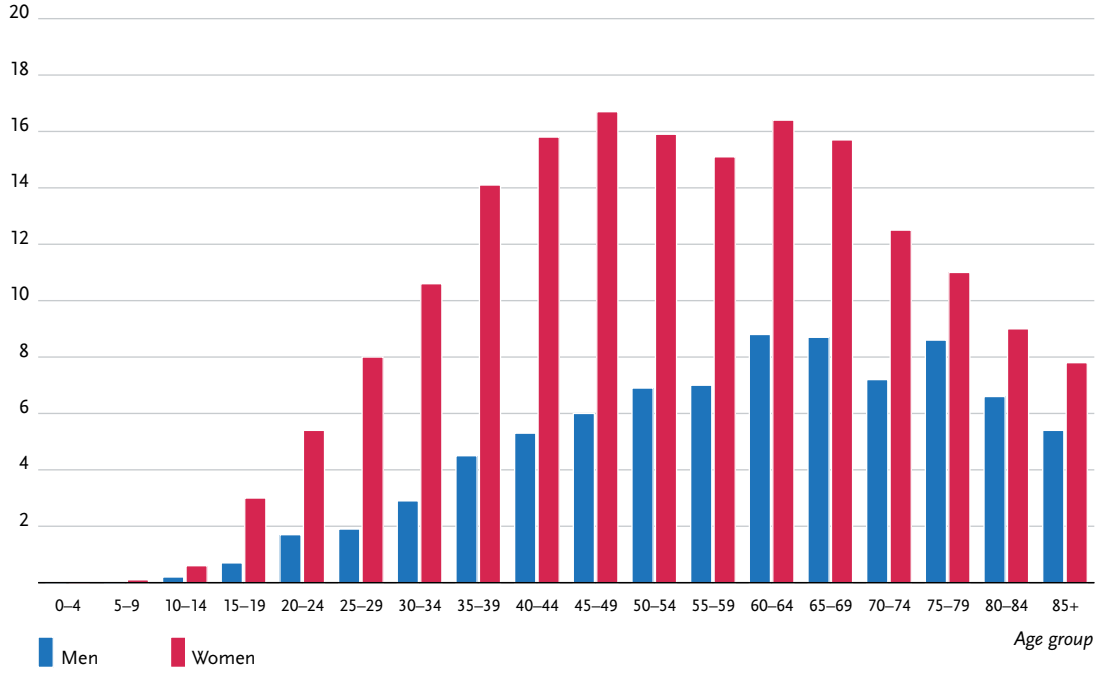


Table 3.24.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C73, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
25 years	<0.1%	(1 in 4,000)	0.3%	(1 in 320)	<0.1%	(1 in 262,800)	0.1%	(1 in 1,400)
35 years	<0.1%	(1 in 2,200)	0.3%	(1 in 340)	<0.1%	(1 in 72,600)	0.1%	(1 in 1,400)
45 years	0.1%	(1 in 1,600)	0.3%	(1 in 400)	<0.1%	(1 in 25,300)	0.1%	(1 in 1,400)
55 years	0.1%	(1 in 1,300)	0.2%	(1 in 510)	<0.1%	(1 in 8,800)	0.1%	(1 in 1,400)
65 years	0.1%	(1 in 1,300)	0.1%	(1 in 740)	<0.1%	(1 in 5,100)	0.1%	(1 in 1,600)
75 years	0.1%	(1 in 1,800)	0.1%	(1 in 1,300)	<0.1%	(1 in 2,700)	0.1%	(1 in 1,800)
Lifetime risk			0.3%	(1 in 300)			0.1%	(1 in 1,400)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
25 years	0.1%	(1 in 1,000)	0.8%	(1 in 130)	<0.1%	(1 in 554,800)	0.1%	(1 in 1,200)
35 years	0.1%	(1 in 700)	0.7%	(1 in 150)	<0.1%	(1 in 261,600)	0.1%	(1 in 1,200)
45 years	0.2%	(1 in 630)	0.5%	(1 in 190)	<0.1%	(1 in 66,900)	0.1%	(1 in 1,200)
55 years	0.2%	(1 in 660)	0.4%	(1 in 270)	<0.1%	(1 in 10,900)	0.1%	(1 in 1,200)
65 years	0.1%	(1 in 790)	0.2%	(1 in 430)	<0.1%	(1 in 5,100)	0.1%	(1 in 1,200)
75 years	0.1%	(1 in 1,200)	0.1%	(1 in 840)	<0.1%	(1 in 2,500)	0.1%	(1 in 1,400)
Lifetime risk			0.8%	(1 in 120)			0.1%	(1 in 1,200)

Figure 3.24.3
Distribution of T-stages at first diagnosis by sex (top: all cases; bottom: only valid reports)
ICD-10 C73, Germany 2011–2012

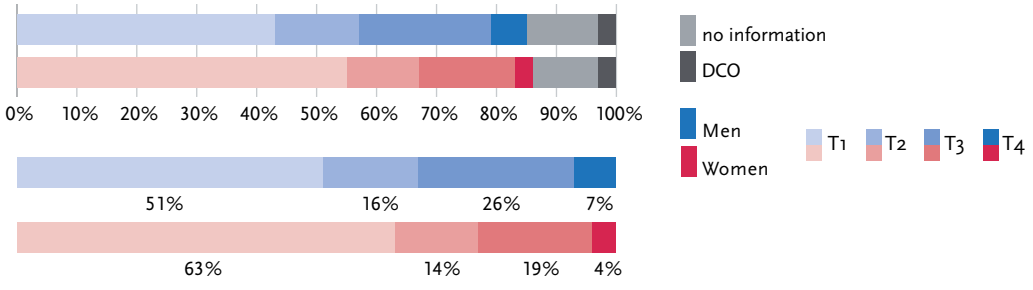


Figure 3.24.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C73, Germany 2011–2012

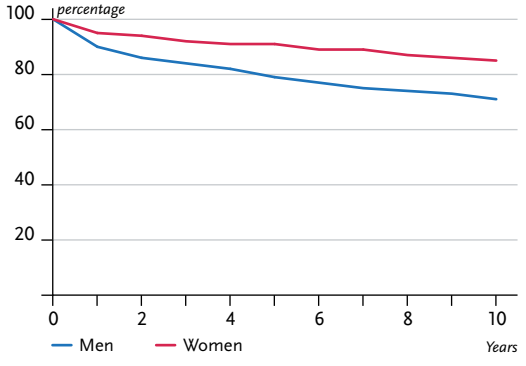


Figure 3.24.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C73, Germany 2011–2012

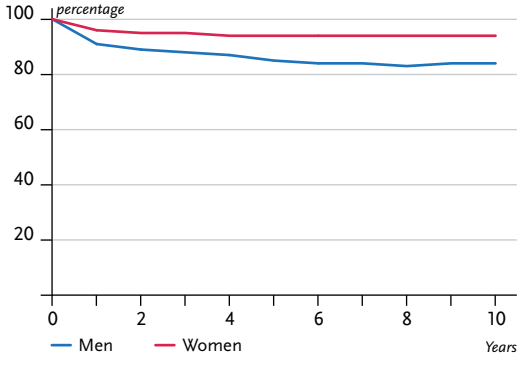


Figure 3.24.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C73, 2011 – 2012
per 100,000 (European standard)

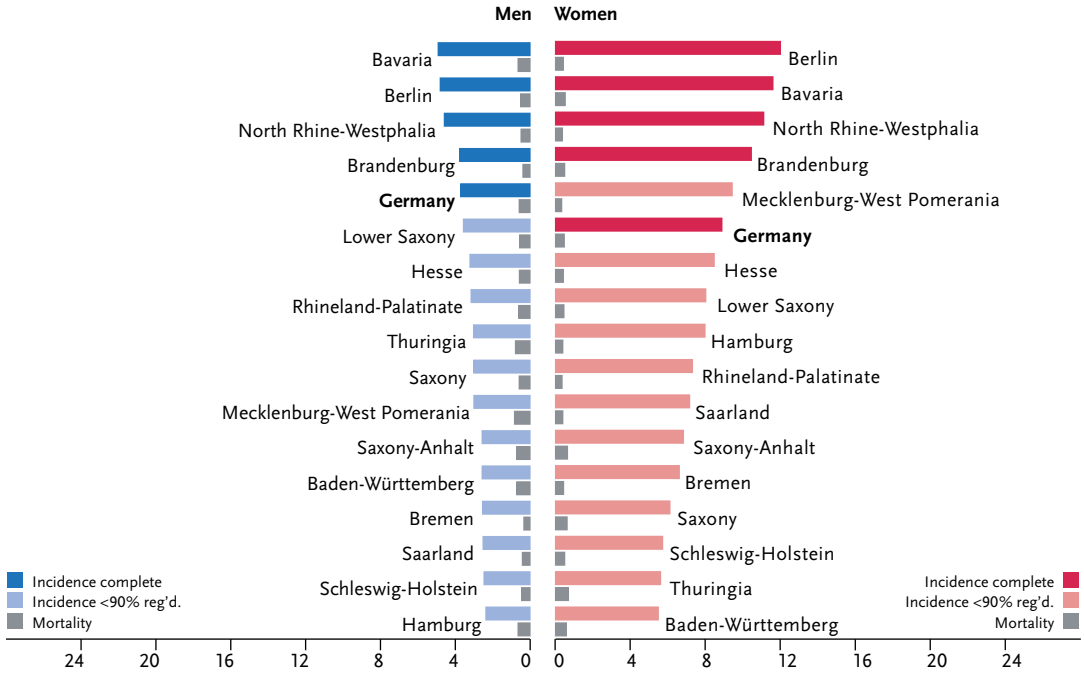
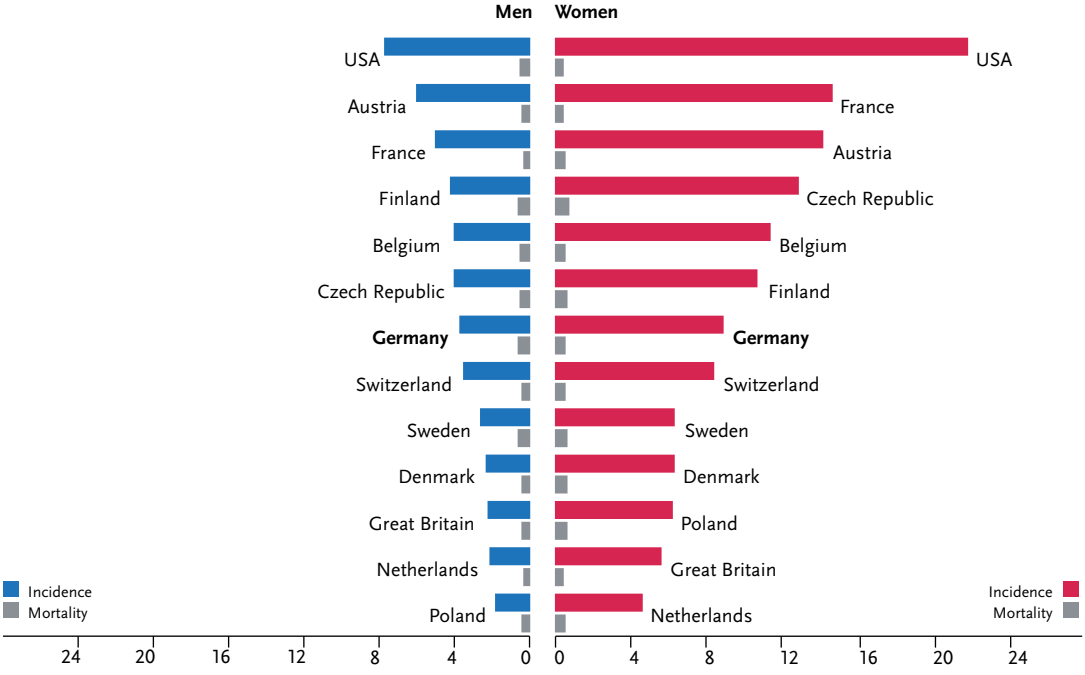


Figure 3.24.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C73, 2011 – 2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.25 Hodgkin's lymphoma

Table 3.25.1
Overview of key epidemiological parameters for Germany, ICD-10 C81

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	1,260	970	1,240	990	1,300	1,100
Crude incidence rate[1]	3.2	2.4	3.2	2.4	3.2	2.5
Standardised incidence rate[1,2]	3.0	2.2	2.9	2.3	2.9	2.4
Median age at diagnosis	45	44	46	41		
Deaths	194	141	219	158		
Crude mortality rate[1]	0.5	0.3	0.6	0.4		
Standardised mortality rate[1,2]	0.3	0.2	0.4	0.2		
5-year prevalence	5,200	4,000	5,200	4,100		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	80 (60–87)	83 (68–93)	73	76		
Relative survival rate (2011–2012)[3]	84 (63–91)	86 (72–97)	80	81		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Hodgkin's lymphoma is histologically distinguished from non-Hodgkin lymphomas by the presence of Reed-Sternberg giant cells in the bone marrow. Hodgkin's lymphoma is a rare disease, and in Germany some 1,240 men and 990 women were diagnosed with it in 2012. It can occur at any age, and about one patient in ten was under 20 years of age at diagnosis. The risk of developing Hodgkin's lymphoma at any stage in life is 0.2 % for both men and women.

In recent years the incidence rates, and the absolute number of new cases annually, have shown no discernible trends, while ever fewer people are dying of Hodgkin's lymphoma. The mortality rate in Germany in 2012 was just over 300, almost 200 fewer than ten years previously. The prognosis is correspondingly favourable, with about 83 % of women and 80 % of men still alive 5 years after diagnosis. Due to the chronic relapsing nature of the disease, the long-term prognosis is also determined by side effects of therapy (including secondary tumours).

Risk factors

The risk factors for Hodgkin's lymphoma are not completely understood. It remains unclear whether lifestyle-related risk factors or environmental risks are responsible for the development of Hodgkin's lymphoma. The associations are complex. It is possible that the risk is increased by a long-term cigarette smoking habit.

As with non-Hodgkin lymphomas, congenital and acquired characteristics of the immune system and viral infections are topics of debate, although their influence cannot be quantified and it is not possible to ascribe a definite cause for any individual patient.

It has long been suspected that the Epstein-Barr virus (EBV), the cause of glandular fever (infectious mononucleosis), and retroviruses (e. g. HTLV and HIV) are involved. The results of recent studies confirm that EBV infection plays an important part in the development of Hodgkin's lymphoma. Other viruses, such as the hepatitis B virus, may also be involved in the development of Hodgkin's lymphoma.

The children and siblings of patients with Hodgkin's lymphoma have a much higher risk of developing the disease themselves. Researchers are therefore paying increasing attention to hereditary factors. However, research has not yet identified any risk-enhancing and inheritable gene mutations.

Figure 3.25.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C81, Germany 1999–2012
per 100,000 (European standard)

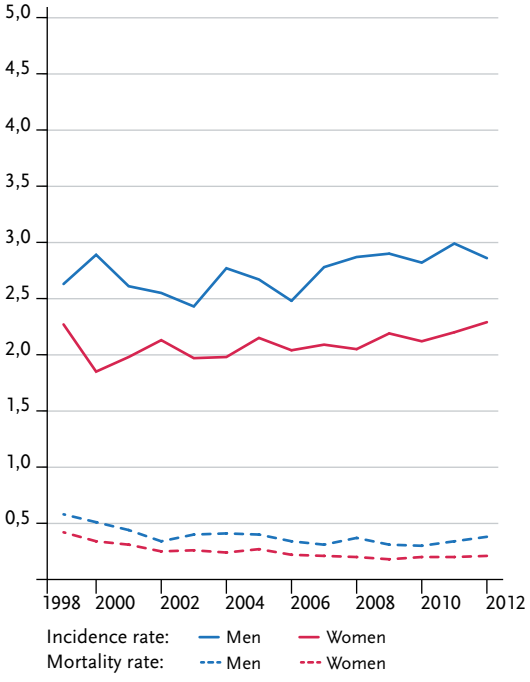


Figure 3.25.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C81, Germany 1999– 2012

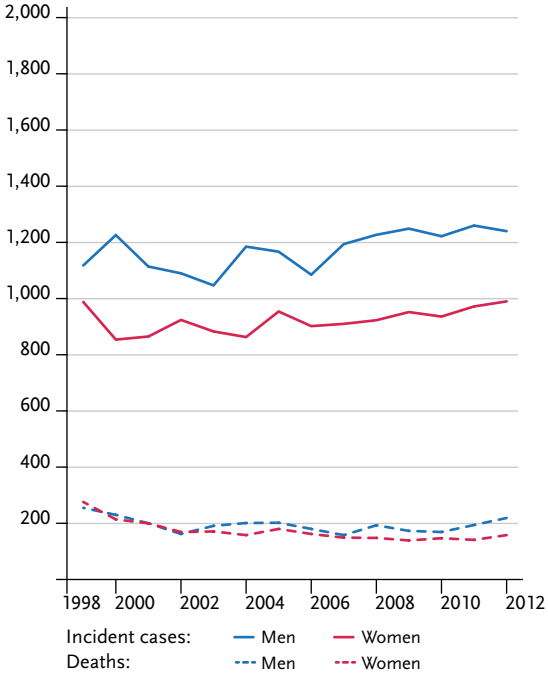


Figure 3.25.2
Age-specific incidence rates by sex, ICD-10 C81, Germany 2011–2012
per 100,000

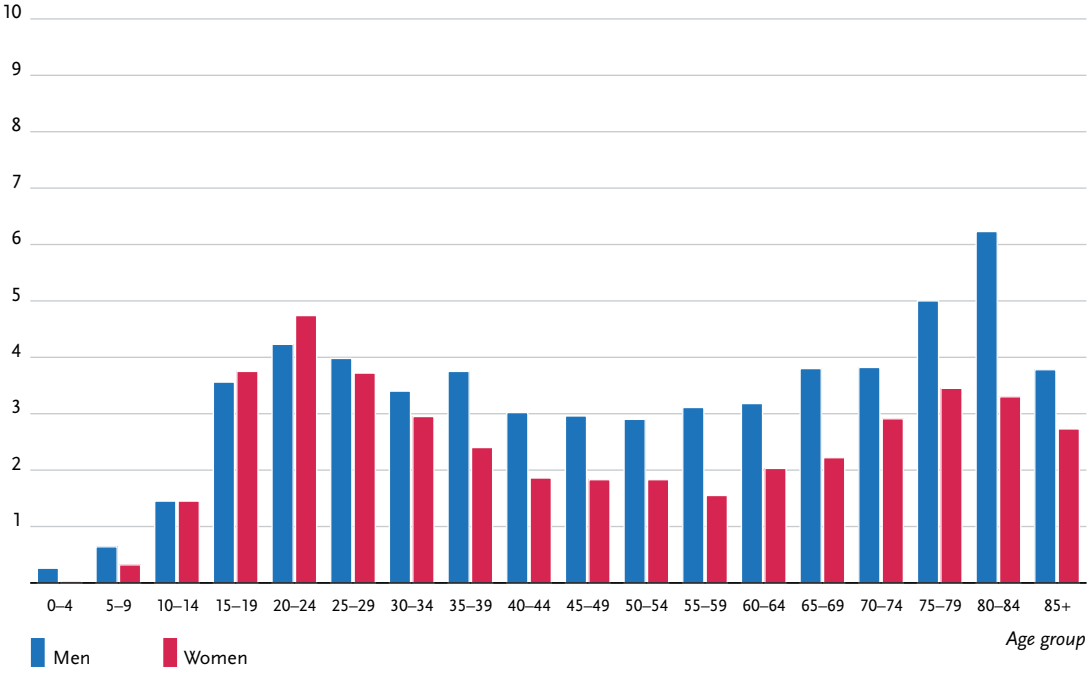


Table 3.25.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C81, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
15 years	<0.1%	(1 in 2,700)	0.2%	(1 in 430)	<0.1%	(1 in 330,300)	<0.1%	(1 in 2,200)
25 years	<0.1%	(1 in 2,800)	0.2%	(1 in 520)	<0.1%	(1 in 63,600)	<0.1%	(1 in 2,200)
35 years	<0.1%	(1 in 3,200)	0.2%	(1 in 630)	<0.1%	(1 in 42,100)	<0.1%	(1 in 2,200)
45 years	<0.1%	(1 in 3,500)	0.1%	(1 in 770)	<0.1%	(1 in 40,300)	<0.1%	(1 in 2,300)
55 years	<0.1%	(1 in 3,700)	0.1%	(1 in 940)	<0.1%	(1 in 14,600)	<0.1%	(1 in 2,400)
Lifetime risk			0.2%	(1 in 400)			<0.1%	(1 in 2,200)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
15 years	<0.1%	(1 in 2,300)	0.2%	(1 in 530)	<0.1%	(1 in 345,900)	<0.1%	(1 in 3,100)
25 years	<0.1%	(1 in 2,900)	0.1%	(1 in 690)	<0.1%	(1 in 88,200)	<0.1%	(1 in 3,200)
35 years	<0.1%	(1 in 4,300)	0.1%	(1 in 910)	<0.1%	(1 in 127,100)	<0.1%	(1 in 3,300)
45 years	<0.1%	(1 in 5,600)	0.1%	(1 in 1,100)	<0.1%	(1 in 64,200)	<0.1%	(1 in 3,300)
55 years	<0.1%	(1 in 5,800)	0.1%	(1 in 1,400)	<0.1%	(1 in 34,200)	<0.1%	(1 in 3,400)
Lifetime risk			0.2%	(1 in 490)			<0.1%	(1 in 3,200)

Figure 3.25.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for Hodgkin's lymphoma.

Figure 3.25.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C81, Germany 2011–2012

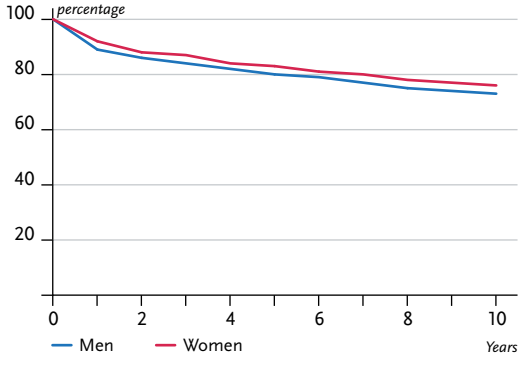


Figure 3.25.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C81, Germany 2011–2012

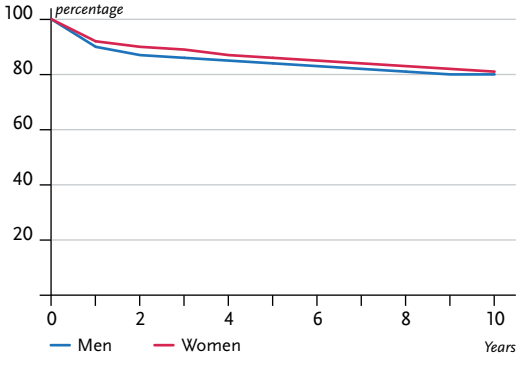


Figure 3.25.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C81, 2011–2012
per 100,000 (European standard)

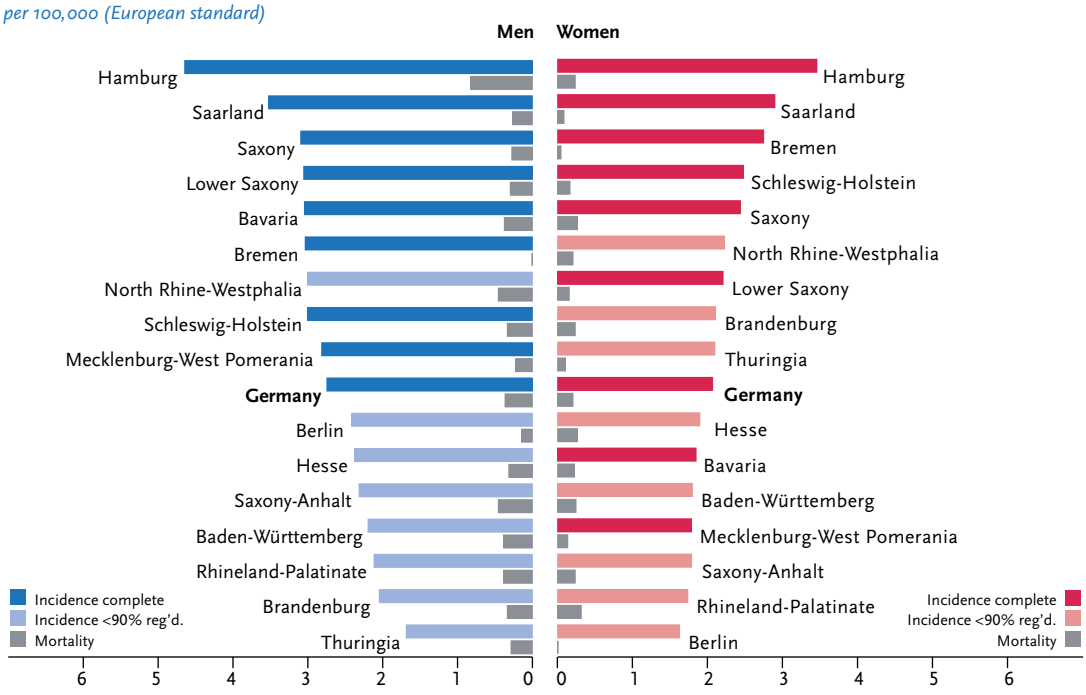
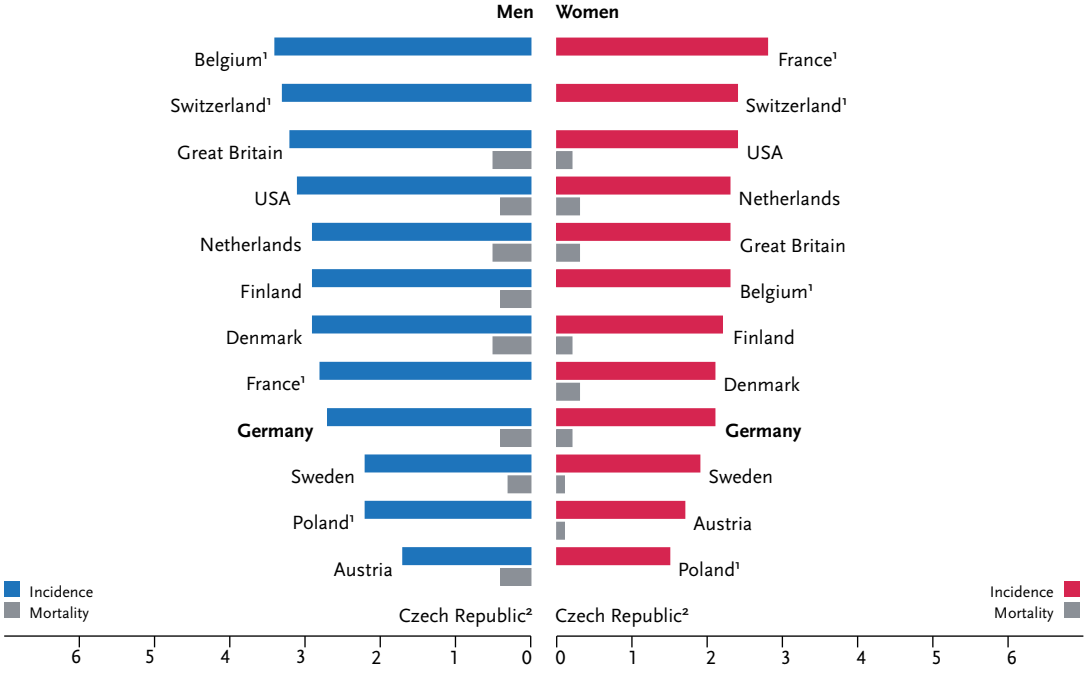


Figure 3.25.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C81, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ no comparable data for mortality
² no comparable data

3.26 Non-Hodgkin lymphomas

Table 3.26.1
Overview of key epidemiological parameters for Germany, ICD-10 C82–C88

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	8,690	7,510	8,580	7,570	9,800	8,200
Crude incidence rate[1]	22.2	18.3	21.8	18.4	24.5	19.9
Standardised incidence rate[1,2]	15.9	10.9	15.4	11.0	16.7	11.2
Median age at diagnosis	69	72	70	72		
Deaths	3,232	3,027	3,407	2,955		
Crude mortality rate[1]	8.3	7.4	8.7	7.2		
Standardised mortality rate[1,2]	5.4	3.4	5.5	3.3		
5-year prevalence	29,200	25,600	29,500	25,900		
		after 5 years		*after 10 years*		
Absolute survival rate (2011–2012)[3]	57 (52–61)	61 (53–66)	42 (38–44)	47 (41–52)		
Relative survival rate (2011–2012)[3]	66 (61–69)	69 (62–74)	57 (51–61)	62 (57–66)		

[1] per 100.000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Non-Hodgkin lymphomas originate from cells of the lymphatic system, mostly from B-lymphocytes. A distinction is made between high-grade and low-grade malignancy forms. In 2012, some 16,000 people were diagnosed with non-Hodgkin lymphoma in Germany. The disease occurs as early as in childhood and the risk of developing it rises almost steadily with increasing age. The median age at diagnosis for men was 70 years and for women 72 years.

The significant increases in the age-standardised incidence rates should be seen within the context of falling rates for leukaemias, since chronic lymphatic leukaemias are now classified clinically under the low-grade malignancy non-Hodgkin lymphomas. The majority of cases are non-follicular lymphomas (49 % among men, 44 % among women). The age-standardised mortality rates are decreasing in both men and women since the turn of the millennium and reached a constant level by now, though they are lower among women compared to men. Approximately 6,000 people in Germany die of this disease annually.

With a relative 5-year survival rate of 66 % among men and 69 % among women, the prognosis for non-Hodgkin lymphomas is generally favourable, although in individual cases it depends on age, as well as on type and distribution of the disease. Some forms, even highly malignant ones, can now be treated with the prospect of a permanent cure.

Risk factors

Risk factors for non-Hodgkin lymphoma can only rarely be conclusively identified. Immunodeficiency (hereditary, because of HIV infection, or due to immunosuppressive treatment) is associated with an increased risk, as are a number of rare autoimmune diseases. Nuclear radiation or chemotherapy can also cause malign lymphomas. Viruses and other pathogens also contribute to the development of some lymphomas. For example, the link between infection with the Epstein-Barr virus (EBV, glandular fever) and Burkitt's lymphoma, which occurs predominantly in Africa, has been proven. Chronic infection of the stomach with the Helicobacter pylori bacterium can lead to a lymphoma of the gastric mucosa (MALT lymphoma). Certain T-cell lymphomas that are rare in Europe are found clustered in carriers of the human T-cell leukaemia virus (HTLV-1). Studies suggest that certain types of lymphoma are more likely to develop in people chronically infected with hepatitis viruses (type B or C). Environmental pollutants such as heavy metals, organic solvents as well as some herbicides, insecticides and fungicides are being discussed as causes of malign lymphomas. Smoking and being overweight appear to play a role, particularly for aggressive lymphomas. Regular exercise may reduce the risk. New studies suggest that hereditary genetic variations could affect the risk of developing the disease, without being a direct cause of the lymphomas.

Figure 3.26.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C82–C88, Germany 1999–2012
per 100,000 (European standard)

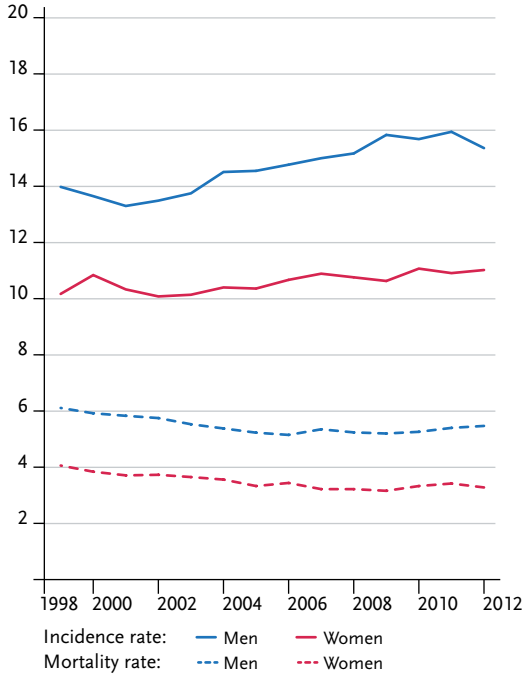


Figure 3.26.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C82–C88, Germany 1999–2012

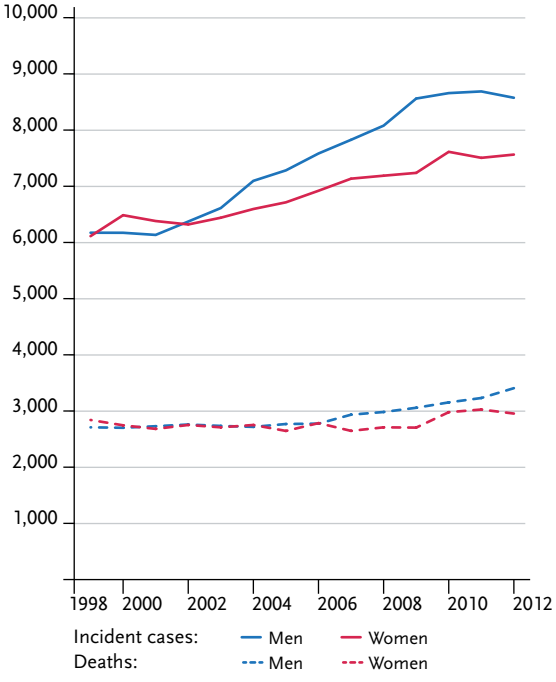


Figure 3.26.2
Age-specific incidence rates by sex, ICD-10 C82–C88, Germany 2011–2012
per 100,000

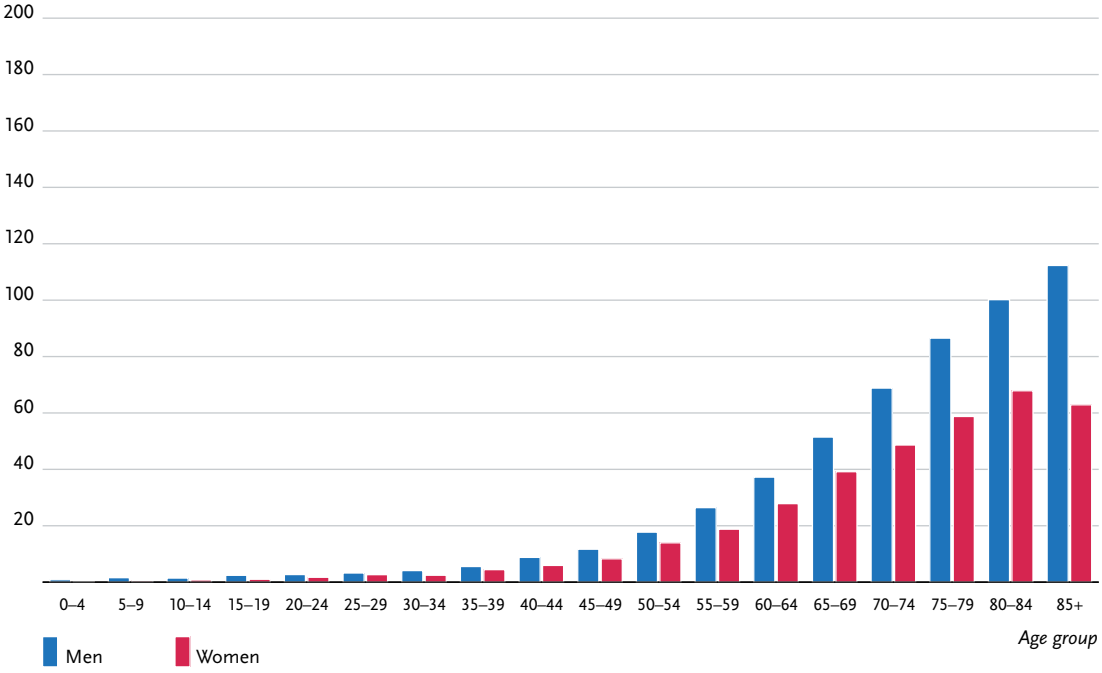


Table 3.26.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C82–C88, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 1,500)	1.7%	(1 in 60)	<0.1%	(1 in 13,000)	0.8%	(1 in 130)
45 years	0.1%	(1 in 700)	1.6%	(1 in 62)	<0.1%	(1 in 3,600)	0.8%	(1 in 130)
55 years	0.3%	(1 in 350)	1.5%	(1 in 65)	0.1%	(1 in 1,300)	0.8%	(1 in 130)
65 years	0.6%	(1 in 180)	1.4%	(1 in 72)	0.2%	(1 in 490)	0.8%	(1 in 130)
75 years	0.7%	(1 in 140)	1.1%	(1 in 94)	0.4%	(1 in 230)	0.7%	(1 in 140)
Lifetime risk			1.7%	(1 in 58)			0.8%	(1 in 130)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	0.1%	(1 in 1,900)	1.4%	(1 in 70)	<0.1%	(1 in 20,300)	0.6%	(1 in 170)
45 years	0.1%	(1 in 900)	1.4%	(1 in 72)	<0.1%	(1 in 7,500)	0.6%	(1 in 170)
55 years	0.2%	(1 in 420)	1.3%	(1 in 77)	<0.1%	(1 in 2,200)	0.6%	(1 in 170)
65 years	0.4%	(1 in 240)	1.1%	(1 in 89)	0.1%	(1 in 710)	0.6%	(1 in 170)
75 years	0.5%	(1 in 190)	0.8%	(1 in 120)	0.3%	(1 in 350)	0.5%	(1 in 200)
Lifetime risk			1.5%	(1 in 68)			0.6%	(1 in 170)

Figure 3.26.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for non-Hodgkin lymphomas.

Table 3.26.3
Proportion of the various non-Hodgkin lymphomas for all new diagnoses C82–C88, by sex, Germany 2011–2012

	C82[1]	C83[2]	C84[3]	C85[4]	C86[5]	C88[6]
Men	15%	49%	8%	19%	2%	6%
Women	20%	44%	5%	22%	2%	7%

1 Follicular lymphoma
2 Non-follicular lymphoma
3 Mature T/NK-cell lymphomas
4 Other and unspecified types of non-Hodgkin lymphoma
5 Other specified types of T/NK-cell lymphoma
6 Malignant immunoproliferative diseases

Figure 3.26.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C82–C88, Germany 2011–2012

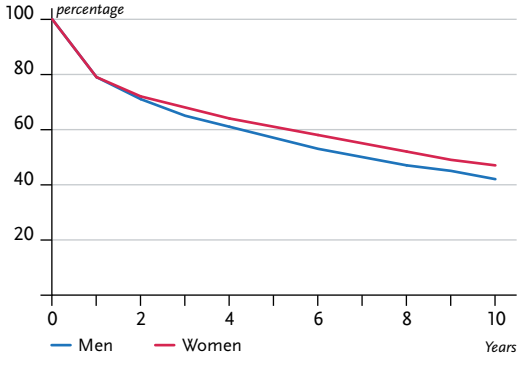


Figure 3.26.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C82–C88, Germany 2011–2012

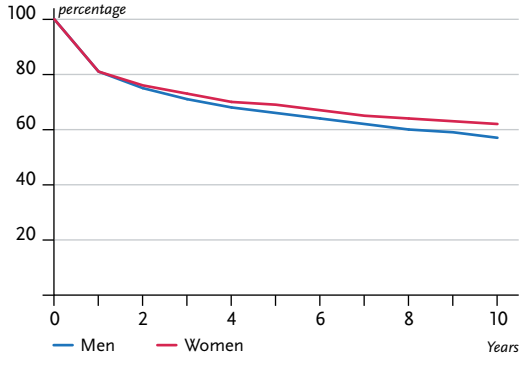


Figure 3.26.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C82 – C88, 2011 – 2012
per 100,000 (European standard)

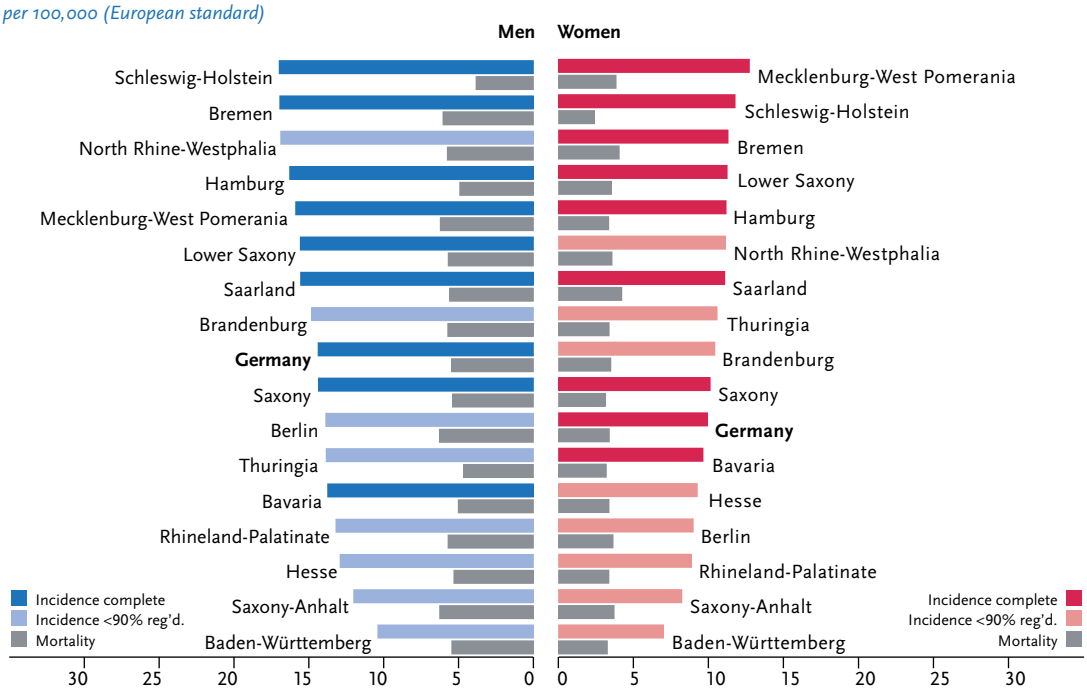
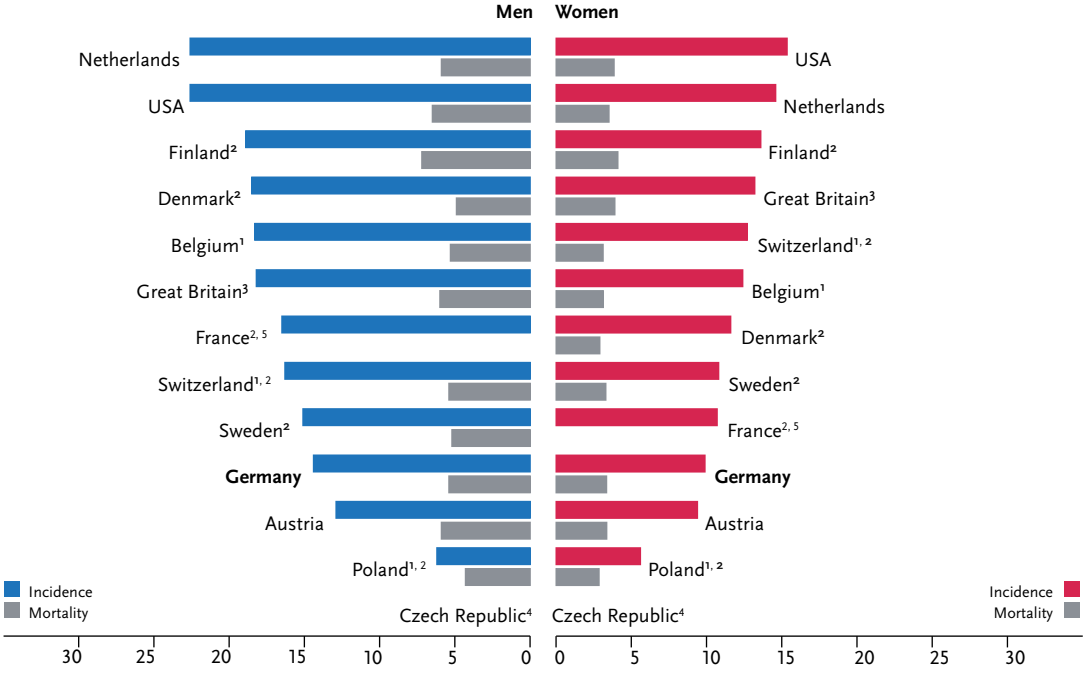


Figure 3.26.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C82 – C88, 2011 – 2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] data for mortality for C81–C85
[2] data for incidence for C82–C85 and C96
[3] data for C82–C85
[4] no comparable data
[5] no comparable data for mortality

3.27 Multiple myeloma

Table 3.27.1
Overview of key epidemiological parameters for Germany, ICD-10 C90

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	3,560	2,940	3,490	2,850	3,800	3,000
Crude incidence rate[1]	9.1	7.2	8.9	6.9	9.4	7.4
Standardised incidence rate[1,2]	6.1	3.9	5.8	3.7	5.8	3.9
Median age at diagnosis	71	73	72	74		
Deaths	1,992	1,916	1,956	1,870		
Crude mortality rate[1]	5.1	4.7	5.0	4.6		
Standardised mortality rate[1,2]	3.3	2.2	3.1	2.1		
5-year prevalence	10,200	8,400	10,500	8,400		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	41 (23–48)	40 (36–48)	22 (7–26)	22 (18–27)		
Relative survival rate (2011–2012)[3]	48 (27–56)	45 (41–55)	31 (11–37)	30 (23–35)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

Multiple myeloma (Plasmacytoma) is a malignant proliferation of anti-body-producing plasma cells. The disease mostly occurs initially in the bone marrow where it forms multiple myeloma with corresponding complications such as bone fractures and bone pain or blood count changes. In approximately 1% of cases involvement of other organs not associated with bone marrow leads to diagnosis (extramedullary plasmacytoma).

In Germany, in 2012 approximately 3,490 men and 2,850 women were newly diagnosed with the illness. The risk of developing the disease increases significantly in advanced years with cases being extremely rare before the age of 45 years (approximately 2% of all cases). Following age-standardisation the incidence rates for women and men were almost constant with the mortality rates in contrast for both genders declining slightly.

Given a relative 5-year survival rate of approximately 45% in women and 48% in men, the prognosis is relatively unfavourable. Even after maximum therapy, e.g. autologous stem cell transplant, a permanent cure is not to be expected. However, the course of the illness may in some cases be asymptomatic for a relatively long period, and during therapy temporary remissions may be possible.

Risk factors

The causes of the development of plasmacytomas (multiple myeloma) are largely still not yet understood. A monoclonal gammopathy of undetermined significance (MGUS) is considered to be the preliminary stage of the multiple myeloma. Recognised risk factors for multiple myeloma are advanced age and the male sex. Chronic infections such as HIV-infection or infection with the hepatitis C virus are associated with an increased risk of developing a multiple myeloma. There are currently conflicting opinions as to whether certain lifestyle habits or exposure to environmental toxins or radiation significantly increase the risk of developing a myeloma. According to more recent study data, being very overweight is linked with increased risk. Familial clustering has been observed though there is no definite evidence of heredity to date. However, variations in incidence within different population groups also point to genetic factors. People of black African origin are probably more frequently affected than white North Americans, Europeans or Asians.

Figure 3.27.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C90, Germany 1999–2012
per 100,000 (European standard)

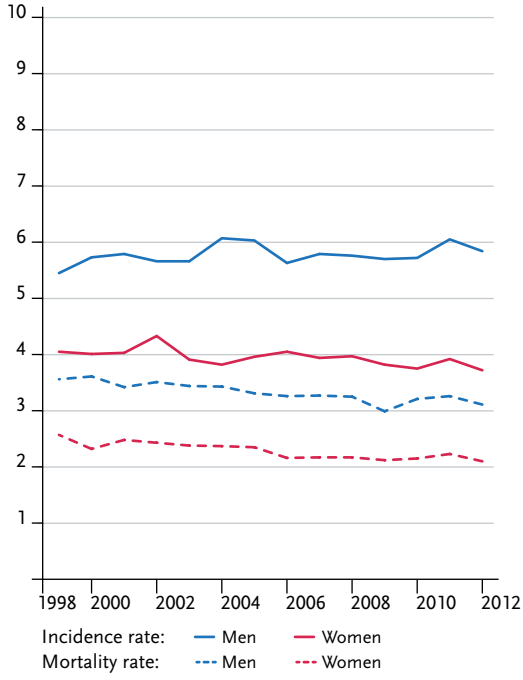


Figure 3.27.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C90, Germany 1999–2012

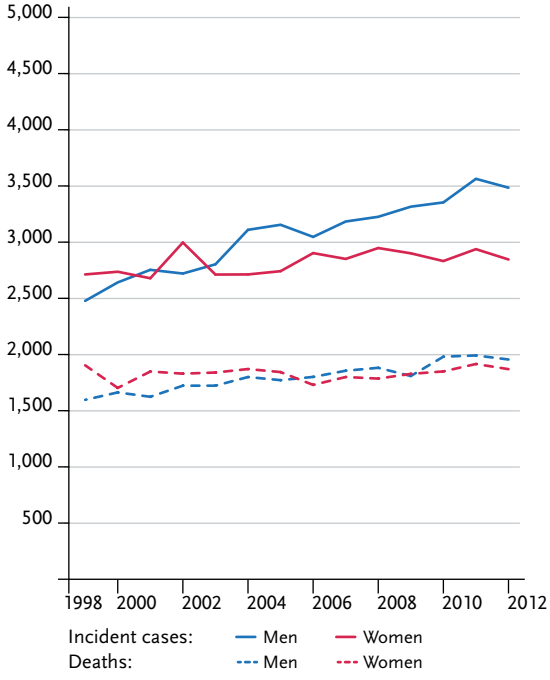


Figure 3.27.2
Age-specific incidence rates by sex, ICD-10 C90, Germany 2011–2012
per 100,000

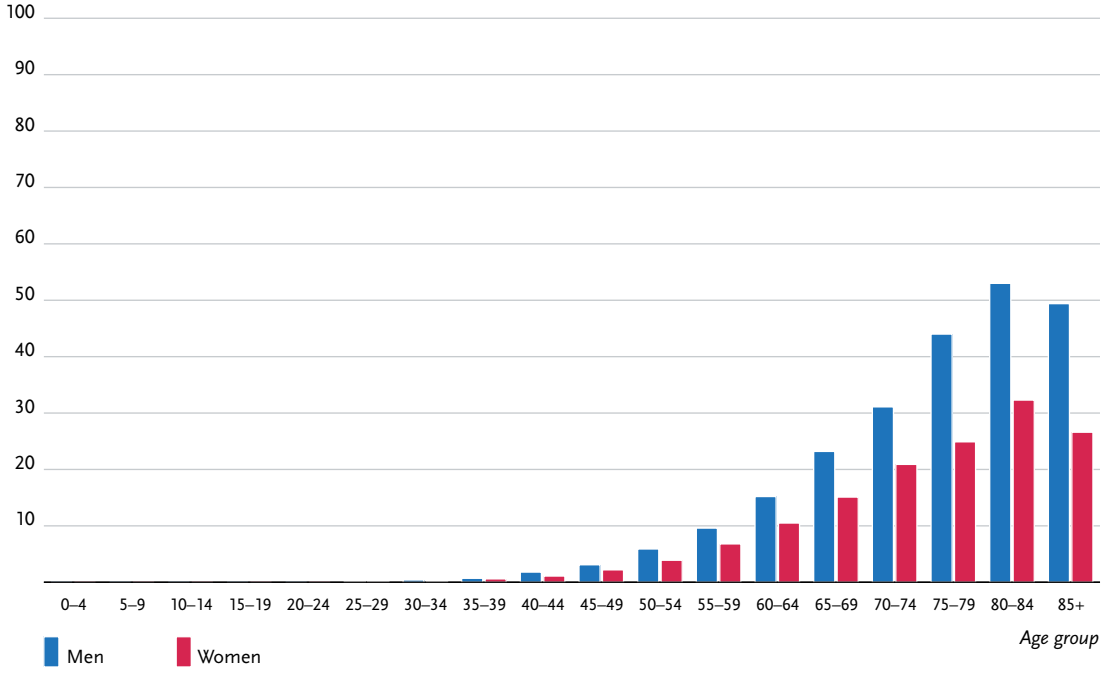


Table 3.27.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C90, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 7,900)	0.7%	(1 in 140)	<0.1%	(1 in 36,100)	0.4%	(1 in 230)
45 years	<0.1%	(1 in 2,300)	0.7%	(1 in 140)	<0.1%	(1 in 6,900)	0.4%	(1 in 230)
55 years	0.1%	(1 in 840)	0.7%	(1 in 140)	0.1%	(1 in 2,000)	0.4%	(1 in 230)
65 years	0.2%	(1 in 410)	0.6%	(1 in 160)	0.1%	(1 in 750)	0.4%	(1 in 240)
75 years	0.3%	(1 in 290)	0.5%	(1 in 200)	0.2%	(1 in 410)	0.4%	(1 in 270)
Lifetime risk			0.7%	(1 in 140)			0.4%	(1 in 240)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 11,200)	0.6%	(1 in 180)	<0.1%	(1 in 64,100)	0.4%	(1 in 260)
45 years	<0.1%	(1 in 3,300)	0.6%	(1 in 180)	<0.1%	(1 in 11,000)	0.4%	(1 in 260)
55 years	0.1%	(1 in 1,200)	0.5%	(1 in 190)	<0.1%	(1 in 3,000)	0.4%	(1 in 260)
65 years	0.2%	(1 in 600)	0.5%	(1 in 210)	0.1%	(1 in 1,000)	0.4%	(1 in 270)
75 years	0.2%	(1 in 420)	0.4%	(1 in 290)	0.2%	(1 in 530)	0.3%	(1 in 330)
Lifetime risk			0.6%	(1 in 180)			0.4%	(1 in 260)

Figure 3.27.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for multiple myeloma.

Figure 3.27.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C90, Germany 2011–2012

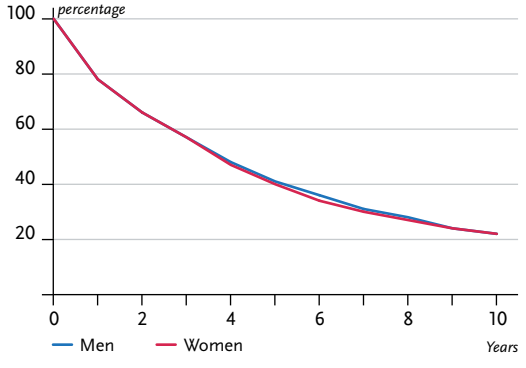


Figure 3.27.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C90, Germany 2011–2012

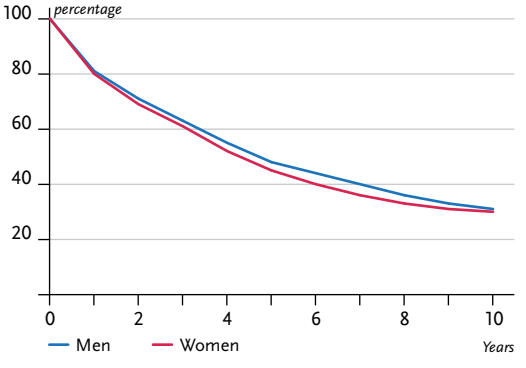


Figure 3.27.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C90, 2011–2012
per 100,000 (European standard)

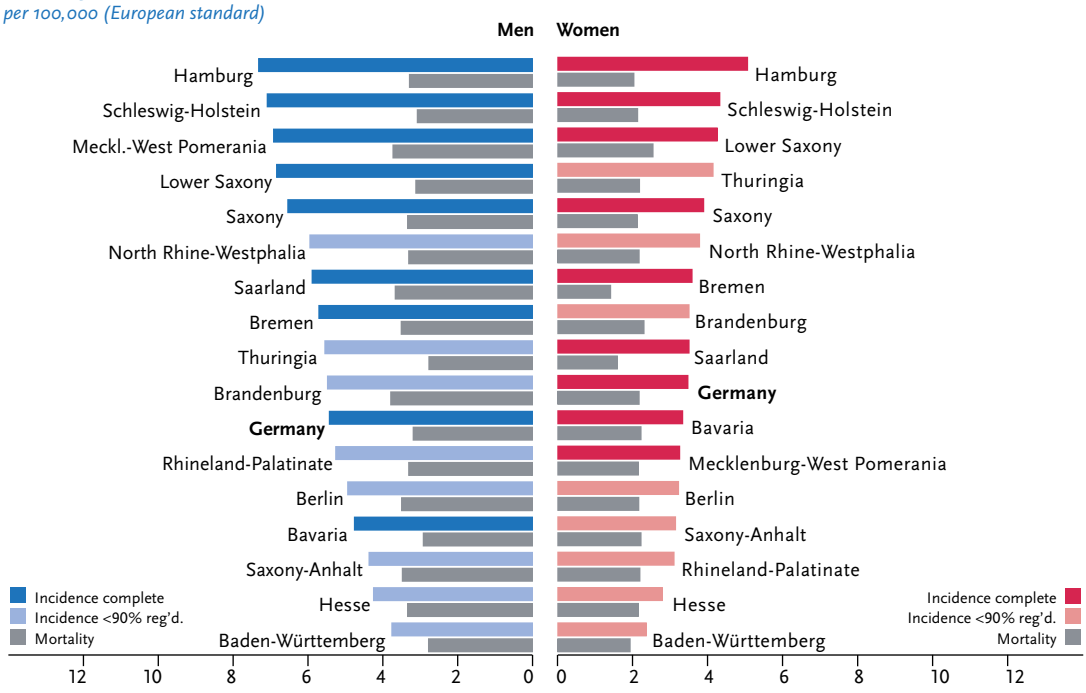
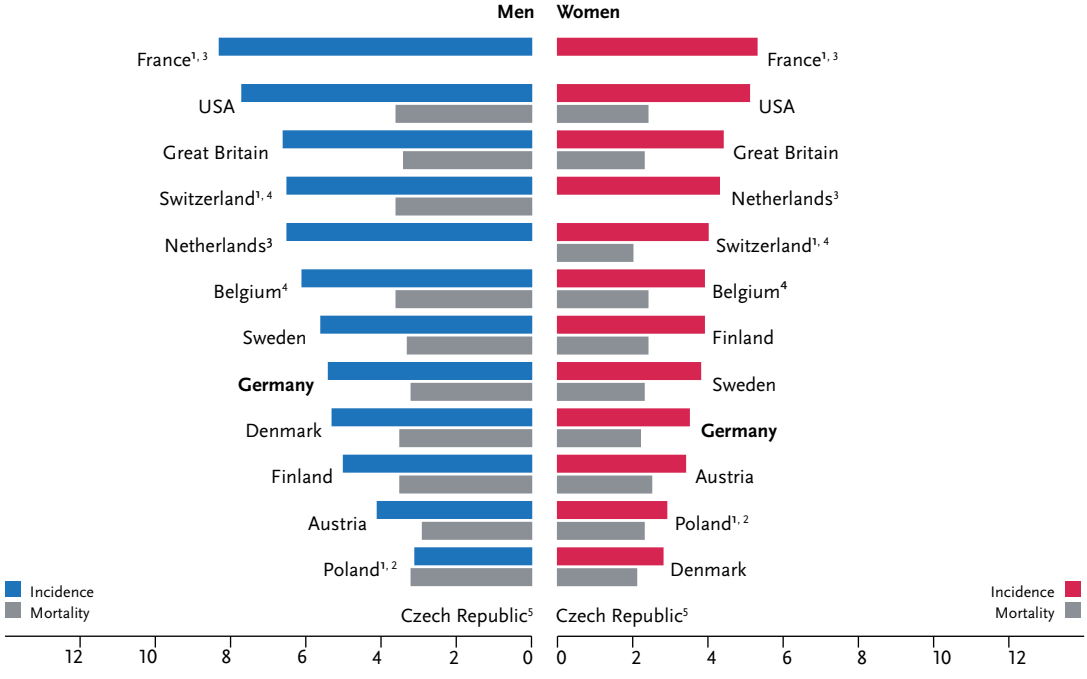


Figure 3.27.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C90, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



[1] incl. C88
[2] data for mortality incl. C96
[3] no comparable data for mortality
[4] data for mortality incl. C88, C96
[5] no comparable data

3.28 Leukaemias

Table 3.28.1
Overview of key epidemiological parameters for Germany, ICD-10 C91–C95

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	7,520	5,840	7,180	5,460	7,800	5,900
Crude incidence rate[1]	19.2	14.2	18.3	13.3	19.4	14.1
Standardised incidence rate[1,2]	14.1	8.9	13.3	8.2	13.3	8.6
Median age at diagnosis	70	72	71	73		
Deaths	4,083	3,535	4,155	3,445		
Crude mortality rate[1]	10.4	8.6	10.6	8.4		
Standardised mortality rate[1,2]	6.9	4.2	6.8	4.0		
5-year prevalence	22,700	16,500	22,700	16,400		
	after 5 years		*after 10 years*			
Absolute survival rate (2011–2012)[3]	50 (34–58)	49 (31–58)	34 (20–39)	36 (23–45)		
Relative survival rate (2011–2012)[3]	58 (40–67)	55 (35–64)	46 (28–54)	46 (28–55)		

[1] per 100,000 persons [2] age-standardised (European standard) [3] in percentages (lowest and highest value of the included German federal states)

Epidemiology

In 2012, some 12,640 people in Germany were diagnosed with leukaemia, 5% of whom were under 15 years of age. The risk for leukaemia falls with increasing age among children and young adults independent of gender. Above the age of 30 the risk increases again continuously, with a higher incidence among men than women. One in 67 men and one in 91 women develop a leukaemia during their lifetime.

More than a third of the diagnosed cases were chronic lymphatic leukaemia (CLL) and over a quarter of the cases were acute myeloid leukaemia (AML).

The age-standardised incidence rates have been relatively stable since 1999 to 2012 among both sexes. However, the age-standardised mortality rates have declined continuously. Within Germany, the highest incidence rates are observed in Hamburg, whereas the highest mortality rates are in Saarland.

The prognosis for leukaemia depends on its form and the age of the subject at diagnosis. It is most favourable by far for the leukaemia forms in childhood, whereas in adults the acute forms still have a poorer prognosis.

Overall, about a third of adult patients are still alive ten years after diagnosis. However, a permanent cure is rarely achieved, e.g. after a risky stem cell transplantation.

Risk factors

The risk factors known to cause acute leukaemia include ionising radiation in radiotherapy, cytostatic drugs in chemotherapy for cancer, and probably also various chemicals (e.g. at the workplace). If, for example, occupational contact with benzene is a causal factor, then leukaemia can be recognised as an occupational disease. However, none of these risk factors is found in the medical history of most patients. In particular the causes of chronic leukaemias are unclear.

The possible influence of dietary habits and lifestyle is under discussion, particularly for chronic lymphatic leukaemias. So far, however, there is no proof of such influences for this or for other chronic and acute forms of leukaemia. The influence of viruses has not been conclusively proved and is also the subject of research. Besides, there is a debate as to whether insufficient training of the immune system in childhood contributes towards increased risk, with no conclusion having yet been reached. No link to exposure to electromagnetic fields of any origin has been proved.

A number of comparatively rare genetic mutations can increase the incidence risk for leukaemia, including trisomy of chromosome 21. It is likely that some hereditary gene variations play a role in the risk of disease without causing leukaemia directly. Several factors presumably need to interact in order for leukaemia to develop.

Figure 3.28.1a
Age-standardised incidence and mortality rates, by sex, ICD-10 C91 – C95, Germany 1999 – 2012
per 100,000 (European standard)

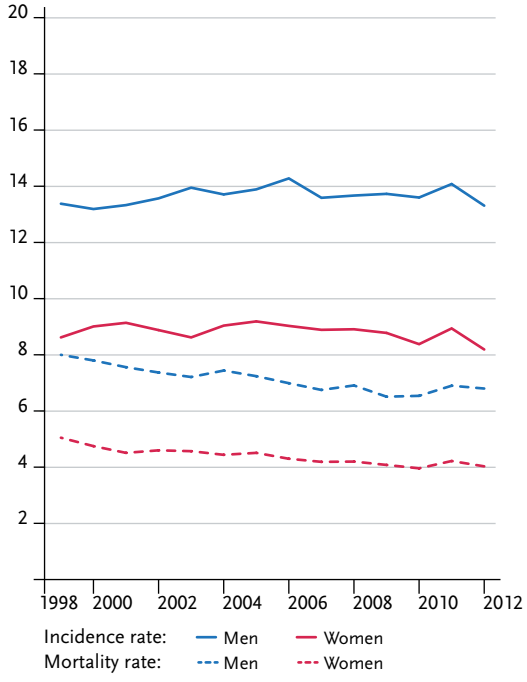


Figure 3.28.1b
Absolute numbers of incident cases and deaths, by sex, ICD-10 C91 – C95, Germany 1999 – 2012

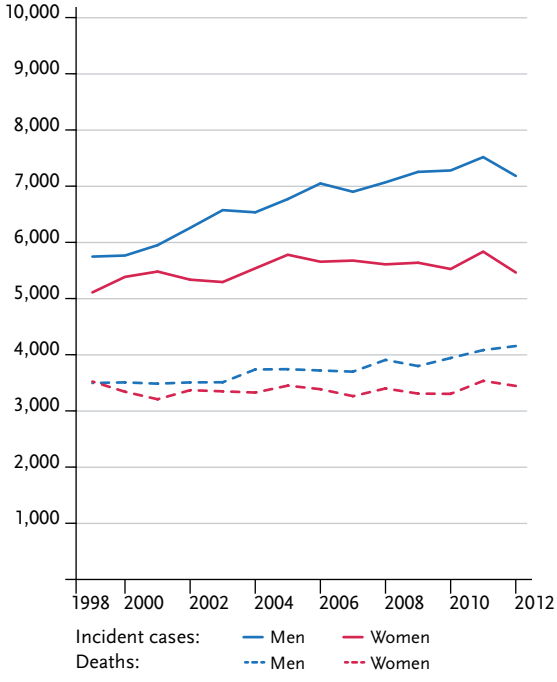


Figure 3.28.2
Age-specific incidence rates by sex, ICD-10 C91 – C95, Germany 2011 – 2012
per 100,000

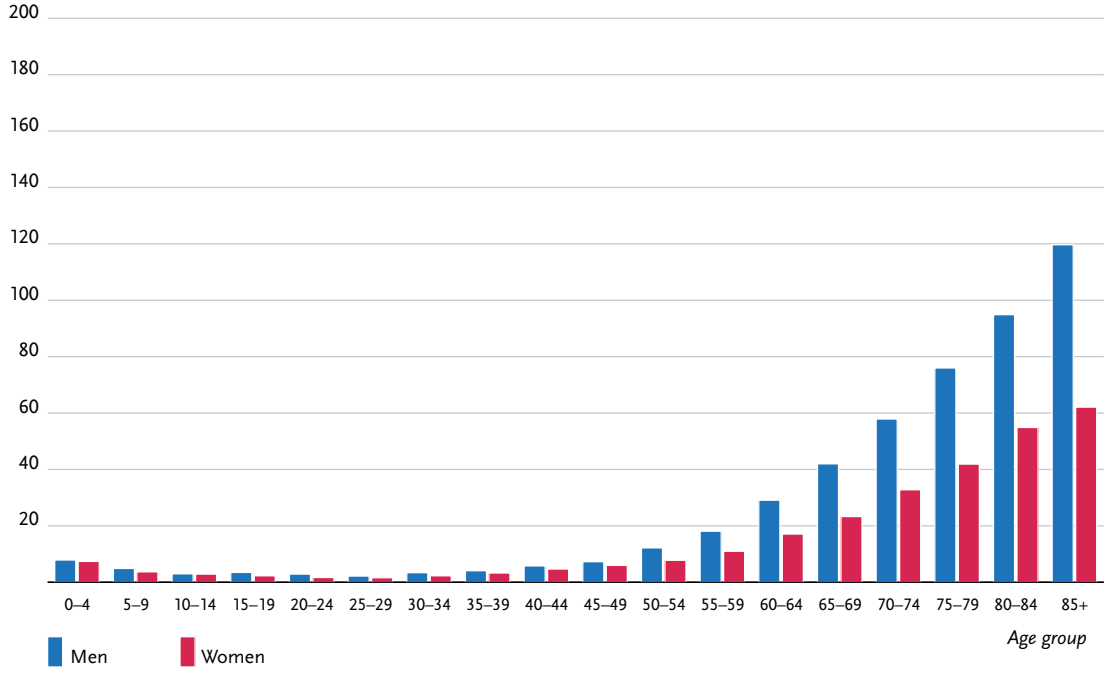


Table 3.28.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C91–C95, database 2012

	Risk of developing cancer				Mortality risk			
Men aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 2,100)	1.4%	(1 in 72)	<0.1%	(1 in 6,700)	0.9%	(1 in 110)
45 years	0.1%	(1 in 1,000)	1.4%	(1 in 73)	<0.1%	(1 in 3,800)	0.9%	(1 in 110)
55 years	0.2%	(1 in 440)	1.3%	(1 in 76)	0.1%	(1 in 1,100)	0.9%	(1 in 110)
65 years	0.4%	(1 in 230)	1.2%	(1 in 82)	0.2%	(1 in 410)	0.9%	(1 in 110)
75 years	0.6%	(1 in 160)	1.0%	(1 in 100)	0.5%	(1 in 190)	0.9%	(1 in 120)
Lifetime risk			1.5%	(1 in 67)			0.9%	(1 in 110)
Women aged	**in the next ten years**		**ever**		**in the next ten years**		**ever**	
35 years	<0.1%	(1 in 2,600)	1.0%	(1 in 99)	<0.1%	(1 in 9,400)	0.7%	(1 in 140)
45 years	0.1%	(1 in 1,600)	1.0%	(1 in 100)	<0.1%	(1 in 4,600)	0.7%	(1 in 140)
55 years	0.1%	(1 in 730)	0.9%	(1 in 110)	0.1%	(1 in 1,800)	0.7%	(1 in 150)
65 years	0.3%	(1 in 380)	0.8%	(1 in 120)	0.2%	(1 in 660)	0.7%	(1 in 150)
75 years	0.4%	(1 in 260)	0.7%	(1 in 150)	0.3%	(1 in 320)	0.6%	(1 in 170)
Lifetime risk			1.1%	(1 in 91)			0.7%	(1 in 140)

Figure 3.28.3
Distribution of T-stages at first diagnosis by sex
T-stages are not defined for leukaemias.

Table 3.28.3
Proportion of the various leukaemia forms for all new diagnoses C91–C95, by sex, Germany 2011–2012

	ALL[1]	CLL[2]	AML[3]	CML[4]	others[5]
Men	7%	40%	20%	8%	24%
Women	8%	36%	23%	9%	24%

1 Acute lymphatic leukaemia (C91.0)
2 Chronic lymphatic leukaemia (C91.1)
3 Acute myeloid leukaemia (C92.0)
4 Chronic myeloid leukaemia (C92.1)
5 incl. unspecified leukaemia forms

Figure 3.28.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C91–C95, Germany 2011–2012

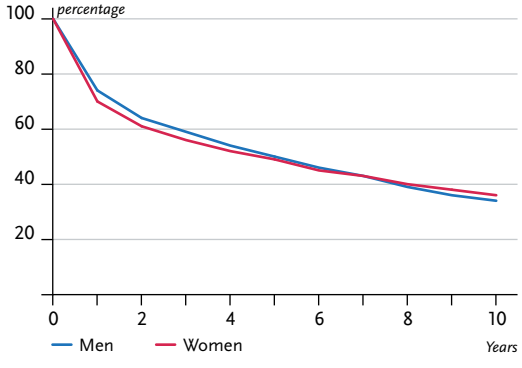


Figure 3.28.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C91–C95, Germany 2011–2012

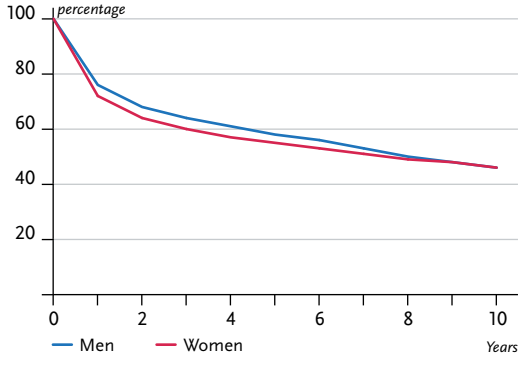


Figure 3.28.5
Registered age-standardised incidence and mortality rates in German federal states, by sex, ICD-10 C91 – C95, 2011 – 2012
per 100,000 (European standard)

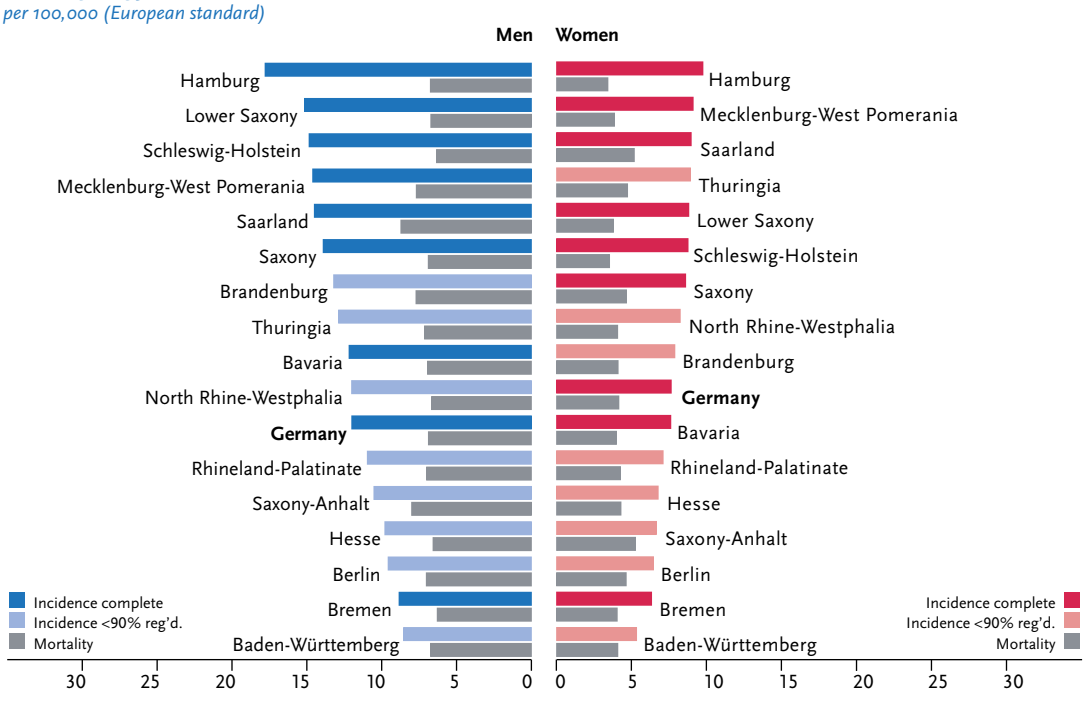
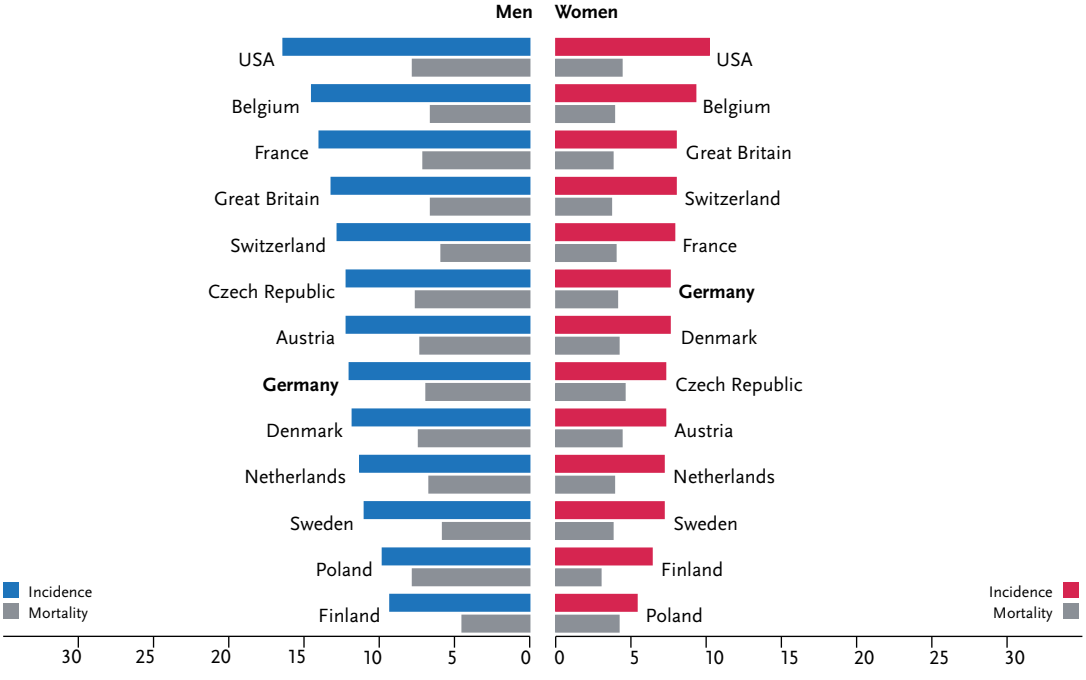


Figure 3.28.6
International comparison of age-standardised incidence and mortality rates, by sex, ICD-10 C91 – C95, 2011 – 2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



3.29 Rare cancer sites and non-melanoma skin cancer

Rare malignant tumours

A good 5 % of all malignant neoplasms excluding non-melanoma skin cancer affect sites which have not been covered in the preceding chapters. Of these, approximately half again are malignant tumours of unspecified site (C80) or other and ill-defined sites (C26, C76). The remainders are presented in Table 3.29.1. Detailed results regarding estimated nationwide incidence and mortality, for instance according to age group and year of diagnosis can be found at www.krebsdaten.de.

Table 3.29.1
Frequency, median age at diagnosis and survival rates for rare malignant tumours in Germany 2012

Cancer site	ICD-10	Incident cases		Deaths		Ø age at diagnosis		rel. 5-Y-SR[1]
		Men	Women	Men	Women	Men	Women	total
Small intestine	C17	1,170	1,010	281	258	69	70	60
Nasal cavity, nasal sinuses and middle ear	C30, C31	560	350	125	65	63	66	58
Mediastinum and other intrathoracic organs	C37–C39	290	210	157	136	67	70	44
Bone and articular cartilage	C40, C41	360	330	250	215	53	55	60
Vagina and other female genital organs	C52, C57, C58		1,110		453		71	49
Penis and other male genital organs	C60, C63	900		198		70		74
Urinary tract excl. kidney and bladder	C65, C66, C68	1,530	1,000	2,270	1,042	74	76	46
Eye	C69	340	330	127	136	66	68	66
Adrenal gland and other endocrine glands	C74, C75	260	240	375	293	57	61	49
Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissue	C96	100	80	28	26	59	58	83

[1] relative 5-year survival rate in percentage, men and women, period 2011–2012

Non-melanoma skin cancer

Non-melanoma skin cancers can mainly be divided into basal cell carcinomas (basaliomas) and squamous-cell carcinomas, both of which occur particularly in advanced age (Table 3.29.2). The most important risk factor for both forms is the long-term impact of the ultraviolet part of sunshine, which is why they are particularly located on the face or on the head and neck.

The basalioma metastasises only in very rare exceptional circumstances and therefore is not usually life-threatening. It can however grow destructively in the surrounding tissue and can considerably affect quality of life given an unfavourable site. The relative survival rate of over 100 % for basalioma can probably be explained by the fact that suspicious skin changes especially in old age are more likely to heal completely in otherwise healthy people.

In the case of squamous-cell carcinoma, metastases occur somewhat more frequently, the prognosis is however generally good. An acquired immune deficiency and/or suppression through medication, for example following transplant surgery, can encourage the occurrence of this tumour.

Rare forms of skin cancer include, amongst others, Merkel-cell tumours, fibrosarcoma and carcinoma of the sebaceous and sweat glands. In cause of death statistics, no differentiation can be made between the various forms of non-melanoma skin cancer.

Table 3.29.2
Frequency, median age at diagnosis and survival rates for types of non-melanoma skin cancer in Germany 2012

Cancer site	ICD-O-3	Incident cases		Deaths		Ø age at diagnosis		rel. 5-Y-SR[1]
		Men	Women	Men	Women	Men	Women	total
Basaliomas	809–811	80,800	78,400			72	71	104
Squamous cell carcinomas	805–808	26,400	17,900			76	79	95
Unspecific histology	800–804	500	500			75	77	91
Other types		1,100	900			75	76	80
Total		108,800	97,700	363	325	73	72	102

[1] relative 5-year survival rate in percentage, men and women, period 2011–2012

4 Cancer in children

The German Childhood Cancer Registry (GCCR) has been based at the Institute of Medical Biostatistics, Epidemiology and Informatics at the University Medical Centre of the Johannes Gutenberg University Mainz, since beginning its work in 1980. Close cooperation with the Society for Paediatric Oncology and Haematology (GPOH) and its associated hospitals was part of the GCCR›s original conception. This is a characteristic feature of the registry which cannot be easily applied to adult oncology. This nationwide, population based childhood cancer registry with a high level of data quality and a degree of completeness of over 95 % (since about 1987) has been built up covering the whole of Germany. The GCCR thus meets international standards for population based cancer registries. A further characteristic of the GCCR is that it has implemented an active, open-end, long-term follow-up observation system which continues long into adulthood. In this way, the registry also provides the basis for research into long-term effects and secondary tumours and for studies with long-term survivors in general. The registry population comprises children who are diagnosed with a malignant disease or a histologically benign brain tumour before their 15th birthday and are part of the resident population of the Federal Republic of Germany when diagnosed. Cancer cases in eastern Germany have also been registered since 1991. Since 1 January 2009, the GCCR has been registering all children and adolescents up to the age of 18 years (i. e. who are diagnosed before their 18th birthday) on the basis of the »Agreement of the Joint Federal Committee on Quality-Assurance Measures for the In-Patient Care of Children and Adolescents with Haemato-Oncological Diseases«. This will make it possible to better consider the needs of the collaborating hospitals which have been combining paediatric and adolescent medicine for several years now and thus also treat cancer patients aged 15 years and over.

The current data pool consists of over 55,000 cancer cases.

Incidence of childhood cancers

About 1,800 cases of childhood (under the age of 15 years) cancer are newly diagnosed every year in Germany. With an overall population of approx. 11 million children under the age of 15 years, this means an annual incidence of about 16.6 per 100,000 children in this age group. The likelihood that a newborn child will develop a malignant disease within the first 15 years of his/her life is 0.2 %. In other words, a malignant cancer is diagnosed in approx. one in 420 children up to their 15th birthday. Since 2009, the beginning of registration of all children and adolescents up to age 18, on average an additional 300 cases aged between 15 and 17 years were registered annually. Within the first 25 years since diagnosis, another cancer (subsequent cancer) was registered for 1,061 patients, which applies to 4.4 % of patients (cumulative incidence).

Range of diagnoses

The pattern of cancer diagnoses in children is completely different from that of adults. For example, children are mostly affected by embryonal tumours (neuroblastomas, retinoblastomas, nephroblastomas, medulloblastomas, embryonic rhabdomyosarcomas or germ-cell tumours); carcinomas, by contrast, are very rare in childhood (making up about 2 % of all malignant diseases). The largest diagnostic groups are leukaemias (33.4 %), CNS tumours (24.4 %) and lymphomas (10.9 %). Overall cancer incidence among children under the age of five is about twice as high as in the 5- to 14-year-old age group. The median age at onset among the under-15-year-olds is five years, ten months. Boys are diagnosed with cancer 1.2 times more frequently than girls.

Figure 4.1
Cancer in children (determined for the period 2004–2013)

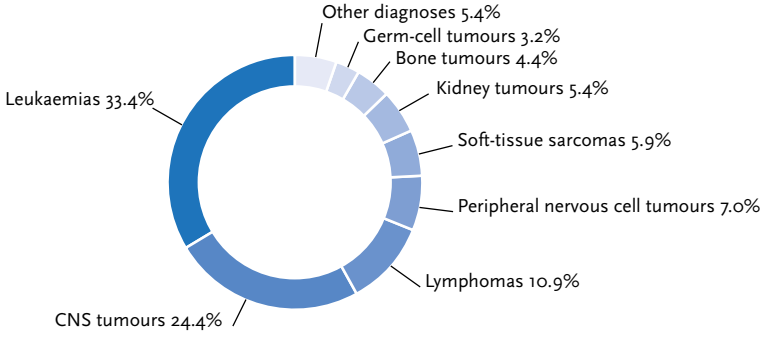
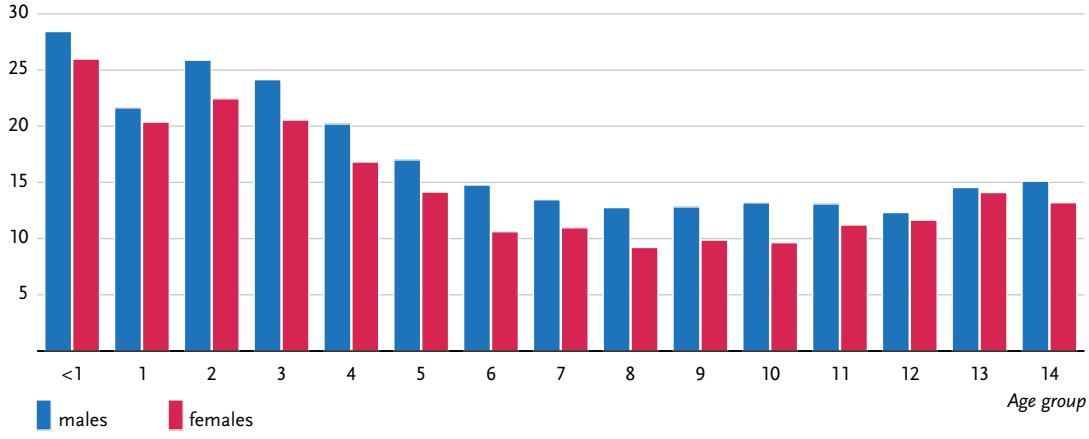


Figure 4.2
Incident cases by age and sex, all childhood malignancies
Number of cases per 100,000 by age group, determined for the period 2004–2013



Leukaemias

Leukaemias make up more than a third of all cancers among the under-15-year-olds. The most common single diagnosis overall (26.5 %) is lymphatic leukaemia (LL). It occurs more than twice as frequently among children under the age of five as in the other age groups. 4.4 % of all childhood malignancies are acute myeloid leukaemias (AML). AML is most common among children under the age of two. The survival prospects for AML are markedly lower than for LL. About 13 % of all subsequent cancers are AML.

The causes of leukaemias in childhood remain largely uncertain, even today. For a long time, environmental influences were suspected of causing childhood leukaemias. Since then it has been shown that the number of cases caused by most environmental factors (low-dose ionising radiation, non-ionising radiation and pesticides) is quite small after all, even if a weak association with leukaemias in childhood cannot be ruled out. A number of clues have meanwhile strengthened hypotheses that assign a key role to infectious pathogens and the immune system in the development of childhood leukaemias. Genetic causes are still researched and discussed for all neoplasia in childhood.

CNS tumours

The most common single diagnoses among CNS tumours are astrocytomas (total: 11.7 %), intracranial and intraspinal embryonal tumours (4.6 %) and ependymomas (1.9 %). Twenty-two percent of all subsequent cancers are CNS tumours. The increase in the incidence of CNS tumours observed in a number of western countries over the past decades may be connected

Figure 4.3
Incident cases by age and sex, childhood acute lymphatic leukaemia (ALL)
Number of cases per 100,000 by age group, determined for the period 2004–2013

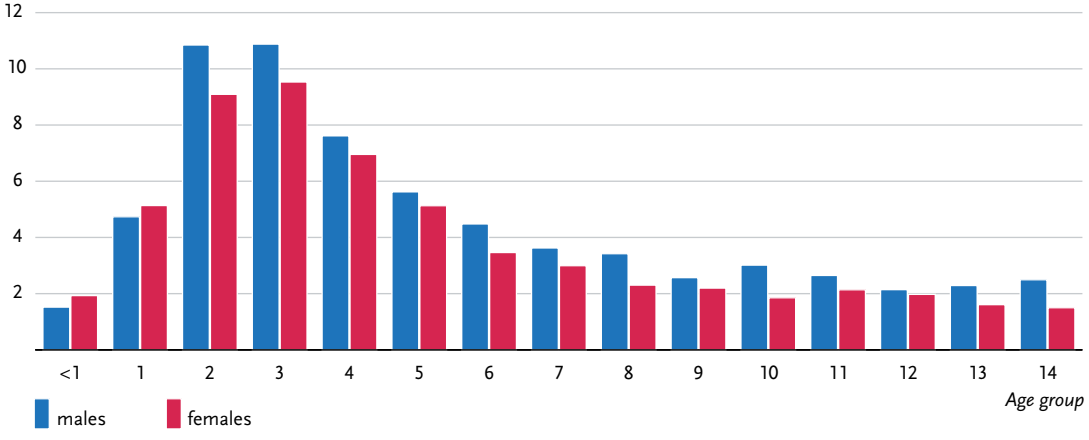


Figure 4.4
Trends of incidence of selected diagnostic groups and for all childhood malignancies
Number of cases per 100,000 (age standardised), including eastern Germany since 1991

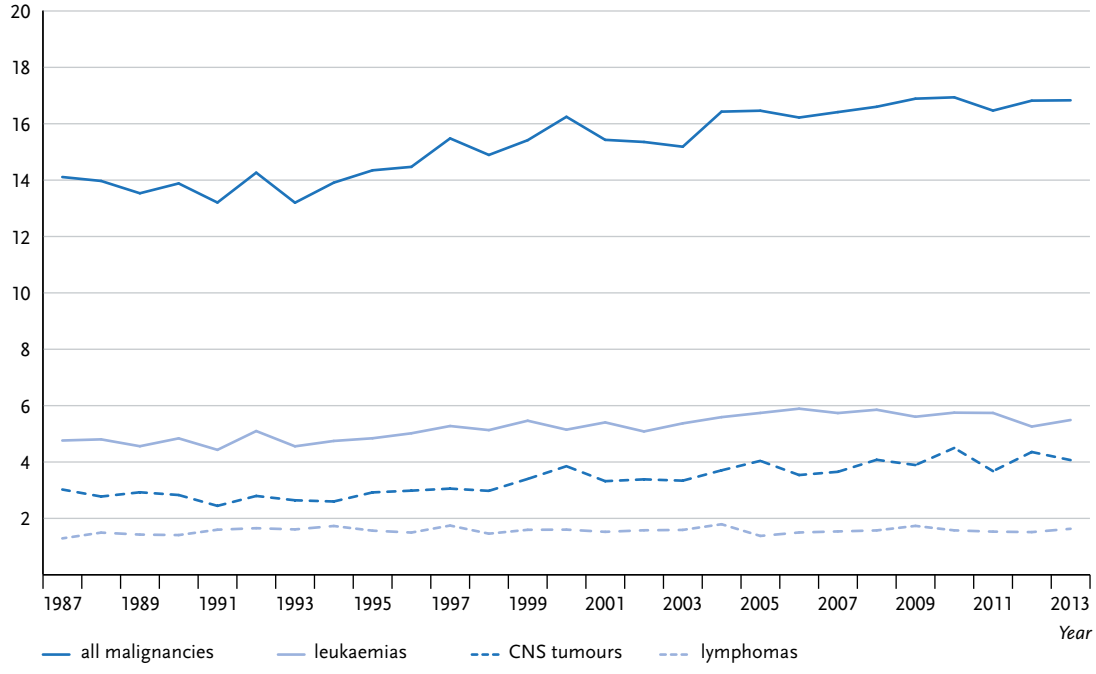
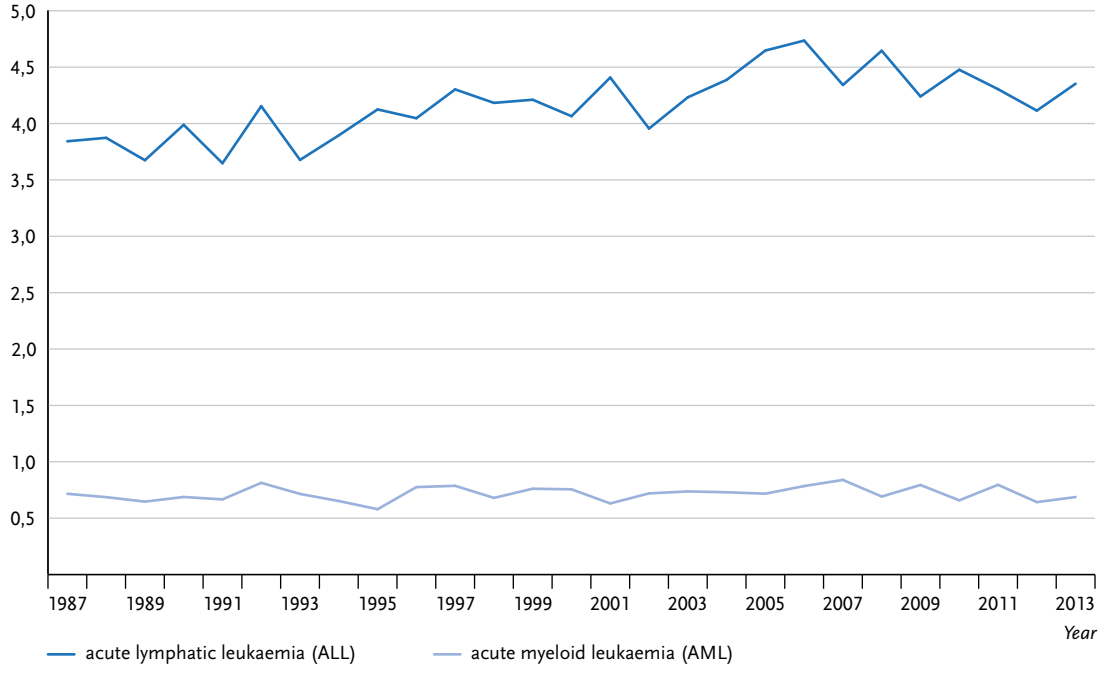


Figure 4.5
Trends of incidence of childhood leukaemias, myeloproliferative and myelodysplastic disorders
Number of cases per 100,000 (age standardised), including eastern Germany since 1991



with a better registration and also with general changes in environmental factors and related exposures. For example, a number of epidemiological studies is looking into the possible influence of ionising radiation, electromagnetic fields, pesticides, the mother's diet and genetic aspects.

Lymphomas

The most common lymphomas are non-Hodgkin lymphomas (NHL), including Burkitt's lymphoma (total: 6.5%) and Hodgkin's lymphoma (4.7%). The chances of survival with Hodgkin's lymphoma are among the best in paediatric oncology. Unfortunately, with more than 8% the frequency of subsequent cancer (within 25 years after diagnosis) after Hodgkin's lymphoma is particularly high. Children with congenital or acquired immunodeficiency and those who have had immunosuppressive therapy are at increased risk of developing NHL. An association is suspected between lymphomas and ionising radiation; this has not, however, been substantiated.

Other common malignant diseases

Other common malignant diseases in childhood include neuroblastomas (nerve-cell tumours), nephroblastomas (kidney tumours), germ-cell tumours, bone tumours and rhabdomyosarcomas (tumours of the skeletal musculature). Among these malignancies, the prognosis for children with nephroblastoma or a germ-cell tumour is much more favourable than for the other tumours. Skin tumours and thyroid cancer are other frequent subsequent cancers.

Survival

Children under 15 years of age with cancer make up less than 1% of all cancer patients. However, malignant neoplasms are the second most common cause of death among children. Fortunately, the survival rates have improved dramatically over the last 30 years thanks to significantly more differentiated diagnostics and the use of multimodal therapy concepts. In the early 1980s the chances of children with cancer being still alive five years after diagnosis were 67%; this figure has risen to 84% since then. Looking at all patients of the registry population who were diagnosed between 2002 and 2011 and followed up, the overall chance of survival is 84% after five years, 82% after ten years, and 81% after 15 years. The encouraging increase in the number of long-term survivors is increasingly focusing attention on the long-term observation of former paediatric cancer patients. The GCCR provides an ideal data basis for carrying out studies with long-term survivors. As the above figures show, it is already possible to provide information on long-term survival (for example after 15 years) and to estimate the risk of developing a second neoplasia after cancer in childhood. Examples of further research possibilities include the incidence of other long-term effects, such as the possible effects of therapy on fertility, and studies examining the health risks of the descendants of fathers and mothers who had childhood cancer. About 32,000 of the more than 42,000 patients currently known to be alive have been under observation by the registry for at least five years. The majority of these patients are at least 18 years old.

Table 4.1
Incidence and survival rates for the most common diagnoses, determined for the period 2002–2011

Cancer sites	Incidence*	Survival rate in %**		
		after 5 years	after 10 years	after 15 years
Hodgkin's lymphomas	0.6	99	98	97
Retinoblastomas	0.4	97	97	97
Germ-cell tumours	0.5	95	94	94
Nephroblastomas	1.0	93	92	92
Lymphoid leukaemias	4.4	92	90	89
Non-Hodgkin lymphomas	0.6	89	87	86
Astrocytomas	1.8	81	79	77
Neuroblastomas and ganglioneuroblastomas	1.4	79	77	76
Rhabdomyosarcomas	0.5	74	72	71
Acute myeloid leukaemias	0.7	73	72	71
Osteosarcomas	0.3	75	71	70
Intracranial and intraspinale embryonal tumours	0.8	67	59	56
All malignancies	16.6	84	82	81

* Related to 100,000 children under the age of 15, age standardised (standard: Segi world population), children diagnosed 2004–2013
** Brenner H, Spix C. Combining cohort and period methods for retrospective time trend analyses of long-term cancer patient survival rates. Br J Cancer 89, 1260–1265, 2003

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5 Appendix

5.1 The German Centre for Cancer Registry Data at the Robert Koch Institute (Zentrum für Krebsregisterdaten, ZfKD)

After the Federal Cancer Registry Data Act (Bundeskrebsregisterdatengesetz – BKRG) came into force in August 2009, the German Centre for Cancer Registry Data was set up at the beginning of 2010 as an independent division within the Robert Koch Institute's Department of Epidemiology and Health Reporting to perform the tasks laid down in the Act:

- to check the completeness of case finding and of the variables included in the anonymised data submitted by the epidemiological (population-based) state cancer registries
- to conduct a nationwide record linkage with the data from the different state cancer registries to discover any duplicate notifications and to inform the cancer registries accordingly
- to compile, update and extrapolate a dataset from the reviewed data from the state cancer registries
- to regularly estimate and analyse survival rates, stage distribution at diagnosis of the respective cancer, and other indicators, particularly on prevalence, the risk of developing and dying of the disease, and how these indicators develop over time
- to examine data from various states to determine any regional differences in selected cancer sites
- to provide a dataset for evaluating health-policy measures of cancer prevention, cancer screening, cancer treatment and healthcare
- to conduct analyses and studies on all aspects of cancer and to publish the results in national and international journals
- to publish the findings on incidence in Germany and its development over time in consultation with the state cancer registries every two years (booklet »Cancer in Germany«)
- to write a comprehensive report on cancer in Germany every five years, first edition will be published at the end of 2016
- to complement classic print-products through facilities of interactive analyses annually updated data and an extended offer of information on the Internet
- to further enhance methods and standardization rules on data collection and data transfer, and to analyse the data together with the state cancer registries
- to use further data sources to describe all aspects of cancer in Germany
- international cooperation
- to collaborate in scientific bodies as well as European and international organisations on cancer registration and cancer epidemiology (e. g. active collaboration in working groups of the German National Cancer Plan, in the Association of Population-based Cancer Registries in Germany (GEKID), International Agency of Cancer Registries (IACR) membership)

The work of the German Centre for Cancer Registry Data is supported by a scientific advisory board with an office at the RKI. This advisory board can also give permission for the dataset at the Centre for Cancer Registry Data to be made available to third parties on application – i. e. in addition to the state cancer registries – if a justified and, in particular, scientific interest can be substantiated. Further information on the German Centre for Cancer Registry Data is available on the Internet at www.krebsdaten.de.

Staff of the German Centre for Cancer Registry Data:

Dr Klaus Kraywinkel (section head)
Dr Benjamin Barnes (deputy section head)
Nadia Baras
Dr Joachim Bertz
Nina Buttmann-Schweiger
Dr Stefan Dahm
Julia Fiebig
Manuela Franke
Dr Jörg Haberland
Stefan Meisegeier
Ina Schönfeld
Antje Wienecke
Dr Ute Wolf

5.2 Association of Population-based Cancer Registries in Germany

The Association of Population-based Cancer Registries in Germany (GEKID) was formed in 2004 as a registered, non-profit-making association. GEKID's members include not only all Germany's population-based cancer registries, but also a tumour centre and interested scientists working in the field of cancer epidemiology. In the field of cancer control, GEKID cooperates closely with the Federal Ministry of Health, particularly in the context of the National Cancer Plan, and the German Centre for Cancer Registry Data based at the Robert Koch Institute (RKI). GEKID also participates actively in a wide range of scientific committees especially in working groups preparing the uniform data set for clinical and epidemiological cancer registration.

The association's primary task is to standardise as far as possible the content and methodology of cancer registration, despite the differences in legislation between the federal states. The comparability of results from the cancer registries can only be assured by nationwide cooperation. To promote such cooperation, GEKID published »The Manual of Population-based Cancer Registration«. Furthermore, GEKID is a joint point of contact for the population-based cancer registries on all issues of common interest and represents the registries at the European level. GEKID is a member of the European Network of Cancer Registries (ENCR) and the International Association of Cancer Registries.

In its charter, GEKID has set itself the following tasks:

- to be the point of contact both for national and international cooperation partners and for the interested public
- to provide information on the status of cancer registration in Germany and explain the aims of population-based cancer registration
- to engage in joint information activities and thus help the individual cancer registries achieve and maintain complete registration
- to define standards on content as a basis for the comparability of population-based cancer registries
- to coordinate tasks involving all the registries and foster contacts with clinical tumour documentation
- to initiate joint research activities
- to promote the scientific use of the population-based cancer registries
- to use the data to advance quality assurance in oncological care

Essential results of the GEKID activities in the past years:

- Enhancement of the interactive GEKID-Atlas regarding actual cancer incidence, mortality and survival in the federal states; the GEKID-Atlas made significant contributions to the scientific usage of cancer registry data and is available via the GEKID-Homepage
- Enhancement of the uniform minimum data format for the report to a registry as well as an interchange format for the forwarding of data according to the place of residence and for the data exchange with the Centre for Cancer Registry Data at the RKI
- Evaluation and publication of results of survival analyses in Germany together with German Cancer Research Centre, supported by German Cancer Aid

Information on GEKID can be obtained on the Internet at www.gekid.de or from the respective regional member registries (see address section, appendix 5.4).

Contacts for the Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V., GEKID) (see address section, appendix 5.4):

Prof Dr Alexander Katalinic
(Chair of GEKID, Schleswig-Holstein Cancer Registry)
Dr Stefan Hentschel
(1st Vice-chair, Hamburg Cancer Registry)
Roland Stabenow
(2nd Vice-chair, Joint Cancer Registry)

5.3 KID – The Cancer Information Service provided by the German Cancer Research Centre

The cancer Information service »KID« was set up in 1986 to provide personal telephone contacts for patients and their relatives with questions regarding cancer. Nowadays, medical staff provides up-to-the minute, scientifically sound answers to around 34,000 questions every year by phone, by e-mail and in consultation surgeries in both Heidelberg and Dresden. This encompasses not only patients, relatives and interested citizens – even representatives from occupational groups concerned with the care of cancer patients turn to the Cancer Information Service. The information on offer is individually tailored to the needs of the various target groups:

- Patients, their relatives and friends are provided with answers to their questions relating to diagnosis and cancer treatment options, on living with the disease and links to additional points of contact within the healthcare system. However, interested citizens with questions on risk factors, cancer prevention and early detection or on cancer research can also obtain comprehensive information by contacting the Cancer Information Service. This strengthens the health literacy of individuals and creates the basis for active interaction and joint decision-making between patients or beneficiaries and the attending physicians.

- Specialists professionally concerned with the subject of cancer receive quick and reliable pertinent information on the basis of the best available scientific evidence. Through clearly structured preparation, research results are made transparent and directly usable for patient care. Source references, individually compiled for experts in the written e-mail replies, enable more in-depth study of relevant literature.

Via its website www.krebsinformationsdienst.de the Cancer Information Service conveys the latest knowledge about cancer, useful addresses and tips on further links and information material. Between 260,000 and 500,000 individual visitors per month use this facility in 2014. For specialist groups, the website offers an introduction into a wealth of cancer-related topics and provides references to further scientific sources. On the social networking site Facebook and Google+, the service posts breaking news and invites discussion. The Cancer Information Service is provided by the German Cancer research Centre in Heidelberg, the largest bio-medical research establishment in Germany. The service is financed by funds from the Federal Ministry of Education and Research (BMBF), the State of Baden-Württemberg's Ministry of Science, Research and Art (MWK) and the Federal Ministry of Health. As a result, the service can provide information independently, free from conflicts of interest and free of charge. In its capacity as national reference centre for cancer information, the Cancer Information Service is committed to providing the highest possible standard of information. Through its accompanying research the Cancer Information Service also provides feedback on how the care situation in Germany is directly experienced by cancer patients and their relatives.

Further information on the remit and workings of the Cancer Information Service can be found (in German) by following the link: www.krebsinformationsdienst.de/wirueberuns.php

Cancer Information Service (KID)
Telephone: + 49 (0) 800 – 420 30 40, (Free inside Germany) Daily from 08.00 to 20.00 hrs.
E-Mail: krebsinformationsdienst@dkfz.de,
Answers usually within 2 working days
Internet: www.krebsinformationsdienst.de and www.facebook.com/krebsinformationsdienst

Contact partners at the Cancer Information Service – KID (also see address section, appendix 5.4):

Dr. Susanne Weg-Remers
Head of the Cancer Information Service (KID)
Dr. Regine Hagmann
Head of Working Group »Knowledge Management« at KID

5.4 Addresses

Krebsregister **Baden-Württemberg** (Baden-Württemberg Cancer Registry)
Epidemiologisches Krebsregister (Population-based Cancer Registry)
Deutsches Krebsforschungszentrum Heidelberg (German Cancer Research Centre)
Im Neuenheimer Feld 581
69120 Heidelberg
Telephone: 06221/42 42 20
E-Mail: ekr-bw@dkfz.de
Internet: www.krebsregister-bw.de

Krebsregister Baden-Württemberg (Baden-Württemberg Cancer Registry)
Vertrauensstelle (Baden-Württemberg Confidentiality Unit)
bei der Deutschen Rentenversicherung (German Pension Insurance) Baden-Württemberg
Gartenstraße 105
76135 Karlsruhe
Telephone: 0721/82 57 90 00 Telefax: 0721/82 59 97 90 99
E-Mail: vs@drv-bw.de

Klinische Landesregisterstelle des Krebsregisters Baden-Württemberg (Clinical State Registration Unit)
bei der Baden-Württembergischen Krankenhausgesellschaft e.V. (Baden-Württemberg Hospital Association)
Birkenwaldstraße 145
70191 Stuttgart
Telephone: 0711/2 57 77 70 Telefax: 0711/2 57 77 79
E-Mail: info@klr-krbw.de

Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit (Bavarian Health and Food Safety Authority)
Zentrum für Krebsfrüherkennung und Krebsregistrierung (Registration Unit)
Schweinauer Hauptstraße 80
90441 Nürnberg
Telephone: 09131/68 08 29 20 Telefax: 09131/68 08 29 05
E-Mail: zkfr@lgl.bayern.de
Internet: www.krebsregister-bayern.de

Bevölkerungsbezogenes Krebsregister Bayern (Bavaria Population-based Cancer Registry)
Vertrauensstelle (Confidentiality Unit), Klinikum Nürnberg-Nord
Professor-Ernst-Nathan-Straße 1
90419 Nürnberg
Telephone: 0911/3 78 67 38 Telefax: 0911/3 78 76 19
E-Mail: vertrauensstelle@klinikum-nuernberg.de
Internet: www.krebsregister-bayern.de

Gemeinsames Krebsregister der Länder **Berlin, Brandenburg, Mecklenburg-Vorpommern, Sachsen-Anhalt** und der Freistaaten **Sachsen** und **Thüringen** (GKR)
(Joint Cancer Registry of Berlin, Brandenburg, Mecklenburg-West Pomerania, Saxony-Anhalt, Saxony)
Brodauer Straße 16–22
12621 Berlin
Telephone: 030/56 58 14 01 (R) Telefax: 030/56 58 14 44 (R)
030/56 58 13 15 (V) 030/56 58 13 33 (V)
E-Mail: registerstelle@gkr.berlin.de
vertrauensstelle@gkr.berlin.de
Internet: www.berlin.de/gkr/

Epidemiologisches Krebsregister **Bremen** (Bremen Cancer Registry)
Leibniz-Institut für Präventionsforschung und Epidemiologie – BIPS GmbH
(Leibniz Institute for Prevention Research and Epidemiology)
Achterstraße 30
28359 Bremen
Telephone: 0421/21 85 69 61 (R) Telefax: 0421/21 85 69 41 (R)
0421/21 85 69 99 (V)
E-Mail: krebsregister@bips.uni-bremen.de (R)
vbkr.kvhb@t-online.de (V)
Internet: www.krebsregister.bremen.de

R = Registerstelle (Registry Unit) V = Vertrauensstelle (Confidentiality Unit)

Hamburgisches Krebsregister (Hamburg Cancer Registry)
Behörde für Gesundheit und Verbraucherschutz (State Ministry of Health and Consumer Protection)
Billstraße 80
20539 Hamburg
Telephone: 040/4 28 37 22 11 Telefax: 040/4 27 31 00 94
E-Mail: HamburgischesKrebsregister@bgv.hamburg.de
Internet: www.hamburg.de/krebsregister

Hessisches Landesprüfungs- und Untersuchungsamt im Gesundheitswesen
Landesauswertungsstelle des Hessischen Krebsregisters
Walter-Möller-Platz 1
60439 Frankfurt am Main
Telephone: 069/1 56 77 12 Telefax: 069/1 56 77 16
E-Mail: Ernst-Alfred.Burkhardt@hlpug.hessen.de
Internet: www.hlpug.de

Vertrauensstelle des Hessischen Krebsregisters (Confidentiality Unit of Hesse Cancer Registry)
bei der Landesärztekammer Hessen (at Hesse State Medical Council)
Im Vogelsgesang 3
60488 Frankfurt/Main
Telephone: 069/7 89 04 50 Telefax: 069/78 90 45 29
E-Mail: vertrauensstelle@laekh.de
Internet: www.laekh.de

Epidemiologisches Krebsregister **Niedersachsen** (Lower Saxony Population-based Cancer Registry)
OFFIS CARE GmbH
Industriestraße 9
26121 Oldenburg
Telephone: 0441/36 10 56 12 Telefax: 0441/36 10 56 10
E-Mail: registerstelle@krebsregister-niedersachsen.de
Internet: www.krebsregister-niedersachsen.de

Niedersächsisches Landesgesundheitsamt (Lower Saxony Local Health Authority)
Vertrauensstelle Epidemiologisches Krebsregister Niedersachsen
(Confidentiality Unit of Lower Saxony Population-based Cancer Registry)
Andreaestraße 7
30159 Hannover
Telephone: 0511/4 50 53 56 Telefax: 0511/4 50 51 32
E-Mail: vertrauensstelle.ekn@nlga.niedersachsen.de
Internet: www.krebsregister-niedersachsen.de

Epidemiologisches Krebsregister **Nordrhein-Westfalen** gGmbH
(North Rhine-Westphalia Population-based Cancer Registry)
Robert-Koch-Straße 40
48149 Münster
Telephone: 0251/8 35 85 71 Telefax: 0251/8 35 85 77
E-Mail: info@krebsregister.nrw.de
Internet: www.krebsregister.nrw.de

Krebsregister **Rheinland-Pfalz**, Registerstelle (Registry Unit of Rhineland-Palatinate Cancer Registry)
Institut für Med. Biometrie, Epidemiologie und Informatik, IMBEI
(Institute for Medical Biostatistics, Epidemiology and Informatics)
55131 Mainz
Telephone: 06131/17 67 13 Telefax: 06131/17 47 51 86
E-Mail: krebsregister@uni-mainz.de
Internet: www.krebsregister-rheinland-pfalz.de

Krebsregister Rheinland-Pfalz gGmbH, Vertrauensstelle
(Confidentiality Unit of Rhineland-Palatinate Cancer Registry)
Am Pulverturm 13
55131 Mainz
Telephone: 06131/17 30 02 Telefax: 06131/17 32 49
E-Mail: krebsregister@mail.uni-mainz.de
Internet: www.krebsregister-rheinland-pfalz.de

Epidemiologisches Krebsregister **Saarland** (Saarland Population-based Cancer Registry)
Ministerium für Soziales, Gesundheit, Frauen und Familie
(Ministry of Social Affairs, Health, Women and Family)
Präsident-Baltz-Straße 5
66119 Saarbrücken
Telephone: 0681/5 01 59 82 (R) Telefax: 0681/5 01 59 98 (R)
0681/5 01 58 05 (V)
E-Mail: krebsregister@gbe-ekr.saarland.de
Internet: www.krebsregister.saarland.de

Krebsregister **Schleswig-Holstein** (Schleswig-Holstein Cancer Registry)
Registerstelle (Registry Unit)
Institut für Krebsepidemiologie e. V. (Institute for Cancer Epidemiology)
Ratzeburger Allee 160, Haus 50
23562 Lübeck
Telephone: 0451/5 00 54 40 Telefax: 0451/5 00 54 55
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Internet: www.krebsregister-sh.de

Vertrauensstelle des Krebsregisters (Confidentiality Unit of Schleswig-Holstein Cancer Registry)
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Bismarckallee 8–12
23795 Bad Segeberg
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Deutsches Kinderkrebsregister (German Childhood Cancer Registry)
Institut für Medizinische Biometrie, Epidemiologie und Informatik
(Institute of Medical Biostatistics, Epidemiology and Informatics), IMBEI
Obere Zahlbacher Str. 69
55131 Mainz
Telephone: 06131/17 31 11 Telefax: 06131/17 44 62
E-Mail: kinderkrebsregister@imbei.uni-mainz.de
Internet: www.kinderkrebsregister.de

Krebsinformationsdienst (KID) (Cancer Information Service)
Deutsches Krebsforschungszentrum (German Cancer Research Centre)
Im Neuenheimer Feld 280
69120 Heidelberg
Telephone: 06221/42 28 90 (secretariat)
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Internet: www.krebsinformationsdienst.de

Further contacts

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(German Centre for Cancer Registry Data at the Robert Koch Institute)
General-Pape-Straße 62–66
12101 Berlin
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E-Mail: krebsdaten@rki.de
Internet: www.krebsdaten.de

Bundesministerium für Gesundheit (Federal Ministry of Health)
53107 Bonn
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5.5 Sources for international comparison of cancer incidence and mortality rates

(for the years 2011–2012, if not otherwise stated. Access date: July to October 2015)

Netherlands:
Netherlands Cancer Registry
http://www.cijfersoverkanker.nl/?language=en

Sweden, Finland, Denmark:
Association of the Nordic Cancer Registries (ANCR)
http://www-dep.iarc.fr/nordcan/English/frame.asp

Poland:
Incidence for 2012 only, Mortality for C23–C24 and C62 for 2012 only:
EUCAN, European Cancer Observatory ECO
http://eco.iarc.fr/EUCAN/Country.aspx?ISOCountryCd=616
Mortality: Eurostat, Statistical office of European Union
http://ec.europa.eu/eurostat/web/health/causes-death/data/database

Czech Republic:
SVOD Web Portal (http://www.svod.cz/?sec=aktuality&lang=en)
Data for all cancer sites (C00–C97 w/o. C44) and for Leukaemias (C95) for 2011 only:
Institute of Health Information and Statistics of the Czech Republic (UZIS)
Cancer Incidence 2011 in the Czech Republic (http://www.uzis.cz/)

Switzerland:
Incidence for 2012 only, Mortality for C23–C24 and C62 for 2012 only:
EUCAN, European Cancer Observatory ECO
http://eco.iarc.fr/eucan/Country.aspx?ISOCountryCd=756
Mortality: Eurostat, Statistical office of European Union
http://ec.europa.eu/eurostat/web/health/causes-death/data/database

Belgium:
Incidence: Belgian Cancer Registry
http://www.kankerregister.org/
Mortality: Eurostat, Statistical office of European Union
http://ec.europa.eu/eurostat/web/health/causes-death/data/database

France:
Data for 2012 only
Incidence: EUCAN, European Cancer Observatory ECO
http://eco.iarc.fr/EUCAN/Country.aspx?ISOCountryCd=250
Mortality: Eurostat, Statistical office of European Union
http://ec.europa.eu/eurostat/web/health/causes-death/data/database

USA:
National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) Program
http://seer.cancer.gov/canques/incidence.html
http://seer.cancer.gov/canques/mortality.html

Great Britain:
Incidence for 2011 only
Cancer Research UK
http://www.cancerresearchuk.org/cancer-info/cancerstats/types/
Incidence for C33–C34 for England and for 2011 only
Office for National Statistics
http://www.ons.gov.uk/ons/datasets-and-tables/index.html?newquery=cancer+england&newoffset=50&pageSize=50&content-type=Reference+table&content-type=Dataset&content-type-orig=%22Dataset%22+OR+content-type_original%3A%22Reference+table%22&sortBy=none&sortDirection=none&applyFilters=true

Austria:
Data for 2011 only
STATISTIK AUSTRIA, Austrian Cancer Registry (Access date: 16th December 2014) and Official cause of death statistics.

5.6 Recent publications related to cancer registration in Germany

Adzersen KH, Friedrich S, Becker N (2015) Are epidemiological data on lymphoma incidence comparable? Results from an application of the coding recommendations of WHO, InterLymph, ENCR and SEER to a cancer registry dataset. Journal of Cancer Research and Clinical Oncology [Epub ahead of print]

Anderson LA, Tavilla A, Brenner H, Luttmann S, Navarro C, Gavin AT, Holleczek B, Johnston BT, Cook MB, Bannon F, Sant M, EUROCARE-5 Working Group (2015) Survival for oesophageal, stomach and small intestine cancers in Europe 1999–2007: Results from EUROCARE-5. European Journal of Cancer 51 (15): 2144–2157

Bahr J, Van Den Berg N, Kraywinkel K, Stentzel U, Radicke F, Baumann W, Hoffmann W (2015) Deutschlandweite, regionalisierte Prognose der bevölkerungsbezogenen Morbidität für häufige Krebserkrankungen – Auswirkungen auf die Versorgung. Deutsche Medizinische Wochenschrift 140 (9): e80–e88

Bartholomäus S, Hense HW, Heidinger O (2015) Blinded Anonymization: a method for evaluating cancer prevention programs under restrictive data protection regulations. Studies in Health Technology and Informatics 210: 424–428

Bayer O, Krüger M, Koutsimpelas D, Emrich K, Ressing M, Zeissig SR, Simon C, Singer S (2015) Veränderung von Inzidenz und Mortalität von Kopf-Hals-Malignomen in Rheinland-Pfalz, 2000–2009. Laryngo- Rhino- Otologie 94 (7): 451–458

Becker N (2014) Aktives Monitoring kleinräumiger Krebshäufungen. Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz 57 (1): 41–46

Beutel ME, Fischbeck S, Binder H, Blettner M, Brähler E, Emrich K, Friedrich-Mai P, Imruck BH, Weyer V, Zeissig SR (2015) Depression, anxiety and quality of life in long-term survivors of malignant melanoma: A register-based cohort study. PloS One 10 (1): e0116440

Blettner M, Ludwig S (2014) Epidemiologische Forschung mit den Daten der Krebsregister. Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz 57 (1): 47–51

Brenner H, Jansen L (2015) Restriction to period of interest improves informative value of death certificate only proportions in period analysis of cancer survival. Journal of Clinical Epidemiology. DOI: 10.1016/j.jclinepi.2015.03.003

Buttmann-Schweiger N, Klug SJ, Luyten A, Holleczek B, Heitz F, du Bois A, Kraywinkel K (2015) Incidence Patterns and Temporal Trends of Invasive Nonmelanotic Vulvar Tumors in Germany 1999–2011. A Population-Based Cancer Registry Analysis. PloS One 10 (5): e0128073

Castro FA, Jansen L, Krilaviciute A, Katalinic A, Pulte D, Sirri E, Ressing M, Holleczek B, Luttmann S, Brenner H, GEKID Cancer Survival Working Group (2015) Survival of patients with gastric lymphoma in Germany and in the United States. Journal of Gastroenterology and Hepatology 30 (10): 1485–1491

Chen T, Fallah M, Jansen L, Castro FA, Krilavicuite A, Katalinic A, Eisemann N, Emrich K, Holleczek B, Geiss K, Eberle A, Sundquist J, Brenner H, Hemminki K, GEKID Cancer Survival Working Group (2015) Distribution and risk of the second discordant primary cancers combined after a specific first primary cancer in German and Swedish cancer registries. Cancer Letters 369 (1): 152–166

Crocetti E, Mallone S, Robsahm TE, Gavin A, Agius D, Ardanaz E, Lopez MDC, Innos K, Minicozzi P, Borgognoni L, Pierannunzio D, Eisemann N, EUROCARE-5 Working Group (2015) Survival of patients with skin melanoma in Europe increases further: Results of the EUROCARE-5 study. European Journal of Cancer 51 (15): 2179–2190

Eberle A, Jansen L, Castro F, Krilaviciute A, Luttmann S, Emrich K, Holleczek B, Nennecke A, Katalinic A, Brenner H, GEKID Cancer Survival Working Group (2015) Lung cancer survival in Germany: A population-based analysis of 132,612 lung cancer patients. Lung Cancer (im Druck)

Eisemann N, Schnoor M, Katalinic A (2015) Prediction of chronic lymphocytic leukaemia incidence in Germany and of patients ineligible for standard chemotherapy. Hematological Oncology. DOI: 10.1002/hon.2198

Eisemann N, Waldmann A, Garbe C, Katalinic A (2015) Development of a Microsimulation of Melanoma Mortality for Evaluating the Effectiveness of Population-Based Skin Cancer Screening. Medical Decision Making 35 (2): 243–254

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Francisci S, Minicozzi P, Pierannunzio D, Ardanaz E, Eberle A, Grimsrud TK, Knijn A, Pastorino U, Salmeron D, Trama A, Sant M, EUROCARE-5 Working Group (2015) Survival patterns in lung and pleural cancer in Europe 1999–2007: Results from the EUROCARE-5 study. European Journal of Cancer 51 (15): 2242–2253

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Heidinger O, Heidrich J, Batzler WU, Krieg V, Weigel S, Heindel W, Hense HW (2015) Digital mammography screening in Germany: Impact of age and histological subtype on program sensitivity. Breast 24 (3): 191–196

Hertrampf K, Eisemann N, Wiltfang J, Pritzkuleit R, Wenz HJ, Waldmann A (2015) Baseline data of oral and pharyngeal cancer before introducing an oral cancer prevention campaign in Germany. Journal of Cranio-Maxillofacial Surgery 43 (3): 360–366

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Holleczek B, Rossi S, Domenic A, Innos K, Minicozzi P, Francisci S, Hackl M, Eisemann N, Brenner H, EUROCARE-5 Working Group (2015) On-going improvement and persistent differences in the survival for patients with colon and rectum cancer across Europe 1999–2007-Results from the EUROCARE-5 study. European Journal of Cancer 51 (15): 2158–2168

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Pohl H, Pech O, Arash H, Stolte M, Manner H, May A, Kraywinkel K, Sonnenberg A, Ell C (2015) Length of Barrett's oesophagus and cancer risk: implications from a large sample of patients with early oesophageal adenocarcinoma. Gut. DOI: 10.1136/gutjnl-2015-309220

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5.7 Further Literature

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Literature on cancer risk factors is available on request at the editors (RKI, German Centre for Cancer Registry Data).

The “Cancer in Germany” report is published every two years by the Association of Population-based Cancer Registries in Germany (GEKID) and the German Centre for Cancer Registry Data (ZfKD) at the Robert Koch Institute. The results contained in this, the tenth edition, are based on data up to 2012. As of 2009, Germany has achieved nationwide coverage of population-based cancer registration. However, because reliable data are not yet available from all federal states, it is still necessary for the ZfKD to estimate figures in some areas. Altogether, this report presents the most important epidemiological statistics and current trends for 27 different types of cancer. It contains details regarding disease incidence and mortality, along with regional and international comparisons, as well as illustrations of the distribution of tumour stages and of survival prospects.