

# World cancer factsheet

## World cancer burden (2012)

### Incidence

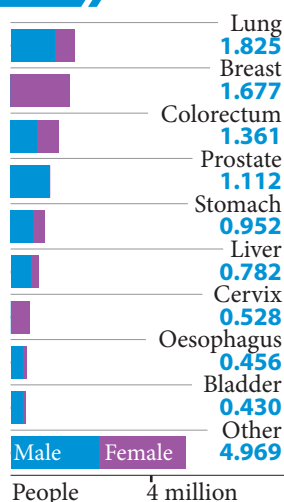
Cancer is a leading cause of disease worldwide. An estimated 14.1 million new cancer cases occurred in 2012. Lung, female breast, colorectal and stomach cancers accounted for more than 40% of all cases diagnosed worldwide. In men, lung cancer was the most common cancer (16.7% of all new cases in men). Breast cancer was by far the most common cancer diagnosed in women (25.2% of all new cases in women)<sup>1</sup>.

**Incidence** is the number of new cases arising in a given period in a specified population. Often given as an absolute number of cases per year or as a standardised rate per 100,000 (see final page glossary).

### Mortality

Cancer is a leading cause of death worldwide, with 8.2 million deaths in 2012. More than half of all cancer deaths each year are due to lung, stomach, liver, colorectal and female breast cancers<sup>1</sup>.

**Mortality** is the number of deaths occurring in a given period in a specified population. Often given as an absolute number of deaths per year or as a standardised rate per 100,000.

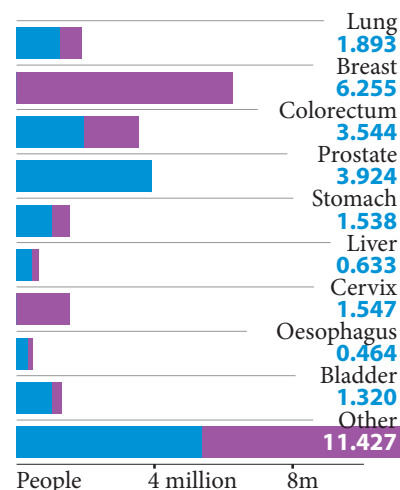


People 4 million

### Prevalence

32.5 million people diagnosed with cancer within the five years previously were alive at the end of 2012. Most were women after their breast cancer diagnosis (6.3 million), men after their prostate cancer diagnosis (3.9 million), and men and women after their colorectal cancer diagnosis (3.5 million)<sup>1,2</sup>.

The **Prevalence** of a particular cancer is the number of persons in a defined population who have been diagnosed during a fixed time in the past with that type of cancer, and who are still alive at the end of a given year. Usually given as a number and a proportion per 100,000 persons.

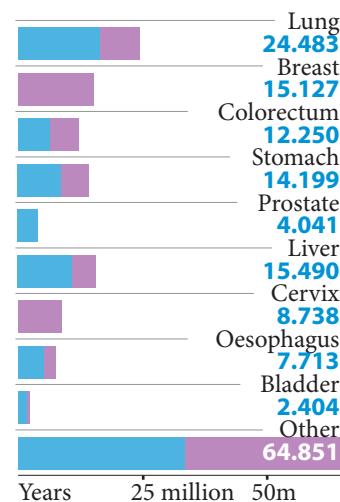


People 4 million 8m

### Healthy Years of Life Lost

An estimated 169.3 million years of healthy life were lost globally because of cancer in 2008. Colorectal, lung, female breast and prostate cancers were the main contributors in most regions of the world, explaining 18%-50% of the total healthy years lost<sup>3</sup>.

**Healthy life years lost** (or Disability Adjusted Life Years, DALYs) are the sum of life years lost to premature mortality (deaths before the age of 80 years for males and 82.5 for females) and the years lived with disability, given as a number or as a standardised rate per 100,000.



Years 25 million 50m

## World cancer trends

Approximately 44% of cancer cases and 53% of cancer deaths occur in countries at a low or medium level of the Human Development Index (HDI – see final page glossary for definition)<sup>4</sup>.

### “Westernisation” Trends

As low HDI countries become more developed through rapid societal and economic changes, they are likely to become “westernised”. As such, the pattern of cancer incidence is likely to follow that seen in high HDI settings, with likely declines in cervix uteri and stomach cancer incidence rates, alongside increasing incidence rates of

female breast, prostate and colorectal cancers. This “westernisation” effect is a result of reductions in infection-related cancers, outweighed by an increasing burden of cancers more associated with reproductive, dietary and hormonal risk factors.

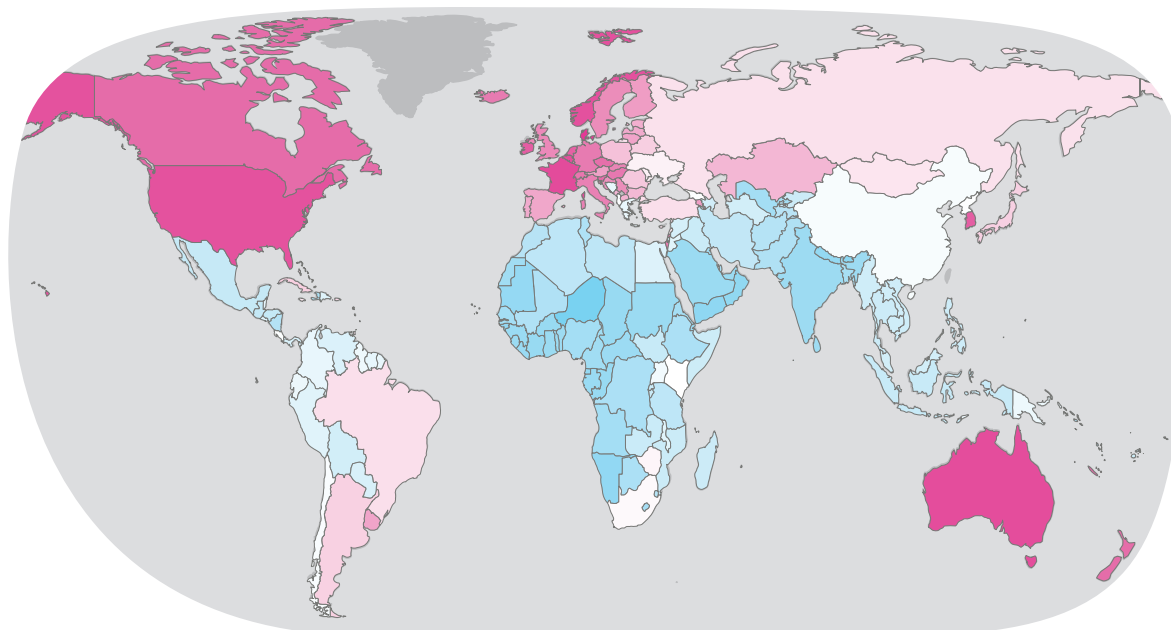
### Projections to 2030

If recent trends in major cancers are seen globally in the future, the burden of cancer will increase to 23.6 million new cases each year by 2030. This represents an increase of 68% compared with 2012 (66% in low and medium HDI countries and 56% in high and very high HDI countries)<sup>1,5</sup>.

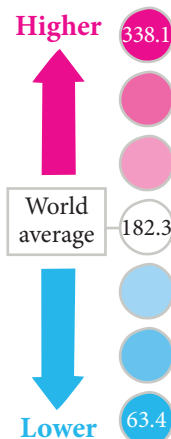
## Credits

This factsheet would not have been possible without the data collected and available from population-based cancer registries. Knowledge about the cancer burden enables the development, implementation, monitoring and evaluation of cancer strategies that prevent, cure and care. This knowledge is lacking in many low- and middle-income countries, making cancer control efforts less effective.

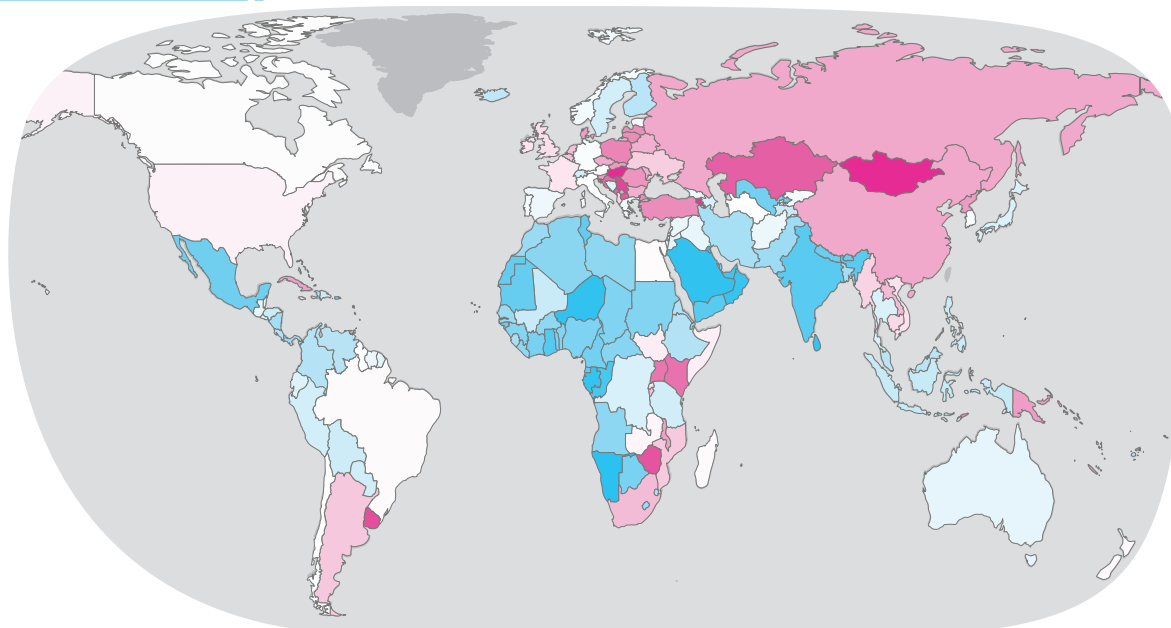
## Incidence 2012 // Cancer incidence by country



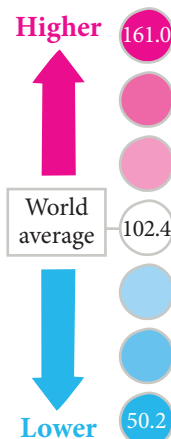
Age standardised incidence rates per 100,000 population compared to the world average



## Mortality 2012 // Cancer mortality by country



Age standardised mortality rates per 100,000 population compared to the world average

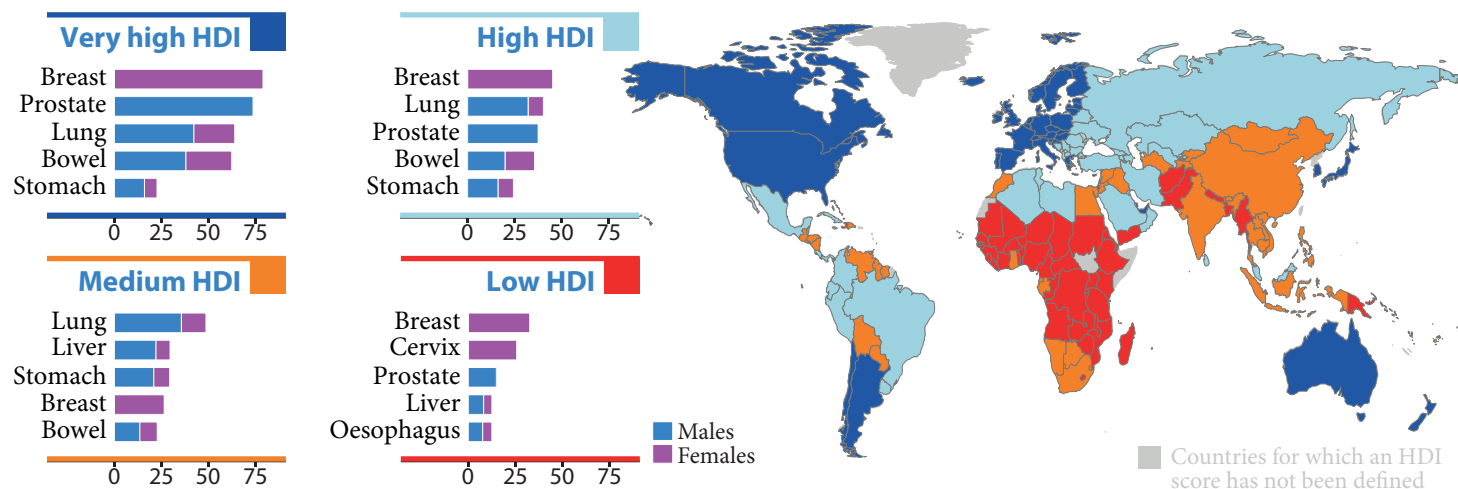


Level of human development (HDI)	Estimates for all cancers in 2012 by HDI and sex (counts in millions)				
	Incidence <sup>a</sup>	Prevalence 5 year	Mortality	Healthy years lost <sup>b</sup>	Population
Very high	5.781 41%	16.334 50%	2.606 32%	39.276 23%	1,153 16%
High	2.126 15%	4.981 15%	1.244 15%	25.764 15%	1,042 15%
Medium	5.232 37%	9.237 28%	3.657 45%	97.766 58%	3,553 50%
Low	0.943 7%	1.993 6%	0.690 8%	6.487 4%	1,303 18%
Worldwide	14.090	32.545	8.201	169.295	7,054

<sup>a</sup> Excluding non-melanoma skin cancers <sup>b</sup> Disability-adjusted life years lost (DALYs), Data from 2008 estimates.

## Most commonly diagnosed cancers by Human Development Index

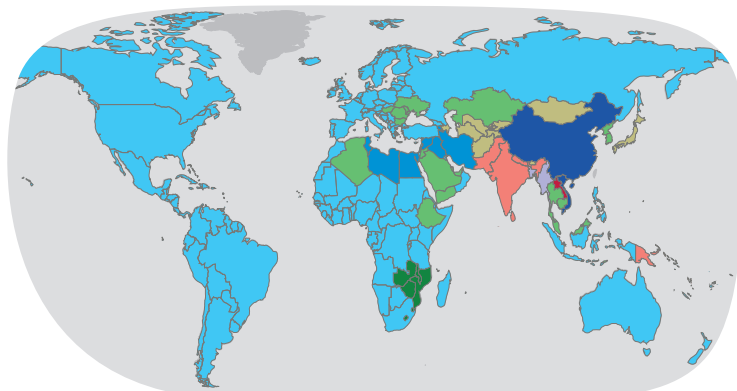
New cases per 100,000 population, age standardised



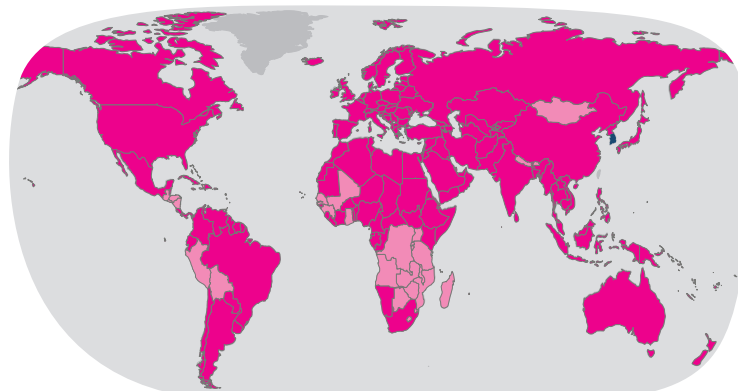
## Prevalence 2012

## Most prevalent cancer by country

### Males



### Females



- 1 Prostate** - 124 countries worldwide
- 2 Bowel** - 23 countries in Africa, Asia and Eastern Europe
- 3 Stomach** - 9 countries in Asia
- 4 Lip, Oral Cavity** - 7 countries in South-Central Asia and Melanesia
- 5 Bladder** - 7 countries in Northern Africa, Asia

- 6 Kaposi Sarcoma** - Lesotho, Malawi, Mozambique, Swaziland, Zimbabwe, Zambia
- 7 Liver** - Gambia, Laos
- 8 Lung** - China, Vietnam
- 9 Pharynx** - Bangladesh, Myanmar

- 1 Breast** - 151 countries worldwide
- 2 Cervix** - 30 countries in Africa, the Americas and Asia
- 3 Thyroid** - South Korea

Level of human development (HDI)	Projections for all cancers in 2030 <sup>a</sup> by HDI and sex (counts in millions)				
	Population		Incidence <sup>b</sup>		Incidence by HDI
	2012	2030	2012	2030	2012 estimates 2030 projections
Very high	1,153 16%	1,219 14%	5.8 41%	8.8 39%	Males 3.1 5.0 Females 2.7 3.8 Both 5.8 8.8
High	1,042 15%	1,174 14%	2.1 15%	3.5 16%	Males 1.1 1.8 Females 1.1 1.7 Both 2.1 3.5
Medium	3,553 50%	4,072 49%	2.1 15%	8.6 38%	Males 2.9 4.7 Females 2.4 3.8 Both 5.2 8.6
Low	1,303 18%	1,925 23%	5.2 37%	1.7 8%	Males 0.4 0.7 Females 0.5 1.0 Both 0.9 1.7
Worldwide	7,054	8,425	14.1	23.6	Total projected 2030 incidence <b>Males 12.85, Females 10.77, Both 23.62</b>

<sup>a</sup> Based on demographic changes (UN) plus trends in rates of six cancers on the basis of changing annual age-adjusted incidence in 101 cancer registries 1988–2002 <sup>b</sup> Excluding non-melanoma skin cancers



## Risk factors

**Tobacco** is, by far, the single most important risk factor for cancer. Worldwide, it caused 22% of cancer deaths (1.7 million in 2008) and 71% of lung cancer deaths (almost 1 million in 2008)<sup>6</sup>.

**Specific Infections** represent other major cancer risk factors with an estimated 2.1 million (16.4%) of the 12.7 million new cases in 2008 attributable to infection. This fraction is substantially higher in less developed regions of the world (23.4% of all cancers) than in more developed regions (7.5%). The most important infectious agents are *Helicobacter pylori*, Hepatitis B and C viruses and Human papillomaviruses, which together are responsible for 1.9 million cases of gastric, liver and cervix uteri cancers, respectively<sup>7</sup>.

For other major global cancers, **reproductive** behaviour and the use of **exogenous hormones**, as well as differences in **weight**, **exercise**, **diet** and **alcohol** consumption, are thought to underlie worldwide differences in the risk of breast cancer while aspects of diet, particularly the consumption of **red and processed meat**, **fibre** and **alcohol**, as well as **bodyweight** and **physical activity** are associated with the risk of colorectal cancer. There is little established about causes of prostate cancer, except for **genetic determinants**. Other important causes of specific types of cancer include **obesity**, excessive **sunlight** exposure and certain **occupational** exposures<sup>8</sup>.

## Countries by HDI

**Low HDI:** Afghanistan; Angola; Bangladesh; Benin; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Eritrea; Ethiopia; Gambia; Guinea; Guinea-Bissau; Haiti; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mozambique; Myanmar; Nepal; Niger; Nigeria; Pakistan; Papua New Guinea; Rwanda; Senegal; Sierra Leone; Solomon Islands; Sudan; Tanzania; Togo; Uganda; Yemen; Zambia; Zimbabwe. **Medium HDI:** Belize; Bhutan; Bolivia; Botswana; Cambodia; Cape Verde; China; Dominican Republic; Egypt; El Salvador; Equatorial Guinea; Fiji; Gabon; Ghana; Guatemala; Guyana; Honduras; India; Indonesia; Iraq; Jordan; Kyrgyzstan; Laos; Maldives; Mongolia; Morocco; Namibia; Nicaragua; Paraguay; Philippines; Samoa; South Africa; Suriname; Swaziland; Syria; Tajikistan; Thailand; Timor-Leste; Turkmenistan; Vanuatu; Venezuela; Viet Nam. **High HDI:** Albania; Algeria; Armenia; Azerbaijan; Bahamas; Bahrain; Belarus; Bosnia and Herzegovina; Brazil; Bulgaria; Colombia; Costa Rica; Cuba; Ecuador; Georgia; Iran; Jamaica; Kazakhstan; Kuwait; Lebanon; Libya; Macedonia; Malaysia; Mauritius; Mexico; Montenegro; Oman; Panama; Peru; Romania; Russian Federation; Saudi Arabia; Serbia; Sri Lanka; Trinidad and Tobago; Tunisia; Turkey; Ukraine; Uruguay; Uzbekistan. **Very high HDI:** Argentina; Australia; Austria; Barbados; Belgium; Brunei; Canada; Chile; Croatia; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Latvia; Lithuania; Luxembourg; Malta; Netherlands; New Zealand; Norway; Poland; Portugal; Qatar; Republic of Korea; Singapore; Slovakia; Slovenia; Spain; Sweden; Switzerland; United Arab Emirates; United Kingdom; United States of America.

## Glossary

**Age-standardised rate (ASR).** A rate is the number of new cases or deaths per 100,000 persons per year. An age-standardised rate is the rate that a population would have if it had a standard age structure. Standardisation is necessary when comparing several populations that differ with respect to age because age has a powerful influence on the risk of cancer. The world standard population used in this report is as proposed by Segi<sup>9</sup>.

**Human Development Index (HDI)** is a composite index of three dimensions of human development: i) life expectancy (based on life expectancy at birth); ii) educational attainment (based on a combination of adult literacy rate and primary to tertiary education enrolment rates) and iii) income (based on GDP per capita adjusted for purchasing-power parity (PPP US\$)). Countries were grouped into four levels of HDI according to the United Nations Development Programme estimates for 2012: very high HDI, high HDI, medium HDI and low HDI<sup>4</sup>.

**Projections.** Cancer incidence in 2030 is projected based on demographic changes (UN) plus crude assumptions on trends in rates of six cancers on the basis of changing annual age-adjusted incidence in 101 cancer registries 1988–2002: annual decreases in stomach (2.5%) and cervical cancer (2%) worldwide, and lung cancer (1%) in high and very high HDI areas in men only; increases in colorectal (1%), female breast (2%) and prostate (3%) worldwide, and lung (1%) in high and very high HDI areas in women only<sup>5</sup>.

## Notes

The figures in this factsheet represent the best available estimates of the global cancer burden but are variable in accuracy, depending on the availability and validity of data in each country. This ranges from real and valid counts of cases and deaths, through estimates based on samples, to estimates based on rates in neighbouring countries.

**Authorship.** This report was prepared by the Section of Cancer Information at IARC, with support from the Statistical Information Team, Cancer Research UK (2014). **Cite as:** International Agency for Research on Cancer and Cancer Research UK. World Cancer Factsheet. Cancer Research UK, London, 2014.

**Further information** on the global burden of cancer can be found using GLOBOCAN 2012 and other resources on the CancerMondial website [www-dep.iarc.fr](http://www-dep.iarc.fr). The Cancer Research UK and IARC worldwide cancer report is available at [www.cancerresearchuk.org/cancer-info/cancerstats/world](http://www.cancerresearchuk.org/cancer-info/cancerstats/world). For information on the Global Initiative for Cancer Registry Development in Low- and Middle-Income Countries, see [gicr.iarc.fr](http://gicr.iarc.fr).

## References

- 1 Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>; accessed on 18/12/2013.
- 2 Bray F, Ren JS, Masuyer E, Ferlay J. Estimates of global cancer prevalence for 27 sites in the adult population in 2008. *Int J Cancer* 2013; 132(5):1133–45. Epub 2012 Jul 26.
- 3 Soerjomataram I, Lortet-Tieulent J, Parkin DM, Ferlay J, Mathers C, Forman D, Bray F. Global burden of cancer in 2008: a systematic analysis of disability-adjusted life-years in 12 world regions. *Lancet* 2012; 380:1840–1850.
- 4 Human Development Report (2013) United Nations Development Programme (UNDP) New York.
- 5 Bray F, Jemal A, Grey N, Ferlay J, Forman D. Global cancer transitions according to the Human Development Index (2008–2030): a population-based study. *Lancet Oncol* 2012; 13:790–801.
- 6 Eriksen M, Mackay J, Ross H (2012). *The Tobacco Atlas – Fourth Edition*. Atlanta, USA: American Cancer Society.
- 7 De Martel C, Ferlay J, Franceschi S, et al. Global burden of cancers attributable to infections in 2008: a review and synthetic analysis. *Lancet Oncol* 2012; 13:607–15.
- 8 Coglian V, Baan R, Straif K, et al. Preventable exposures associated with human cancers. *J Natl Cancer Inst* 2011; 103:1827–39.
- 9 Segi M. Cancer mortality for selected sites in 24 countries (1950–57). Japan: Department of Public Health, Tohoku University of Medicine, 1960.