NCD Video

CANCER

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Introduction

- Cancer is a generic term for a large group of diseases that can affect any part of the body.
- Other terms used are malignant tumours and neoplasms.
- One defining feature of cancer is the **rapid creation of abnormal cells** that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs (metastasis).
- Metastases are the major cause of death from cancer.

Problem

- Cancer accounts for 7.6 million deaths worldwide (around 13% of all deaths) in 2008.
- About 70% of all cancer deaths occurred in low- and middle-income countries.
- Deaths from cancer worldwide are projected to continue to rise to over 13.1 million in 2030.

Methods of estimation

- **Incidence:**
  Local incidence data: incidence rates were estimated as the weighted average of the local rates.
- **Mortality:**
  No data.

  The number of cancer deaths was estimated from incidence estimates and site specific survival provided by neighbouring countries.
- **Prevalence:**
  Prevalence was estimated from incidence estimates and country specific observed survival by cancer and age group.

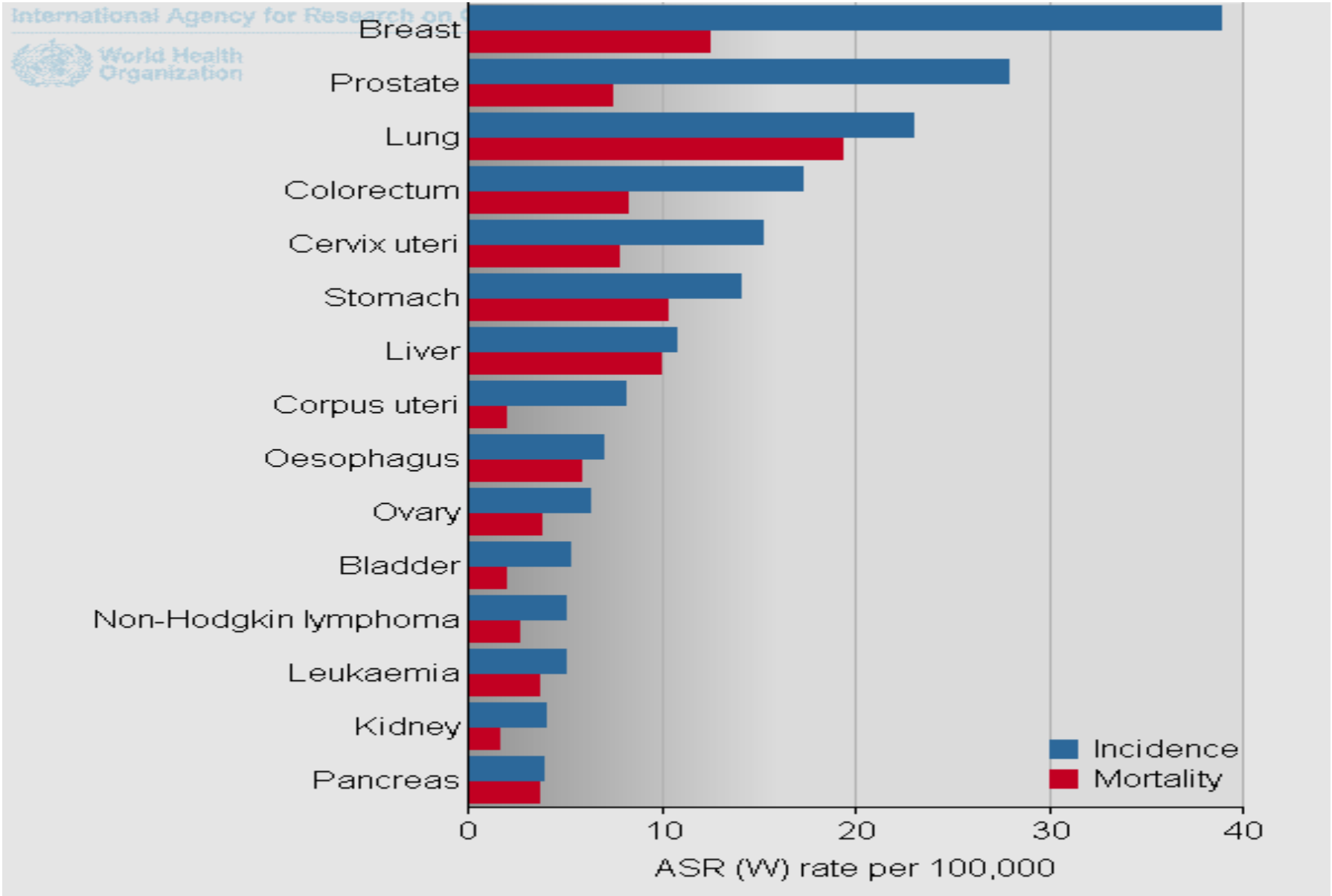
- **Age-standardised rate (W):**

  A rate is the number of new cases or deaths per 100 000 persons per year.

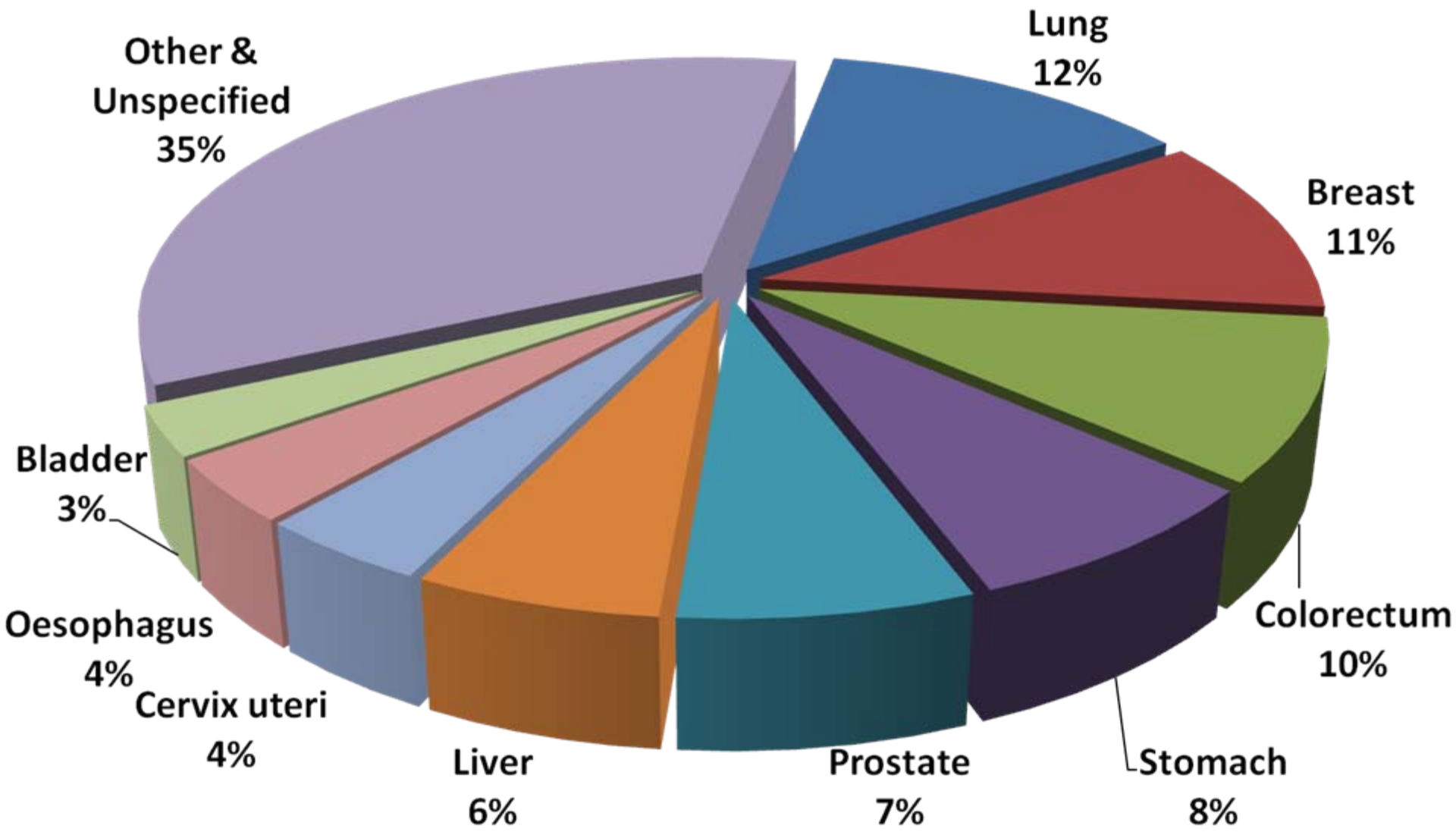
  An age-standardised rate is the rate that a population would have if it had a standard age structure.

- **Risk of getting or dying from the disease before age 75 (%):** It is expressed as the number of new born children (out of 100) who would be expected to develop/die from cancer before the age of 75 if they had cancer (in the absence of other causes of death).

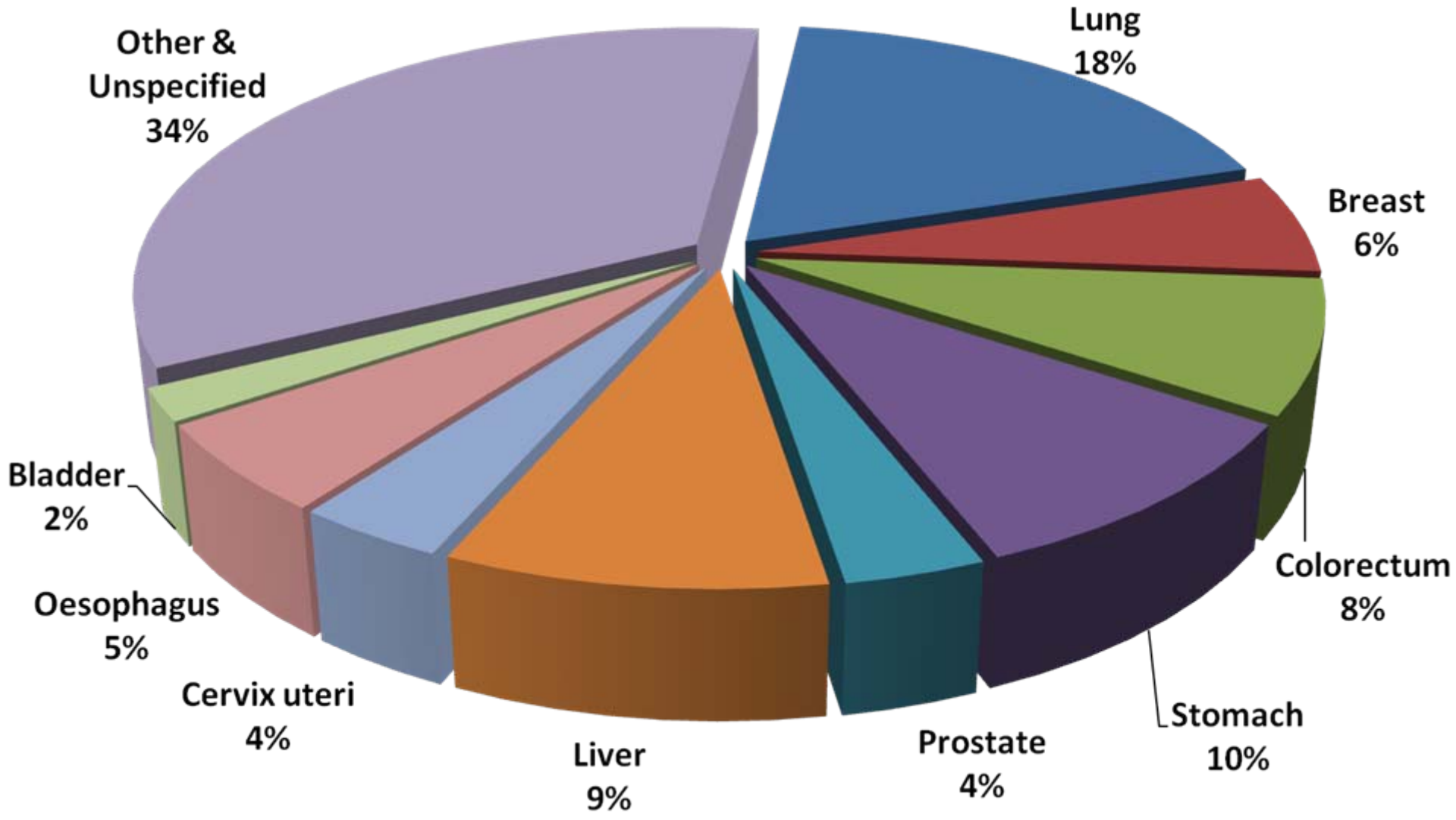
Estimated age-standardised incidence and mortality rates (both sexes) : WORLD



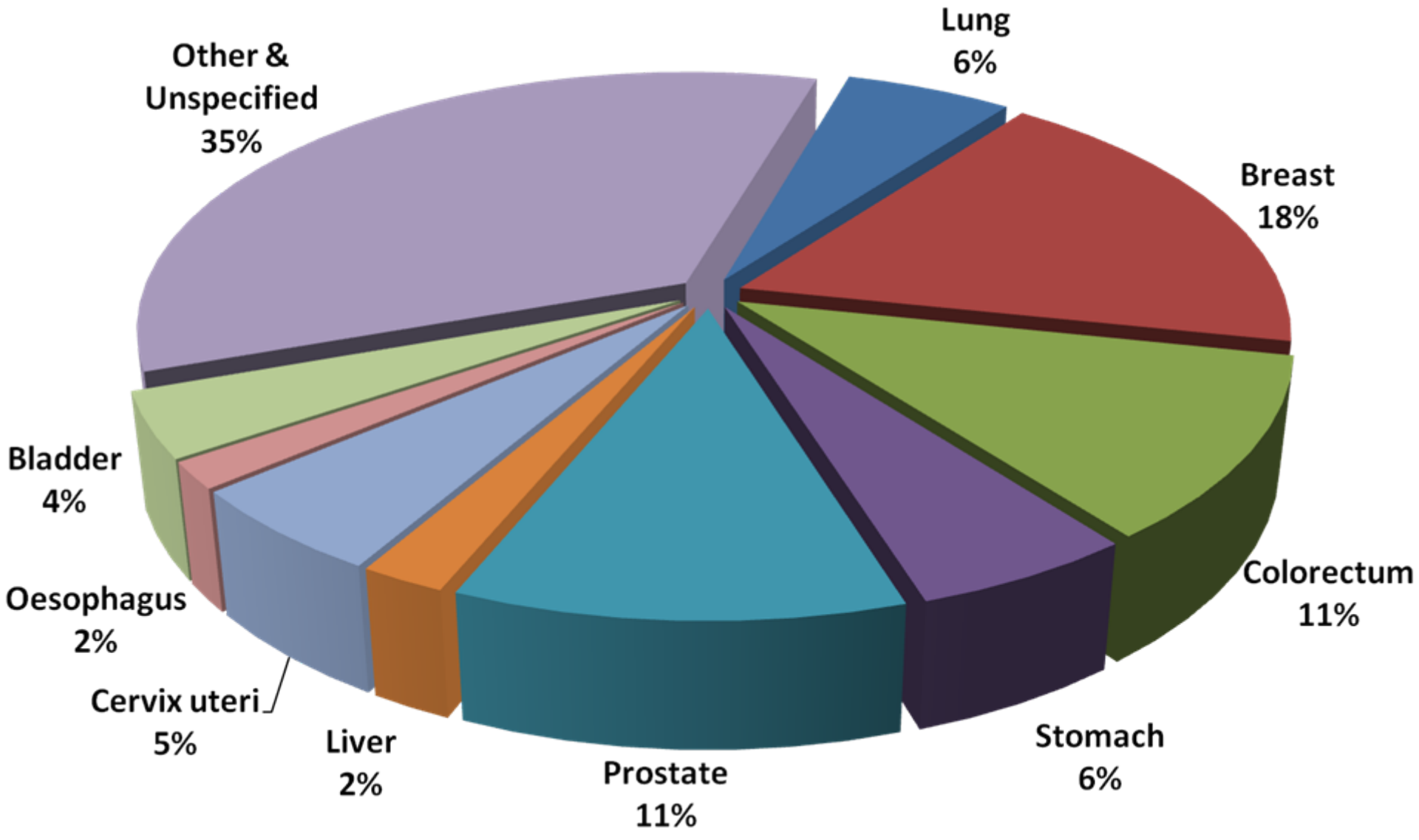
Estimated Global Incidence



Estimated Global Mortality



Estimated Global 5-year Prevalence



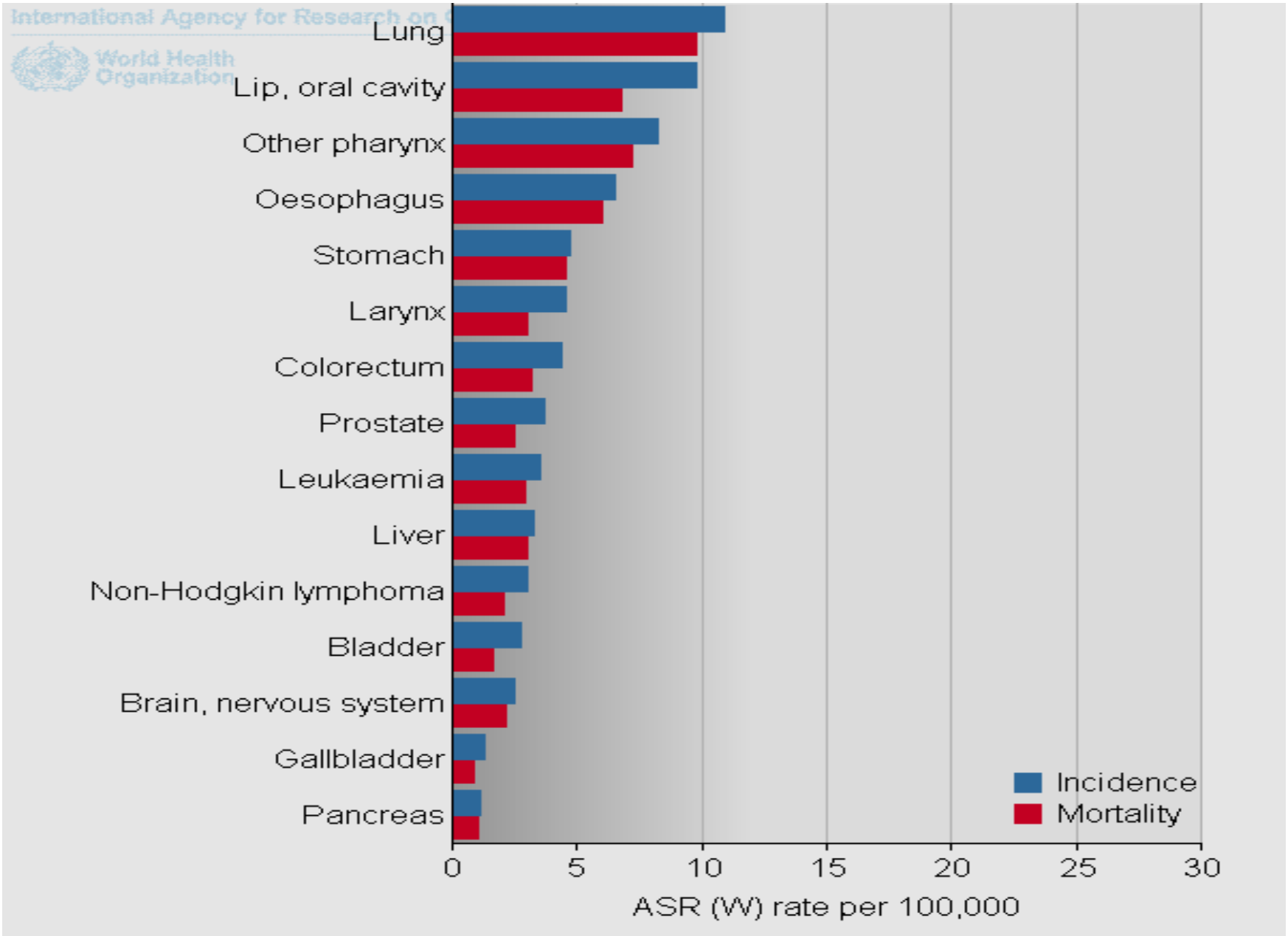
Summary statistics (2008)

WORLD	Male	Female	Both sexes
Population (thousands)	3414566	3358715	6773281
Number of new cancer cases (thousands)	6617.8	6044.7	12662.6
Age-standardised rate (W)	202.8	164.4	180.8
Risk of getting cancer before age 75 (%)	21.1	16.5	18.6
Number of cancer deaths (thousands)			
Age-standardised rate (W)	127.9	87.2	105.6
Risk of dying from cancer before age 75 (%)	13.4	9.1	11.1
5-year prevalent cases (thousands)	13514.9	15288.3	28803.2
Proportion (per 100,000)	550.6	620.8	585.8
5 most frequent cancers (ranking defined by total number of cases)	Lung	Breast	Lung
	Prostate	Colorectum	Breast
	Colorectum	Cervix uteri	Colorectum
	Stomach	Lung	Stomach
	Liver	Stomach	Prostate

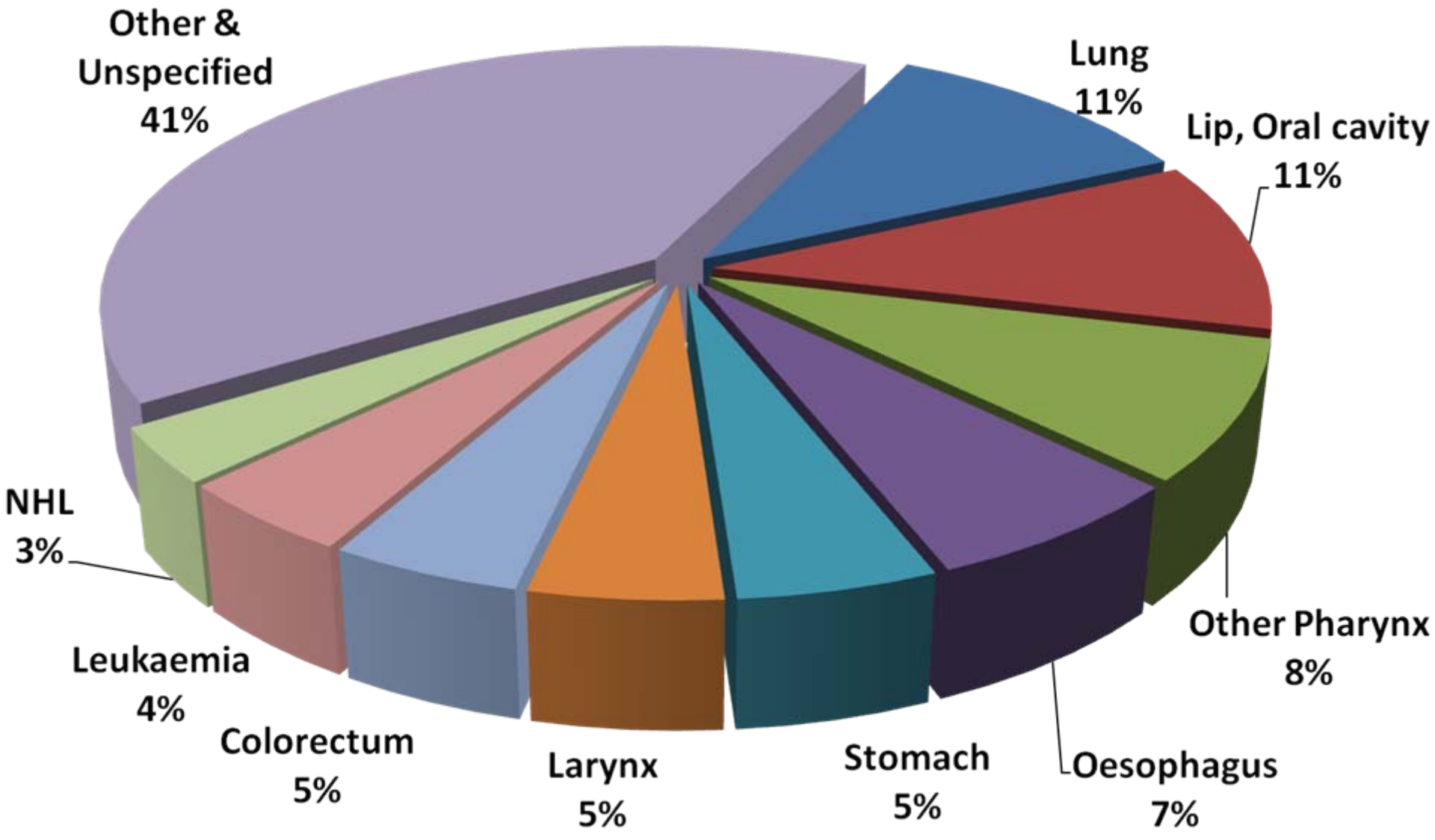
INDIA (in 2008)

- New cancer cases: 9.4 lac
  - Female: 5.1 lac
  - Male: 4.3 lac
- Incidence rate: 98.5 per lac population
- Deaths due to cancer: 6.3 lac
  - Male: 3.21 lac
  - Female: 3.12 lac
- Mortality rate: 68 per lac

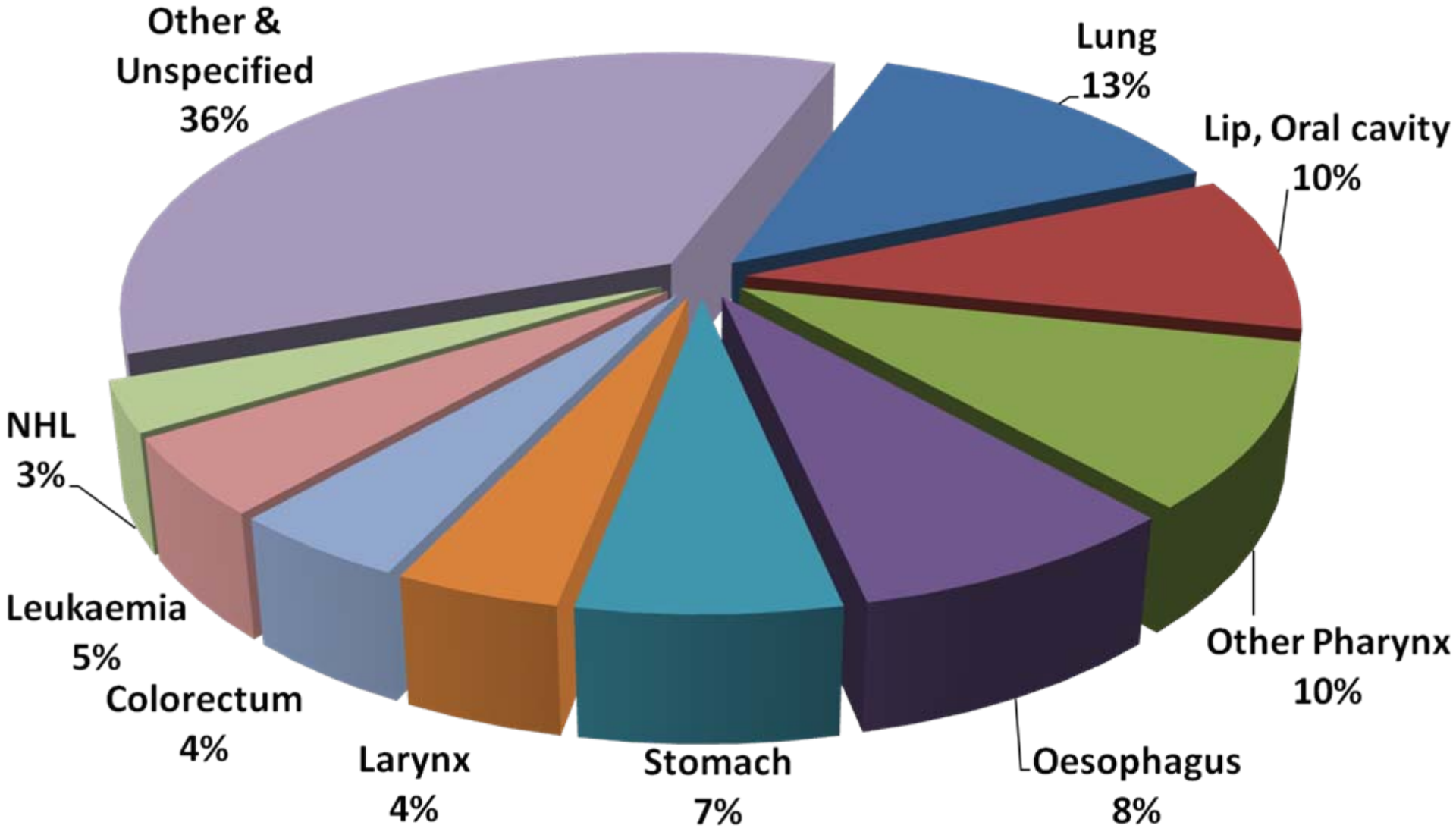
Estimated age-standardised incidence and mortality rates: Men



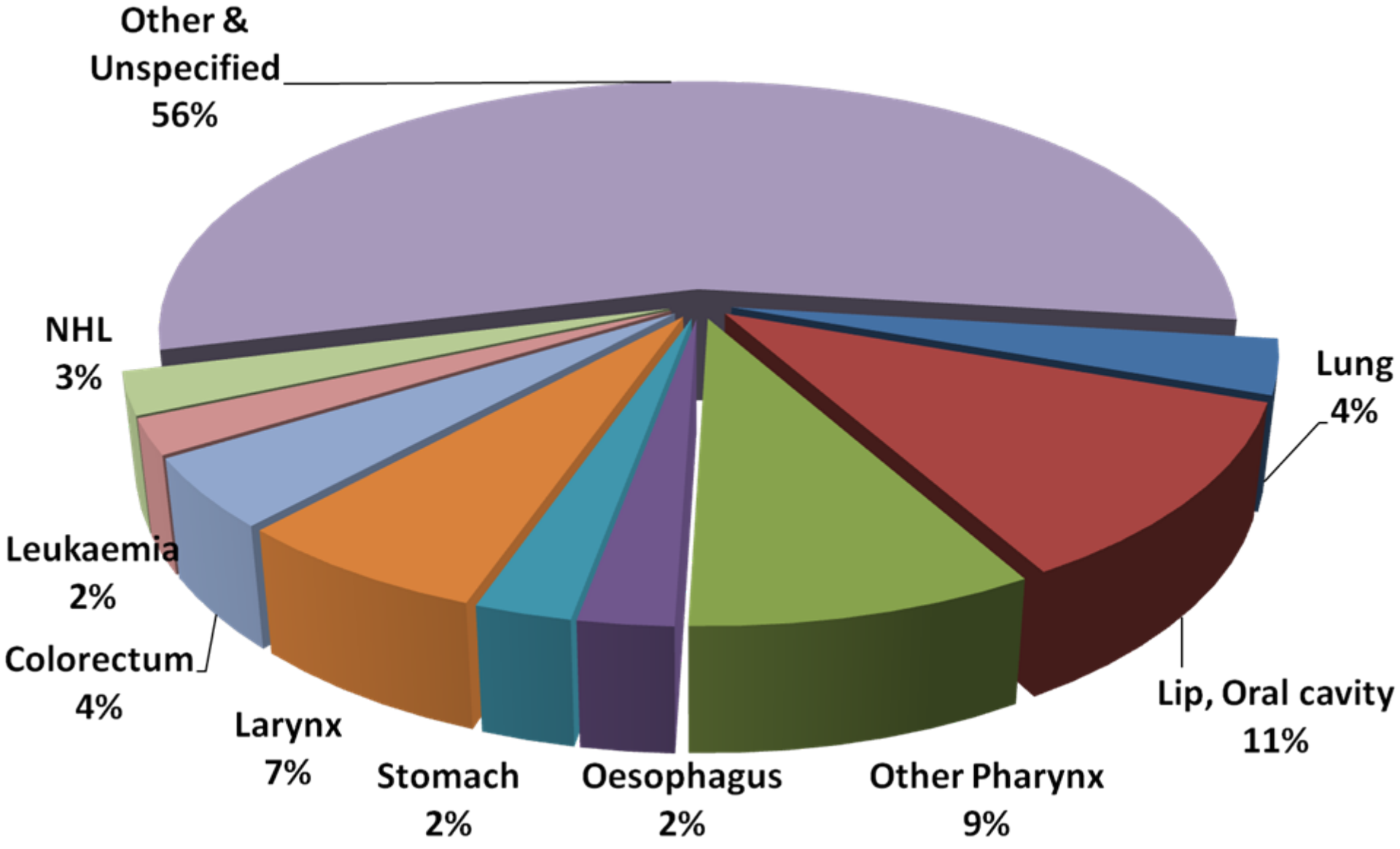
Estimated Incidence: Men



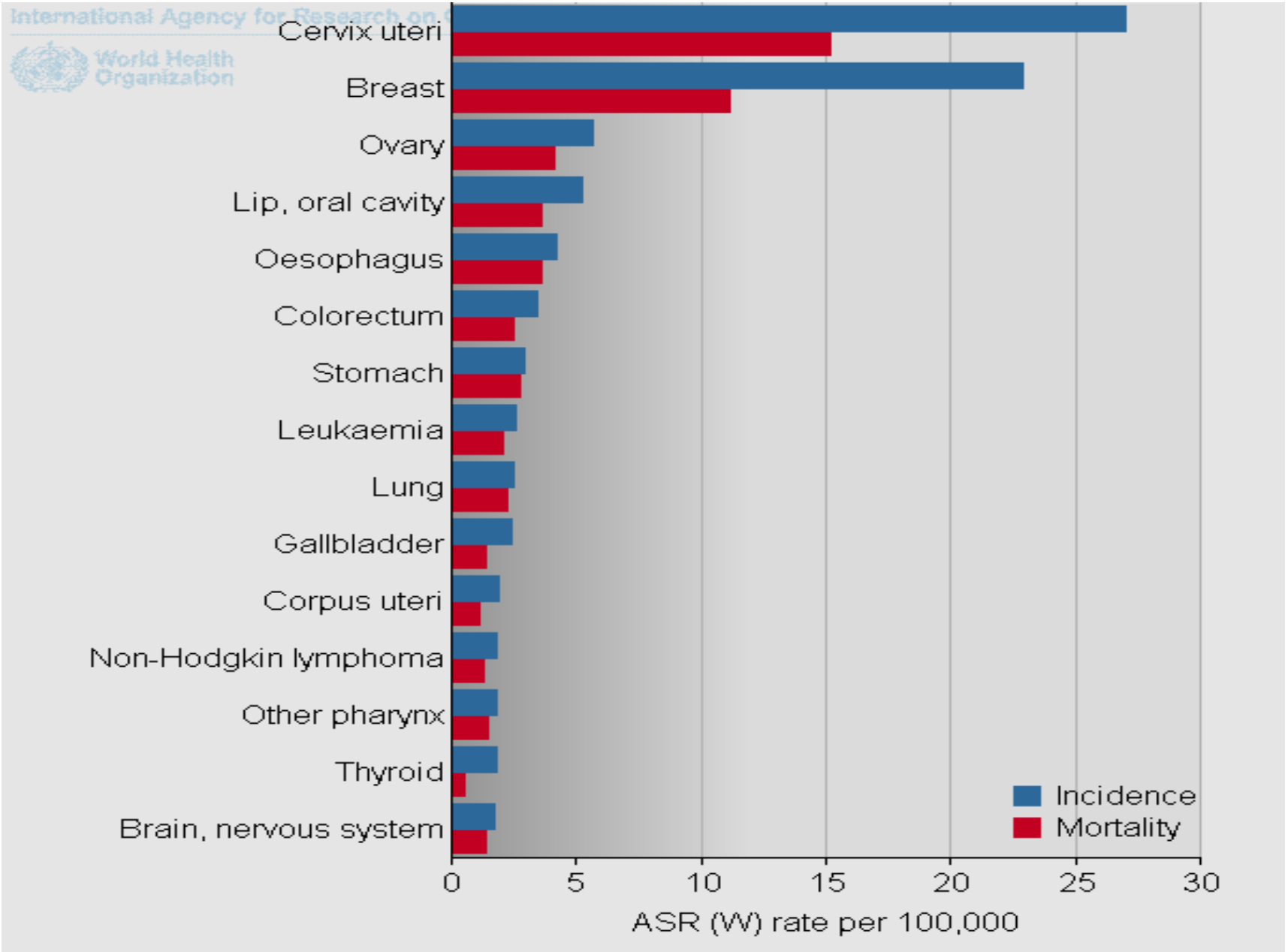
Estimated Mortality: Men



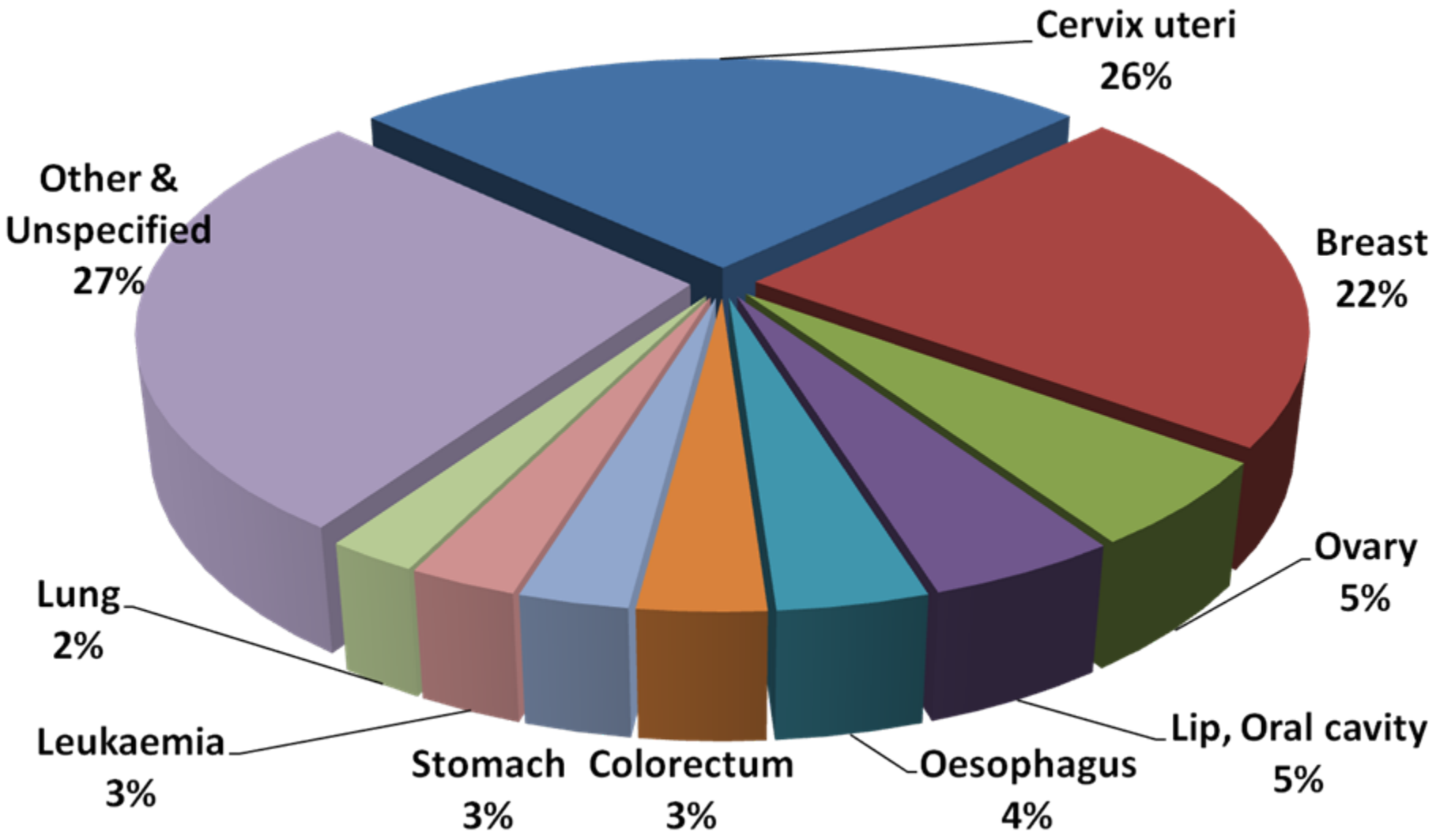
Estimated 5-year Prevalence: Men



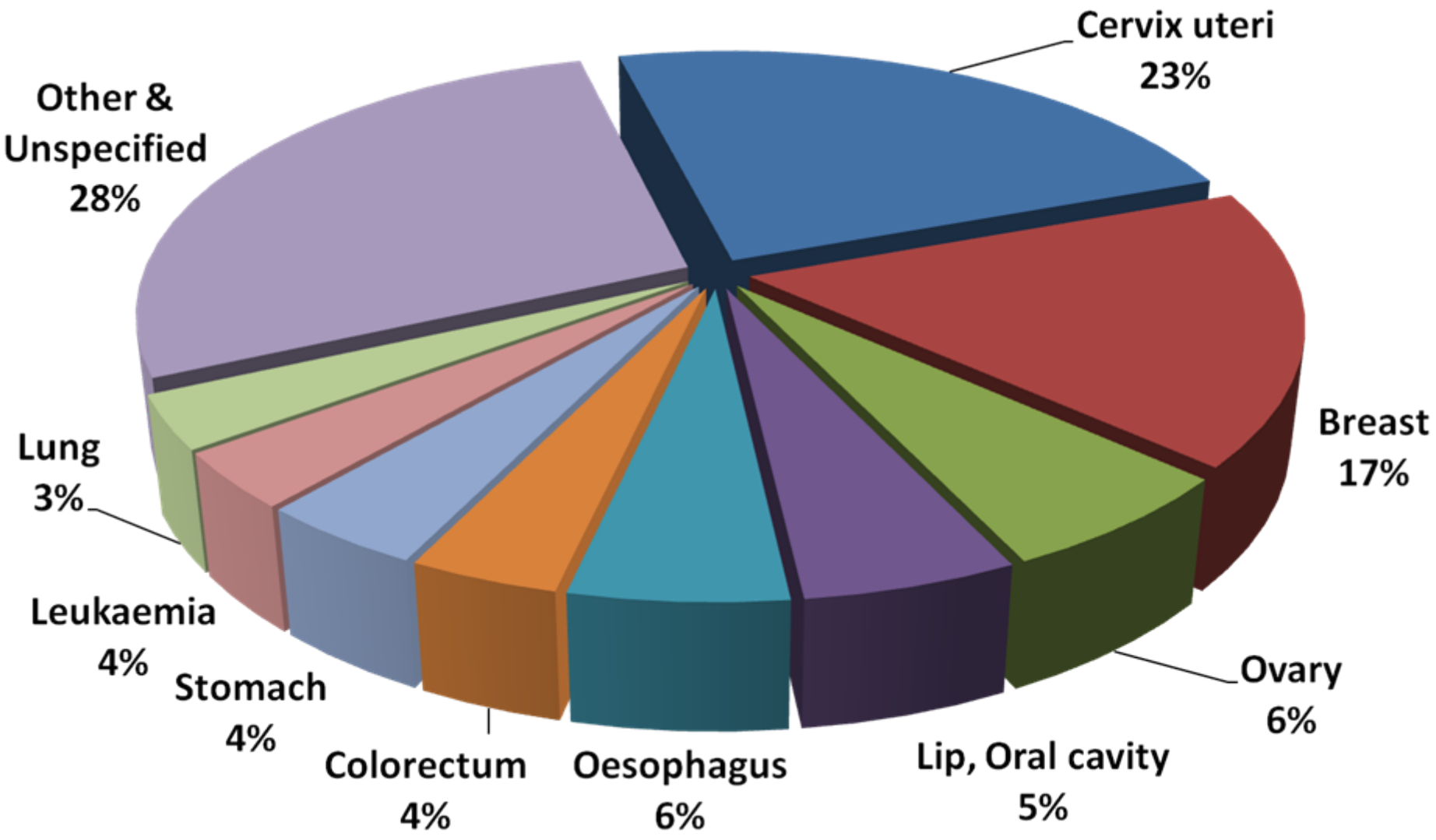
Estimated age-standardised incidence and mortality rates: Women



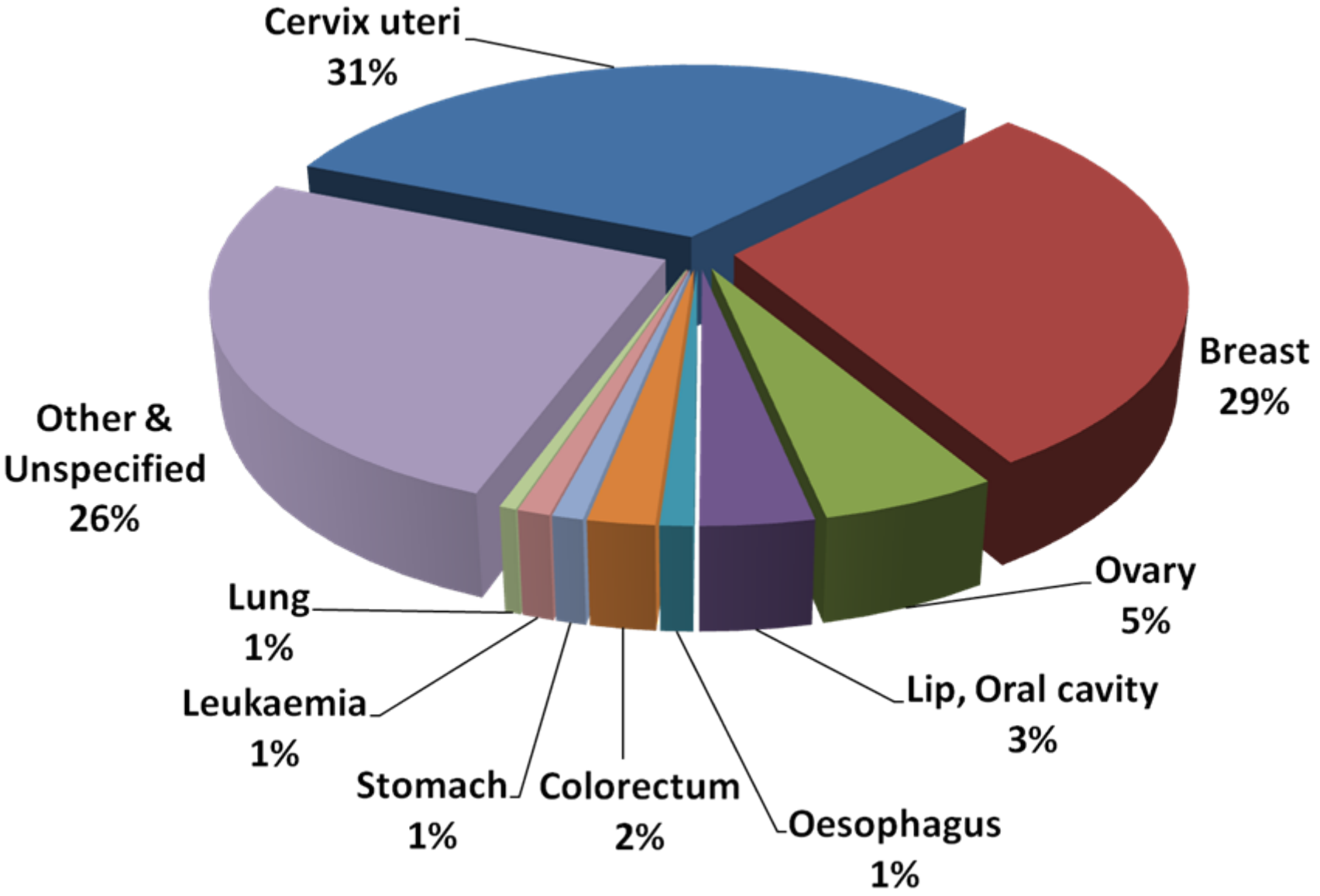
Estimated Incidence: Women



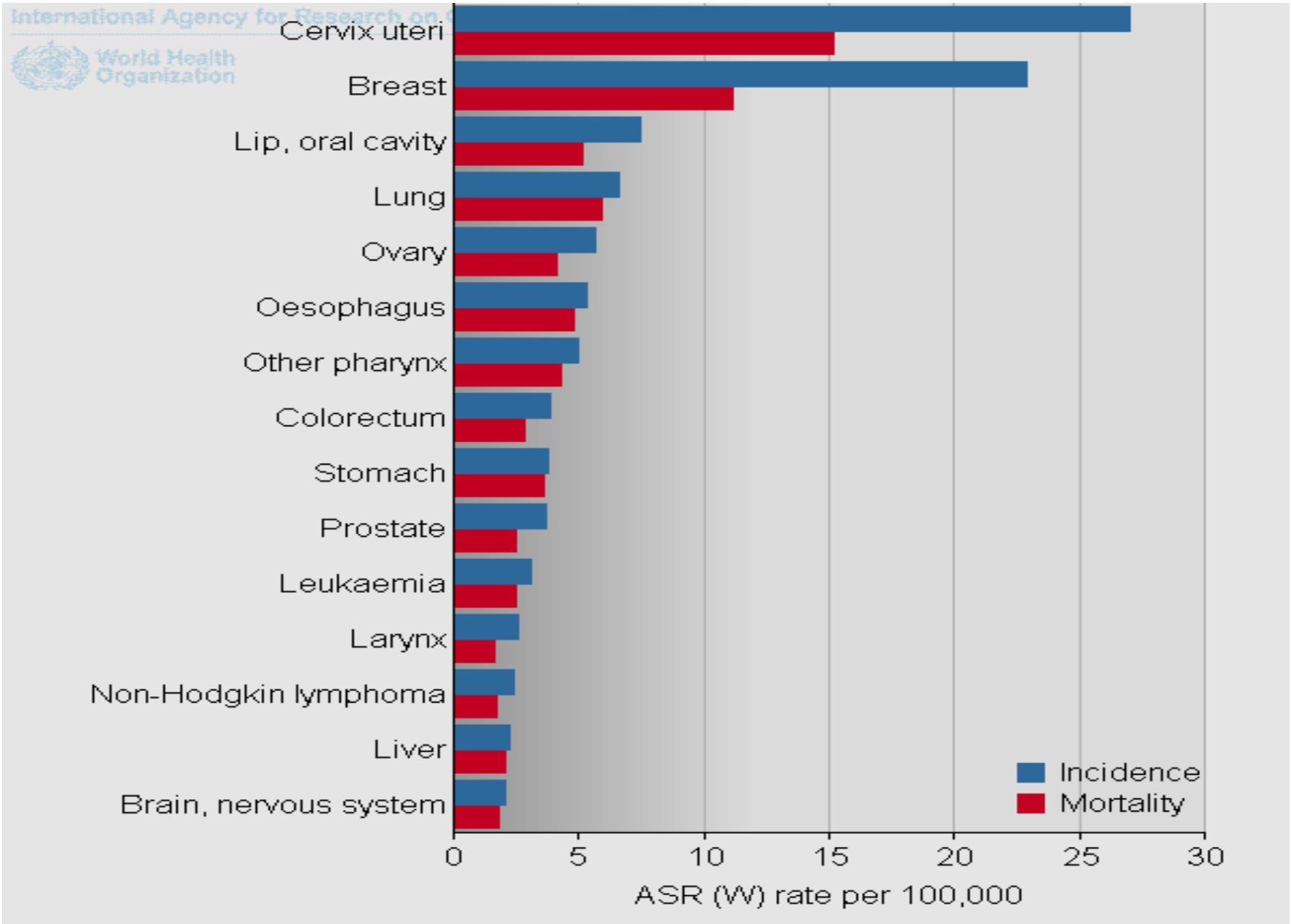
Estimated Mortality: Women



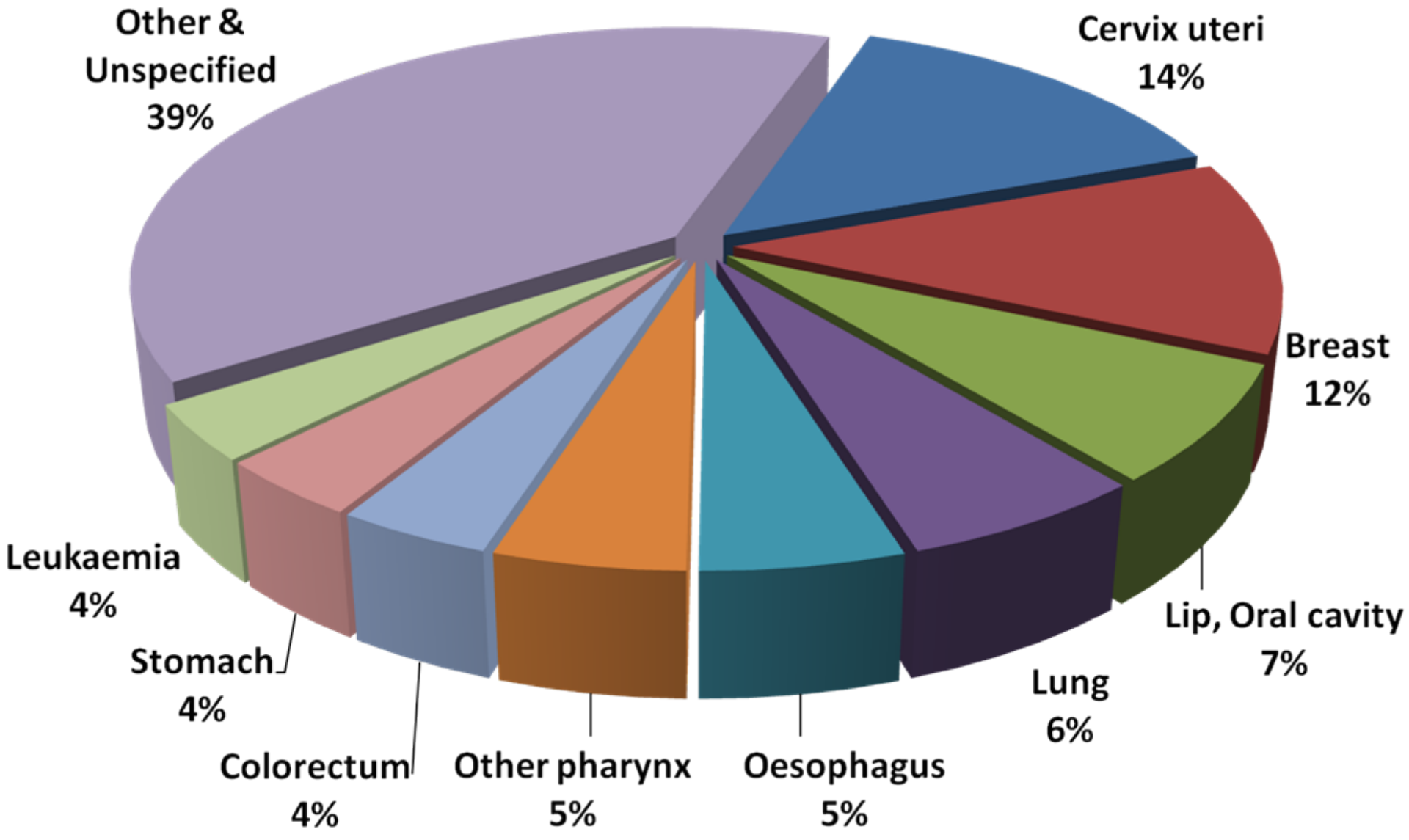
Estimated 5-year Prevalence: Women



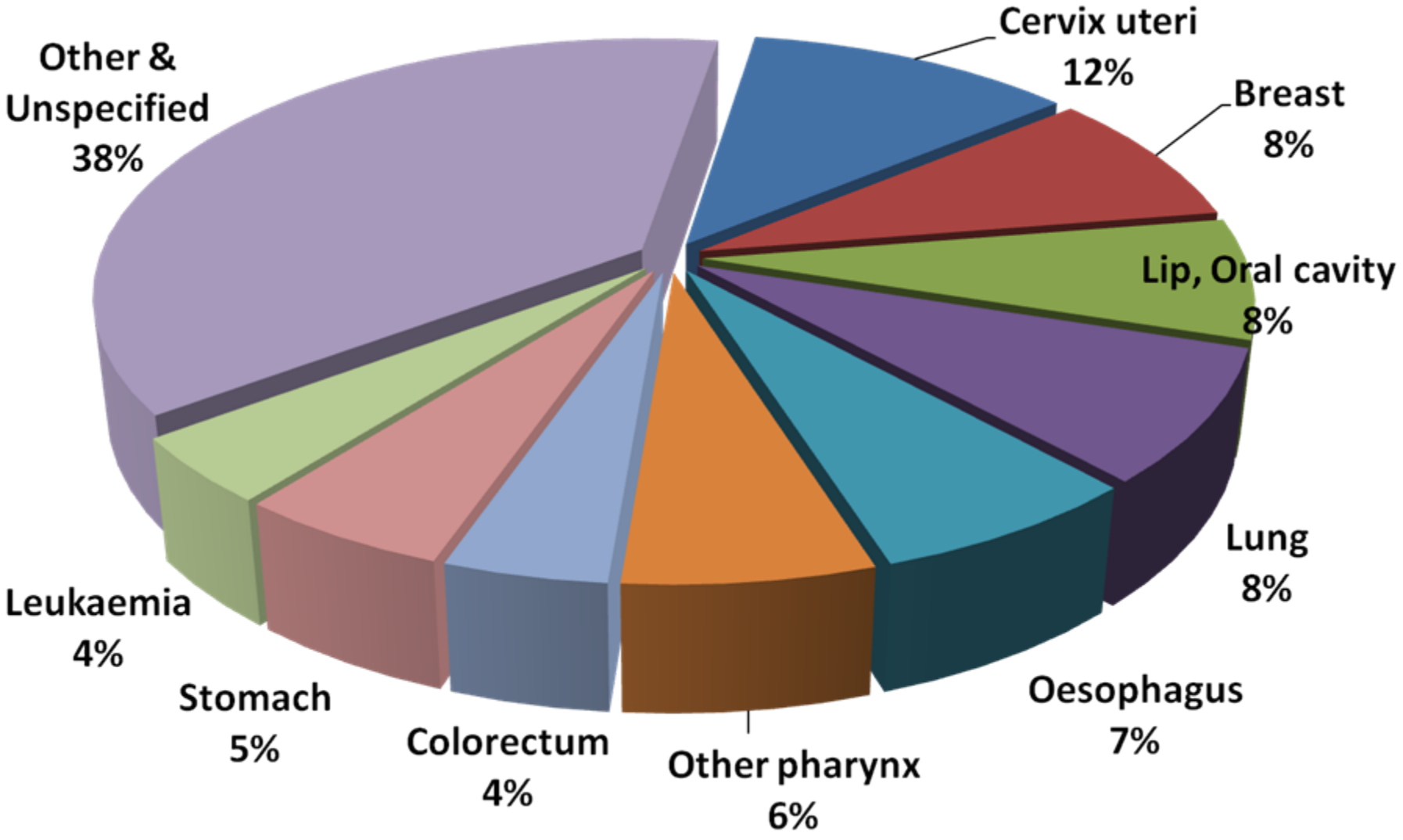
Estimated age-standardised incidence and mortality rates: both sexes



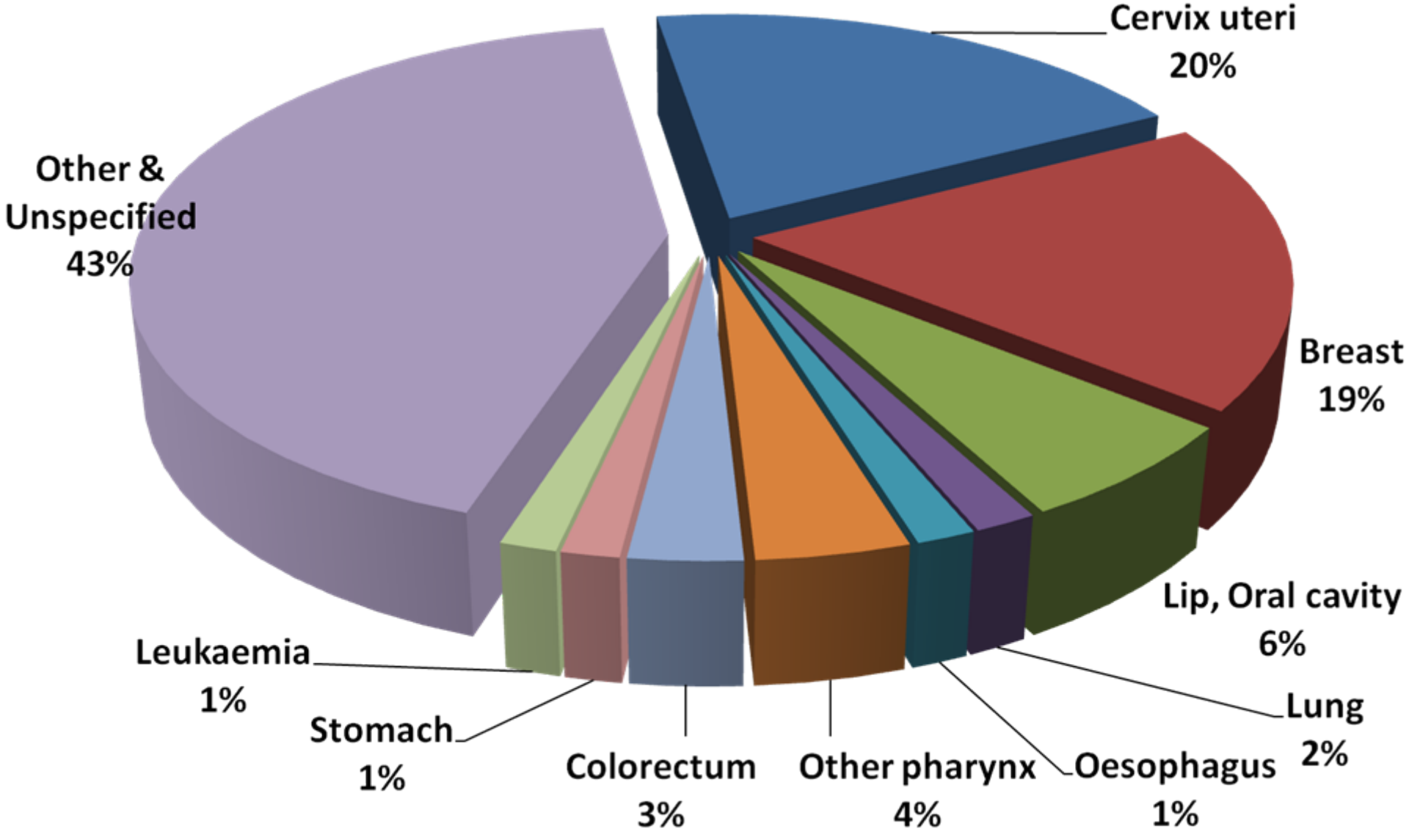
Estimated Incidence: Both sexes



Estimated Mortality: Both Sexes



Estimated 5-Year Prevalence: Both sexes



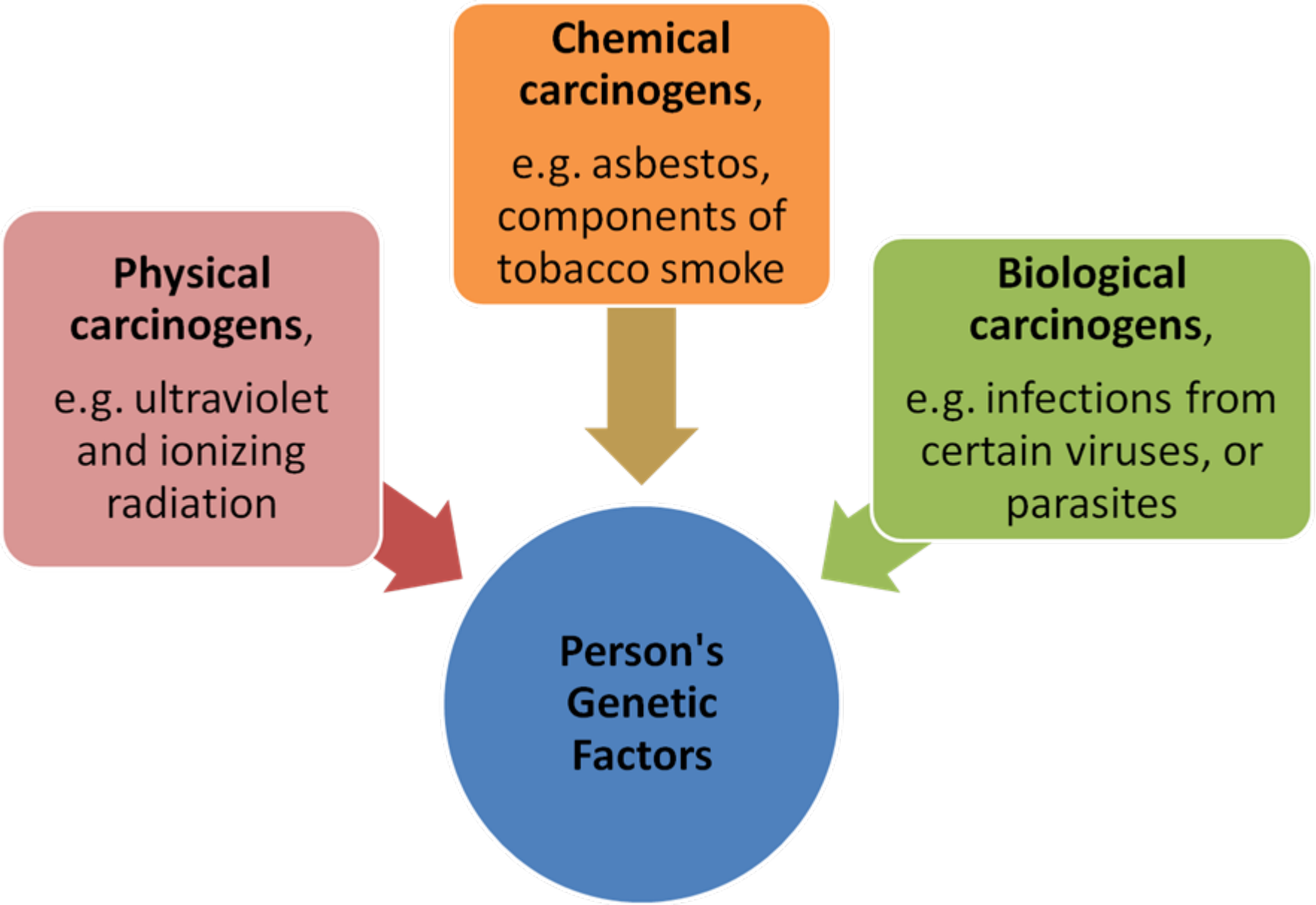
Summary statistics (2008)

INDIA	Male	Female	Both sexes
Population (thousands)	610618	570793	1181411
Number of new cancer cases (thousands)	430.1	518.8	948.9
Age-standardised rate (W)	92.9	105.5	98.5
Risk of getting cancer before age 75 (%)	10.2	10.8	10.4
Number of cancer deaths (thousands)	321.4	312.1	633.5
Age-standardised rate (W)	71.2	65.5	68.0
Risk of dying from cancer before age 75 (%)	8.0	7.1	7.5
5-year prevalent cases (thousands)	620.2	1084.9	1705.1
Proportion (per 100,000)	149.4	277.1	211.4
5 most frequent cancers (ranking defined by total number of cases)	Lung	Cervix uteri	Cervix uteri
	Lip, oral cavity	Breast	Breast
	Other pharynx	Ovary	Lip, oral cavity
	Oesophagus	Lip, oral cavity	Lung
	Stomach	Oesophagus	Oesophagus

What causes cancer?

- The transformation from a normal cell into a tumour cell is a multistage process, typically a progression from a pre-cancerous lesion to malignant tumours.
- These changes are the result of the interaction between a **person's genetic factors** and three categories of external agents, including:

- **Physical carcinogens**;
- **Chemical carcinogens**; and
- **Biological carcinogens**.


Chemical carcinogens,
e.g. asbestos, components of tobacco smoke
Physical carcinogens,
e.g. ultraviolet and ionizing radiation
Biological carcinogens,
e.g. infections from certain viruses, or parasites
Person's Genetic Factors

Risk factors for Cancer

- Tobacco
- Alcohol
- Dietary factors
- Occupational exposures
- Infections: Viruses; Parasites
- Customs, Habits & Life styles
- Others

Tobacco use is the single most important risk factor for cancer causing 22% of global cancer deaths and 71% of global lung cancer deaths.

In many low-income countries, up to 20% of cancer deaths are due to infection by HBV and HPV.

Control of Cancer

- Primary prevention

  More than 30% of cancer deaths could be prevented by modifying or avoiding key risk factors.

- Secondary prevention

  Many cancers have a high chance of cure if detected early and treated adequately.

Primary Prevention

- Control of tobacco and alcohol consumption
- Personal hygiene
- Radiation
- Occupational exposures
- Immunization
- Foods, drugs & cosmetics
- Legislation
- Cancer education

Early warning signs (danger signals) of cancer

- A lump or hard area in the breast
- A change in a wart or mole
- A persistent change in digestive and bowel habits
- A persistent cough or hoarseness
- Excessive loss of the blood at the monthly period or loss of blood outside the usual dates
- Blood loss from any natural orifice
- A swelling or sore that does not get better
- Unexplained loss of weight

Secondary prevention

- Cancer registration
  - Hospital based registries
  - Population based registries
- Early detection of cases
- Treatment.

Cancer diagnosis and treatment is complemented by psychological support.

Palliative care

- Palliative care is treatment to relieve, rather than cure, symptoms caused by cancer.
- Palliative care can help people live more comfortably;
- It is particularly needed in places with a high proportion of patients in advanced stages where there is little chance of cure.
- Relief from physical, psychosocial and spiritual problems can be achieved in over 90% of advanced cancer patients through palliative care.

Palliative care strategies

- Effective public health strategies, comprising of **community- and home-based care** are essential to provide pain relief and palliative care for patients and their families in low-resource settings.
- Improved access to **oral morphine** is mandatory for the treatment of moderate to severe cancer pain, suffered by over 80% of cancer patients in terminal phase.

Cancer screening

- Malignant disease is preceded by a premalignant lesion.
- Most cancers begin as localized lesions.
- As much as 75% of all cancers occur in body sites that are accessible.

- Screening programmes are especially effective for frequent cancer types for which a **cost-effective, affordable, acceptable and accessible** screening test is available to the majority of the population at risk.

- Examples of screening methods are:

➢ Visual inspection with acetic acid (VIA) for cervical cancer in low-resource settings;

➢ PAP test for cervical cancer in middle- and high-income settings;

➢ Mammography screening for breast cancer in high-income settings.

Thanks.

Epidemiology of Selected Cancers

ORAL CANCER

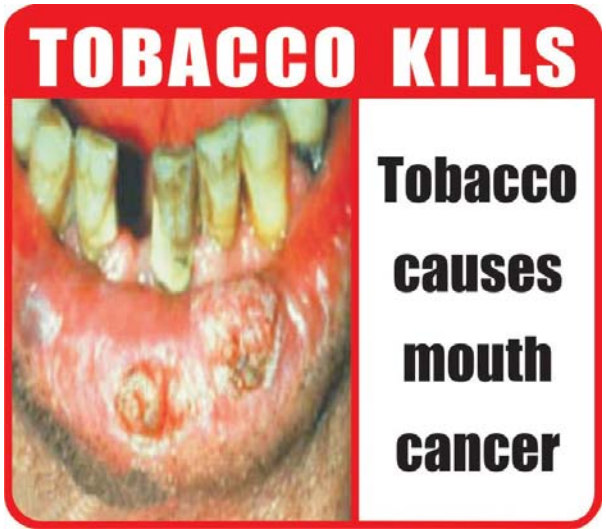
- One of the ten most common cancer
- New cancer cases: 2.6 lac
- Deaths due to oral cancer: 1.27 lac
- Mortality rate: 1.9 per lac

India

- Incidence:
  - Males: 9.8 cases 1 lac
  - Females: 5.2 cases per 1 lac
- Mortality:
  - Males: 6.8 cases 1 lac
  - Females: 3.6 cases per 1 lac

Epidemiological features

- Tobacco
- Alcohol
- Pre-cancerous stage
- High risk groups
- Cultural patterns



Prevention

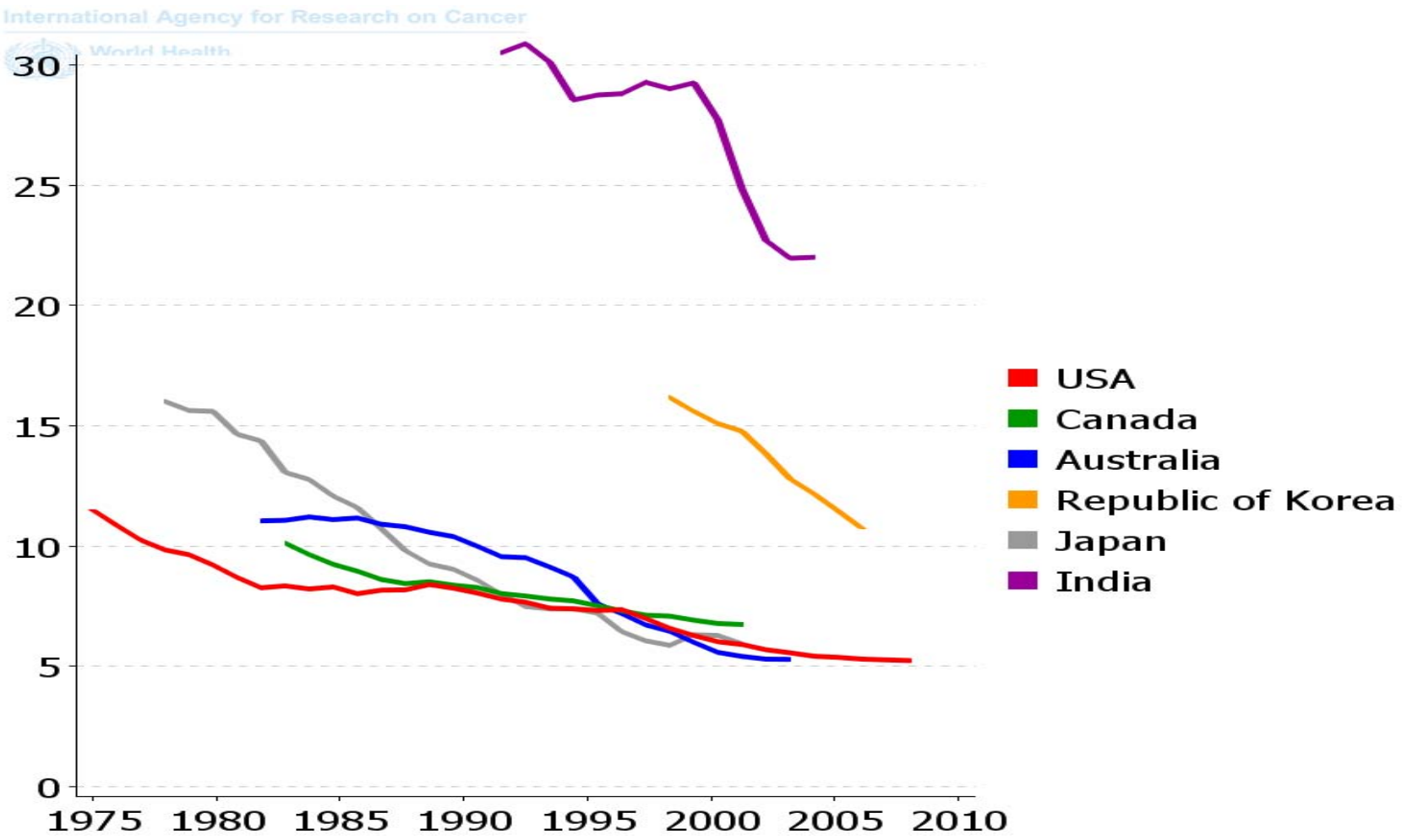
- Primary prevention
- Secondary prevention

Cancer Cervix

- Cervical cancer is the third most common cancer in women, and the seventh overall.
- More than 85% of the global burden occurs in developing countries, where it accounts for 13% of all female cancers.
- No of new cases: 530000 cases
- No. of Deaths: 275000
- Incidence: Mortality ratio: 52%

- High-risk regions are Eastern and Western Africa (ASR greater then 30 per 100,000), Southern Africa (26.8 per 100,000), South-Central Asia (24.6 per 100,000), South America and Middle Africa (ASRs 23.9 and 23.0 per 100,000 respectively).
- Rates are lowest in Western Asia, Northern America and Australia/New Zealand (ASRs less than 6 per 100,00). Cervical cancer remains the most common cancer in women only in Eastern Africa, South-Central Asia.

Trends in Incidence of Cervical Cancer: ASR (W) per 100,000



India

- Incidence: 27 per 1 lac
- Mortality: 15.2 per 1 lac
- 23.3% of all cancer deaths in women
- 11.4% of total cancer deaths

Risk factors

- Age
- Genital wars
- Marital status
- Early marriage
- OCPs
- Socio-economic class

Prevention

- Primary prevention
- Secondary prevention

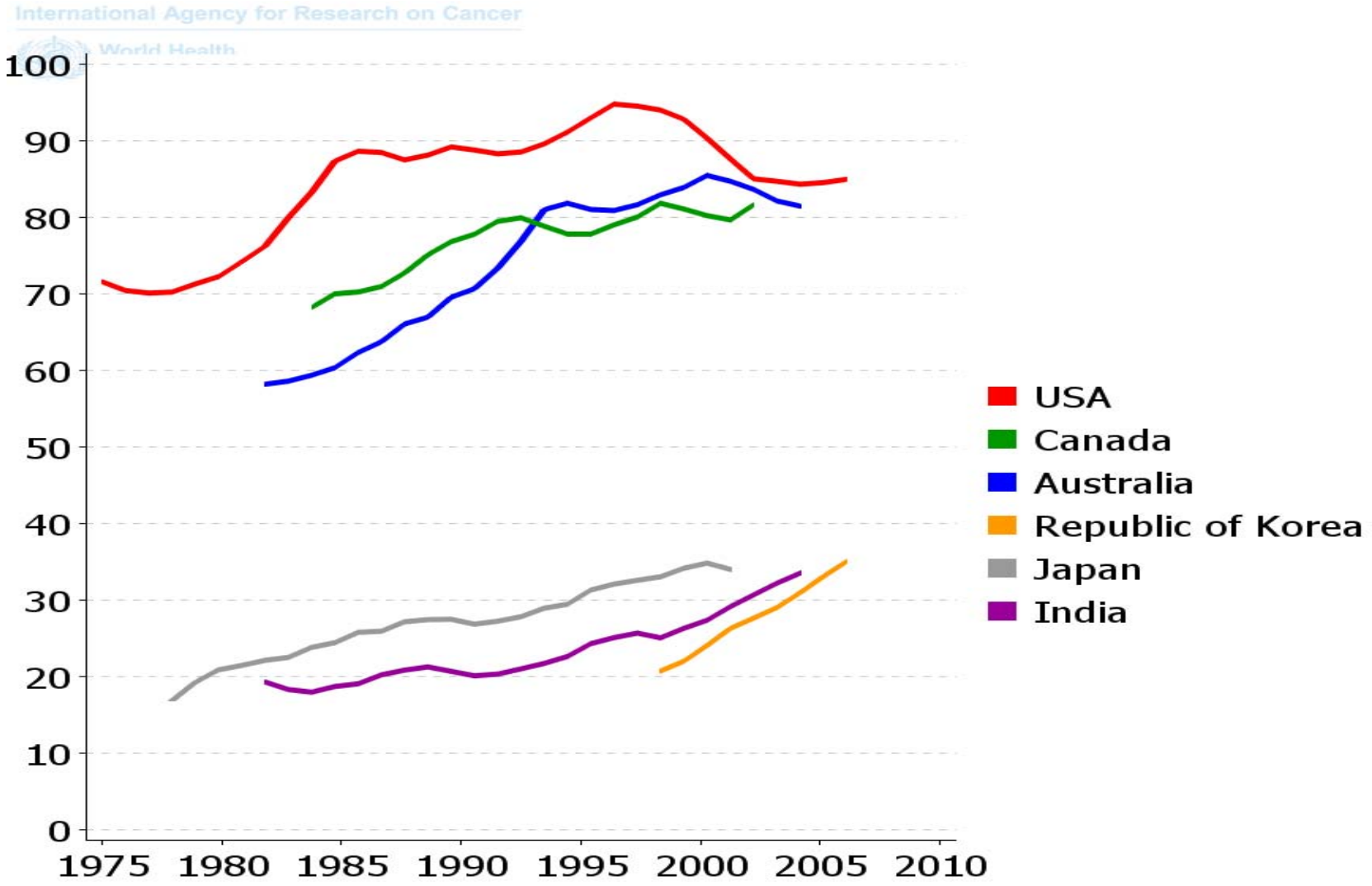
Breast Cancer

- Breast cancer is by far the most frequent cancer among women
- An estimated 1.38 million new cancer cases diagnosed in 2008 (23% of all cancers), and
- Ranks second overall (10.9% of all cancers).

- It is now the most common cancer both in developed and developing regions with around 690 000 new cases estimated in each region (population ratio 1:4).
- Incidence rates vary from 19.3 per 100,000 women in Eastern Africa to 89.7 per 100,000 women in Western Europe, and are high (greater than 80 per 100,000) in developed regions of the world (except Japan) and low (less than 40 per 100,000) in most of the developing regions.

- The range of mortality rates is much less (approximately 6-19 per 100,000) because of the more favorable survival of breast cancer in (high-incidence) developed regions.
- As a result, breast cancer ranks as the fifth cause of death from cancer overall (458 000 deaths), but it is still the most frequent cause of cancer death in women in both developing (269 000 deaths, 12.7% of total) and developed regions, where the estimated 189 000 deaths is almost equal to the estimated number of deaths from lung cancer (188 000 deaths).

Trends in Incidence of Breast Cancer: ASR (W) per 100,000



India

- Incidence: 22.9 per lac
- Mortality: 11.1 per lac

Risk factors

- Age
- Family history
- Parity
- Age at menarche and menopause
- Hormonal factors
- Prior breast biopsy
- Diet
- Socio-economic status
- Radiations
- OCPs

Prevention

- Primary prevention
- Secondary prevention

Lung Cancer

- Lung cancer has been the most common cancer in the world for several decades, and by 2008, there were an estimated 1.61 million new cases, representing 12.7% of all new cancers.
- It was also the most common cause of death from cancer, with 1.38 million deaths (18.2% of the total).

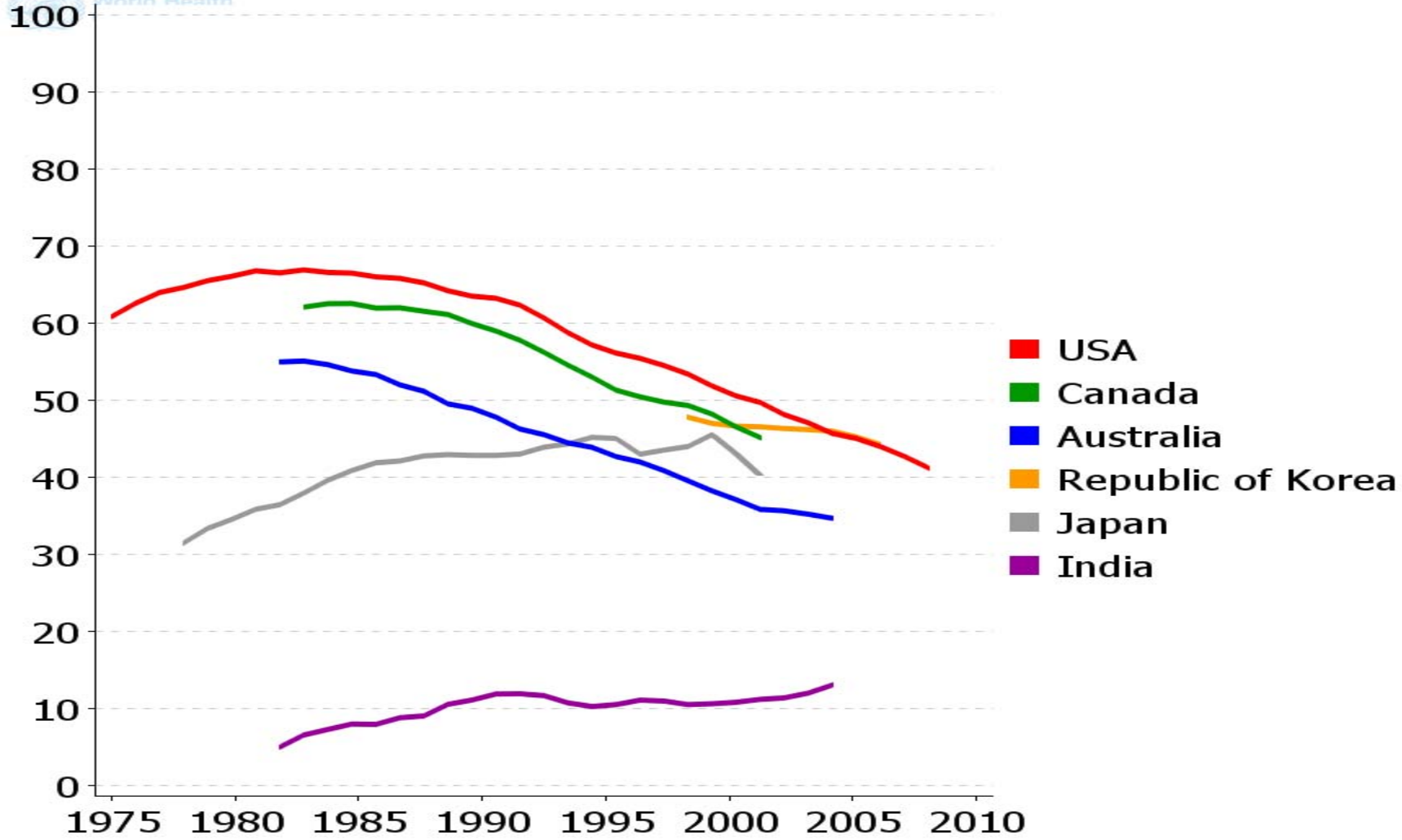
- The majority of the cases now occur in the developing countries (55%).
- Lung cancer is still the most common cancer in men worldwide (1.1 million cases, 16.5% of the total), with high rates in Central-Eastern and Southern Europe, Northern America and Eastern Asia.
- Very low rates are still estimated in Middle and Western Africa (ASRs 2.8 and 3.1 per 100,000 respectively).

- In females, incidence rates are generally lower, but, worldwide, lung cancer is now the fourth most frequent cancer of women (516 000 cases, 8.5% of all cancers) and the second most common cause of death from cancer (427 000 deaths, 12.8% of the total).
- The highest incidence rate is observed in Northern America (where lung cancer it is now the second most frequent cancer in women), and the lowest in Middle Africa (15th most frequent cancer).

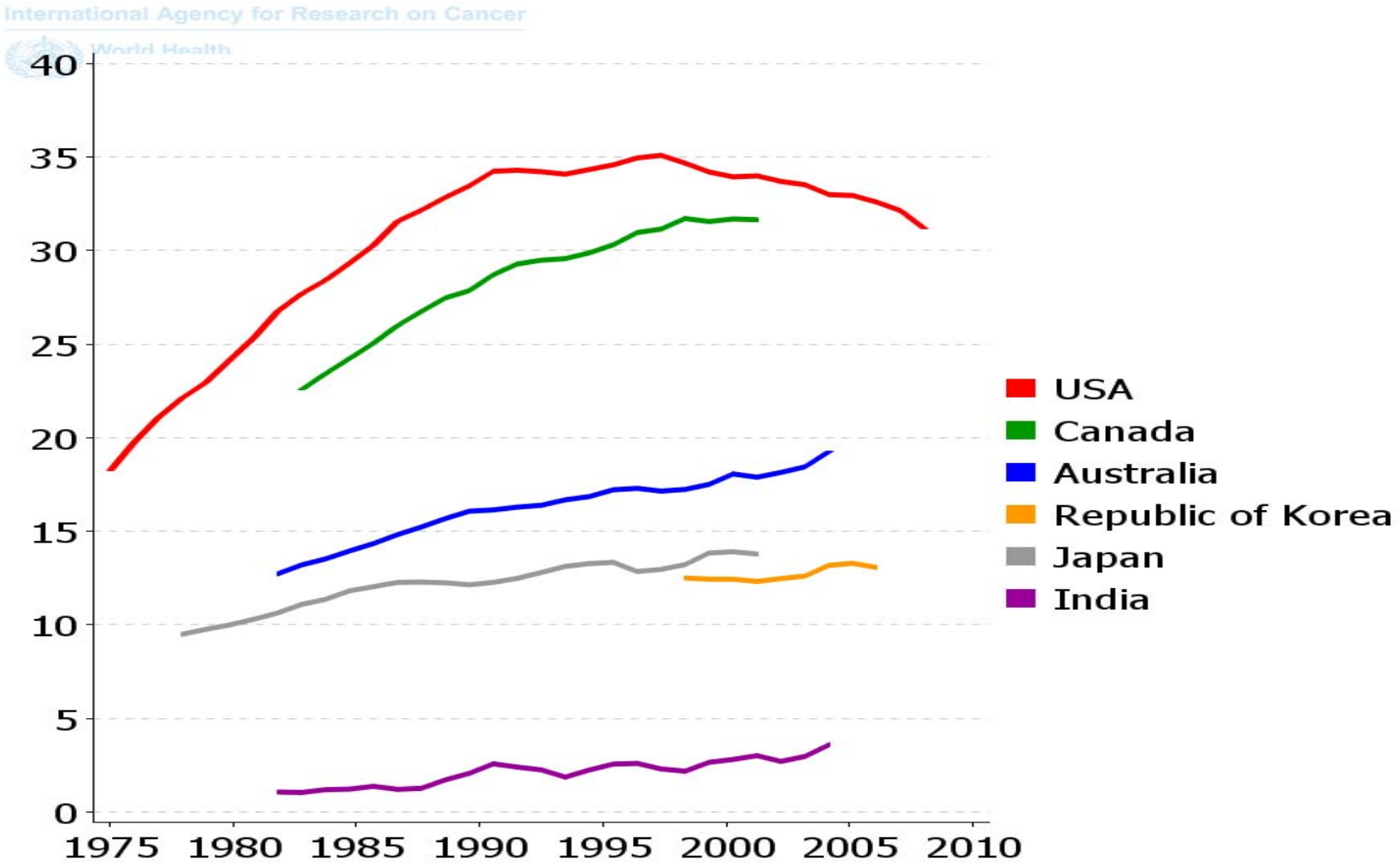
India

- Incidence: 6.6 per lac
- Mortality: 5.9 per lac

Trends in incidence of lung cancer: ASR (W) per 100,000, men



Trends in incidence of lung cancer: ASR (W) per 100,000, women



Epidemiological Features

- Age
- Sex
- Smoking
- Others

Prevention

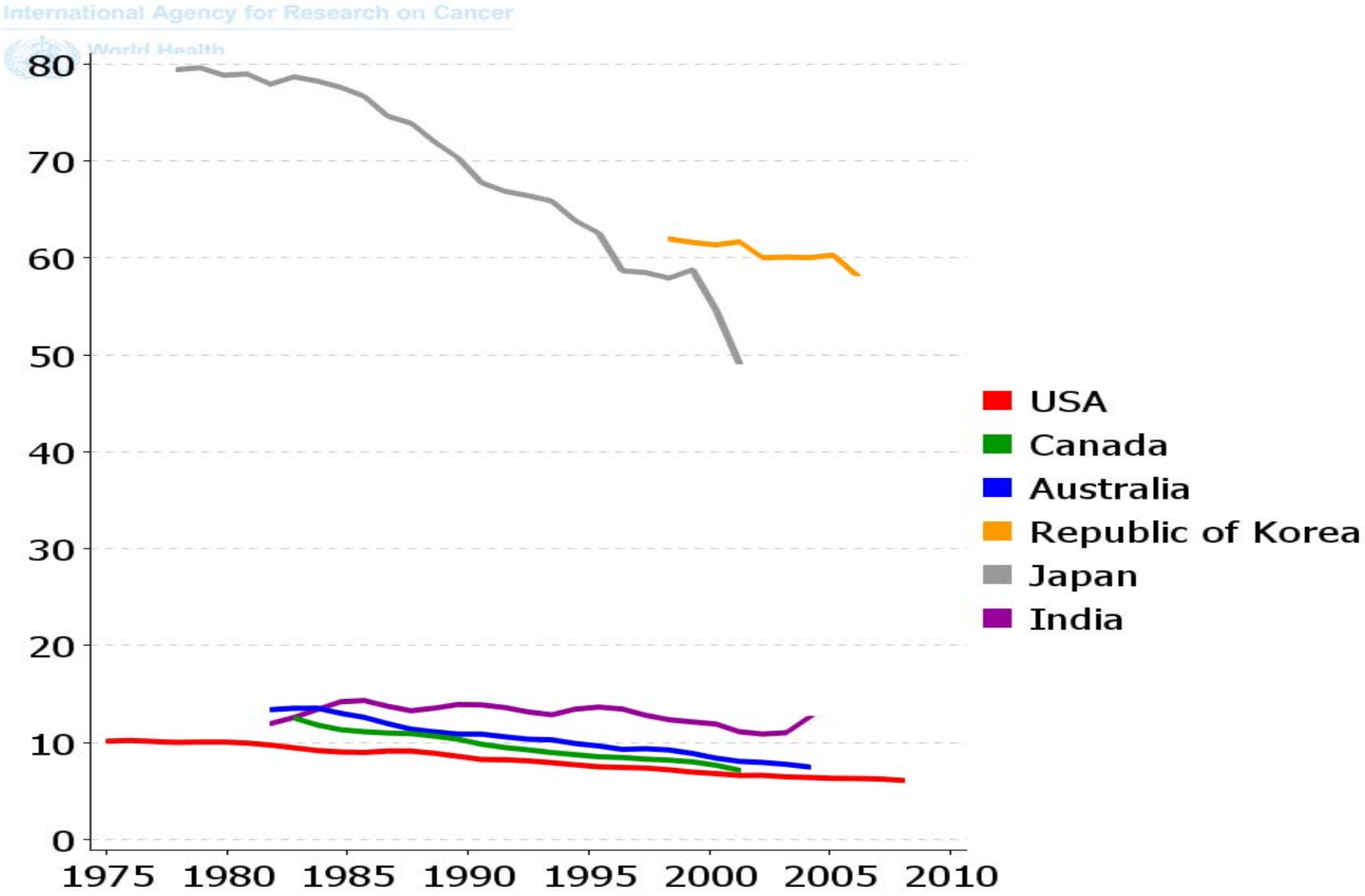
- Primary prevention
  - Public information & education
  - Legislative & restrictive measures
  - Smoking cessation activities
  - National & International coordination
- Secondary prevention

Stomach Cancer

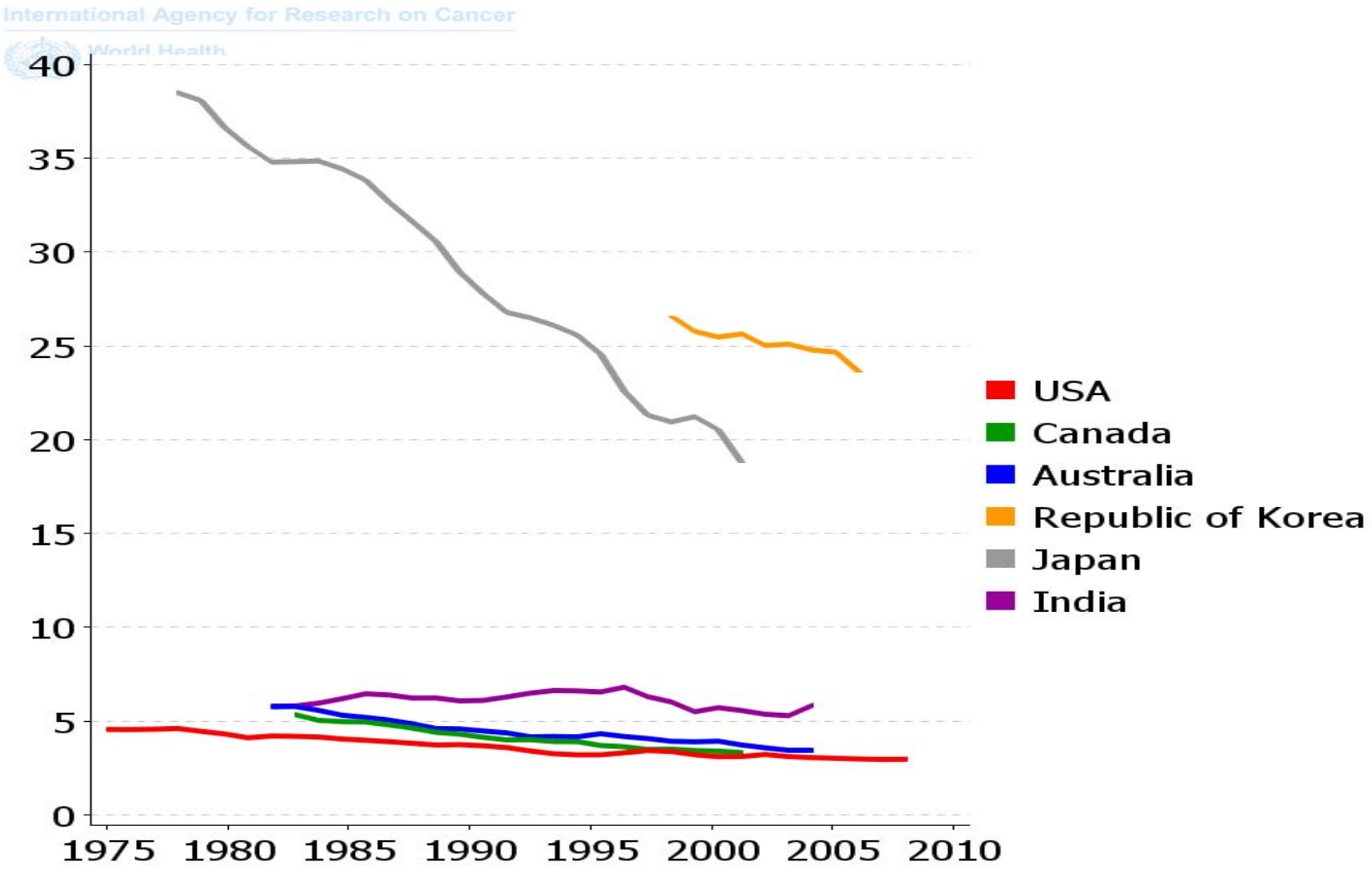
- About one million new cases of stomach cancer were estimated to have occured in 2008 (988 000 cases, 7.8% of the total), making it currently the fourth most common malignancy in the world, behind cancers of the lung, breast and colo-rectum.
- More than 70% of cases (713 000 cases) occur in developing countries (467 000 in men, 246 000 in women), and half the world total occurs in Eastern Asia (mainly in China).
- Age-standardised incidence rates are about twice as high in men as in women, ranging from 3.9 in Northern Africa to 42.4 in Eastern Asia for men, and from 2.2 in Southern Africa to 18.3 in Eastern Asia for women.

- Stomach cancer is the second leading cause of cancer death in both sexes worldwide (736 000 deaths, 9.7% of the total).
- The highest mortality rates are estimated in Eastern Asia (28.1 per 100,000 in men, 13.0 per 100,000 in women), the lowest in Northern America (2.8 and 1.5 respectively).
- High mortality rates are also present in both sexes in Central and Eastern Europe, and in Central and South America

Trends in incidence of stomach cancer: ASR (W) per 100,000, men



Trends in incidence of stomach cancer: ASR (W) per 100,000, women



Oesophageal cancer

- Oesophageal cancer is the eighth most common cancer worldwide, with 481 000 new cases (3.8% of the total) estimated in 2008, and the sixth most common cause of death from cancer with 406 000 deaths (5.4% of the total).
- More than 80% of the cases and of the deaths occur in developing countries.

- The incidence rates of oesophageal cancer vary internationally more than 15-fold in men (ASR 22.3 per 100,000 in Southern Africa compared to 1.4 in Western Africa), and almost 20-fold in women (ASR 11.7 per 100,000 in Southern Africa compared to 0.6 in Micronesia/Polynesia).
- Oesophageal cancer is two to four times more common among men than women.
- The highest mortality rates are found in both sexes in Eastern and Southern Africa, and in Eastern Asia.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