



GLOBAL CANCER RATES COULD INCREASE BY 50% TO 15 MILLION BY 2020

World Cancer Report provides clear evidence that action on smoking, diet and infections can prevent one third of cancers, another third can be cured

Cancer rates could further increase by 50% to 15 million new cases in the year 2020, according to the World Cancer Report, the most comprehensive global examination of the disease to date. However, the report also provides clear evidence that healthy lifestyles and public health action by governments and health practitioners could stem this trend, and prevent as many as one third of cancers worldwide.

In the year 2000, malignant tumours were responsible for 12 per cent of the nearly 56 million deaths worldwide from all causes. In many countries, more than a quarter of deaths are attributable to cancer. In 2000, 5.3 million men and 4.7 million women developed a malignant tumour and altogether 6.2 million died from the disease. The report also reveals that cancer has emerged as a major public health problem in developing countries, matching its effect in industrialized nations.

"The World Cancer Report tells us that cancer rates are set to increase at an alarming rate globally. We can make a difference by taking action today. We have the opportunity to stem this increase. This report calls on Governments, health practitioners and the general public to take urgent action. Action now can prevent one third of cancers, cure another third, and provide good, palliative care to the remaining third who need it," said Dr. Paul Kleihues, Director of the International Agency for Research on Cancer (IARC) and co-editor of the World Cancer Report.

The World Cancer Report is a concise manual describing the global burden, the causes of cancer, major types of malignancies, early detection and treatment. The 351-page global report is issued by IARC, which is part of the World Health Organization (WHO).

Dr Gro Harlem Brundtland, Director-General of WHO, states: "The report provides a basis for public health action and assists us in our goal to reduce the morbidity and mortality from cancer, and to improve the quality of life of cancer patients and their families, everywhere in the world,"

Examples of areas where action can make a difference to stemming the increase of cancer rates and preventing a third of cases are:

Reduction of tobacco consumption. It remains the most important avoidable cancer risk. In the 20th century, approximately 100 million people died worldwide from tobacco-associated diseases.

A healthy lifestyle and diet can help. Frequent consumption of fruit and vegetables and physical activity can make a difference.

Early detection through screening, particularly for cervical and breast cancers, allow for prevention and successful cure.

The predicted sharp increase in new cases - from 10 million new cases globally in 2000, to 15 million in 2020 - will mainly be due to steadily ageing populations in both developed and developing countries and also to current trends in smoking prevalence and the growing adoption of unhealthy lifestyles.

"Governments, physicians, and health educators at all levels could do much more to help people change their behaviour to avoid preventable cancers," says Bernard W. Stewart, Ph.D., co-editor of the report, Director of Cancer Services, and Professor, Faculty of Medicine, University of New South Wales, Australia. "If the knowledge, technology and control strategies outlined in the World Cancer Report were applied globally, we would make major advances in preventing and treating cancers over the next twenty years and

beyond."

From a global perspective, there is strong justification for focusing cancer prevention activities particularly on two main cancer-causing factors - tobacco and diet. We also need to continue efforts to curb infections which cause cancers," said Dr Rafael Bengoa, Director, Management of Non-communicable disease at WHO. "These factors were responsible for 43 per cent of all cancer deaths in 2000, that is 2.7 million fatalities, and 40 per cent of all new cases, that is four million new cancer cases."

As part of an effort to stem this trend, WHO is engaged in efforts to stem both tobacco use, and to improve diet, nutrition and physical activity.

Tobacco consumption remains the most important avoidable cancer risk. The report reviews and recommends a number of strategies to reduce global tobacco consumption, requiring the coordinated involvement of government and community health organizations, health care professionals and individuals. The groundbreaking public health treaty - the Framework Convention on Tobacco Control - which the Member States of WHO have agreed to submit to the World Health Assembly in May 2003, represents a powerful tool to ensure that such strategies are implemented.

WHO is also engaged in preparing a Global Strategy on Diet, Physical Activity and Health, under a May 2002 mandate from Member States to address the growing global burden of chronic diseases, including cancers, cardiovascular diseases, diabetes and obesity. WHO is consulting widely with Member States, other UN agencies, the private sector and civil society on the strategy, which will be presented to the World Health Assembly in May 2004. The strategy will contain recommendations for governments on nutrition and physical activity goals and population-based interventions to reduce the prevalence of chronic disease including cancer.

For further information:

For US media enquiries please contact: Ian Larsen, Hoffman & Hoffman Public Relations, +1 703 820 2244 (office), mobile: +1 703 29 2099; or Nils Hoffman, +1 703 820 2244 (office), mobile: +1 703 967 1490.

For UK Media enquiries, please contact Victoria Sabin or Julia Hobsbawn, Hobsbawn Media and Marketing Communications, +44 207 964 8570 (office), or Victoria Sabin, mobile + 44 07971 430244.

Nicolas Gaudin, Chief, IARC Communications, International Agency for Research on Cancer, Tel: +33 472 738 567 Mobile: +33 680 572 966, Fax: +33 472 738 311, E-mail: com@iarc.fr

Rebecca Harding, Communications Officer, World Health Organization, Mobile (+41) 79 509 0651.

Please note that high resolution photos will be available on WHO website from 3rd April for downloading:

<http://www.who.int/multimedia/worldcancerday2003/photo.html>

All WHO Press Releases, Fact Sheets and Features can be obtained on the WHO home page <http://www.who.int/>.

The World Cancer Report - The major findings

Tobacco, the case for primary prevention Tobacco consumption remains the most important avoidable cancer risk. In the 20th century, approximately 100 million people died world-wide from tobacco-associated diseases (cancer, chronic lung disease, cardiovascular disease and stroke). Half of regular smokers are killed by the habit. One quarter of smokers will die prematurely during middle age (35 to 69 years).

The lung cancer risk for regular smokers as compared to non-smokers (relative risk, RR) is between 20 and 30 fold. In countries with a high smoking prevalence and where many women have smoked cigarettes throughout adult life, roughly 90 per cent of lung cancers in both men and women are attributable to cigarette smoking. For bladder and renal pelvis, the RR is five-six but this means that more than 50 per cent of cases are caused by smoking.

The RR for cancers of the oral cavity, oral cavity, pharynx, larynx and squamous cell carcinoma of the oesophagus is greater than six, and three-four for carcinomas of the pancreas. These risk estimates are higher than previously estimated and unfortunately, additional cancer sites with a RR of two-three have been identified as being associated with tobacco smoking, including cancers of the stomach, liver, uterine cervix, kidney (renal cell carcinoma) nasal cavities and sinuses, esophagus (adenocarcinoma) and myeloid leukaemia.

Involuntary (passive) tobacco smoke is carcinogenic and may increase the lung cancer risk by 20 per cent. There is currently no evidence that smoking causes breast, prostate or endometrial cancer of the uterus.

The deadly smoking habit is particularly worrying in Central and Eastern Europe and many developing and newly industrialized countries. The tendency of youth around the world to start smoking at younger and younger ages will predispose them to substantial risks in later life.

While it is best never to start smoking, epidemiological evidence supports the enormous benefits of cessation. The greatest reduction in the number of cancer deaths within the next several decades will be due to those who stop the habit. The greatest effect results from stopping smoking in the early 30s, but a very impressive risk reduction of more than 60 per cent is obtained even when the habit is quit after the age of 50 years.

The report reviews and recommends a number of strategies to reduce global tobacco consumption, requiring the coordinated involvement of government and community health organizations, health care professionals and individuals. The groundbreaking public health treaty - the Framework Convention on Tobacco Control represents a powerful tool to ensure that such strategies are implemented.

Infection and cancer: intervention is key In developing countries, up to 23 per cent of malignancies are caused by infectious agents, including hepatitis B and C virus (liver cancer), human papillomaviruses (cervical and ano-genital cancers), and *Helicobacter pylori* (stomach cancer). In developed countries, cancers caused by chronic infections only amount to approximately 8 per cent of all malignancies.

This discrepancy is particularly evident for cervical cancer. In developed countries with an excellent public health infrastructure and a high compliance of women, early cytological detection of cervical cancer (PAP smear) has led to an impressive reduction of mortality while in other world regions, including Central America, South East Africa and India, incidence and mortality rates are still very high. Today, more than 80 per cent of all cervical cancer deaths occur in developing countries.

Vaccinations could be key to preventing these cancers. HBV vaccination has already been shown to prevent liver cancer in high-incidence countries and it is likely that human papillomavirus (HPV) vaccination will become a reality in 3 to 5 years.

In the gastro-intestinal tract (GIT), any chronic tissue damage with necrosis and regeneration carries an increased cancer risk, e.g. consumption of very hot beverages (squamous cell carcinoma of the esophagus), gastro-oesophageal reflux (adenocarcinoma of the esophagus), chronic gastritis induced by *H. pylori* infection (stomach cancer), Crohn's disease (cancer of the small intestines) and ulcerative colitis (colon cancer).

Poverty, affluence and the global burden of cancer In developed countries, the probability of being diagnosed with cancer is more than twice as high as in developing countries. However, in rich countries, some 50 per cent of cancer patients die of the disease, while in developing countries, 80 per cent of cancer victims already have late-stage incurable tumors when they are diagnosed, pointing to the need for much better detection programs.

The main reasons for the greater cancer burden of affluent societies are the earlier onset of the tobacco epidemic, the earlier exposure to occupational carcinogens, and the Western nutrition and lifestyle.

However, with increasing wealth and industrialization, many countries undergo rapid lifestyle changes that will greatly increase their future disease burden.

"Once considered a "Western" disease, the Report highlights that more than 50 per cent of the world's cancer burden, in terms of both numbers of cases and deaths, already occurs in developing countries. "Cancer has emerged as a major public health problem in developing countries for the first time, matching its effect in industrialized nations. This is a global problem, and it's growing. But, we can take steps to slow this growth," says Paul Kleihues, MD, Director of IARC and co-editor of the World Cancer Report.

The Western lifestyle and its health risks The Western lifestyle is characterized by a highly caloric diet, rich in fat, refined carbohydrates and animal protein, combined with low physical activity, resulting in an overall energy imbalance. It is associated with a multitude of disease conditions, including obesity, diabetes, cardiovascular disease, arterial hypertension and cancer.

Malignancies typical for affluent societies are cancers of the breast, colon/rectum, uterus (endometrial carcinoma), gallbladder, kidney and adenocarcinoma of the oesophagus. Prostate cancer is also strongly related to the Western lifestyle, but there is an additional ethnic component; black people appear to be at a greater risk than whites and the latter at higher risk than Asian populations. Similar lifestyles are associated with a similar tumour burden. Since they have a common cause, these neoplasms typically go together. There is no region in the world that has a high incidence of breast cancer without a concurrent colon cancer burden.

Obesity is spreading epidemically throughout the world. It visualizes a chronic energy imbalance and is an independent predictor of an increased cancer risk, particularly for carcinomas of the uterine endometrium, kidney and gall bladder.

Together with the independent Expert Report on diet and chronic disease, released in March 2003 by WHO and FAO (Food and Agriculture Organization) the World Cancer Report provides policymakers with the latest information on which to base advice.

Nutrition and cancer - the good news Stomach cancer is among the most common malignancies worldwide, with some 870,000 cases every year, and 650,000 deaths. About 60 per cent of cases occur in developing countries, with the highest incidence rates coming in Eastern Asia, the Andean regions of South America and Eastern Europe. The good news is that stomach cancer is declining world-wide, in some regions almost dramatically. In Switzerland and neighbouring European countries, the mortality fell by 60 per cent within one generation. If this trend continues, stomach cancer may in some world regions become a rare disease during the next 30 years. The main reason for this welcome development is the invention of the refrigerator, allowing fish and meat preservation without salting. The drop in incidence and mortality rates is therefore particularly impressive in Nordic countries in which fish consumption is traditionally high, e.g. Iceland. In populations that still prefer salty food, e.g. Portugal and Brazil (salted cod, bacalao), Japan and Korea (salted pickles and salad), stomach cancer rates are still high but have also started to decline significantly. An additional factor contributing to this trend is the availability in many countries of fresh fruit and vegetables throughout the year.

Cancer prevention: a healthy diet can help!

Epidemiological studies indicate that the frequent consumption of fruit and vegetables may reduce the risk of developing cancers of epithelial origin, including carcinomas of the pharynx, larynx, lung, oesophagus, stomach, colon and cervix. Recent data from the European Prospective Investigation into Cancer and Nutrition (EPIC), suggests that a daily consumption of 500 grams (1.1 lbs.) of fruits and vegetables can decrease incidence of cancers of the digestive tract by up to 25 per cent.

The report also says that given the multi-faceted impact of diet on cancer, many countries should encourage consumption of locally produced vegetables, fruit and agricultural products, and avoid the adoption of Western style dietary habits. IARC says that such actions would have health benefits beyond cancer, since other common non-communicable diseases, notably cardiovascular disease and diabetes, share the same lifestyle-related risk factors.

Early detection - the best strategy second to primary prevention The best possible prevention against cancer remains the avoidance of exposure to cancer-causing agents: this is called primary prevention (eg tobacco, industrial carcinogens, etc).

There is sound evidence that the recent decline in cancer mortality observed in several countries is to a significant extent due to early detection. Responsible for this success are not only improvements in imaging (mammography, magnetic resonance (MR) and computed tomography (CT) imaging), but also a higher degree of disease awareness and educational programmes on typical early symptoms. Most successful so far has been the early detection of cervical cancer by cytology and of breast cancer by mammography. A recent analysis by an IARC Working Group concluded that under trial conditions, mammography screening may reduce breast cancer mortality by 25-30 per cent and that in nation-wide screening programmes a reduction by 20 per cent appears feasible. There is also emerging evidence that prostate cancer screening by assessment of serum PSA levels may result in lower mortality rates but management of early lesions is still very invasive. For colon cancer, colonoscopy is considered the gold standard although its application in population-based screening programmes would require considerable medical resources.

Cancer control strategies

The aim of cancer control is a reduction in both the incidence of the disease and the associated morbidity and mortality, as well as improved life for cancer patients and their families. In addition to substantial opportunities for primary prevention, the World Cancer Report also emphasizes the potential of early detection, treatment and palliative care. It urges all countries to establish comprehensive national cancer control programmes, aimed at reducing the incidence of the disease and improving the quality of life for cancer patients and their families. In developing countries in particular, where a large proportion of cancers are detected late in the course of the disease, efforts to achieve earlier diagnosis and delivery of adequate palliative care and pain relief deserve urgent attention.

Cancer by the Numbers

Lung cancer is the most common cancer worldwide, accounting for 1.2 million new cases annually; followed by cancer of the breast, just over 1 million cases; colorectal, 940,000; stomach, 870,000; liver, 560,000; cervical, 470,000; esophageal, 410,000; head and neck, 390,000; bladder, 330,000; malignant non-Hodgkin lymphomas, 290,000; leukemia, 250,000; prostate and testicular, 250,000; pancreatic, 216,000; ovarian, 190,000; kidney, 190,000; endometrial, 188,000; nervous system, 175,000; melanoma, 133,000; thyroid, 123,000; pharynx, 65,000; and Hodgkin disease, 62,000 cases.

The three leading cancer killers are different than the three most common forms, with lung cancer responsible for 17.8 per cent of all cancer deaths, stomach, 10.4 per cent and liver, 8.8 per cent.

Industrial nations with the highest overall cancer rates include: U.S.A, Italy, Australia, Germany, The Netherlands, Canada and France. Developing countries with the lowest cancer were in Northern Africa Southern and Eastern Asia. (A complete list of cancer rates by countries can be found at <http://www-dep.iarc.fr/>).

Lung cancer in women

Lung cancer strikes 900,000 men and 330,000 women yearly. Among men, smoking causes more than 80 per cent of lung cancer cases. In women, smoking is the cause of 45 per cent of all lung cancer worldwide, but more than 70 per cent in North America and Northern Europe. In both men and women, the incidence of lung cancer is low before age 40, and increases up to age 70 or 75.

The rise in female smoking prevalence is a major public health concern. In the US, more women die from smoking-induced lung cancer than from breast cancer and in some Nordic countries, including Iceland and Denmark, female lung cancer deaths have begun to outnumber male tobacco victims.

Considering that in several European countries up to 50 per cent of young women are now regular smokers, this will cause a disease burden that significantly reduces women's health in decades to come.

Colon cancer

Cancers of the colon and rectum are rare in developing countries, but are the second most frequent malignancy in affluent societies. More than 940,000 cases occur annually worldwide, and nearly 500,000 die from it each year.

A major cause is a diet rich in fat, refined carbohydrates and animal protein, combined with low physical activity. Genetic susceptibility appears to be involved in less than five per cent of cases.

Epidemiological studies suggest that risk can be reduced by decreasing meat consumption (particularly processed meat) and increasing the intake of vegetables and fruit. Migrant populations rapidly reach the higher level of risk of the adopted country, another sign that environmental factors play a major role.

Colonoscopy is the most reliable means for early detection. Progressively improved diagnosis and treatment has resulted in a five-year survival rate of 50 per cent.

Key statements

Tobacco use is the major preventable cause of cancer in the world.

Molecular genome research will reveal a tremendous amount of information on cancer but it is not clear how easy these discoveries will translate into actual lives saved and may well be restricted to rare cancers.

As developing countries succeed in achieving lifestyles similar to Europe, North America, Australia, New Zealand and Japan, they will also encounter much higher cancer rates, particularly cancers of the breast, colon, prostate and uterus (endometrial carcinoma).

Researchers will demonstrate that successful behavioral changes in tobacco, alcohol and diet will prevent far more cancers than the elimination of toxins such as industrial pollution, car exhaust and dioxins.

The Pap smear for cervical cancer is the single best cancer screening procedure. The medical community must develop a wide spectrum of tests for other cancers and are now evaluating many procedures to determine if they are effective and practical.

The major differences of cancer between the sexes are the predominance in males with lung, liver, stomach, esophageal and bladder cancer; for the most part, these differences derive from patterns of exposure to the causes of the cancers, to a smaller extent they reflect intrinsic gender differences in susceptibility.

More than one million cases occur worldwide annually, with some 580,000 cases occurring in developed countries (>300/100,000 population per year) and the remainder in developing countries (usually <1500/100,000 population per year), despite their much higher overall population and younger age.

In 2000, the last year for which global data exists, some 400,000 women died from breast cancer, representing 1.6 per cent of all female deaths.

The proportion of breast cancer deaths was far higher in the rich countries (2 per cent of all female deaths) than in economically poor regions (0.5 per cent).

"The good news is that breast cancer mortality rates have started to decline in North America, Western Europe and Australia, mainly due to improvements in early detection and treatment programs such as chemotherapy and tamoxifen," says Dr. Stewart. "Five-year survival rates are higher than 75 per cent in most developed countries."

The report says that the worldwide breast cancer epidemic has many causative factors, including reproductive history, genetics, radiation (especially at times of breast development), and the Western lifestyle with a high caloric diet, obesity and lack of physical activity.

"Dietary recommendation require close coordination with programs for the prevention of other related non-communicable diseases, mainly cardiovascular diseases, chronic obstructive pulmonary diseases and diabetes," Dr. Kleihues says.

IARC also calls for effective and carefully evaluated school education programs for tobacco abstinence and healthy dietary habits, especially because very few countries currently have effective education programs.

The Lyons, France-based IARC also calls for national cancer control programs can help to ensure that governments take the necessary actions to guarantee that the public has the motivation to adopt healthy

personal habits.

"New drugs will not necessarily eradicate tumors, but when used in combination with other agents, may turn many cases of rapidly fatal cancer into 'manageable' chronic illness," Dr. Stewart says.

Control -- For maximum impact on the cancer problem, societies must change their priority from treatment and detection to prevention, the IARC report says.

At the core of this cancer control strategy, the essential package includes cost-effective interventions for the following components: tobacco control, infection control, healthy eating, a curable cancer program and palliative care.

"By acting now, by the year 2020, countries can achieve significant reductions in cancer rates and in mortality from cancer," says Dr. Stewart. "These opportunities exist, and the only question is whether we will take advantage of them for the benefit of all humankind."

"This is a break out book that will be distributed to government health ministries, medical schools and general bookstores," Dr Kleihues says.

"There is no book like this in the world. No one has attempted to do what this book has attempted to do. We tried to produce a book that has much technical detail that is both relevant and understandable to laymen, as to the specialists."