

The World Health Organization's

FIGHT AGAINST CANCER

Strategies that prevent, cure and care



World Health
Organization

WHO Library Cataloguing-in-Publication Data

The World Health Organization's Fight Against Cancer: Strategies That Prevent, Cure and Care.

1.World Health Organization. 2.Neoplasms – prevention and control. 3.Neoplasms – therapy. 4.Neoplasms – epidemiology. 5.Statistics.

I.World Health Organization. II.Title: Fight against cancer. III.WHO's fight against cancer.

ISBN 978 92 4 159543 8

(NLM classification: QZ 200)

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Printed in Switzerland

THE WORLD HEALTH ORGANIZATION'S

FIGH T AGAINST CANCER

STRATEGIES THAT PREVENT, CURE AND CARE



World Health
Organization

prevent





Years of work have resulted in global strategies being crafted and implemented to improve health, and prevent and control cancer.

These strategies, requested by the World Health Organization's own Member States, provide a strong foundation for a determined fight against the disease. Jointly, they will form the basis of our Global Action Plan Against Cancer.

Despite these efforts, WHO and its Member States still face great challenges to defeat the global burden of cancer. Greater investment in prevention, cure and care, closer collaboration with international partners and stronger determination to defeat cancer are needed to fuel what must be a continuous, sustainable campaign.

Cancer is the world's second biggest killer after cardiovascular disease, but one of the most preventable noncommunicable chronic diseases. Cancer killed 7.6 million people in 2005, three quarters of whom were in low- and middle- income countries. By 2015, that number is expected to rise to 9 million and increase further to 11.5 million in 2030.

Up to 40% of all cancer deaths can be avoided by reducing tobacco use, improving diets and physical activity, lowering alcohol consumption, eliminating workplace carcinogens and immunizing against hepatitis B virus and the human papillomavirus.

A large proportion of cancer can be cured and all cancer patients deserve care. WHO provides support to strengthen health services to cure and care for cancer patients by improving primary and specialized health care. WHO makes essential medicines and technologies available for cancer treatment and palliative care. Our strategies and policy guidelines help governments in all countries to improve population health standards and reduce national cancer burdens.

Backed by World Health Assembly resolution 58.22 of 2005 on cancer prevention and control, WHO is committed to a Global Action Plan Against Cancer that will enhance synergies both across WHO and with our international partners to reduce the physical, social and economic burden of cancer worldwide.

Dr Margaret Chan
Director-General

40%

of all cancer deaths can be prevented

**Cancer killed 7.6 million people
in 2005, three quarters
of whom were in low- and
middle-income countries**

www.who.int/cancer/en/

GLOBAL ACTION PLAN CAN SAVE MILLIONS

WHO knows how to stop millions of people dying needlessly from cancer. Our task is to support Member States to make this happen.



WHO's Global Action Plan Against Cancer combines the organization's existing strengths and strategies to increase its capacity to face this global public health problem.

It provides guidance to governments, health providers and other stakeholders on how to prevent and cure this chronic disease, as well as care for those for whom palliation is the only option.

"It is possible, even in very economically-constrained environments, to be effective in preventing cancer and improving access to quality services for patients who need such services," says **Dr Catherine Le Galès-Camus**, WHO's Assistant Director-General for Noncommunicable Diseases and Mental Health.

Every year, at least 7 million people die from cancer, more than HIV/AIDS, malaria and tuberculosis combined. And almost half of these deaths are avoidable. The high prevalence of cancer is ominously shifting from developed nations to poorer, less medically-equipped countries.

But WHO's many departments and experts have developed a wide range of strategies to end this needless suffering. These measures prevent and cure many cancers, provide palliative care for the terminally ill, and measure and manage the disease's impact and services to fight it. All these efforts are being consolidated in WHO's Global Action Plan Against Cancer.

This multi-faceted approach will ensure that these strategies are addressed at country levels within national cancer control programmes (NCCP), which are blueprints governments can use to frame legislation, design health services and raise awareness to fight cancer.

To ensure that these strategies succeed, WHO must keep working closely with global partners, ranging from collaborating centres (whocc.who.int) to governmental and nongovernmental organizations in cancer-related fields like tobacco and immunization.

We also work hand-in-hand with a host of UN bodies, like the International Atomic Energy Agency on the joint-Program of Action for Cancer Therapy (PACT) in Albania, Nicaragua, Sri Lanka and the United Republic of Tanzania.

WHO has also formed a Commission on Social Determinants of Health to promote equal access to preventive and curative health services for all people, irrespective of their social or economic backgrounds.

Dr Andreas Ullrich, a WHO cancer control medical officer within the Department of Chronic Diseases and Health Promotion, says the Action Plan can help governments prevent deaths from cancer by advocating prevention and control programmes at the highest political level.

"Every country, regardless of resource level, can confidently take steps to curb the cancer epidemic," Ullrich says. "They can save lives and prevent unnecessary suffering caused by cancer."



WHO CANCER FIGHTERS

Dr Catherine Le Galès-Camus, Assistant Director-General for Noncommunicable Diseases and Mental Health

Tobacco use and exposure causes 1.5 million cancer deaths annually.

Chronic hepatitis B infection kills 340 000 from liver cancer and cirrhosis. A quarter of a million women die from cervical cancer. Vaccines exist to prevent most of these deaths.

Occupational carcinogens kill at least 152 000 people. Some 274 000 people who are overweight, obese or physically inactive die from cancer. Harmful alcohol causes 351 000 cancer deaths. Indoor and outdoor air pollution leads to 71 000 cancer deaths, according to WHO's Comparative Risk Assessment publications (www.who.int/healthinfo/boddocscra).

The human price is not the only loss caused by cancer. It is responsible for immense costs to health systems, insufferable economic and emotional burdens on families and irreplaceable losses for communities.



WHO CANCER FIGHTERS

Dr Andreas Ullrich, Medical Officer, Cancer Control

AGAINST CANCER OF LIVES

HOW WHO FIGHTS CANCER

Reading this brochure, you'll be given a dynamic glimpse of the many cancer control activities WHO performs. Each activity fits within the four broad approaches WHO takes to fight cancer: Prevention, Cure, Care and Manage. WHO's intensive efforts have produced dozens of strategies, recommendations and technical programmes to combat

cancer, prevent needless deaths and provide appropriate care for the terminally ill. WHO has consolidated these tools for countries in a framework known as the national cancer control programme (NCCP), which focuses government attention and services on all facets of the fight against cancer.

PREVENT

WHO devotes vast amounts of effort to prevention activities, which can reduce cancer deaths by 40% and prevent untold suffering and cost to communities, increasingly in the developing world. This brochure examines each WHO programme dealing with cancer prevention and how they go about it. Reducing tobacco and alcohol use are key goals, as are improving diets and physical activity. Safeguarding workplaces against carcinogens, and advancing immunizations against the hepatitis B virus play enormous roles in reducing the cancer burden. They are all discussed in the Prevention section.

CARE

WHO provides vital support and guidance to care for cancer sufferers for whom cure is not an option. Guidelines, technical support and training are all offered to provide the best possible palliative care services. WHO's work in palliative care – from headquarters to the field – is reviewed in this brochure.



CURE

Through early detection, screening and adequate treatment, many cancers can be cured. WHO helps countries scale up these areas. WHO provides countries, particularly in the developing world, access to the most appropriate technologies, medicines and training to perform potentially life-saving treatment. This brochure looks at what different programmes are doing to build this cancer-fighting capacity in the field.

MANAGE

Providing information on cancer burdens for strengthening evidence-based policy is a core WHO function. We assist countries to plan, implement and measure the success of their NCCPs. Such work also helps identify challenges and direct resources towards effective cancer prevention and control activities. This brochure examines the different, yet coordinated, departments playing crucial roles in developing necessary data and providing policy options to ensure people benefit from NCCP.

PREVENT

WHO TOBACCO CONVENTION CRUCIAL TO CANCER PREVENTION

Quitting tobacco is the best way to reduce cancer. To help make this happen, WHO develops and helps implement powerful tobacco controls.

Tobacco use is the world's leading preventable cause of death, killing more than 5 million people annually. About one third die from cancer. Left unchecked, global tobacco-related deaths could rise to over 8 million by 2030.

The landmark WHO Framework Convention on Tobacco Control (WHO FCTC) came into force in 2005. It addresses tobacco control from supply and demand standpoints and aids countries in handling civil and criminal liability issues linked to tobacco use and manufacturers.

"We highlight the global problem of tobacco use and the many serious diseases it causes, cancer being a main one," says **Dr Douglas Bettcher**, Acting Director of the Tobacco Free Initiative (TFI), which drew up the Convention.

www.who.int/tobacco/framework

More than 140 countries have ratified the legally-binding WHO FCTC and WHO is urging more states to follow suit. Parties to the Convention are obligated to introduce effective tobacco control policies based on rigorous scientific evidence. Nongovernmental



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Dr Douglas Bettcher, Acting Director, Tobacco Free Initiative

organizations, such as the International Union Against Cancer (UICC), play pivotal roles in helping WHO curb tobacco use.

Of the 7 million annual cancer deaths, 40% are preventable. Of these avoidable cancer deaths, tobacco accounts for 60%. Lung cancer is the leading form of tobacco-caused cancer, followed by tumours of the larynx, pancreas, kidney and bladder.

WHO assists countries develop legislation to raise cigarette prices and ban tobacco advertising and smoking in public places.

Implementing the Convention's controls could cause a 50% reduction in tobacco uptake and consumption, saving up to 200 million lives by 2050.

TFI and WHO's Oral Health Programme have also worked together to produce information material for health professionals like dentists on oral cavity cancer, 75% of which is related to tobacco.

BRAZIL'S ANTI-TOBACCO CAMPAIGN CUTS CANCER DEATHS

Brazil's approach to tobacco control is causing smoking prevalence and related cancer deaths to fall among men.

Studies show that WHO-backed tobacco control measures have caused smoking rates in Brazil to fall from 32% in 1989 to 19% today, says **Vera Luiza de Costa e Silva**, WHO's former Tobacco Free Initiative director.

"We can see that cancer mortality, particularly from lung cancer among men, is declining due to our programmes, which makes Brazil a true success story," says de Costa e Silva, now the senior advisor on tobacco to Brazil's Minister of Health.

Brazil was a key architect of the WHO FCTC and has passed a wide range of laws to fight tobacco use.

The WHO FCTC has banned tobacco product advertising, promotion and sponsorship and smoking in all public places in Brazil. Tobacco manufacturers must display clear pictorial health warnings on packaging and remove misleading descriptive words like "mild" and "light" cigarettes.

Brazil now targets low prices for tobacco products, tobacco smuggling rackets and the high rates of young girls smoking to further cut smoking rates and reduce future cancer burdens.

"WHO's support has been essential to this entire tobacco control process," says de Costa e Silva.



WHO DIET, PHYSICAL ACTIVITY AND HEALTH STRATEGY TACKLES CANCER

Eating well and staying active are keys to leading healthier lives and eliminating the risks of chronic conditions like cancer.

WHO works with countries to spread this simple message and craft straightforward approaches to promote healthy diets and physical activity.

WHO's Global Strategy on Diet, Physical Activity and Health (DPAS) sets a range of policy options for two major chronic disease risk factors: unhealthy diet and physical inactivity.

"DPAS implementation can save many cancer-related deaths through increasing population levels of physical activity and improving dietary habits," says **Dr Timothy Armstrong**, Acting Team Leader, Global Strategy on Diet, Physical Activity and Health.

Poor diet, physical inactivity and being overweight or obese can lead to higher risk of people suffering common cancers, including oesophagus, colorectal, breast, endometrium (uterus) and kidney.

Such risk factors have emerged through vast lifestyle changes in developed and developing countries.

Overweight and obesity alone account for 40% of endometrial cancer. Collectively, overweight and obesity, and physical inactivity account for 159 000 colorectal cancer deaths each year, and 88 000 breast cancer deaths each year.

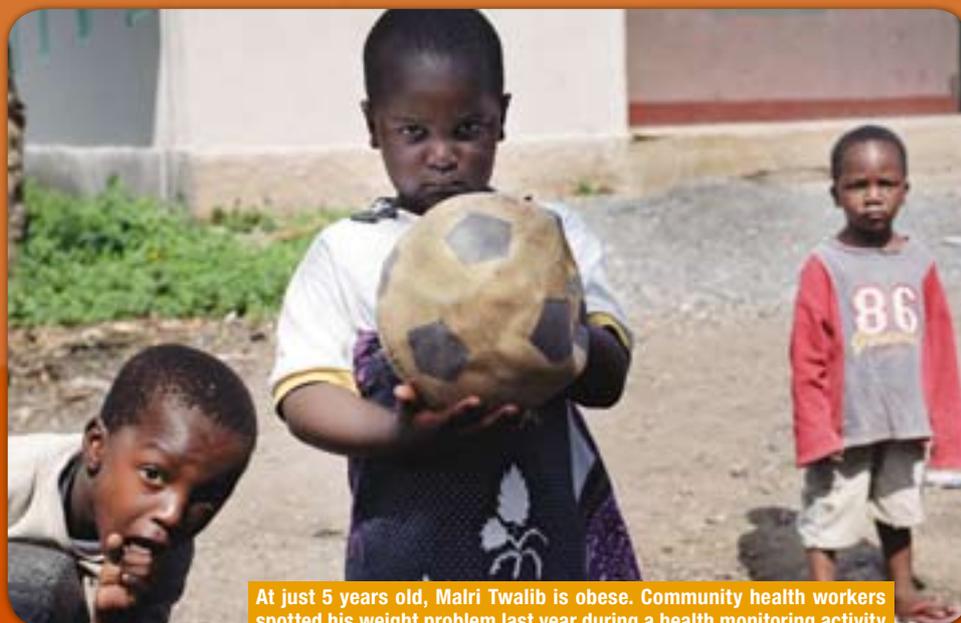
Studies show 19% of breast cancer deaths and 26% of colorectal cancer mortality are attributable to increased weight and physical inactivity.

DPAS is a tool for Member States to develop and implement policies, plans and programmes to reduce risk factors linked to unhealthy diets and physical inactivity in homes, schools and workplaces.



WHO CANCER FIGHTERS

**Dr Timothy Armstrong, Acting Team Leader,
Global Strategy on Diet, Physical Activity and Health**



At just 5 years old, Malri Twalib is obese. Community health workers spotted his weight problem last year during a health monitoring activity in his village in Kilimanjaro, United Republic of Tanzania.

Numerous countries in all WHO regions plan to implement or have implemented DPAS independently or as part of existing programmes.

WHO has conducted its Fruit and Vegetable Promotion Initiative since 2003 to increase global fruit and vegetable consumption.

www.who.int/dietphysicalactivity

OMAN EMBRACES WHO APPROACH TO DIET AND EXERCISE

Oman has turned to WHO to defeat the growing burden of overweight and obesity, and in doing so reduce cancer.

By implementing WHO's Global Strategy on Diet, Physical Activity and Health, Omani health policymakers have ready-made guidelines to reduce risk factors that cause high rates of chronic disease.

"There is strong political will in Oman to implement DPAS because noncommunicable diseases like cancer are seen as this country's next big challenge," says Dr Jawad al-Lawati, Director of Noncommunicable Diseases for Oman's Ministry of Health.

"One of the avenues to address these issues is through DPAS."

About half of Omanis over 20 years of age are overweight or obese. This puts them at increased risk of suffering from oesophagus, colorectal, breast, endometrial and kidney cancer, says al-Lawati.

Rapid development in the past 30 years has drastically changed Omani lifestyle, resulting in more people becoming sedentary, eating more fast-food and exercising less.

Omani health authorities will disseminate WHO's DPAS strategy to all ministries for feedback and support in implementing its diet and physical activity goals. Al-Lawati says the strategy is flexible enough to be matched to Oman's cultural requirements.

WHO HIGHLIGHTS CANCER RISKS OF ALCOHOL CONSUMPTION

Reducing alcohol consumption leads to a wide range of health gains, including reduced cancer deaths.

WHO works with governments to introduce policies that reduce the negative health consequences of hazardous and harmful alcohol use, identify risky drinking patterns and improve public health.

www.who.int/substance_abuse

Harmful alcohol use causes 351 000 cancer deaths annually and is a risk factor for many cancers, including oral, pharynx, larynx, oesophagus, liver, colorectal and breast.

“Putting more focus on cancer and alcohol and strengthening the evidence base can help the health sector become more involved in reducing alcohol-related harm and the risk of cancer,” says **Dag Rekve**, a technical officer working on the management of substance abuse.

In 2005, the World Health Assembly adopted a resolution on “public health problems caused by harmful use of alcohol,” urging



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Dag Rekve, Technical Officer, Management of Substance Abuse

countries to develop, implement and evaluate effective strategies to reduce the health and social problems associated with alcohol.

WHO offers governments policy frameworks that recommend effective strategies and interventions to reduce alcohol-related harm. WHO wants to increase awareness, particularly among national policymakers, of the risks to health of hazardous and harmful drinking.

WHO has released manuals for physicians and other health professionals to help hazardous and harmful drinkers with a brief intervention strategy to reduce dangerous drinking.

“For hazardous and harmful drinkers or people with a dependence, effective treatment and brief interventions exist to reduce the risk of cancer by reducing exposure to alcohol,” Rekve says.

WHO VACCINE HEP. B-LINKED

WHO-backed immunization drives against hepatitis B prevent hundreds of thousands of people from succumbing to liver cancer, a scourge in many developing countries.

Chronic hepatitis B virus infection causes about half the world’s liver cancer deaths, killing 340 000 people annually. But vaccinating children can protect against the virus and prevent liver cancer.

With the GAVI Alliance, formerly known as the Global Alliance for Vaccine and Immunization, WHO promotes the introduction of hepatitis B vaccine in many poor countries.

“We now have a very safe and effective vaccine that works when you give it to children,” says **Dr Thomas Cherian**, coordinator of WHO’s Expanded Programme on Immunization, part of the Department of Immunization, Vaccines and Biologicals.

www.who.int/immunization/topics



WHO HELPS HEP B IMMUNIZATION RATES SOAR IN CHINA

WHO is helping increase hepatitis B vaccinations across China, where up to 13 million people have been immunized against the liver cancer-causing disease since 2003.

WHO is a major partner of a five-year \$76 million immunization drive funded by the GAVI Alliance and China targeting 5.5 million infants annually.

“Current estimates show approximately 90% of infants born in GAVI Project-funded counties are receiving the required three doses of vaccine, and 70% are getting it within the first 24 hours of life,” says **Dr Steven Hadler**, a technical officer with the Expanded Programme on Immunization in WHO’s Representative Office in China.



DRIVES STOP LIVER CANCER

“The vaccine’s rate of success is 95% for preventing chronic infection of hepatitis B.”

WHO estimates more than 2 million child deaths were averted through immunization in 2003, plus another 600 000 hepatitis B-related deaths that would have occurred in adulthood from liver cancer and cirrhosis.

By late 2005, the vaccine had been introduced in 158 WHO Member States. Global coverage is estimated at 55% and as high as 86% in the Americas. This contrasts with 27% in South-East Asia and 39% in Africa.

“In countries where hepatitis B infection is highly endemic it is one of the top three cancer killers. It is up there with tobacco as a cause of



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Dr Thomas Cherian, Coordinator, Expanded Programme on Immunization

cancer in places like China,” says **Dr Craig Shapiro**, a medical officer with the Expanded Programme on Immunization.

Poor countries needing vaccines receive WHO’s assistance to apply to GAVI for funding and medicines. WHO has developed guidelines to improve access to vaccines for children.



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Dr Craig Shapiro, Medical Officer, Expanded Programme on Immunization

Some 120 million Chinese are chronically infected with hepatitis B, according to a 1992 national hepatitis epidemiological survey. Liver cancer is also the No. 1 cancer type in China.

Newborns are a main target of the “China Ministry of Health/GAVI Hepatitis B Vaccination Project,” because immunization within the first 24 hours of birth prevents an infected woman passing the virus to her child.

The drive is focussed on China’s poorer western provinces where it is preventing about 400 000 children annually becoming disease carriers, averting hundreds of thousands of liver cancer deaths.

China aims to reduce the frequency of chronic hepatitis B infection in children to under 1% by 2010. Before the immunization project started, up to 10% of Chinese children became chronically infected with hepatitis B.



WHO LEADS VACCINE INTRODUCTION AGAINST CERVICAL CANCER

New vaccines are not only preventing infection but helping reduce cervical cancer, which kills more than a quarter of a million women annually.

WHO’s Initiative for Vaccine Research (IVR) leads efforts to introduce vaccines for girls and young women to immunize them against human papillomavirus (HPV), a sexually transmitted infection causing cervical cancer.

One new vaccine prevents HPV infection and is licensed in several countries, while another has been undergoing late-stage clinical testing.

“These HPV vaccines are a tool to fight cervical cancer and sexually-transmitted HPV infections and can be used with sexual risk reduction edu-

cation and screening programmes in our fight against the disease,” says **Dr Teresa Aguado**, coordinator of IVR’s Product Research and Development unit.

WHO is focusing its fight in the developing world, where 80% of global cervical cancer deaths occur.

More than 250 000 women die annually from cervical cancer, 99% caused by HPV. WHO projects cervical cancer deaths will rise to 320 000 in 2015 and 435 000 in 2030. Two HPV types cause 70% of cervical cancer and existing vaccines are more than 90% effective against these types.

IVR backs applied research into HPV vaccines and advises governments on introducing them into cancer screening, immunization, adolescent, reproductive, and sexual health programmes.

WHO provides evidence for decision-makers on introducing HPV vaccines in countries through its partnerships with donors, such as the Bill and Melinda Gates Foundation, and nongovernmental organizations, like the Program for Appropriate Technology in Health (PATH).

IVR works with country and regional stakeholders to evaluate the acceptability of HPV vaccines and strategies to integrate the vaccine into cervical cancer prevention programmes.

WHO funds the WHO Information Centre on HPV and Cervical Cancer. This is an online database for decision-makers that includes country-specific information relevant to cervical cancer prevention and HPV vaccine introduction.

IVR is creating an HPV Laboratory Network to enable vaccine licensing and quality monitoring in developing countries.

WHO GUIDANCE ON CHEMICALS LOWERS CANCER RISKS

WHO lowers cancer burdens by urging reductions in exposure to numerous carcinogens, including asbestos, arsenic, dioxins and aflatoxins.

WHO produces standards, policies and recommendations with UN partners, such as the United Nations Environment Program (UNEP), for Member States to reduce exposure to carcinogens through air, food and drinking water.



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Dr Angelika Tritscher, Joint Secretary to the FAO/WHO Expert Committee on Food Additives and FAO/WHO Meeting on Pesticide Residues

“We conduct science-based risk assessments on chemicals to establish how much would be tolerable without any health risks or, if possible, determine what the health risks are at certain exposure levels,” says **Dr Angelika Tritscher**, a scientist with WHO’s Department of Public Health and Environment.

Asbestos is one of the main occupational carcinogens, and exposure occurs through inhaling contaminated air both in workplaces and living environments. WHO works closely with the International Labour Organization (ILO) and International Trade Union Confederation to reduce asbestos exposure. WHO recently published a series of recommendations on eliminating asbestos-related diseases (whqlibdoc.who.int/hq/2006/WHO_SDE_OEH_06.03_eng.pdf).

Arsenic is one of few carcinogenic chemicals in drinking water. WHO, with other UN agencies, has produced a state-of-the-art review on arsenic in water. It has also issued Guidelines for Drinking Water Quality (www.who.int/water_sanitation_health/dwq/arsenic) that recommend a guidance value for arsenic in drinking water.

WHO and the Food and Agriculture Organization (FAO) also produce safety standards for chemicals in food, including cancer-causing contaminants like dioxins or aflatoxins.

Food consumption is responsible for over 90% of exposure to dioxins – chemicals that rank among the most dangerous and carcinogenic of the so-called “Dirty Dozen” – of persistent organic pollutants.

The Joint FAO/WHO Expert Committee on Food Additives has established a monthly tolerable intake level for dioxins and advises on the effects of maximum dioxin limits in food.

WHO gives governments, particularly in developing regions, recommendations to reduce exposure to aflatoxins, organic chemicals produced by mold that contaminate food in hot and humid climates, mostly grains, corn and nuts.

WHO WORKS TO MAKE WORKPLACES CANCER FREE

Thousands of workers could die from cancer due to exposure to avoidable carcinogens, like asbestos, and unhealthy practices in factories, fields and building sites.

To protect employees, WHO urges governments and industry to ensure workplaces are equipped with adequate health and safety standards and free from dangerous pollutants.

www.who.int/occupational_health

Each year, occupational carcinogens cause at least 152 000 cancer deaths, including lung, larynx and skin, leukaemia and nasopharyngeal.

“We promote awareness that cancer can be prevented through improving working environments,” says **Dr Ivan Ivanov**, a scientist with WHO’s Department of Public Health and Environment.



WHO CANCER FIGHTERS

Dr Ivan Ivanov, Scientist, Occupational Health

Unlike people who contract cancer by knowingly exposing themselves to carcinogens like tobacco, many workers have little say in workplace health and safety measures and fall prey to poor health protection standards, Ivanov says.

Most workplace cancer deaths occur in the developed world, but numbers are growing in developing nations where safety standards are often poor.

WHO provides policy recommendations to help numerous countries stop using carcinogens in the workplace.

Asbestos is one of the main occupational carcinogens and exposure kills over 90 000 workers through lung cancer and mesothelioma annually. Exposure occurs through inhaling contaminated air both in workplaces and living environments.

Thousands more die from leukemia caused by exposure to benzene, an organic solvent widely used by workers, including in chemical and diamond industries.

WHO works closely with the International Labour Organization (ILO) to reduce asbestos exposure and prevent other occupational cancers. In 2006, WHO warned countries to stop using asbestos or face a cancer epidemic. It also provided a series of recommendations on eliminating asbestos-related diseases.

www.who.int/occupational_health/publications/asbestosrelateddisease

WHO also arms health ministries with up-to-date information to frame health arguments and legislation to rid workplaces of carcinogens. Kenya used this information to help to replace all school roofs containing asbestos with non-asbestos material.

WHO ADVISES ON ASBESTOS DANGERS IN INDIA, ASIA

Across India, asbestos exposure puts millions of people, from concrete makers to students, at risk of developing cancer.

WHO is working with officials in India, and with many developing Asian nations, to stamp out asbestos use by promoting awareness and legislation on its cancer-causing risks.

"If countries follow our advice, there will be reductions in cancer," says Dr Habibullah Saiyed, WHO's South-East Asian regional officer for occupational health. "It will take several decades to see the results because cancer takes a long time to emerge, but we must start now."

Asbestos causes an estimated 8000 cancer deaths annually in India and that number could increase if asbestos use continues.

People most at risk of dying from lung cancer and mesothelioma are workers making asbestos-filled concrete and pipes, along with

labourers using such products. Many Indian school roofs are made with asbestos, putting students and teachers at risk.

WHO holds workshops across Asia on the dangers of asbestos, bringing together government officials, industry, other UN agencies and nongovernmental organizations.

While calling for an end to the use of asbestos, WHO suggests alternative building materials that industry can use instead of this cancer-causing product.



WHO REDUCES IONIZING RADIATION-RELATED CANCER

WHO's efforts to reduce harmful exposure to ionizing radiation, from radon to nuclear emergencies, are preventing cancer.

Ionizing radiation is a well established carcinogen for certain cancers, like lung, breast and thyroid cancer and most types of leukaemia.

"We look at all environments where radiation may affect human health, including natural radiation sources, accidental exposures, and radiation use in occupational or medical settings," says **Dr Zhanat Carr**, a scientist with WHO's Radiation and Environmental Health Programme.



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Dr Zhanat Carr, Scientist, Radiation and Environmental Health

www.who.int/ionizing_radiation

One of the world's largest natural radiation sources is radon, a gas produced from the uranium decay chain in rocks and soils. It accumulates in the basement of homes built in areas where radon occurs naturally. It is the second most important risk factor for lung cancer after tobacco, causing tens of thousands of deaths annually.

WHO launched its International Radon Project to estimate radon-associated disease burdens, provide mitigation and surveillance guidance and help Member States form evidence-based radon policies.

www.who.int/ionizing_radiation/env/radon

WHO also deals with the results of nuclear emergencies like the 1986 Chernobyl nuclear reactor explosion that resulted in a massive radioactive fallout that affected mainly Belarus, Ukraine, and the Russian Federation.

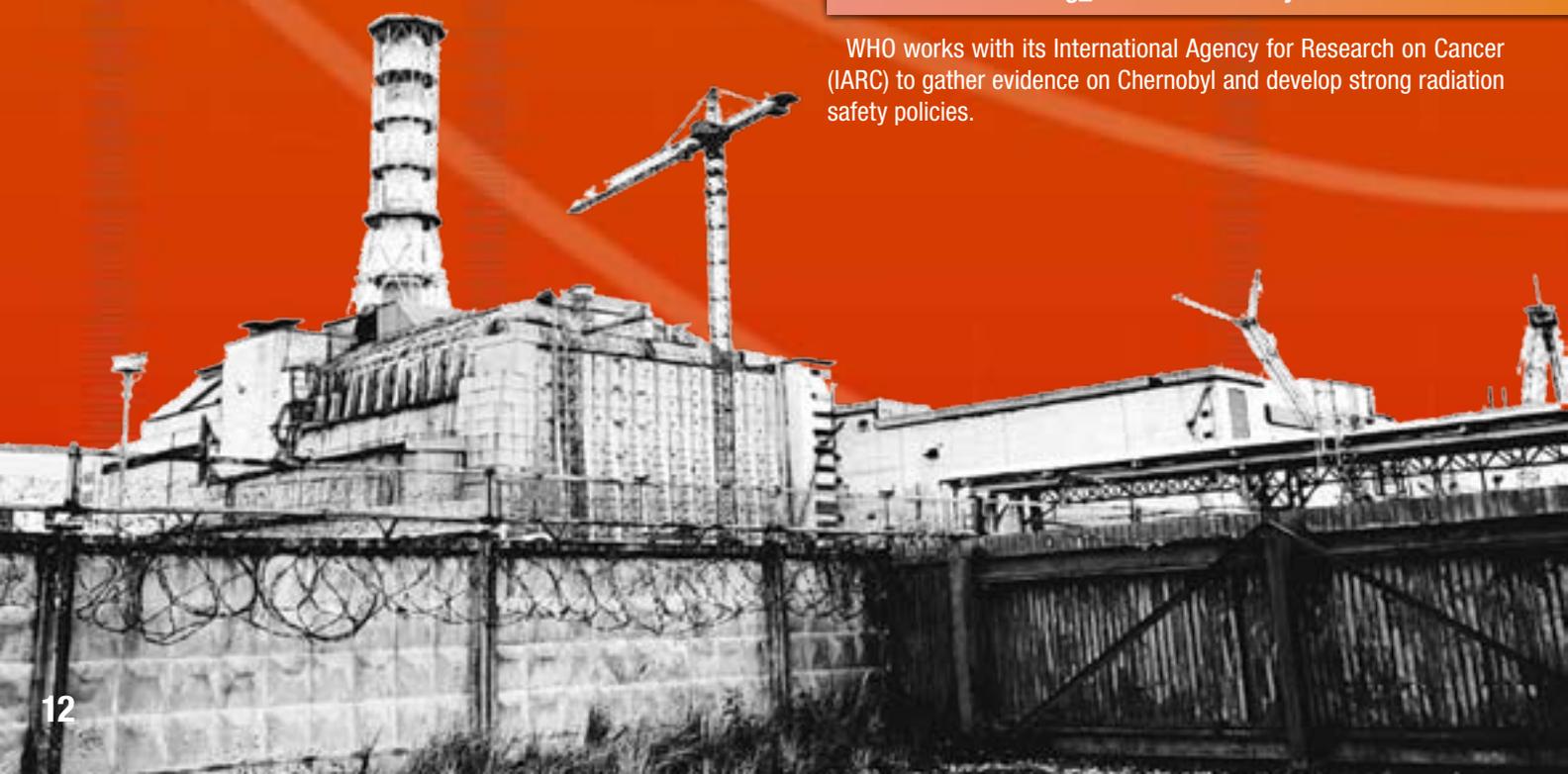


Since 1986, WHO has been involved in programmes at Chernobyl providing assistance and assessing the health impacts of the explosion. The accident led to a large increase in thyroid cancer among those who were children at that time, most of whom were able to be treated successfully. Thousands of clean-up workers are also under medical and epidemiological surveillance in Belarus, the Russian Federation and Ukraine.

In 2006, WHO issued a report with findings of 20 years of health research into the Chernobyl explosion, which provides a basis for national policy recommendations.

www.who.int/ionizing_radiation/chernobyl

WHO works with its International Agency for Research on Cancer (IARC) to gather evidence on Chernobyl and develop strong radiation safety policies.



WHO SHEDS LIGHT ON RISKS OF SOLAR RAYS, SUNBEDS

No one can stop the sun shining, but WHO knows how to stop people suffering skin cancer from ultraviolet radiation.

WHO is a key player in raising awareness to prevent cancer caused by exposure to sunlight and other non-ionizing, low-frequency forms of radiation, such as sunbeds.

www.who.int/uv/health

In 2006, WHO released its Global Burden of Disease of Solar Ultraviolet Radiation, estimating that up to 60 000 people die every year

programmes promoting sun safety. WHO fact sheets raise awareness on dangers associated with sunbeds, tanning and ultraviolet light exposure.

The Radiation and Environmental Health Programme promotes and evaluates peer-reviewed studies on possible links between non-ionizing radiation and cancer.

It works closely with IARC to follow studies into possible carcinogenic effects of other sources of non-ionizing radiation, including static fields, power lines and mobile telephony.



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Dr Emilie van Deventer, Scientist, Radiation and Environmental Health

due to over exposure to ultraviolet radiation. Of those, 48 000 are caused by malignant melanomas and 12 000 by skin carcinomas.

“Ultraviolet radiation can have significant negative health consequences such as skin cancer, as well as a positive effect in terms of providing our body with vitamin D,” says **Dr Emilie van Deventer**, a scientist specializing in non-ionizing radiation within WHO’s Radiation and Environmental Health Programme.

“For this reason we work to develop population-based approaches to help people live with the sun.”

WHO’s Sun Protection and Schools Module, *How to Make a Difference*, assists Ministries of Health and Education to develop



CURE



& CARE



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Prof. Charles Gilks, Coordinator, Antiretroviral Treatment and HIV Care

VICTORIES OVER AIDS BRING CANCER BURDEN INTO FOCUS

Success in scaling up access to HIV/AIDS treatment has set the world a new challenge: protecting people with the virus from succumbing to long-term chronic diseases like cancer.

Combination antiretroviral therapies work by suppressing the AIDS virus, in turn enabling people with the disease to enjoy longer and more productive lives.

“We are getting lots of people on treatment, thereby lengthening their lives,” says **Prof. Charles Gilks**, Coordinator of Antiretroviral Treatment and HIV Care for WHO’s HIV/AIDS Department. “But the consequence is that HIV-associated cancers become more and more important.”

WHO supports Kaposi sarcoma treatment and is planning next steps for other HIV/AIDS-related cancers, says Gilks. Such measures could include scaling up cervical cancer screening as part of the HIV/AIDS treatment programme.

Other cancers linked to HIV/AIDS include lymphomas and cancers of the lung, skin and liver.

WHO’s Department of HIV/AIDS promotes WHO’s palliative care guidelines for general symptom relief for HIV/AIDS sufferers, particularly the terminally ill. These guidelines are being widely implemented through hospices.

“The success we have had in getting people onto treatment programmes has turned AIDS into a chronic disease, which means we will have a new pattern of morbidity and mortality and a lot of it will be from cancer,” Gilks says.

www.who.int/hiv

With this in mind, WHO is focusing more on chronic disease prevention for people living with HIV/AIDS.

Primary prevention measures like recommending people living with HIV/AIDS use condoms have led to a reduction in Kaposi sarcoma, a common form of cancer in HIV-positive people linked with a sexually-transmitted herpes-like virus.



SEXUAL, REPRODUCTIVE HEALTH PROGRAMMES DECREASE CANCER

WHO programmes promoting early detection of cervical and breast cancer by screening are key primary health measures for curing cancer.

WHO's Reproductive Health and Research Department (RHR) helps reduce cervical cancer in developing nations by providing policymakers, programme managers and health professionals access to evidence-based data on preventing and curing cervical cancer.

WHO promotes primary prevention measures like condoms and better sexual health to combat cancer. Early cancer detection through screening is equally vital since many women access services at late, incurable stages.

"There are many ways to screen for cervical cancer, but the question is how to improve screening in developing countries where people don't have



WHO CANCER FIGHTERS

**Dr Nathalie Broutet, Medical Officer,
Controlling Sexually-Transmitted and Reproductive Tract Infections**

access to highly qualified professionals or the finances and resources," says **Dr Nathalie Broutet**, an RHR medical officer.

Developing countries, particularly in sub-Saharan Africa, are home to most of the more than a quarter of a million women who die annually from cervical cancer. Virtually all develop the cancer by contracting the human papillomavirus (HPV), a preventable sexually-transmitted infection for which a vaccine now exists (See page 9).



MIRIAME'S STORY

Her cancer had been diagnosed too late

Two years ago, Miriame Nnamusoke was diagnosed with cervical cancer. This news came on top of other health problems: she had known for the previous eight years that she was HIV-positive. At the age of 45, Miriame felt her future looked bleak.

Miriame underwent radiotherapy for her cervical cancer in 2005. Although this treatment helped relieve some of her symptoms, it did not cure her because **her cancer had been diagnosed too late**. This is a common problem in countries with limited resources where basic screening services are not available.

WHO is helping introduce a highly effective, low-cost cervical cancer screening method known as visual inspection with acetic acid (VIA) into several African countries. It can be followed by cryotherapy, a freezing procedure that destroys abnormal or diseased tissue.

WHO and IARC have also established collaborating centres in these and other countries to monitor VIA's impact.



WHO CANCER FIGHTERS

Dr Paul Van Look, Director, Reproductive Health and Research

Department director **Dr Paul Van Look** says WHO has a strong track record in studying breast and cervical cancer, particularly in relation to hormonal contraception use.

"Our department's work has been instrumental in reassuring millions of women that these contraceptive preparations do not carry a substantially increased risk of developing breast or cervical cancer," Van Look says.

WHO SUPPORTS CERVICAL CANCER SCREENING IN AFRICA

WHO equips African health workers with the means to prevent cervical cancer by improving screening and early treatment training.

A project run in conjunction with a Zimbabwean medical specialist trains doctors and nurses in six African countries to use screening based on visual inspection with acetic acid (VIA) screening and perform cryotherapy.

"We brought doctors and nurses from other African countries to learn how to perform VIA and cryotherapy at our clinic in Harare," says Prof. Mike Chirenje, from the University of Zimbabwe's Department of Obstetrics and Gynaecology.

"Then we go to these countries with WHO funding to set up cervical cancer screening programmes."

VIA, where nurses spray vinegar onto the cervix during a speculum examination, detects pre-cancer cells in 80% of women screened.

It is successful in low-resource African settings and more suitable than Pap smears in many health centres, where laboratory infrastructure needed to test such samples is unavailable.

Doctors are also trained to perform cryotherapy, which freezes and kills pre-cancerous cells before cervical cancer develops.

Twenty-six percent of all Zimbabwean women with cancer suffer from cervical cancer, making it the No. 1 type of cancer among females in the country, according to the Zimbabwe National Cancer Registry's 2002 data.

Initial VIA testing in Zimbabwe was conducted between 1996 and 1998 before a three-year demonstration project was run.

WHO helped set up VIA training pilot projects in Madagascar, Malawi, Nigeria, Uganda, the United Republic of Tanzania and Zambia and is investigating how to scale up these projects.

WHO HELPS COUNTRIES SELECT ESSENTIAL TOOLS TO FIGHT CANCER

Supporting countries to choose the best surgical tools to fight cancer is a key role of WHO.

WHO advises countries on acquiring health devices and technologies to build better health systems to cure and care for their citizens, including those suffering from cancer.

Dr Steffen Groth, Director of WHO's Department of Essential Health Technologies, helps craft standards, guidelines and training materials that allow national policymakers to decide what instruments they need to meet health service demands.

www.who.int/ehf

"If the diagnostic technology is there it could mean the difference between life and death," says **Dr Harald Ostensen**, coordinator of diagnostic imaging and laboratory technology within the Essential Health Technology department.

WHO helps developing countries acquire basic X-ray and general purpose ultrasound technology and provides training for the technology.

Cervical, colon and breast cancers may be curable if diagnosed properly. Imaging technologies, like X-ray and ultrasound, play a pivotal role.

WHO is investigating using low-cost digital imaging systems instead of conventional film-based equipment. Digital technology allows images to be electronically transmitted to hospitals in a country with well-trained staff to interpret the examinations.

In the United Republic of Tanzania, WHO has started a pilot project managed by the Ocean Road Cancer Institute linking several hospitals by telemedicine technology.

"If health systems are strengthened they will get better access to diagnostic facilities, which can detect cancer early on in patients and increase chances of cure," Ostensen says.



WHO CANCER FIGHTERS

Dr Steffen Groth, Director, Department of Essential Health Technologies

WHO works with its regional and country offices to train local health workers in radiography techniques and handpicks people to become radiography trainers. International lecturers are also brought to countries to pass on their expertise.



WHO CANCER FIGHTERS

Dr Harald Ostensen, Coordinator, Diagnostic Imaging and Laboratory Technology



WHO EMERGENCY, SURGICAL CARE GUIDANCE HELPS REDUCE CANCER THREAT

Even in the world's barest health centres, WHO helps implement simple surgical procedures to help detect and treat cancer.

WHO has prepared vital training materials and goes to poor, low-resource settings to teach doctors, nurses and clinicians how to perform biopsies. Biopsies make histological diagnosis and cure of breast cancer possible if followed by speedy referral to more advanced hospitals.

"Cancer is a big health issue in many low-resource settings where misdiagnosis and delayed referral is common. And it is the patient who suffers," says **Dr Meena Nathan Cherian**, in charge of WHO's Emergency and Essential Surgical Care Project.



WHO CANCER FIGHTERS

Dr Meena Nathan Cherian, Medical Officer, Emergency and Essential Surgical Care Project

WHO launched its Global Initiative for Emergency and Essential Surgical Care in 2005, attracting partners to strengthen surgical and anesthesia best practices in developing countries. Workshops have been held in at least 16 countries.

WHO has also prepared an extensive training manual with a DVD showing how to perform proper examinations and biopsies, remove lumps and send specimens for histological diagnosis.

Healthcare workers without formal surgical training can be taught to perform these procedures.

"This can help timely diagnosis of cancers, such as cervical, breast, uterus, oral and skin, and ensure prompt referral to an advanced health facility," Cherian says.



WHO MEDICINAL ADVICE CURES, CARES FOR CANCER PATIENTS

If countries are to cure and care for cancer patients, access to essential medicines is vital.

WHO recommends certain essential medicines to treat patients suffering from chronic diseases, including cancer, in particular in the field of chemotherapy. The same goes for providing appropriate pain relief for those with terminal conditions.

“For 30 years, WHO has published a Model List of Essential Medicines that includes medicines for cancer and palliative care,” says **Dr Suzanne Hill**, the Secretary of WHO’s Committee on Selection and Use of Essential Medicines.

www.who.int/medicines/areas/rational_use

The list is revised and updated biennially, with new medicines added to meet most health needs. It is used to guide procurement of medicines in many countries, including drugs needed for cancer patients.

WHO has reviewed all chemotherapy – or cytotoxic – drugs for treating cancer. It is now moving towards compiling a comprehensive list of cancer-associated medicines linked to treatment protocols.



WHO CANCER FIGHTERS

Dr Suzanne Hill, Secretary of the WHO Committee on the Selection and Use of Essential Medicines

WHO is also working on a list of essential medicines for children, including those needing treatment in oncology centres.

Chemotherapy drugs in middle-income countries are becoming far too expensive and being promoted inappropriately, Hill says. WHO guidelines on costs and use can help in this area.

For cancer patients who cannot hope for cure, providing pain relief is crucial. Half of all cancer patients suffer severe pain and 80% have no access to opiates.

WHO advocates morphine use as part of tightly controlled palliative care programmes to prevent patient suffering. It interacts with governments to balance drug control policies that block access to medically-required opiates.

WHO is updating existing guidelines and programmes to provide pain treatment for cancer patients, says **Dr Willem Scholten**, technical officer for Quality Assurance and Safety of Medicines within WHO’s Department of Medicines Policy and Standards.



WHO CANCER FIGHTERS

Dr Willem Scholten, Technical Officer, Quality Assurance and Safety of Medicines



WHO PROMOTES PALLIATIVE CARE FOR CANCER PAIN RELIEF

While urging countries to do everything possible to prevent and control cancer, WHO demands equal effort to promote palliative care for people for whom cure is not possible.

Most cancer patients need palliative care and pain control. WHO advocates strongly for advanced cancer patients to be given severe and moderate pain relief and the opportunity to live with optimal dignity.

But in many low-resource settings, capacities to provide such care are often lacking. National opiate policies can be too restrictive, limiting availability of morphine and other pain relief drugs.

WHO advocates that governments ensure palliative care is institutionalized. Furthermore, WHO is developing and promoting palliative care and pain relief protocols for national health systems.

Backed by WHO, health authorities in Barcelona have transformed the Catalan region's public health approach to make palliative care available to all people in a variety of settings.

WHO, through its headquarters and regional and country offices, has helped expand palliative care services in many developing countries, particularly in Africa, where chronic disease levels are rising.

Throughout Africa, WHO has supported local services by giving palliative care to people with HIV/AIDS who also need palliative care at advanced stages of the disease.

WHO helps countries with situation analyses and palliative care planning to reach as many people as possible. WHO's Ladder for Pain Relief is a key pain management strategy that can ease pain for about 90% of patients.

WHO TRAINING EASES PAIN FOR UGANDAN CANCER SUFFERERS

WHO guidelines have helped train 1600 Ugandan health professionals to care for patients suffering from cancer, HIV-related conditions and other acute or chronic illnesses.

WHO advocacy and publications have also persuaded many governments in low- and middle-income countries to provide essential pain relief medicine, like oral morphine, to reduce the suffering of patients.

WHO publications show front-line health workers how to provide home-based palliative care and counseling to caregivers and relatives (www.who.int/3by5/publications/documents/en/gener-icpalliativecare082004.pdf).

"We are trying to increase the capacity of health workers in Uganda to provide palliative care to people suffering from Kaposi sarcoma and other forms of cancer," says **Dr Abdikamal Alislad**, a WHO medical officer in charge of HIV prevention and treatment in Uganda.

Cancer, particularly of the cervix and breast, is increasing in Uganda. WHO is boosting capacities to prevent and treat cancer and care for those in pain.

WHO works closely with Hospice Africa Uganda, a prominent nongovernmental organization, to provide palliative care to Ugandans in need.

Hospice Africa Uganda has used this WHO-backed approach to strengthen palliative care services in Botswana, Cameroon, Ethiopia, Ghana, Malawi, Nigeria, Rwanda, Sierra Leone, the United Republic of Tanzania, and Zambia.



MANAGE



WHO NATIONAL CANCER CONTROL PROGRAMMES PROVIDE HOLISTIC CANCER GUIDANCE

Many countries are already putting WHO's cancer-fighting tools to use in their attempt to reduce the cancer burden.

National Cancer Control Programmes (NCCP) act as a public health framework for all strategies and plans dealing with cancer prevention, control, care and management for their health systems.

WHO's benchmark publication, *National Cancer Control Programmes – Policies and Managerial Guidelines*, is a vital tool used by countries to address every aspect of cancer prevention and control. It was developed by the Department of Chronic Diseases and Health Promotion (www.who.int/cancer/media/en/408.pdf).

According to this tool, NCCP is the most cost effective package of policies, programmes and interventions adapted to specific country needs and resource levels.

NCCP provide crucial assistance to health executives and policy-makers in managing their systems to ensure effective services are provided through optimal use of resources.

WHO provides technical guidance through publications

on best public health practices (<http://www.who.int/cancer/modules/>) as well as hands-on assistance through WHO regional and country offices.

Canada, France, India and Viet Nam are among the many countries to have established NCCP based on WHO guidelines. WHO is committed to increasing the number of countries with NCCPs.

WHO SUPPORTS ALBANIA IN LAUNCHING ITS OWN NCCP

Albania has embraced WHO best practice to develop its own nationwide strategies to fight cancer.

Albania's new National Cancer Control Programme aims to prevent and cure cancer, the country's second-highest cause of death, and comprehensively care for those with terminal conditions.

"WHO's evidence-based expertise helped us decide to embark on a broader cancer control programme that promotes public health with a cancer focus," says Albanian Vice Minister of Health Dr Zamira Sinoimeri.

In 2005, 4200 Albanians died from cancer, the country's second highest cause of mortality after cardiovascular disease and responsible for 18% of all deaths for that year.

Tobacco use, increased alcohol consumption, changing sexual behaviours and unsafe exposure to solar rays are the main causes of cancer that the control programme aims to address.

It also sets out to enhance home-based palliative care services after surveys found that 95% of Albanians terminally ill from cancer prefer to be cared for at home rather than in hospital settings.

WHO sent two cancer experts in 2006 to work with Albanian experts and design its programme. This programme sets dates to achieve goals by, including national screening programmes, improved training and needs assessments for radiotherapists, oncologists and palliative care doctors.



WHO MAKES CANCER DATA AVAILABLE AT TOUCH OF A BUTTON

WHO uses many weapons to fight cancer, including the World Wide Web.

WHO's Global InfoBase is a vast online warehouse of health information and statistics helping policymakers and health professionals learn about and respond to a wide array of health conditions, including cancer mortality and incidence, its causes and preventive actions.

infobase.who.int

WHO provides cancer-specific country information online to help decision-makers quantify health risks and react adequately to cancer's growing burden.

"Countries need information on mortality, incidence, and prevalence of risk behaviours in the population to plan prevention and control programmes for chronic diseases such as cancer," says **Dr Kate Strong**, scientist with the Global InfoBase, part of WHO's Noncommunicable Diseases and Mental Health Cluster. "The InfoBase provides this."

InfoBase presents data on tobacco use and poor diet, death rates and types of cancer. Various levels of information exist, from country-comparable data to all surveys and research available on a country's chronic disease burden.

The InfoBase team updates data and works with WHO regional offices to generate information in various cancer-related fields, including obesity and tobacco.

WHO trains Health Ministry staff in various countries to conduct surveys on health risk factors as part of the STEPwise surveillance project.

InfoBase then posts the data and builds capacity in health sectors to ensure follow-up surveys are conducted every three to five years.

SuRF

Surveillance of Risk Factors



WHO CANCER FIGHTERS

Dr Kate Strong, Scientist, Global InfoBase



IRAQ STEPWISE SURVEY HIGHLIGHTS CANCER BURDEN

In the midst of conflict, Iraqis have not swept their country's pressing health needs under the carpet.

Instead, they have confronted their increasing burdens of cancer and other noncommunicable diseases by completing the WHO STEPwise risk factors survey in December 2006.

"This information can help my ministry convince the government that health programmes to deal with chronic diseases, including cancer, should be adopted," says Iraqi Health Minister Ali Al-Shammari.

WHO staff held a training workshop in Jordan on the STEPwise approach for 30 Iraqi epidemiologists from Iraq's various governorates.



The epidemiologists prepared about 400 Iraqi Health Ministry employees to conduct the actual door-to-door surveys of almost 5000 households, which achieved a response rate of 94.2%.

The results showed an alarming presence of risk factors for cancer, heart disease, stroke and diabetes in people aged 25–65 years.

Al-Shammari says the survey gave his government vital information on Iraq's chronic disease

status and will help him convince leaders to devote more resources to primary health care and prevention.

"We will try using the STEPwise results to build a new oncology centre in Iraq," he says.

WHO'S CANCER MORTALITY MONITORING SHAPES HEALTH POLICY

By keeping track on how many people die from cancer, WHO provides governments crucial data needed to shape prevention and control programmes.

WHO's Country Health Information (CHI) unit draws on available national and sub-national information on cancer incidence and mortality to prepare comparable estimates of cancer burden for all WHO Member States.

This data helps health policy makers identify priorities and interventions to reduce cancer incidence and mortality.

"Understanding the magnitude of the cancer burden and which cancers are most common and causing most deaths around the world is a significant point where governments can start working out what can be done to treat and prevent cancers," says unit coordinator **Dr Colin Mathers**.

WHO uses multiple information sources to build its mortality picture, including a data base of death registrations from 110 countries. WHO's CHI unit also works closely with the International Agency for Research on Cancer (IARC) to chart cancer death patterns. It also provides monitoring and projections of the cancer burden.



WHO CANCER FIGHTERS

Dr Colin Mathers, Coordinator, Country Health Information

"Knowing which cancers are increasing or decreasing is useful for identifying priorities and evaluating whether programmes are making an impact," Mathers says.

CHI's work to identify the preventable proportion of cancer through the comparative risk assessment project (www.who.int/healthinfo/boddocs-cra) is a powerful advocacy weapon to influence government policy and legislation.

Its estimates are also available online through the Global InfoBase, in departmental publications and World Health Reports.

WHO CANCER RESEARCH AGENCY LEADS WORLD IN STUDYING CANCER'S CAUSES

To fight cancer, WHO must know what causes it. This is why it founded the International Agency for Research on Cancer (IARC).

IARC was established in 1965 with the main goal of identifying the causes of cancer so preventive measures can be taken against them.

Based in Lyon, France, the agency coordinates and conducts epidemiological and laboratory research concentrating on human cancer and the relationships between people and the environment.

Its four main objectives are to monitor global occurrence of cancer, identify its causes, explain the mechanisms of carcinogenesis and develop scientific strategies to control the disease.

IARC closely collaborates with the International Association for Cancer Registries (IACR) to play a leading role in global cancer registration by studying cancer incidence, mortality and survival throughout the world.

Over 900 agents and exposures have been examined in laboratories, epidemiological studies and working group meetings to try to identify those which cause cancer. IARC programmes aim at finding approaches to avoid cancer through primary prevention and early detection.

The agency also serves as a special forum providing support for international collaboration in cancer research.

WHO, IARC HELP OPEN GHANA CANCER REGISTRIES

WHO and IARC are helping Ghana keep check on its cancer burden.

Two cancer registries have been established in teaching hospitals in the capital, Accra, and the country's second-largest city, Kumasi.

"We are trying to speed up the registry of cancer patients so that we can make the case that there is a public health problem posed by cancer," says **Dr Joaquim Saweka**, WHO's Country Representative for Ghana.

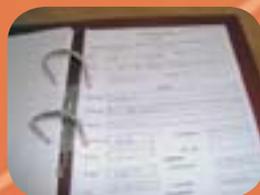
More than 14 000 Ghanaians die from cancer annually and Saweka believes that data made available by the registries will highlight to government policy-makers how important the disease is.

WHO has given overseas training to staff members on running a cancer registry, provided computers for the centres and run in-country workshops with medical personnel.

"These registries will give Ghana updated statistics on the occurrence of cancer in the country, because at this moment there is little available information," Saweka says.

"Once we have this data it will be easier to mobilize government attention to respond to the increasing impact of cancer."

WHO support also includes facilitating study tours and providing training to sensitize health workers on cancer-related issues.



ACKNOWLEDGEMENTS

This brochure, *The World Health Organization's Fight Against Cancer*, was produced under the direction of Catherine Le Galès-Camus, Assistant Director-General for Noncommunicable Diseases and Mental Health.

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THIS BROCHURE IS A JOINT EFFORT OF THE FOLLOWING WHO DEPARTMENTS

Chronic Diseases and Health Promotion; Tobacco Free Initiative; Mental Health and Substance Abuse; Initiative for Vaccine Research; Immunizations, Vaccines and Biologicals; Public Health and Environment; Measurement and Health Information Systems; HIV/AIDS; Essential Health Technologies; Medicine Policy and Standards; Reproductive Health and Research.

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PHOTO CREDITS

The Cancer Council Victoria Australia (page 13), UNICEF/China/Liu Yu (page 8), PATH/Carib Nelson (page 9), WHO South East Asia Regional Office (page 11), Chris De Bode (cover, pages 7, 11), Marko Kokic (pages 4, 5, 14, 16, 18, 19, 20, 21, 22), Eric Miller (page 15).

All data are based on WHO data and Danaei *et al* (2005), *Causes of cancer in the world: comparative risk assessment of nine behavioural and environmental risk factors*, *The Lancet*, 366, 1784–1793.

Design: rsdesigns.com

Brochure production: Rebecca Harding, Joyce Kuku-Winyi, Kristin Thompson.

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ISBN 978 92 4 159543 8



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