Cancer can be prevented too

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“Incoincidence can only be but an overlooked cause of an unknown effect”
François Marie Arouet (Voltaire) (1694–1778)
French writer and philosopher

Background

World Cancer Day

“Cancer can be prevented too” is a global campaign launched on World Cancer Day 2010 by the International Union Against Cancer (UICC) to increase public awareness on cancer prevention and how a number of simple steps can signifi cantly reduce the risk of developing cancer later in life. Celebrated every year on 4 February, World Cancer Day is led by UICC and its member organisations with the support of the World Health Organization and key partners. The campaign is backed by a new scientifi c report: “Pro- tection against cancer-causing infections”, which focuses on nine infections that can lead to cancer.

The International Union Against Cancer (UICC)

Founded in 1933, UICC is the world’s leading consortium of cancer-fighting organisations, with more than 300 members spanning Africa, the Americas, Asia–Pacific, Europe and the Middle East. Located in Geneva, Switzerland, the headquarters provides reporters with editorial materials and access to interview opportunities with experts from cancer-fighting affiliates in more than 100 countries (www.uicc.org).

Inoculation and vaccination

Within the extensive world of preventive medicine, we encounter vaccines, which are, beyond all doubt, the most effi cient instrument for preventing and for fighting infectious diseases. The origin of the term vaccine comes from the Latin word vaccinus, and this last from the word vacca, that is, cow. The history of its discovery is widely known:

In the eighteenth century, the control of epidemic dis- eases was crucial against the terrible effects of smallpox. This disease spread from east to west in a tragic and dev- astating manner. In 200 BC, traditional medicine practices in China and India used the introduction of subcutaneous serous exudates from smallpox pustules to palliate the disease. In Greece, inoculation was performed by means of four needle punctures on the forehead, cheeks, and chin in the form of a Greek cross. In Turkey, the practice included three needle punctures.

The personal intervention of Lady Mary Wortley Mont- tague (1689–1762) was crucial so that the Western medical community could know, use and benefi t from this preven- tive procedure. Wortley arrived in Turkey in 1717, accom- panied by her husband who had been appointed as British ambassador in Constantinople. Smallpox had left marks on Wortley’s face. When she arrived in the city, and as a fi rst measure, she had her 3-year-old son successfully inoculat- ed. The whole process was described by Wortley to a friend in London by a series of letters titled “Letters from East”. On her way back to London, Wortley devoted herself to make known this benefi cial and preventive method against the disease, a method that would spread from London to almost all of Europe. Nonetheless, the eighteenth century would bring about the discovery of vaccination thanks to the English rural physician Edward Jenner in 1796.

Jenner noticed that female milk collectors would oc- casionally developed a sort of bovine smallpox (cowpox), a mild variant of the lethal human condition, as a result of the continuous contact with these animals, although the pa- tient would eventually survive without acquiring the com- mon smallpox. During his research work on the inoculation method, Jenner took a sample of the bovine smallpox from the hand of a female farmer named Sarah Nelmes; he later
injected this fluid into the arm of an 8-year-old boy named James Phipps. The small boy manifested symptoms of the bovine smallpox. Forty-eight days later, once Phipps had thoroughly recovered from the disease, Jenner injected the human smallpox into the boy, but this time there were no symptoms or signs of disease. Confident as he was in his discovery, and in order to prove that the arguments against this practice were baseless, Jenner administered the vaccine to his own 5-year-old son in the belief that this would satisfy and convince his adversaries; however, the method was not accepted, and there were harsh discrepancies for 20 years. Ultimately, the well-deserved recognition came from France in 1805 when Napoleon ordered that his troops be vaccinated. A few years later, Louis Pasteur introduced the terms vaccine and vaccination into medical terminology as homage to Jenner.

The smallpox vaccine was the first, and was followed by many others, such as anthrax, rabies, tetanus, diphtheria, Black Death, whooping cough, yellow fever, typhus, and a long et cetera.

Decade of vaccines

Recent data from the World Health Organization (WHO) show that vaccination rates have experienced historical maximum levels and therefore represent an improvement with reference to the drop seen in the 1990s. The percentage of children who received the basic vaccine DTP (a combination of three vaccines that provides immunization against diphtheria, whooping cough and tetanus) from 2000 to 2009 in the poorest countries increased from 66% to 79% and became the highest recorded level. The number of deaths due to measles dropped 77% during 2000 and 2008, whereas mortality reduction in Africa was estimated at 92%.

In February 2010, the Bill and Melinda Gates Foundation announced, through the World Economical Forum, the commitment of allotting $10 billion over the next 10 years for research, development and distribution of vaccines destined for countries in greatest need. “We must make this the decade of vaccines,” expressed Gates. “Vaccines save and improve the lives of millions of people in developing countries. Innovation will allow us to save more children’s lives than ever”

Both research work and the development of a new selection of vaccines are experiencing one of the best moments ever. As an example, the ultimate phases of new, promising vaccines aimed at protecting children from malaria are now underway. Likewise, the introduction of a new vaccine to prevent meningitis outbreaks in Africa is imminent. As for this announcement, Margaret Chan, General Director of WHO, affirmed: ‘Bill Gates’ commitment on child vaccination is unprecedented, but it only represents a small part of what is really needed. It is absolutely crucial that governments and the private sector coordinate efforts for supplying vaccines that will save the lives of children, who are the ones who most need it.”

Vaccines against cancer

“Of the 12 million people who are diagnosed with cancer each year, around 20% of cases can be attributed to viral and bacterial infections that either directly cause or increase the risk of cancer,” said Professor David Hill, UIICC president. “For this reason, UIICC, with over 300 member organizations in more than 100 countries will focus this year’s World Cancer Day campaign on increasing awareness of the contribution of infections to the global cancer burden.”

Cancers caused by viral or bacterial infections can be prevented through strategies such as vaccination and by adopting lifestyle changes, safe behaviours and other control measures, all of which could be implemented worldwide. A major advancement was the development of a vaccine that protects against the hepatitis B virus (HBV) that can lead to liver cancer – the third highest cause of death by cancer in men. Dramatic developments recently took place with the development of a second vaccine, the human papilloma virus (HPV) vaccine, which is now available and which protects against the virus that can lead to cervical cancer, the third highest cause of cancer-related death in women.

Despite the existence of these preventative measures, there is a clear disparity between low- and high-income countries in incidence rates of cancer related to infections (26% vs 8%, respectively), access to prevention programmes and also treatment and care. For example, 80% of global cervical cancer deaths are in developing countries, and even where affordable technology is available, enormous challenges remain due to limitations in disease awareness and public health infrastructures, illustrated by the significant differences in the coverage of HBV vaccination programmes worldwide. “There is a call for increased awareness of how some infections can lead to cancer, especially given the possibilities offered by prevention,” said Professor David Hill. “Policy-makers around the world have the opportunity and obligation to use these vaccines to save people’s lives and educate their communities towards lifestyle choices and control measures that reduce their risk of cancer.”

Protecting against cancer-causing infections is one of the topics addressed under the umbrella of the “Cancer can be prevented too” campaign. The campaign aims to raise awareness of the fact that the risk of developing cancer can potentially be reduced by up to 40% through simple lifestyle changes and other control measures, such as vaccination, regular physical activity, eating healthily, limiting alcohol consumption, reducing sun exposure and avoiding tobacco. The worldwide campaign is supported by a provocative digital campaign focusing on these six main lifestyle changes and control measures.