CANCER PREVENTION
CHALLENGES & OPPORTUNITIES PATH

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THE EXPERTS TAKING PART IN THE WORKSHOP ARE

Julien Biaudet (CLARA), Florence Cousson-Gélie (University of Montpellier), Jack Cuzick (Queen Mary University of London), Joakim Dillner (Karolinska Institute), Rosybet Drury (Sanofi Pasteur MSD), Carolina Espina Garcia (IARC), Judith Perez-Gomez (Sanofi Pasteur MSD), Catherine Hill (Institut Gustave-Roussey), Andrea Lasserre (Inca), Eduardo Seleiro (IARC), Isabelle Soerjomataram (IARC), Gervais Tursan d’Espaignet (WHO), Larry von Karsa (IARC), Marie-Cécile Levant (Sanofi Pasteur MSD), M. Marc Odic (Sanofi Pasteur MSD), Martin Wiseman (World Cancer Research Fund (WCRF) International).

FACILITATOR

• Barbara Nasto, Journalist, Biopharma Dealmakers, Nature Group

SPEAKERS

• Paul Brennan, Head, Section of Genetics - International Agency for Research on Cancer (IARC)
• Ruxandra Dragha-Akli, Director - Health Directorate, DG Research and Innovation, EU Commission
• Béatrice Fervers, Coordinatrice de l’Unité Cancer Environnement, Centre Léon Bérard
• Catherine Hill, Senior epidemiologist, Biostatistics and Epidemiology Unit, Institut Gustave-Roussey
• Manolis Kogevinas, co-Director, Centre for research in environmental epidemiology (CREAL)
• Vivien Tsu, Associated director of reproductive health, PATH

“It is easier to prevent a disease than to cure it”

The large diversity of cancer prevention aspects were discussed during the plenary session of the BIOVISION World Life Sciences Forum. To date, public health has been successful, for example through tobacco control at the UE level, vaccination against hepatitis B virus (HBV) and human papilloma virus (HPV), and efforts to control obesity and promote nutrition and physical activity. More effort has still to be made on alcohol consumption, obesity, infections that are responsible of 30% of cancers worldwide and the disparities of cancers between countries with the importance of prevention strategies for developing countries.

European Union action against cancer

Last September was the celebration of the launch of the program “Europe Against Cancer” with an aim to prevent, screen and control cancer. The main actions of the program are promoting early detection of cancer, tobacco control, health at work and a screening program for breast and colorectal cancer. This represents a large cancer research implementation strategy in the European Union. One of the main priorities is personalized medicine with challenges in the identification of biomarkers and the integration analysis of large datasets (cohorts, network of human monitoring and rational standards for chemicals). New tools, new diagnostics, big data analytics, susceptibility genes to predict the disease, biomarkers for a better outcome and novel targets are expected. This could bring new standards to Europe and encourage the exchange of data between countries. One billion Euros are required for prevention and to cross the bridge of technology. The ultimate goal is to transform cancer from a chronic disease and find a cure.

Prevention and early detection

“Early detection makes the difference”

Prevention and early detection are very important in developing countries. PATH is a non-profit organization focusing on cervical and breast cancer for which 90% of cases are in developing countries. Three examples of how innovation in prevention is related to a decrease in cancer incidence were presented. HPV vaccines allowed a drop in the incidence of cervical cancer in...
only 10 years. HPV DNA testing (self-testing) can be performed by women themselves using a home kit when medical structures are not effective and face a cultural barrier. Early detection of breast cancer by clinical breast examination instead of mammography is efficient and can reduce costs.

**Alcohol and tobacco**

In France, the two main risk factors of cancer are tobacco and alcohol. People in France are blind to this concept and wrongly believe “I am doing sport, I can smoke”. Information available to the public often causes an autonomy problem and therefore, behavior is biased due to crossed messages between the often changing public health messages and the lobbies that push consumption. A measure of the consumption is needed: “saying drink moderately means nothing”. It is important to think in terms of policy (legislation and pricing). Taxation seems to be an efficient prevention strategy with the example of pre-mixed drinks. Concerning tobacco, duty free, cross-border markets and smuggling represent a significant problem in terms of policy and taxation.

**Obesity and physical activity**

Obesity is increasing and represents an important risk factor. It is responsible for 4 to 40% of cancers. An increasing number of children are overweight due to obesity or lack of physical activity; therefore, it is extremely important to target this risk. Moreover, obesity is a risk even after cancer occurrence especially for breast cancer. Less physical activity and obesity conduce more side effects, and higher risks and mortality rates. A significant benefit exists in continuing physical activity after diagnosis. A change in physical activity guidelines must be implemented and translated into clinical practice to make physical activity a common recommendation by physicians. This change in perspective must be implemented at the patient level, but also at the physician level. Developing strategies are important to encourage physical activity for cancer prevention, but also for patients during and after cancer treatment.

**Environment and pollution**

How does air pollution and the different pollutants impact cancer occurrence? The risk is low for pollutants alone, but exposure simultaneously to several pollutants is linked with several risk factors. This represents a low risk at the individual level, but the number of cancer cases continues to increase. Compared with tobacco, which represents a 100% increase of risk, air pollution in Western Europe represents a 10% increase of risk, but exposure is during the entire lifespan and for all the population. Collaboration and cross data are needed.

**Identifying the causes**

How can we use genomic information to detect early cancer? How do low levels of carcinogens in environment affect the risks of cancer occurrence? To prevent cancers, we need to know the causes and the population at risk. The genomic revolution provides us with new opportunities to identify and understand the causes of cancer. Carcinogens (e.g. UV radiation, tobacco) leave an imprint, a specific DNA signature (molecular signature), in tumors, which can be associated with particular exposure. Large cohorts and a global effort (international convention) are needed to make progress.

“Call for Actions” developed by a group of invited experts during the Cancer Prevention workshop, proposing a set of key initiatives to improve cancer prevention policies and public health interventions:

1. Use legislation, pricing and other policies to promote healthy living and a healthy working environment e.g. no tobacco, less alcohol, physical activity, healthy weight and good food choices
2. Increased tax on tobacco and alcohol
3. Implement and monitor HPV and hepatitis B (HBV) vaccination programs to ensure effectiveness and high coverage
4. Implement and monitor effective and evidence-based screening programs for breast, colorectal and cervical cancers; avoid screening where net benefits are not proven
5. Create and enforce legislation to minimize exposure to occupational environmental carcinogens
6. Regularly review the evidence for benefits and harms of actions through a transparent and credible process to inform policy makers, professionals and the general public
7. Monitor risk factors, implementation of interventions, health and social impacts; publish and communicate results
8. Ensure no interference from lobbies when formulating a health policy related to issues, e.g. tobacco, alcohol, nutrition, sun beds.

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