WHO-EM/NCD/092/E

Report on the

Regional meeting on cancer control and research priorities

Doha, Qatar
20–22 October 2013

World Health Organization
Regional Office for the Eastern Mediterranean

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1. INTRODUCTION

Cancer is already ranked among the top four leading causes of death in the Eastern Mediterranean Region. The incidence is expected to almost double in the next two decades, from an estimated 456 000 new cases in 2010 to nearly 861 000 in 2030[1], the highest relative increase among all WHO regions[2].

The above estimates are based only on the effect of population growth and ageing, but the additional effect of increasing exposures to cancer risk factors, such as smoking, unhealthy diet and physical inactivity, and environmental pollution, will lead to an even bigger rise in the burden of cancer. The prevalence of these risk factors is likely to increase due to socioeconomic and cultural changes, placing significant strains on health programmes and causing substantial human suffering. The epidemic of lung cancer in men in many countries in the Region is a potent warning of the urgent need for action.

At the same time, the development of cancer control actions in most of the countries has been based on sporadic investments and actions rather than on planned, approved and resource-linked national cancer control plans. In many instances the scientific evidence base for such investments has not been obtained and the evaluation of implemented programmes has not been carried out.

The Political Declaration of the UN High Level Meeting on the Prevention and Control of Noncommunicable Diseases, held in New York in September 2011, and the endorsement by the 59th Session of the Regional Committee for the Eastern Mediterranean in October 2012 of a regional framework for action[3] to implement the UN Political Declaration, create opportunities for accelerating action on cancer prevention and control. Cancer is one of the four priority noncommunicable disease groups (together with cardiovascular diseases, diabetes and chronic respiratory diseases) and shares a number of major risk factors with the other conditions (tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol)

Furthermore, the endorsement at the 66th World Health Assembly in May 2013 of WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 with its associated monitoring framework including 9 voluntary targets and 25 indicators, calls on countries to adopt targets and indicators in cancer prevention and control, that need to be realized by 2025. The development of a coordinated strategy for cancer surveillance, research and screening, aligned and integrated with the needs and priorities for cancer prevention and control outlined in the UN Political Declaration on Non-Communicable

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1 GLOBOCAN 2008. Cancer incidence and mortality worldwide. Lyon: International Agency for Research on Cancer; 2010. Available from: http://globocan.iarc.fr

2 Towards a strategy for cancer control in the Eastern Mediterranean Region. Cairo: WHO Regional Office for the Eastern Mediterranean; 2010.

3 WHO Regional Committee for the Eastern Mediterranean resolution EM/RC59/R.2. on the Political Declaration of the United Nations General Assembly on the Prevention and Control of Non-Communicable Diseases: commitments of Member States and the way forward. Cairo: WHO Regional Office for the Eastern Mediterranean; 2012.

Diseases, the regional framework for action, and in the WHO Global Action Plan, will be essential for successfully attaining these goals.

Cancer is one of the four priority noncommunicable disease groups (together with cardiovascular diseases, diabetes and chronic respiratory diseases) and shares a number of major risk factors with the other conditions (tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol). While the integrated noncommunicable disease initiatives addressing these shared risk factors are relevant for prevention of certain cancers, the heterogeneity of cancer patterns globally and regionally requires developing specifically tailored solutions for early detection, treatment and follow-up care to improve survival and mortality outcomes. The research priorities to fill knowledge gaps also need to be defined regionally. In addition, the heterogeneity of cancer burden demands the development of a carefully considered comprehensive national cancer plan including time-bound actions supported by adequate financial, infrastructure and human resources investments for effective cancer control.

To support Member States to improve cancer control programmes and enhance cancer research, WHO in collaboration with the International Agency for Research on Cancer (IARC) organized a regional meeting on cancer control and research priorities. The meeting was held in Doha, Qatar, from 20 to 22 October 2013.

The meeting addressed the following objectives:

- Review current status and forecasts of cancer epidemiology in the Region.
- Analyse the current status of cancer registration and reporting, and discuss priorities for strengthening cancer information systems.
- Review current knowledge of the contribution of exposures of particular concern to the cancer burden in the Region, including environmental factors, and identify research priorities for addressing knowledge gaps about cancer causation.
- Identify appropriate approaches for screening and early detection of the most common cancers in light of the controversies and uncertainties surrounding some screening strategies.

The meeting was attended by national cancer focal points from Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, South Sudan, Tunisia, United Arab Emirates, Directors of Regional Cancer WHO Collaborating Centres, Regional and International experts, IARC scientists and staff members from WHO headquarters and the Regional Office for the Eastern Mediterranean. The meeting programmes and list of participants are included in Annexes 1 and 2.

The meeting was opened by Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean, and Dr Christopher Wild, Director of the International Agency for Research on Cancer. Welcome remarks were delivered by Dr Faleh Mohamed Ali, Undersecretary of the Supreme Council of Health, Qatar.

Dr Alwan welcomed the meeting participants, affirming that the meeting represented a unique opportunity to bring together different areas of WHO working together to support cancer control efforts of the countries in the Region. Dr Alwan stressed that the meeting had a strong focus on defining the next steps in priority areas for cancer prevention and control, and the research needed to provide the evidence base for these activities.

Dr Wild welcomed the participants on behalf of IARC. For IARC the meeting was an important opportunity to listen to the priorities for the different countries across the Region. He expressed his hope that this would be a courageous meeting, generating a strong vision and leadership to take the action that would address the cancer burden of the future.

Dr Faleh Mohamed Ali thanked WHO and IARC for organizing the meeting. He highlighted the strong commitment of Qatar in this area and the progress made in a short time period on planning and implementation of the national cancer prevention and control programme. Qatar recognized the central role of research in this effort.

The three-day meeting programme was organized around three key themes: cancer epidemiology and surveillance; cancer causation and prevention; and screening and early detection for priority cancers. Each session included a brief introductory presentation by IARC scientists and regional experts followed by open discussion. The conclusions were drawn in form of recommendations, for each of the three theme areas.

2. PERSPECTIVES FROM WHO AND IARC

2.1 Global noncommunicable disease agenda and cancer priorities in the WHO Eastern Mediterranean Region

Dr Ala Alwan, Regional Director, WHO Regional Office for the Eastern Mediterranean

In 2012, noncommunicable diseases were declared as one of the five strategic priorities for the WHO in the Eastern Mediterranean Region over the next five years. This provides a clear mandate for action on cancer as one of the four priority Noncommunicable diseases, while recognizing some specific features of cancer, such as the role of other risk factors such as infections.

Dr Alwan acknowledged the great diversity of the Region and the need to tailor interventions according to country needs, capacities and resources. He stressed that in approaching cancer, the WHO must use its comparative advantages and emphasize its core functions. He highlighted the key areas for action by countries in relation to cancer prevention and control based on the regional framework for action:

- Building capacity in surveillance – cancer registration, monitoring exposures and causative factors (Themes 1 and 2 of the meeting)
- Addressing gaps in epidemiological and health system research (Theme 2)
- Developing guidance on implementation of prevention interventions (Part of Theme 2)
- Reviewing international experience in policy options for promoting health care, particularly early detection/screening interventions (Theme 3)

- Developing evidence-based options for screening of common cancers (Theme 3)

Dr Alwan also stressed the importance of other areas of cancer control that need to be addressed in subsequent meetings. These include the need for reviewing international experience in policy options for promoting cancer health care, particularly interventions in primary health care and community settings; reviewing cost-effectiveness of clinical/hospital-based interventions which are consuming a large proportion of healthcare budget; developing guidance and building capacity in palliative care; and developing guidance on the governance aspects of cancer control as part of noncommunicable disease programmes (integrated versus disease specific programmes).

2.2 IARC as a strategic partner for cancer research and control in the WHO Eastern Mediterranean Region

Dr Christopher Wild, Director, IARC

Dr Wild described IARC's main areas of activity, and presented a number of projects illustrating its multidisciplinary approach, using molecular techniques to support population research, and IARC's focus on conducting research that develops the evidence base for the implementation of cancer prevention initiatives, therefore particularly appropriate to support the discussions in this meeting.

Dr Wild continued by presenting some of IARC's current research collaboration with countries in the Eastern Mediterranean Region, highlighting how these activities and expertise, coupled with IARC's activities in the area of education and training, supported national governments in developing situation assessments, capacity development, policy development and implementation of cancer prevention programmes.

Finally, Dr Wild highlighted the collaboration between IARC and WHO headquarters, and its contribution for the development of the Global Action Plan for the Prevention and Control of Noncommunicable Diseases and the list of key targets and indicators in the Global Monitoring Framework.

3. TECHNICAL PRESENTATIONS

3.1 The rising magnitude of cancer in the Region: cancer patterns and burden

An overview of the global situation on cancer burden was presented, highlighting the patterns of specific importance in the Region. Cancer patterns in the Region are heterogeneous but there are a few common features including the predominance of some cancers, in particular breast cancer which is the most common cancer in women in all the countries. In men the situation is more diverse with lung, prostate and colorectal cancer being the most common.

Overall, cancer incidence in the Region is comparatively lower than in other regions, but is forecasted to see the highest increase in the next decades among WHO regions simply as a result of the changing population structure. In addition changes in exposures to risk

factors are likely to further increase cancer burden, particularly in countries with the highest levels of socioeconomic and human development. There is generally a good correlation between transition to higher levels of human development and patterns of certain cancers (such as breast, colorectal, prostate cancer) associated with risk factors linked to westernized lifestyles.

There is a need to improve sources of data both for civil registration (no or poor data available in most countries) and cancer registration in the Region (the situation is improving: increasing number of high quality population based cancer registries but no data for some countries – see below).

3.2 Strengthening cancer registration in the Region

IARC launched a major initiative to improve the quality of cancer statistics worldwide. The GICR is a multi-partner initiative led by IARC to support development of cancer registration based on a model of regional hubs for technical support and training. Five to six hubs are planned worldwide to provide support and training for the establishment or improvement of population-based cancer registries in their geographic regions, and promote networking and research collaborations.

There has been substantial progress in the area of cancer registration in several countries in the Region, but data quality is still heterogeneous and coverage patchy; in some countries there is simply no data. The development of cancer registration is generally correlated with the human development level of the country. The development of vital registration systems is less advanced across the Region, with no data in most countries and only low-quality vital registration systems in a small number of countries.

It is important to create at least one population-based cancer registry in each country as only they can provide an accurate and unbiased description of the cancer patterns and outcomes. Hospital- or pathology-based cancer registries, although useful for local operational planning, do not provide data of sufficient quality for cancer control planning and programme evaluation.

Population-based cancer registries do not need to have national or widespread coverage. Accurate and representative data can be obtained from small population-based cancer registries covering representative samples of the population. Setting up a population-based cancer registry covering a population of 1–5 million is feasible for most countries and IARC has the tools and expertise to support this. The approach in each country depends on the financial and human resources available and other specific conditions, so it is important to conduct a detailed situation analysis prior to developing plans for cancer registration.

A number of next key steps were suggested including: situation analysis across the Region; development of a workplan including priority countries; schedule of site visits; networking support and linkages to existing networks; training courses. The support role of the IARC Cancer Registration Hub in Izmir, Turkey was discussed. The opportunity for establishing a hub within the Eastern Mediterranean Region was also discussed.

3.3 Cancer survival in the Region

3.3.1 Survival as an indicator of health services efficiency in early detection and treatment: availability of data on survival

Population-based survival data are an excellent indicator of health services effectiveness in the provision of cancer services for early diagnosis, prompt treatment and follow-up care. Such data can be a useful measure to evaluate progress and to advocate for cancer control. However, survival measures necessitate a good surveillance infrastructure: not just a good quality population-based cancer registry, but also good vital status data and low loss to follow-up of the health care services.

Data from the SURVCAN project on cancer survival in Africa, Asia and Latin America was presented, including a comparison with data from two centres in the Region, in Riyadh, Saudi Arabia and Lahore, Pakistan. The SURVCAN project had been a catalyst for progress in cancer surveillance in the participating centres and countries, in terms of training and capacity development for cancer registries and for the broader heath information system infrastructure.

There is a need for the creation of a project, “Cancer Survival in Eastern Mediterranean Region” as a joint project between a number of established cancer registries, IARC, centres of excellence in other regions such as the Cancer Institute in Chennai and the Union for International Cancer Control (UICC). This project would have a strong training component and should be able to report on survival in the Region on a number of priority cancer sites in a reasonable timeframe.

3.3.2 Cancer survival priorities in the short-medium term (next 5 years), gaps and how they can be addressed

Survival is a key indicator of the outcome of cancer diagnosis and success of treatment. The technical requirements and methodologies for conducting survival studies, together with an analysis of the current gaps for conducting these studies in the Region were shared. The main challenges are the low quality of the mortality registration systems, difficulties in accessing or linking information from the different sources and difficulties with the active follow-up of cases. There is a need to adopt a number of measures relating to improving data access and the quality and linkage of the various sources, as well as training and capacity building in this area.

3.4 Environmental factors of major importance in the Region

3.4.1 Evaluating the causes and prevention of human cancer

Prevention is the single most effective response to the major increase in cancers anticipated in the Region. IARC has evaluated more than 950 agents and exposures suspected of causing cancer, of which 113 have been classified as carcinogenic to humans (group 1), 66 as probably carcinogenic to humans (group 2A) and 205 as possibly carcinogenic to humans (group 2B). These evaluations have been done by over 1000 scientists from 50 countries

selected by IARC as among the most knowledgeable in the relevant field. Evidence from studies in humans, in experimental animals and other relevant data on mechanisms are considered in reaching an overall evaluation. Volume 100, comprising 6 parts in all, was an updated review of previous evaluations, with a specific focus on the human cancers caused and the mechanisms of action. Currently, an interactive internet module is being developed to enable users to obtain more detail on specific agents.

An example of a new evaluation just released is volume 109 “Outdoor air pollution”, which is assessed by measures of particulate matter in air. There is sufficient evidence that such pollution causes lung cancer, importantly in non-smokers as well as smokers.

There is an opportunity for input into future priorities in these series during a meeting planned to be held from 7 to 9 April 2014.

3.4.2 The role of chemical pollutants, radiation and other key environmental factors in the etiology of cancers

The association between environmental factors and cancer risk can be an area of scientific uncertainty, e.g. diesel exhaust, pesticides, khat use, shift work, radiation, etc., with knowledge constantly increasing. For example a meta-analysis of studies on exposure to diesel motor exhaust resulted in an estimate of 26% increase in risk of lung cancer. Studies in this area present challenges to achieving resolution of questions of causation because of low, often widespread exposure levels. Current areas of concern of relevance to the Region include exposure to mineral oils, exposures in the construction industry (asbestos and silica), pesticide exposures in agriculture, in the general environment and foods. Long latency periods must be considered, e.g. although asbestos has been banned in many countries, they are still experiencing increases in asbestos-induced lung cancers and mesotheliomas.

However, in some instances the public health effects and the extent of public concern are reversed, e.g. the low effect of nuclear power, but the major concern of the public and some governments. Radiation in the form of radon may induce 10%–15% of lung cancer in some countries, and the effect of medical exposures remains a concern. However, the cancer effects of the known nuclear accidents are low, and will probably be low from the Fukishima disaster, though they were substantial and unrecognized for some time from radiation released into the Techa river in the former USSR, including increases in solid cancers and haematological malignancies.

During discussions, it was pointed out that there are currently no facilities for environmental monitoring in the Region. It is important that the capacity for research in this area is developed in each country.

In relation to depleted uranium, although it is recognized as a category 1 carcinogen, there is a need to demonstrate there has been relevant human exposure, i.e. that depleted uranium can be measured in individuals, in order to justify a study, i.e. a two stage approach is necessary.

The increase in thyroid cancer, observed especially in women in many countries, is now recognized as a form of ascertainment bias, an effect of the application of screening and diagnostic tests that identify small, dormant though histologically malignant nodules. This over-diagnosis problem has also been recognized for prostate and breast cancer screening.

The carcinogenic risk to pharmacists and nurses who handle chemotherapy drugs, which were identified in volume 100A of IARC monographs as carcinogenic hazards, must be recognized and careful precautions over exposure are required. A similar concern relates to exposure of pathologists and technicians to formaldehyde.

3.5 Lifestyle factors of major importance in the Region

3.5.1 Changing lifestyles and cancer risk

Initial associations between diet and cancer based on correlations were largely un-confirmed in subsequent observational epidemiology studies, especially cohort studies. These later studies are now recognized as suffering from major issues of misclassification of dietary intake, which inevitably resulted in biasing associations towards the null. As a result of recent assessments by the World Cancer Research Fund/American Institute for Cancer Research it is now recognized that up to half of all cancers are caused by diet and physical inactivity, some mediated through obesity. Dietary factors may interact; an example is the joint effect of red meat and low fibre consumption in increasing the risk of colorectal cancer. A mechanism seems to be the occurrence of nitroso-compounds in the colon and changes in colonic epithelium increasing its permeability to carcinogens. Fresh fruit and vegetables reduce the risk of colorectal cancer and of several other cancers.

The lesson for the Region is to promote consumption of fresh fruits and vegetables, limit red meat consumption and combat obesity by reducing consumption of energy dense foods. Finland presents an example of successful national action resulting in increased consumption of fresh vegetables by providing them free-of-charge in canteens. Although some individuals are genetically predisposed to obesity, environmental influences predominate, especially excess sugar and fat consumption.

In promoting healthy diets and physical activity the media has limited influence. Providing healthy school meals and fiscal, labelling and regulatory factors are more effective.

3.5.2 Rising burden in the Region of cancers associated with obesity and physical inactivity

The cause of obesity is an imbalance between energy intake and physical activity. In measuring obesity, waist circumference (an index of abdominal obesity) as well as BMI are important.

Overweight and obesity, present in up to 80% of women in some countries in the Region (e.g. Bahrain, Egypt, Jordan, Kuwait, Saudi Arabia and United Arab Emirates), is responsible for increasing the risk of breast cancer in postmenopausal women, colorectal, endometrium, kidney and pancreas cancer, and adenocarcinomas of the oesophagus. In

addition, obesity is linked to other noncommunicable diseases such as cardiovascular disease and diabetes which are also highly prevalent in the Region. There is a continuing risk throughout life, so it is important to avoid obesogenic diets from early in life.

There is a need to improve surveillance and health information systems to better understand diet–obesity–cancer links. Studies of cancer aetiology should be followed by research on prevention. IARC has developed a standardized measure of dietary intake which can be extended to studies in many countries. For some cancers there is a need to study different phenotypes, as they may have different causal dietary factors, e.g. breast cancer.

Behavioural research is needed on measures to decrease obesity, while in many instances changes are needed in the physical environment (urban planning) and transport system to increase the opportunities for physical activity.

3.5.3 Challenges in tobacco control

The missing link on tobacco and cancer is inaction on what we know. MPOWER measures as part of the WHO Framework Convention on Tobacco Control need to be applied in all countries of the Region. Two countries in the Region have not yet ratified the convention. A major challenge everywhere is smoking in the young and young adults, especially males, both of cigarettes and waterpipes. This requires action against tobacco companies that offer young people free cigarettes. There is also a need to enforce bans on tobacco advertising, and raise taxes on tobacco, which are relatively low in many countries, as well as evaluating barriers to the implementation of tobacco control measures and take action to ratify a new protocol on illicit trade.

3.5.4 Prevention of infection-related cancers: a focus on HPV and HCV

The importance and public health relevance of infectious agents as preventable causes of cancer are highlighted by IARC's research results on attributable fractions of cancer mortality across the world which show major geographical variations (33% of cancers in sub-Saharan Africa are attributable to infections compared to 3% in Australia). The Eastern Mediterranean Region holds an intermediate position with about 13% of the cancer burden attributable to infections. In less developed countries the great majority of the attributable fraction is due in almost equal parts to human papilloma virus (HPV), *Helicobacter pylori* and hepatitis C virus (HCV) infections.

HPV risk and cervical cancer prevention

Although there is considerable variation in the prevalence and distribution of HPV types across the world, this is not the case when assessing the prevalence of HPV in cervical cancer cases, where HPV type 16 and 18 are responsible for 68%–82% of the overall invasive cervical cancer burden. In the Region, 78% of HPV in cancer cases are due to HPV 16 and 18. There are age specific variations in some countries with a double peak in younger and older age groups depending on sexual habits in societies.

A major public health issue is the feasibility of HPV vaccine introduction in developing countries. As the GAVI has included HPV in its portfolio of vaccines, there are increasing options for low resource GAVI-eligible countries to get support in developing national HPV vaccination programmes. Recent studies confirm the cost effectiveness of HPV introduction for DALY averted when the cost of HPV dose is low (US$ 2–12).

While cervical cancer is less prevalent in Eastern Mediterranean Region compared with other WHO regions, it is an important public health problem in some of the countries which could be averted by HPV vaccination programmes. The majority of countries of the Region with the highest prevalence of cervical cancer are GAVI eligible (Afghanistan, Pakistan, Somalia, Sudan and Yemen) and should be encouraged to apply for pilot studies.

In the most affected countries there is a clear need to introduce both HPV vaccination, as primary prevention, together with cervical cancer screening to prevent invasive cancer by detecting and treating pre-cancerous lesions. These two approaches are complementary addressing cancer prevention at different target age groups along a continuum of care.

HCV risk and liver cancer prevention

HCV is a major cause of liver cancer in some countries in the Eastern Mediterranean Region such as Egypt and Pakistan, due primarily to unsafe injection practices and un-tested blood transfusions, respectively. A recent WHO global report highlighted major gaps in the implementation of comprehensive WHO recommended multiple hepatitis control and monitoring policies in the Region.

There is an urgent need to up-scale and harmonize prevention strategies in the Region based on recommended policies, e. g. blood donation testing, safe injection practices, and a general shift of medical treatment for any disease towards oral treatment over intravenous injections.

3.6 Screening and early detection for priority cancers

3.6.1 Implementation of national programmes for screening and early-detection of common cancers – challenges and opportunities.

It is estimated that almost half of all cancers in the Region are amenable to early detection and potential cure with adequate treatment. Without early detection, treatment resources are used inefficiently and the need for palliative care services is high. An early detection programme is the organized and systematic implementation in a defined population of early diagnosis or screening (or both), together with diagnosis, treatment and follow-up care of detected cases. It requires a number of different components such as creation of population and professional awareness, empowerment of the general population to seek health care, adequately developed health care services infrastructure to allow equitably accessible and affordable health care, adequate availability of trained human resources, and the mechanisms to monitor and evaluate the programme. All countries should be encouraged to

undertake a detailed situation analysis of the current status of early detection for priority cancers and identify areas for further investments.

Early diagnosis is the awareness by the public and health professionals of early signs and symptoms of cancer, to facilitate early clinical diagnosis allowing effective and simple treatment before the disease becomes advanced and spreads extensively to adjacent tissues or to distant organs. In countries where the vast majority of cancers are diagnosed in late clinical stages, an early diagnosis programme is the most feasible and appropriate strategy to reduce advanced disease and improve survival.

Organized screening programmes involve the systematic application of an affordable, simple, safe, acceptable and accurate screening test in a presumably asymptomatic population, with provision of diagnosis, treatment and follow-up care to screen-positive persons to identify and treat those with precancerous lesions or conditions or early invasive cancer. Opportunistic screening denotes the unsystematic or sporadic application of screening tests in health services or fragmented provision of screening tests to untargeted individuals. Organized screening programmes avoid over-screening and over-treatment of ineligible persons and thus are more cost-effective than opportunistic screening.

3.6.2 Current status of breast cancer screening in the Region: requirements and uncertainties

Breast cancer is the most important cancer in the Region, accounting for almost one-third to half of the cancer burden in women in many countries. Its incidence is increasing at the rate of 1%–3% per annum in countries where population-based data are available. Because of the predominance of young age groups in the general population in countries in the Region, breast cancer cases below the age of 50 years constitute a high proportion of incident breast cancers. More than 70% of breast cancer cases are diagnosed in advanced stages in most middle-income and low-income countries in the Region.

Population based cancer registries may commit resources to document stage at presentation and treatment patterns of incident breast cancer patients in their catchment area. Educational efforts and reorientation of clinical care providers and pathologists should be undertaken to improve recording breast cancer stages and treatment in medical records. This will require documentation of primary tumour size and lymph node metastasis with explicit documentation of TNM stages in histopathology reports.

A major early detection approach suitable for all countries in the Region is creating population-wide breast awareness by improving public and professional awareness about symptoms and signs of breast cancer with prompt and appropriate referral, thus facilitating early diagnosis. The objectives of breast awareness include making women aware of their normal breasts and ensuring they recognize any breast abnormalities promptly and seek medical attention. Primary care practitioners should be trained in competently providing clinical breast examination and promptly referring women with abnormalities for triaging with triple diagnosis tools: expert physical examination, diagnostic imaging (mammography and/or ultrasonography) and fine needle aspiration cytology or core or excision biopsy.

Adequate facilities should be developed in accessible health services where women with breast symptoms can be triaged and treated.

Introducing organized screening programmes with either clinical breast examination or screening mammography involves substantial health care and financial resources and the decision to introduce a screening programme should be carefully considered and backed up by a well-developed protocol, following a wide consultative process, with commitment of adequate resources and careful monitoring. Screening services should be scaled up in a phased manner preceded and informed by pilot studies. Adequate health education and awareness campaigns should be first introduced to ensure women are empowered to seek screening services and participate in all components of the screening programme. The process (input) and early outcome measures should be carefully monitored and mid-course corrections applied when necessary.

The current ongoing large-scale opportunistic screening and early detection initiatives in countries should be carefully reviewed and the findings widely documented and shared to facilitate development of breast cancer early detection programmes.

3.6.3 Current status of colorectal cancer screening in the Region: is there a need for screening programmes for colorectal cancer?

The incidence of colorectal cancer varies substantially between countries, reflecting the fact that colorectal cancer is strongly related to development and lifestyle. With increasing burden of colorectal cancer linked to demographic transition and economic/social development in many countries, age specific rates are increasing over lifetime with peaks over 65 years of age as a cohort effect. Increasing colorectal cancer trends over the last two decades have been documented, for example in Kuwait. The expected increase in the burden of colorectal cancer makes early detection a priority.

The most commonly used colorectal cancer screening tests are faecal occult blood tests (FOBT) which have evolved from lower sensitivity chemical-based tests to high sensitivity immunochemistry-based FOBT (iFOBT). iFOBT is easier to manage since it does not require dietary restriction, because of the immune-specificity of the test to blood (globin), and because the results are readable by the user (home based). Large scale randomized controlled trials have documented that biannual screening with iFOBT reduces overall colorectal cancer mortality by 16% (intention-to-treat approach) and by 25% in the population which attended the programme.

Flexible sigmoidoscopy detects cancer in those parts of the colorectum which are most affected by cancer. Large scale randomized controlled trials have shown that flexible sigmoidoscopy-based screening is effective in reducing colorectal cancer mortality by 28% in the intention-to-treat approach and by 50% in those attending the test. Colonoscopy-based screening has demonstrated similar effectiveness as flexible sigmoidoscopy screening. Both flexible sigmoidoscopy and colonoscopy have the disadvantages of bearing a risk for perforation and a cumbersome preparation for the person to be screened.

There is currently a substantial practice of opportunistic screening in many high income countries in the Region. The Abu Dhabi Health Authority has launched recently a colorectal cancer screening programme based on colonoscopy screening every 10 years and iFOBT every 2 years.

In Thailand, the Lampang Pilot demonstration project, conducted jointly with IARC, showed that colorectal cancer screening based on iFOBT combined with colonoscopy is feasible and effective in a middle income country setting.

There are a number of prerequisites to developing a national colorectal cancer screening or early detection programme in the Region. The presence of a population based cancer registry is one key element. Conducting a pilot project would be advisable taking the example of the experience in Thailand where a clear algorithm and protocol was established. The aim would be to evaluate the feasibility, safety and acceptance of a screening programme. The overall objective would be for the Region to catalyse a paradigm shift from opportunistic to organized screening by using iFOBT as primary screening test.

The IARC quality assurance criteria are fundamental for any colorectal cancer screening planning and implementation, and would be the reference guide for these projects. Countries eligible for piloting such screening are those with emerging and expected major demographic and social changes causing an increasing background risk for colorectal cancer (e.g. Bahrain, Kuwait, Oman, Qatar).

4. GROUP DISCUSSIONS

Participants were divided into three groups to discuss the three meeting themes. Group work consisted of brain-storming, consensus-building and presentations, followed by discussions of findings in plenary sessions. The following summarizes the key findings, discussions and recommendations.

4.1 Cancer surveillance and registration

There are discrepancies in cancer estimates reported in GLOBOCAN versus national estimates. These need to be reconciled. It is important to communicate and exchange data to ensure their use in policy development.

Developing population-based cancer registries requires resources. It is important to demonstrate the usefulness of cancer registration data when advocating for resources to counter the perception that cancer registration is simply an exercise in data collection.

Government/political support and long-term commitment of appropriate resources for cancer registries are crucial.

Cancer registration must include mechanisms to continuously improve data quality. Cancer data collection and surveillance are best integrated as part of national health information systems.

The needs related to cancer registration vary across the Region and must be addressed on a country-by-country basis. These needs relate most notably to training and capacity development, situation assessments and technical guidance, and templates for data collection by the cancer registries. The role of IARC/WHO is crucial in addressing these needs. Cancer registries should follow the recommendations for improvements and implement the changes suggested in situation assessments.

The hub model employed by IARC is well received. Hubs should work with networks already established in the Region. The hub model rests on a 2-way interaction between the hub and the Region, whereby hubs provide expertise and training but also draw on local expertise and capacity. Currently the hubs follow geographical regions rather than WHO Regions, simply for practical reasons. Future discussions will determine how the regional hub model can be adapted to the needs of this Region.

Cancer registries need to engage in collaborative projects in the area of cancer surveillance and epidemiology: analyses of cancer survival; characterizing the effect of major risk factors on cancer burden; characterizing the effect of prevention initiatives on burden associated with specific cancers. These activities will help show the broader uses and usefulness of cancer registration data.

A proactive approach is needed to improve communication between cancer registries and IARC, and to develop capacity and provide technical guidance, perhaps targeting specific priorities.

There is a need to integrate cancer registries in national cancer control plans by improving the availability and quality of standard data and include additional data that can be used for planning both at national and at local/operational levels (e.g. data on staging, outcome, or loss to treatment).

It is recommended that each country develop, as appropriate, a report on the current status of cancer registration based on a detailed situation assessment. The report must include recommendations for the way forward. Reports from various countries could serve as the basis for developing an action plan for the Region, setting out the strategy and priorities for the development of cancer registration.

4.2 Cancer survival

Good quality cancer registration data from a population-based cancer registry and quality mortality data are prerequisites for good cancer survival estimates.

Data on cancer survival can be seen as part of the natural progression in the development of the surveillance infrastructure, allowing countries to gradually obtain more sophisticated data.

Training and capacity development are needed to improve regional capacity in assessing cancer survival. IARC is starting to run training in this area in collaboration with the Cancer Institute in Chennai, India.

Population-based cancer registries provide data on age adjusted relative survival rates. More sophisticated survival indicators can only be produced in more controlled clinical settings.

Survival analyses form hospital-based cancer registries are useful for the concerned hospital but are not appropriate for cancer control planning.

4.3 Cancer causation and prevention

Randomized trials on diet and cancer have not been successful. This is largely because they had not used sufficiently accurate methods to assess dietary intake of different foods in adults and in some instances may have used the wrong (surrogate) endpoints.

Dietary surveillance is an essential component for assessing the relationship between dietary factors (and other related lifestyle factors such as physical inactivity and obesity) and cancer or other noncommunicable diseases. Accurate data on dietary patterns also provides an essential foundation for planning and monitoring future policy action.

WHO needs to develop specific policy tools to make the necessary changes in diet, in particular action on salt and fat intake.

Currently electronic cigarettes have low penetration in the Region; the actions of some Ministries of Health to block their introduction were deemed reasonable. It is important to advise adults (especially under the age of 40 and preferably 30) to stop smoking immediately in order to still have a substantial impact on cancer.

Opium link to cancer could be considered as a theme for a future IARC monograph. There is a need to change ingrained cultural habits on substances that may be carcinogenic; betel nut in India and aristolochic acid exposure were other examples.

There are research gaps on unique risk exposures, e.g. depleted uranium, that need to be addressed.

There should be more input from experts from the Region in defining the priorities for future IARC monographs and handbooks.

There is a need for the analysis of population attributable fractions for noncommunicable diseases as a whole and for specific cancers, to produce estimates of the impact of the implementation of prevention activities.

4.4 Cancer screening and early detection

All countries in the Region should undertake a detailed situation analysis on the current status of screening and early detection of priority cancers, and identify the need for further investments.

The benefits, harms and cost-effectiveness of screening must be considered before introducing a screening programme. The decision to introduce a national screening programme should be accompanied by the commitment of adequate resources for diagnosis and treatment.

Introducing early detection programmes for prostate cancer should not be considered given the costs and significant harms associated with over-diagnosis and over-treatment.

There is a need for campaigns directed to the public as well as to health professionals to raise cancer awareness about symptoms and signs of cancer, and the need for prompt referral for early diagnosis and treatment

It is important to document clinical stages and treatment details in population-based cancer registries in order to understand the missed opportunities for early detection and treatment.

In the Islamic Republic of Iran the high detection rate of adenomas in colonoscopies, led to recognition of the need to plan the introduction of a colorectal cancer screening programme.

The lack of demonstrable reductions of total mortality in colorectal cancer trials is not an indicator of non-efficiency of the screening, since colorectal cancer is relatively rare as cause of death compared to other causes.

Determining the age to start colorectal cancer screening requires epidemiological research on age-specific colorectal cancer incidence.

5. CONCLUSIONS

The meeting recommended a number of specific and practical steps for cancer control and cancer research in Eastern Mediterranean countries with a particular focus on prevention. The participants also identified the contributions of the WHO, IARC and Member States to this set of recommendations. If endorsed for action by Member States, the recommendations will need resources, including specified project-based funding. Such action taken now would represent the leadership and vision needed to significantly reduce the cancer burden of current and future generations among the countries in the Region.

The main conclusions and recommendations of the meeting were distributed to delegates at the 60th Session of the Regional Committee for the Eastern Mediterranean, held in Muscat, Oman, 27–30 October 2013.

6. RECOMMENDATIONS

General recommendations

To Member States

1. All countries should introduce at least one representative population-based cancer registry to provide data on incidence and, where possible, survival, stage and treatment details relevant to cancer control planning.
2. Countries should ensure sustainability of new/existing cancer registries through commitment to budget support.
3. Countries should:
   - implement the highly cost-effective WHO-recommended "best buys" that can reduce cancer and other noncommunicable diseases, such as the Framework Convention on Tobacco Control and the MPOWER measures for tobacco control, replacing trans-fat with polyunsaturated fats, and promotion of physical activity;
   - consider implementation research to monitor and evaluate interventions instigated within national programmes in order to further refine and improve such programmes both nationally and across the Region;
   - develop capacity for research on cancer, including through participation in international studies in the areas identified in this report.
4. Multi-centre international collaborative research studies should be conducted to evaluate the unique risk exposure profiles in the Region and the association with cancer.
   - One priority is outdoor air pollution in light of the special case of mixed natural and man-made sources of pollutants in arid regions.
   - Additional priorities include the contributions of khat, waterpipe smoking and depleted uranium to regional cancer burdens.
5. Countries should not introduce early detection or screening programmes for prostate cancer, given the significant harms associated with over-diagnosis and over-treatment.

To IARC and WHO

6. IARC should coordinate an analysis of the current status (quality and coverage), needs and gaps of cancer registration in each country, and the development of a detailed workplan to support the development of population-based cancer registries, including creation of appropriate regional networks of registries to enhance training and support.
7. IARC should conduct research to establish the population attributable fraction of cancers associated with known risk factors (notably tobacco, overweight/obesity, physical inactivity, unhealthy diet, infections and environmental carcinogens) in the Region. In addition, the potential impact of implementing available prevention strategies across the Region should be assessed to provide a tailored evidence base for cancer control.
8. IARC and WHO should cooperate with all countries in the Region to undertake a detailed situation analysis on the current status of early detection and screening in the country and identify priorities for further investments.

9. IARC should conduct in collaboration with national partners to evaluate all current cancer screening programmes in the Region; IARC and WHO should prepare a joint publication to document the lessons learned across the Region.

Recommendations regarding screening and early diagnosis of specific cancers

10. The selection of clinical breast examination-based versus mammography-based screening approaches should be considered carefully in relation to local resources.

11. Countries with sufficient resources and a sufficiently developed health system should consider introducing organized colorectal cancer screening using immunochemical faecal occult blood test and colonoscopy triage to persons aged 50–70 years.

12. In countries with high incidence of cervix cancer and where resources permit, screening by trained health care professionals using visual inspection with acetic acid (VIA) (or lugol's iodine-VILI) for women age 35 or more should be introduced and repeated every 2–5 years.

13. In countries where opportunistic screening with Pap smear is already being performed, a careful review of cost-effectiveness should be undertaken.

14. Countries with high incidence of oral cancer should consider an early diagnosis programme targeting users of tobacco, alcohol, toombak or khat.

15. Primary care practitioners and dentists should be trained to perform oral visual inspection and refer persons with suspected precancerous lesions and cancers for diagnosis and treatment.

Annex 1

PROGRAMME

09:00–10:00 Opening session

09:00–09:15 Opening remarks and objectives of meeting
Dr A. Alwan, Dr C. Wild

09:15–09:30 Welcome remarks
H.E. Mr Abdulla Bin Khalid Al Qahtani, Minister of Public Health and Secretary General, Supreme Council Of Health, Qatar

09:30–09:45 Global noncommunicable disease agenda and cancer priorities in the WHO Eastern Mediterranean Region
Dr A. Alwan, WHO/EMRO

09:45–10:00 IARC as a strategic partner for cancer research and control in the WHO Eastern Mediterranean Region
Dr C. Wild, IARC

Theme 1 – Cancer epidemiology and surveillance

10:30–11:30 The rising magnitude of cancer in the Region: cancer patterns and burden
Chairs: Dr C. Wild and Dr P. James
Global and regional situation on cancer burden – lessons of relevance to the Region
Dr F. Bray, IARC
Regional reflection
Discussant: *Dr B. Al-Bahrani, Royal Hospital, Oman*
Discussion

11:30–13:00 Strengthening cancer registration in the Region
Chairs: Dr H. Al-Khater and Dr R.Sankaranarayanan, IARC
Building cancer Registration Networks – the Global Initiative for Cancer Registration (GICR) Hub model
Dr F. Bray, IARC
Regional reflection
Discussants: Dr A. Shamseddine, American University of Beirut, Lebanon
Dr A. Al Zahraini, Gulf Cancer Registry, Saudi Arabia
Discussion and way forward: gaps, priorities and strategies for improving cancer registration and surveillance

Theme 2 – Cancer causation and prevention

14:00–15:15 Environmental factors of major importance in the Region
Chair: Dr K. Al Saleh and Dr S. Franceschi
Evaluating the causes and prevention of human cancer
Dr K. Straif, IARC
The role of chemical pollutants, radiation and other key environmental factors in the etiology of cancers
Dr J. Schüz, IARC

	Discussion and way forward: research and prevention priorities in relation to environmental factors
15:45–17:15	Lifestyle factors of major importance in the Region *Chairs: Dr A. Hussein and Dr R. Swaminathan* Changing lifestyles and cancer risk *Dr P. James, International Association for the Study of Obesity, United Kingdom* Rising burden in the Region of cancers associated with obesity and physical inactivity *Dr I. Romieu, IARC* Challenges in tobacco control *Dr Samer Jabbour, WHO EMRO* Regional reflection *Discussant: Dr R. Malekzadeh, Teheran University of Medical Sciences, Islamic Republic of Iran* Discussion and way forward: research and prevention priorities in relation to lifestyle factors
17:15–17:30	Re-cap and close of the first day

Theme 3 – Screening and early detection for priority cancers

09:00–09:30	Screening and early detection *Chairs: Dr A. Al Zahrani and Dr R. Camacho-Rodriguez* Implementation of national programmes for screening and early-detection of common cancers – challenges and opportunities *Dr R. Sankaranarayanan, IARC*
09:30–11:00	Breast cancer Current status of breast cancer screening in the Region: requirements and uncertainties *Dr A. Miller, University of Toronto, Canada* Regional reflection *Discussant: Dr Nada Alwan, University of Baghdad, Iraq* Discussion and way forward: cost effective approaches and research priorities
11:00–12:15	Colorectal cancer Current status of colorectal cancer screening in the Region. Is there a need for screening programmes for colorectal cancer? *Dr R. Sankaranarayanan, IARC* Regional reflection *Discussant: Dr Kakil Rasul, Qatar* Discussion and way forward: cost effective approaches and research priorities
12:15–13:30	Infection-related cancer Prevention of infection-related cancers: a focus on HPV and HCV *Dr S. Franceschi, IARC* Regional reflection Discussion and way forward: cost effective approaches and research priorities

14:30–16:00	Cancer survival in the Region *Chairs: Dr S. Franceschi and Dr A. Miller* Survival as an indicator of health services efficiency in early detection and treatment: availability of data on survival *Dr R. Sankaranarayanan, IARC* Cancer survival priorities in the short-medium term (next 5 years) gaps and how they can be addressed *Dr R. Swaminathan, Cancer Institute, India* Regional reflection *Discussant: Dr M. Al Nsour, EMPHNET/University of Glasgow and IARC, Jordan* Discussion and way forward: Improving evidence on cancer survival toward action to reduce mortality
16:30–17:15	Summary and key points from the first two days *Chairs: Dr A. Alwan, Dr C. Wild* Restating the objectives of the meeting and outlining what is expected from the participants the following day Discussion

Next steps: Development of evidence-based recommendations and proposals of priority initiatives and research projects

09:00–10:30	Group work (3 groups) Theme 1: Cancer epidemiology and surveillance Theme 2: Cancer causation and prevention Theme 3: Cancer screening and early detection Outcome: Clear recommendations and next steps for countries and for WHO
11:00–13:00	Presentation of group work, discussion and formulation of a way forward in each of the three thematic areas
13:00–14:30	Summary and outcome statement

Annex 2

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