

## 4th INTERNATIONAL CANCER CONTROL CONGRESS

# Managing Population Health to Prevent and Detect Cancer and Non-Communicable Diseases

Heather Bryant<sup>1</sup>, Hai Rim Shin<sup>2</sup>, David Forman<sup>3</sup>, Vladimir Stevanovic<sup>4</sup>, Sohee Park<sup>5</sup>, Robert Burton<sup>6</sup>, Cherian Varghese<sup>2</sup>, Andreas Ullrich<sup>7</sup>, Catherine Sutcliffe<sup>8</sup>, Simon Sutcliffe<sup>1</sup>, and the ICCC-4 Working Group

### Abstract

The goals of cancer control strategies are generally uniform across all constituencies and are to reduce cancer incidence, reduce cancer mortality, and improve quality of life for those affected by cancer. A well-constructed strategy will ensure that all of its elements can ultimately be connected to one of these goals. When a cancer control strategy is being implemented, it is essential to map progress towards these goals; without mapping progress, it is impossible to assess which components of the strategy require more attention or resources and which are not having the desired effect and need to be re-evaluated. In order to monitor and evaluate these strategies, systems need to be put in place to collect data and the appropriate indicators of performance need to be identified. Session 2 of the 4th International Cancer Control Congress (ICCC-4) focused on how to manage population health to prevent and detect cancers and non-communicable diseases through two plenary presentations and four interactive workshop discussions: 1) registries, measurement, and management in cancer control; 2) use of information for planning and evaluating screening and early detection programs; 3) alternative models for promoting community health, integrated care and illness management; and 4) control of non-communicable diseases. Workshop discussions highlighted that population based cancer registries are fundamental to understanding the cancer burden within a country. However, many countries in Africa, Asia, and South/Central America do not have them in place. A new global initiative is underway, which brings together several international agencies, and aims to establish six IARC regional registration resource centres over the next five years. These will provide training, support, infrastructure and advocacy to local networks of cancer registries, and, it is hoped, improve the host countries' ability to assess and act on cancer issues within their jurisdictions. Multiple methods of programme evaluation were presented across workshops, but all were attuned to both the resource base and the specific questions to be addressed. Where innovative strategies were being tested, customized evaluation strategies should be undertaken. Where programmes are well-developed and data is being collected for evaluation, there is the opportunity for sophisticated analytical methods to be used to pinpoint specific areas or delivery sites for future quality improvement. Finally, unique opportunities now exist to integrate the strategies developed in cancer control and evaluation with those under development for other non-communicable diseases. This area will likely be one for future development.

**Keywords:** Registries - screening and early detection - models of care - control of non-communicable diseases

*Asian Pacific J Cancer Prev*, 13, ICCC-4 Supplement, 13-22

### Introduction

The goals of cancer control strategies are generally uniform across all constituencies, regardless of the population size, resource base, or point in the cancer control continuum any strategy may address. Almost universally, they address the threefold aims of a reduction in cancer incidence, a reduction in cancer mortality, and an improvement in the quality of life for those affected by cancer. While these goals may seem decidedly ambitious, a well-constructed strategy will ensure that all of its

elements can ultimately be connected to one of these three main visionary goals.

When a cancer control strategy is being implemented, it is essential to map progress (or lack of it) towards these goals; without mapping progress, it is impossible to assess which components of the strategy would benefit from more attention or resources, and which other components may not be having the desired effect, and therefore need re-evaluation before further investment of human and financial resources. The inherent difficulty in doing so, however, lies in the very magnitude of their ambition: in

<sup>1</sup>Canadian Partnership Against Cancer, Canada, <sup>2</sup>WHO Western Pacific Regional Office, Philippines, <sup>3</sup>IARC, France, <sup>4</sup>OECD, France, <sup>5</sup>National Cancer Center, Korea, <sup>6</sup>Monash University, Australia, <sup>7</sup>World Health Organization, Switzerland, <sup>8</sup>Johns Hopkins Bloomberg School of Public Health, USA \*For correspondence: Heather.Bryant@partnershipagaincancer.ca

order for a strategy to be effective, many elements need to be addressed, and, for many of the interventions, the ultimate impact may not be realized until substantial time has elapsed. This is particularly true of those interventions that address a reduction in cancer incidence, where even very effective risk reduction strategies (such as a reduction in tobacco use) will not result in reductions in incidence for many years, due to the lapse in time between exposure to a carcinogen and the ultimate development of clinically recognized disease.

The need for development of strong indicators of performance is not unique to the cancer system; the same imperative exists in other parts of the health system, and has been addressed in various ways. A particularly helpful construct for this process is the development of a hierarchy of indicators, from the most high level (termed “big dot” indicators in Heenan’s work (Heenan, Khan et al., 2010) on hospital indicators), through drivers, or intermediate indicators, followed by more detailed program-level indicators that may be germane to the delivery of a specific service or program. The “big dot” indicators in Heenan’s model are those that may be considered by a hospital board, the drivers may be the territory of senior management personnel within the hospital, and the process measures within each service may fall into the domains of each employee in their own particular part of the system. Similarly, each component of the cancer control system may look at different levels of indicators, with measures of incidence and mortality being used as the “big dots”. Known drivers, such as tobacco use rates or availability of key screening or therapeutic interventions, could be the intermediate level indicators, while the small dots may include measures of program performance (the time it takes for the participant to receive results, for example). This paper was prepared to provide an overview of initiatives designed to assess cancer control systems, either at the level of a national overview, or within a context that is closer to the delivery of cancer control interventions. As will be evident, some initiatives are moving forward with the development of routine methods to be used in either the development or reporting on the functioning of cancer control systems. However, in most cases, the evaluations of system functioning are developed as individual studies with data collection specific to, and within the resources of, the programs they are designed to evaluate. The ability to make strides in assessment and measurement of impact, even as programs are designed and rolled out over a wide range of contexts, will be highlighted through the exposition of initiatives at several levels.

## Methodology and Objectives

ICCC-4 Session 2 on “Managing population health to prevent and detect cancer and non-communicable diseases” comprised two plenary presentations providing an overview of the subject matter as a means of preparing Congress participants for participating in four, small group, interactive workshops on relevant topics to be addressed in greater depth. Selected abstracts providing particular insights into the topic area were presented orally by the authors in each of the workshops. Workshop

leaders were encouraged to conclude their workshops with a brief set of prioritized recommendations to identify the key directions for further development of interventional activities beyond this Congress.

The objectives of this session were to explore the necessary elements for planning and monitoring cancer control systems. The following four issues were selected for in-depth discussion in the workshops:

1. What role can cancer registries play in cancer control?
2. What information is needed to plan and evaluate screening and early detection programs?
3. Are there alternate models for promoting health and illness management?
4. How can we integrate cancer control planning into the national non-communicable diseases (NCDs) prevention and control agenda?

## Plenary Presentations

### *1. Findings From the OECD Systems of Cancer Care Study : Vladimir Stevanovic and Rie Fujisawa*

The OECD Systems of Cancer Care study was undertaken in order to explain possible causes of variation in the performance of national cancer systems. The objectives were to explore the characteristics of systems of cancer care and to assess the relative effect of the main system domains, in particular governance, on survival outcome of patients with breast, cervical, colorectal and lung cancers.

Data on cancer policies have been collected through a network of national cancer experts from 38 countries. This was done through a specific questionnaire and supplemented with information obtained via a structured interview process. Cancer survival data were obtained through the EUROCARE-4 study, US SEER programme and OECD data collection. Relations between the main health system domains (i.e., resources, process quality and governance) and cancer survival were investigated by fractional polynomials modeling.

The preliminary results indicate that a considerable proportion of variation in cancer survival can be explained by governance in addition to resource input and process quality. The better performing countries have established cancer policy priorities, implemented key elements of cancer control, introduced integrated care processes and actively worked on the improvement of service delivery. Survival is strongly related to country’s income levels, investment in technology and innovative cancer drugs, and available human resources and infrastructure. The relationship between resources and outcomes is weaker once a reasonable resourcing level has been reached. Certain quality characteristics, including access to screening, waiting time and the reported availability of optimal treatment in terms of combined surgery, chemotherapy and radiotherapy, appear to be most robust descriptors of evidence-based execution of cancer care. The results of this work shed light on the underlying features of cancer care systems that are associated with cancer outcome variations and suggest which system

characteristics are particularly important. The final report, including detailed information about different aspects of national policies, will be published in 2012.

## *2. The Global Initiative for Cancer Registration in Low- and Middle-Income Countries (GICR): David Forman*

High-quality population-based cancer registries (PBCR) collect and classify information on all new cases of cancer in a defined population, providing accurate data on incidence and survival. This information is vital for national governments for the purposes of assessing the burden of cancer in the community, for planning health services and as a foundation for evaluating the impact of cancer control strategies.

There remains a notable lack of high-quality PBCR in Africa, Asia and Central and South America. Despite the overwhelming need, only small proportions of the populations in these continents are adequately monitored by effective PBCR. Only about a third of the countries in the three continents have some form of PBCR meeting standards suitable for planning purposes. Overall it is estimated that approximately 1, 4 and 6% respectively of the populations in these three continents are resident within areas covered by PBCR included in the most recent volume of *Cancer Incidence in Five Continents*, the IARC reference publication on the burden of cancer worldwide (IARC 2012).

While fully recognising the many difficulties involved in reliable disease surveillance in these regions, it is essential that this situation be radically changed. Appropriate phased interventions over the next 5-10 years are required to bring about substantive increases in the number, quality and population coverage of PBCR in lower resource settings.

A new global initiative is underway to effect this level of change. Several international agencies are involved in the initiative which seeks, among other objectives, to establish six IARC regional registration resource centres (hubs), over the next five years. These will provide training, support, infrastructure and advocacy to local networks of cancer registries.

## **Workshops**

### *1. Registries, Measurement, and Management in Cancer Control: Leads: David Forman and Sohee Park*

Accurate information on cancer incidence and type is vital for the development and subsequent impact assessment of cancer control policies and programs. The diversity of cancer types in different countries, even when those countries may have the same level of economic development, highlights the requirement for cancer control activities to consider the pattern of cancer and the available resources in any specific population. Given that different cancers may be variably amenable to primary prevention, early detection, screening and treatment, it is essential to understand the burden of different cancers as a rational basis for control activities. In lower-income settings, hospital-based registries can be an important step towards

the establishment of PBCRs, but it is only the latter that provide an unbiased description of the cancer patterns and trends in defined catchment populations.

As noted above, there are too few high-quality PBCRs in Africa, Asia and Latin America. A first priority is to establish representative PBCRs covering those populations not currently monitored. New registries might be most effectively established to cover well-defined representative regions rather than an entire country.

Once cancer registries have been established and are reliably reporting cancer type specific incidence rates in their respective populations, a second priority would be for registries to collect follow-up information (deaths among cancer patients) in order to estimate survival rates and, at least for selected cancers, information on the stage of disease at diagnosis. According to the resources available to a registry, many more variables could be collected regarding risk factors (e.g., HIV status), diagnosis of disease, co-morbidities and treatment. In some countries, such information could be obtained by linkage to other routine datasets (e.g., HIV registries) while elsewhere, especially in high-income settings, linkage to biobanks or cohort datasets is also feasible. The presentations that follow provide information about the operation and utility of registries in support of cancer control in three very different economic and cultural settings (Canada, Sri Lanka and Iran). However, the core of any effective PBCR involves the comprehensive capture of a basic dataset about all cancer patients within a defined community. Such information can provide a major part of the evidence base for appropriate control planning. In this context, it needs to be recognized that a cancer registry is a cost effective tool to facilitate appropriate plans that will provide the maximum value for money.

### Abstract 1: Implementing a Provincial Cancer Performance Measurement Program in Saskatchewan, Canada *Jon Tonita, Riaz Alvi*

The Saskatchewan Cancer Agency (SCA) is responsible for the provision of cancer treatment, prevention, early detection programs, research, and education services to residents in the province of Saskatchewan, Canada. As Canada moves forward with the implementation of the Canadian Strategy for Cancer Control through the establishment of the Canadian Partnership Against Cancer, there has been an increased emphasis on evidence-based evaluation and decision making. By measuring outcomes and establishing performance indicators we can answer the question: "is the SCA really doing the right program activities to bring about the outcomes that are needed by SCA patients and clients?" To help answer this question, the SCA has access to a wealth of data available internally and externally including the provincial cancer registry, electronic health records, screening program databases for breast cancer, cervical cancer and colorectal cancer, and other databases. Although the SCA is data rich, we have been traditionally information poor. To strengthen our use of available data, the SCA has established a Performance Measurement Department to carry out analyses and interpretation of performance related cancer control data. The process by which the SCA: 1) decided to establish

this function within the SCA, 2) how the new department was initially brought together, and 3) how the department will proceed with performance indicator development, were presented. The lessons learned throughout this development and implementation process were also presented.

Abstract 2: Review of Country Specific Evidence to Strengthen Early Detection of Breast Cancer in Sri Lanka  
*Suraj Perera, Neelamani Paranagama, Anuradhini Kasthuriratne*

**Objective:** Evaluate the burden of breast cancer in Sri Lanka with the goal of improving services at the regional and national level. **Methods:** A structured review of data from cancer registries in Sri Lanka was conducted to extract the evidence related to the burden and early detection of breast cancer. **Results:** Cancer registry information in Sri Lanka clearly showed an increasing incidence of breast cancer among females during the last 20 years, giving an age standardized incidence rate of 18.4 /100,000 in 2005. From 2000 to 2005, approximately 25% of newly detected female cancers each year were breast cancers. When the age specific breast cancer incidence rates were compared during 2000- 2005, the highest incidence rate was reported among women 50 - 69 years of age. The majority of breast cancers were detected in more urbanized districts in Sri Lanka. According to the cancer mortality data, of all cancers affecting women in 2001, breast cancer had the highest age standardized mortality rate at 4.7/ 100,000. According to the 2006-2007 Annual Report on Well Women Clinic Programme, clinical breast examinations were conducted for 72,799 women in 2006 and 108,150 women in 2007 throughout the country. Breast abnormalities were detected among 1343 and 1830 women in these two years, respectively. Information on the number of confirmed breast cancers was not available. In a study conducted in one administrative district, it was revealed that the overall coverage of the breast cancer early detection programme was 2.2%. A retrospective analytical study in a single surgical unit revealed that 50% of breast cancer patients were diagnosed in advanced stages and 58% of breast cancer patients had a delay in seeking treatment more than 3 months. **Conclusions:** Since breast cancer patients are still presenting in advanced stages and there is very low coverage of breast cancer early detection, awareness activities for health professionals and the public, as well as regular monitoring and evaluation of the programme, need to be conducted.

Abstract 3: National Comprehensive Cancer Control Program (NCCCP) with Multi Dimension Point of View, Iran as an Example  
*Mohammadesmaeil Akbari, Maryam Khayamzadeh, Atieh Akbari, Koorosh Etamad, Ayad Bahadori, Rashid Ramezani*

**Objective:** Cancer is an important health issue and a heterogeneous disease and there needs to be a comprehensive program for its successful control in each country. The preparation of the NCCCP for the Islamic Republic of Iran will be discussed as an example of strategy development and implementation. **Methods:** Based on research conducted at the Cancer

Research Center in Iran, data were analyzed in multiple dimensions, including epidemiological aspects, social determinants, ethnicity and geographical variation, and their effect on the outcome of cancer management. In addition, psychological and spiritual data and their effect on the NCCCP were analyzed. **Results:** Cancers are the third cause of death and the fourth for burden of disease in Iran. Age specific rates of cancers increased steadily from 2003 until 2007, with greater increases observed in men. Five year prevalence estimates for breast, colorectal and gastric cancer are around 30,000, 14,000, and 8500, respectively. Overall 5 year survival for common cancers such as breast, stomach, colorectal, ovary and thyroid are 71%, 12.8%, 41%, 61%, and 88% respectively. The research also highlights the effect of psychological and spiritual elements in overall survival of cancer cases and even in incidence and prevalence. Epidemiological data are the main source of data to reflect the cancer status in each country and were taken into consideration in preparing an NCCCP. Cancer trends show growth of 8 per 100,000 over the last five years. Development of strategies to deal with this inexorable increase in cases should be an important element of any NCCCP. The incidence rate in Iran is approximately 1 per 1000 and 1/5th the rate observed in European or North American countries. While cancers are fourth in burden of disease in Iran overall, the incidence and burden of cancers vary significantly among the provinces. Given these differences, the NCCCP in Iran may be different from those of other countries, and should contain specialized provincial activities rather than a uniform strategy in comprehensive cancer control. **Conclusions:** Each NCCCP should be developed in relation to the burden of disease in that country and should take into account the different epidemiological, social, economical, psychological and spiritual patterns.

**Summary for Workshop 1**

- The three presentations provided examples of the use of registry (and other related) data in Canada, Iran and Sri Lanka – settings with varied levels of economic and registry development. All focused on the requirements for bringing together multiple datasets to fully understand the situation and context. These examples illustrated how data can inform control plan formulation (Iran), promote early detection of breast cancer (Sri Lanka), and evaluate utilisation of chemotherapy according to guidelines (Canada).
- Expanding datasets to capture clinical information will add value to utility of registry data once core incidence data are reliably captured.
- By assisting in planning decisions and priority setting in cancer care, opportunities are provided to demonstrate that resources invested in a registry can be highly cost-effective investments.

## 2. Use of Information for Planning and Evaluating Screening and Early Detection Programs: Lead: **Heather Bryant**

The implementation of organized population-based screening programs is in various stages within different countries. Where resources have allowed, and health care systems have developed organized strategies, population-based programs have routinely integrated quantitative evaluation plans within their frameworks. However, it is frequently necessary to build specific evaluation strategies to answer questions that are either not evaluable within the program structure, or to address specific areas of quality performance in more detail. The presentations in this workshop addressed the use of a case-control study to examine the reach and effectiveness of a nationwide program, the implementation of a population survey to assess the needs of specific sub-populations about screening, and the development of sophisticated statistical methods to examine the relative quality performance of several municipalities within an overall program.

Abstract 1: Evaluation of the Nationwide Cervical Screening Programme in Thailand: a Case-Control Study  
*Chananya Kasinpila, Supanee Promthet, Donald Parkin, Peter Sasieni, Patravoot Vatanasapt*

**Objectives:** To evaluate the effectiveness of the cervical cancer screening programme in northeast Thailand in the prevention of invasive cervical cancer. **Methods:** A hospital-based case-control study was carried out in four tertiary hospitals in two provinces of northeast Thailand. Subjects were women in the 30-64 year age group, who were residents in northeast Thailand. A total of 130 women with a diagnosis of invasive cervical cancer were compared with two groups of controls: a) hospital controls and b) hospital patient companions. Information on risk factors for cervical cancer and history of screening by cytology (Pap smear) were collected using a structured interview. **Results:** 80% of control subjects reported having had a Pap test in the past, and some two thirds within the 3 years before interview. There was a significant protective effect for multiple (6+) previous screening tests as was reported in 20% of controls. When women who had tests less than 6 months prior to the study were excluded, there was a strong, significant protective effect of the number of tests (for 1-5 tests: OR= 0.45 95% CI= 0.25 to 0.84, and for 6+ tests: OR= 0.29 95% CI= 0.11 to 0.82). Tests carried out 1-2 years and 3+ years before diagnosis were associated with an OR of 0.27 (95% CI= 0.13-0.56) and 0.42 (95% CI= 0.20-0.88) respectively. **Conclusions:** The cervical screening programme in northeast Thailand has achieved excellent coverage and is preventing cervical cancer. Women who have been screened multiple times are at substantially lower risk than those only screened a few times suggesting that the quality of the screening could be improved.

Abstract 2: A Survey of Risk Perceptions, Beliefs, Knowledge and Screening Practices of Korean Americans Concerning Colorectal Cancer: *Kyeung Mi Oh, Gary Kreps, Jungmi Jun, Wonsun Kim*

**Objective:** Cancer is the leading cause of death for Korean Americans (KAs). Colorectal cancer (CRC) is one of the most commonly diagnosed cancers and the leading cause of death for KAs. Low screening rates of KAs may contribute to these high death rates. KAs had the lowest CRC screening rate among all Asian American subgroups. However, little is known about the factors that explain KA's colorectal cancer screening behaviors. This study examines (1) KAs' CRC screening behaviors and (2) specific antecedents of their colon cancer screening behaviors by conducting a KA community based survey. **Methods:** Based on the Health Belief Model, we examined knowledge about colon cancer, related beliefs, risk perceptions, and other factors in association with colon cancer screening behaviors. Data for this study were gathered with a cross-sectional, community-based survey conducted in the Washington, DC metropolitan area as part of the first program of research to examine the health and cancer information needs and cancer screening practices of KAs. The survey, based on the HINTS instrument, was translated into Korean. The study population included 254 KAs aged 40 years and over without a history of colorectal cancer. The study outcome variable was adherence to CRC screening guidelines. **Results:** Significant differences in adherence to CRC screening guidelines were found in different age groups, based upon length of US residence, proportion of life in US, health insurance and number of visits to health care. Knowledge about CRC screening tests and recommended age for screening were significantly associated with adherence to CRC screening. 'Haven't had problems/no symptoms' and 'doctor didn't order it/didn't say I needed it' were the most frequently answered barriers to CRC screening. **Conclusions:** Implications were drawn from this research for developing communication intervention programs to promote CRC screening and early detection for KAs.

Abstract 3: Assessment of Quality Indicators of Cancer Screening in Osaka, Japan: An Application of Funnel Plots  
*Yuri Ito, Tomio Nakayama, Takahiro Tabuchi, Akiko Ioka, Isao Miyashiro, Hideaki Tsukuma*

**Background:** Cancer screening programmes (stomach, lung, colorectum, breast and cervix) were initiated in Japan in the 1980s. These programmes are implemented at the municipal level, but do not work effectively, because they do not identify individuals in the target population and do not use a call/recall system. Furthermore the management of screening varies between municipalities. In Osaka, we have collected data on quality indicators (QIs) for cancer screening (such as attendance rate, positive rate, compliance of diagnostic test and positive predictive value) and reported the results annually since 1987. We applied funnel plots to assess QIs of cancer screening as quality assurance. **Methods:** It is difficult to evaluate the difference in point estimates of QIs, because of the wide variation in the population size of municipalities in Osaka (from 6,000 to 800,000). We used a funnel plot to assess QIs for colorectal cancer screening for each municipality in Osaka. The funnel plot can consider the difference in population size and avoid spurious ranking of point estimates. **Results:** For compliance of diagnostic

testing, when we used the average of Osaka prefecture (48%) as a grand mean ('target') in a funnel plot, a few municipalities fell in the lower 95% confidence interval. However, when we used the acceptable limit (70%) set down by the government as a 'target', more municipalities fell in the lower 95% confidence interval. For positive rates, when we used the average of Osaka (8%) as a grand mean, a few municipalities fell in the higher 95% confidence interval but when we used the acceptable limit (7%) as a 'target', more municipalities fell in the higher 95% confidence interval. **Conclusion:** The funnel plot is a useful tool to evaluate QIs of cancer screening. It can identify the outlier municipalities which have poor quality of cancer screening.

### Summary for Workshop 2

- Presenters covered a range of examples for developing indicators of knowledge/awareness/behaviors so that programs could be developed, and using indicators/statistical methods to evaluate programs.
- The appropriate evaluation tools to be used in screening programs are dependent upon the gaps that need to be addressed, and on the level of data available within programs; where program data cannot address all quality questions, supplemental studies, such as case-control studies, can be used to inform progress.
- The key issue discussed was the ongoing link between programs and impact, and using indicators to ensure that programs are having the desired effect: this requires active planning for future evaluation at the time of program development, and as rollout continues.

### 3. *Alternative Models for Promoting Community Health, Integrated Care and Illness Management:* Lead: **Robert Burton**

In many lower-middle income countries a comprehensive health care system that can promote community health, integrate care and manage illness does not exist for the control of cancer. For example, in order to rapidly reduce cancer mortality for a population by detecting cancers which are more curable if diagnosed early, all citizens must have access to primary health care which is available, affordable and competent, and secondary health care where patients detected with possible cancers in the community can be referred for diagnosis and treatment that is also available, affordable and competent.

Much primary prevention of cancer can be done via government legislation and regulation without the involvement of community health care professionals, for example taxing cigarettes, but primary prevention interventions which require a health conscious community will probably not meet expectations if the community

health care professionals are not skilled and supportive (e.g., vaccination against infectious cancers). This workshop, therefore aimed to explore models for promoting community health, integrated care and illness management for cancer where the kind of comprehensive primary and secondary health care system described above does not exist.

Cancer prevention interventions based in primary schools are not dependant on a functional medical health system and offer a promising opportunity to begin prevention activities at an early age and disseminate prevention messages into homes and communities. Two experiences in primary prevention of cancer, in addition to the oral presentations, were pre-chosen to stimulate discussion in the workshop and were examined for sustainability and outcomes:

1. WHO China urban schools randomised trials: two randomised controlled trials (RCT) in Chinese primary schools which tested 2 different intensities of a range of strategies to prevent and reduce existing obesity in children aged 5-10 years were discussed. The importance of involving the parents and staff in changing the school's nutrition and physical activity and targeting overweight and obese students and their parents was apparent from the success of the more intensive intervention RCT. The prevalence of obesity in primary school boys was reduced by one third in just one year in this RCT, whereas the lower intensity RCT did not have a significant effect on overweight or obesity (Wang, Kong et al., 2005).

2. The Australian Sunsmart program: a primary school sun protection prevention program. Individual schools have to obtain the participation of the school management, staff and pupils and the parents. School infrastructure improvements are mandatory with shade structures covering significant play areas, children must wear appropriate clothing to school and the school must enforce a "no hat no play" rule. Sunscreen must be available in classrooms. Most primary schools in Australia are now classified as Sunsmart by meeting these and other criteria (Cancer Council 2011). Research has shown that this program has had a significant impact on the sun protection behaviors of parents as well.

### Abstract 1: Physician Detailing to Encourage Cancer Screening: Donna Williams, Henry Nuss, Colleen Huard

**Objective:** Colorectal cancer (CRC) is the third most diagnosed cancer in the United States and the third leading cause of adult cancer deaths. Among U.S. women, breast cancer is the most common cancer and the second leading cause of cancer deaths. Early detection of both cancer types through proper screening mechanisms vastly improves treatment outcomes. However, screening rates in the U.S. are low; roughly half of adults are in compliance with CRC screening recommendations. Research shows that individuals are more likely to engage in screening behavior based on a physician's recommendation. However, many physicians fail to advise patients due to a lack of awareness of current guidelines. **Methods:** To address this issue in Louisiana, The Louisiana Comprehensive Cancer Control

Program began a physician detailing program in 2008. Modeled after the pharmaceutical company approach, staff promote the American Cancer Society screening guidelines through the delivery of brief, targeted messages to doctors and other health care providers at their own practice sites. Providers also received patient education materials to promote evidence-based best practices. Since the inception, a total of nine regional coordinators throughout the state have detailed more than 180 unique health care providers. Medicare data were obtained to measure the number of enrollees receiving the CRC screening and mammography. **Results:** In the period from July 1, 2008 to June 30, 2010, the CRC screening rates were consistently higher in intervention areas of the state as compared to control areas ( $df=1, F=4.0, p=0.05$ ). This was also true of the mammography rates in the very same areas of the country ( $df=1, F=4.3, p=0.043$ ). **Conclusions:** These preliminary results indicate that physician detailing may be a very promising way of encouraging physicians and their staff to recommend cancer screening procedures.

**Abstract 2: Changing Awareness and Behavior on Cancer Prevention: The Dissemination Effect of '10 Codes for Cancer Prevention' in Korea: Min Kyung Lim, E Hwa Yun, Jin Kyoung Oh, Eun Young Park, Bo Yoon Jeong, Eun-Cheol Park**

**Objective:** To raise public awareness about cancer prevention the campaign '10 Codes for Cancer Prevention' and its practical guidelines were carried out by the National Cancer Center and Ministry of Health and Welfare. The effects of the campaign and education were evaluated. **Methods:** In Korea, a nationwide population-based survey has been conducted annually for one thousand male and female adults since 2007. The questionnaire was developed based on the Precaution Process Adoption Model. Information on age, gender, marital status, education level, area of residence, occupation, income, religion, awareness about cancer being avoidable and the '10 codes for Cancer Prevention', as well as six different stages of attitude on adoption of each code, were gathered to evaluate awareness of the '10 Codes for Cancer Prevention' and the impact of the campaign on behavioral change. **Results:** With implementation of the nationwide campaign, the proportion who knew that cancer is avoidable increased from 84% in 2007 to 89% in 2010. Awareness on the necessity of each code has increased to more than 90%, excluding awareness on moderate drinking and safe sexual behavior. The proportion in the action stage of each code increased slightly each year. However, regular moderate intensity physical activity (33%), balanced diet (47.1%), and HBV vaccination (28.1%) were reported by relatively few people in 2010. Subjects aware of the '10 Codes for Cancer Prevention' were significantly more likely to be on the action stage for each code, excluding smoking cessation, after adjusting for the effects of other covariates ( $p<0.0001$ ). **Conclusions:** From our experience in Korea, cancer prevention campaigns that deliver core messages are definitely necessary for raising awareness about positive behaviors for cancer prevention, even if the higher level of awareness does not always translate into healthy habits.

### Summary for Workshop 3

- Primary school based interventions are promising but still require input, resources, and commitment to be sustainable.
- Monitoring of prevention programs is essential to determine their impact; the presentation from Korea provided an example of a well-designed and thorough monitoring system.

#### 4. Control of Non-Communicable Diseases: Leads: Cherian Varghese and Andreas Ullrich

The cancer control community has been on an uphill task to get the world's attention and action. In 2011, the United Nations General Assembly High Level Meeting on Non-Communicable Diseases gave the global mandate and commitment for the prevention and control of NCDs, including cancer (UNGASS 2011). No single chronic disease, such as cardiovascular disease, cancer, diabetes, or chronic lung diseases, can be tackled in isolation and by the health sector alone. NCDs, including cancer, require a response that cuts across a wide range of government ministries and departments, as well as involving civil society and non-state actors. This is where partnerships can make the difference in order to address the shared risk factors of NCDs, such as tobacco, unhealthy diet, physical inactivity and harmful use of alcohol. Implementing the tobacco convention, for example, requires – and is now getting – continued action from a variety of government departments, including health, environment, customs and excise, and education, as well as health workers and consumer organizations.

Cancer is still more a question of control rather than prevention. Health professionals in cancer, for example, still see their main focus on treatment and keep prevention at low profile. This has to change if a difference is to be made. Working with other NCDs to address the common risk factors can help the cancer community bridge this gap. Cancer might be more powerful as an advocacy issue and we need to get this in the forefront of our prevention efforts. On the care delivery side, a comprehensive set of preventive interventions need to be adapted to the needs and expectations of the various target audiences along the continuum of care and the life course approach. The WHO package of essential NCD interventions (PEN), which provides a set of cost-effective interventions in the primary health care setting for cardiovascular disease, diabetes and chronic lung diseases, also includes early detection of cancer (WHO 2010). Information systems, monitoring and surveillance and referral pathways can be shared resources for cancer control along with other NCDs. Synergies with existing but non NCD care delivery systems (e.g., in child and adolescent health, vaccine delivery, reproductive health and HIV care) can be developed in order to use all opportunities to address the broad spectrum of cancer prevention and early detection interventions needed (Narayan et al., 2011; Ullrich et al., 2011).

The objectives of this workshop were to: 1) identify

opportunities for integrated risk reduction for cancer and other NCDs; 2) consider options for a primary health care approach for the control of NCDs; and 3) discuss partnerships and joint resource mobilization.

Abstract 1: Profiling NCDs and Their Risk Factors in the WHO Western Pacific Region: Cherian Varghese, Marie Clem Carlos, Hai-Rim Shin, Han Tieru, Leanne Riley

Standardized and comparable data are essential for planning and evaluating policies and programmes for the prevention and control of non-communicable diseases (NCD). WHO released the Global Status Report on Noncommunicable Diseases in April 2010 and has made available a global picture on NCDs (WHO 2011). The profile of NCDs in the WHO Western Pacific Region is largely based on the global report and brings together the burden of non-communicable diseases, prevalence of their shared risk factors and information on the capacity of countries and areas stratified by income category. The profile presents a comparison of overall mortality due to NCDs, mortality from selected NCDs, morbidity of cancer and diabetes and population prevalence of risk factors, such as tobacco, alcohol, physical inactivity, obesity, high blood pressure and hypercholesterolemia. WHO has carried out a survey to assess the country capacity for addressing NCD prevention and control in 2010 and this profile also brings out the status and provides a comparison between the surveys of 2004 and 2010. Surveillance systems of NCDs are a challenge for low- and middle-income countries. Cause-specific mortality, disease registries, especially for cancer, and population prevalence of risk factors are essential epidemiological parameters that should be made available in a reliable and timely manner. Health system indicators and system capacity are critical for introducing and evaluating interventions. Policies relevant for NCD prevention and control in health and related domains also have to be kept under surveillance. This paper presented the collated data on NCDs, their risk factors, and country capacity for NCD prevention and control, and discussed the options for context specific approaches to advance surveillance and monitoring for NCD prevention and control.

Abstract 2: Barriers to Seeking Diagnosis and Treatment for Breast Cancer in a Selected Philippine Population: Victoria Medina, Maria Theresa Redaniel, Francisca Cuevas, Ma. Rica Lumague, Jane Baltazar, Emma Valencia

**Objective:** A study focusing on clinical breast examination (CBE) found that 34% of women referred to secondary care did not report to hospitals even when the cost of diagnosis and treatment were shouldered by a third party. This study aimed to determine reasons for non-compliance to referral. **Methods:** Fifty-eight women found with breast lump were interviewed using a questionnaire based on the health belief model. A 6-item Likert scale was used for the responses. Factor analysis with varimax rotation confirmed the groupings of variables. T-tests were used to compare average scores on the Likert scale. Logistic regression was done to determine independent factors affecting the outcome. **Results:** The barriers that

were associated with non-compliance were perceived inconvenience ( $p=0.015$ ), (lack of) knowledge (0.048), fear ( $p=0.089$ ) and number of barriers ( $p=0.000$ ). Factors affecting compliance were number of barriers (OR=2.17; 95% CI: 1.18; 3.97), and inconvenience (OR=1.53; 95% CI 1.0; 2.32). **Conclusions:** Non-compliance to referrals may be due to perceived inconvenience, fear and lack of knowledge. Efforts should be made to reinforce breast cancer awareness, and women should be encouraged to consult for possible cancer related symptoms.

Abstract 3: When the Hospital Goes to the Shopping Mall! Building Partnerships with Community Institutions in Cancer Control: David Kinyanjui, Lawrence Ikahu, Elizabeth Abongo

**Objective:** The growing burden of breast cancer in developing countries, compounded by poor access to screening and treatment programs, calls for urgent innovative cancer control interventions. This paper describes a low cost model of increasing cancer awareness and screening for breast cancer using clinical breast examinations by taking these services to shopping malls, churches and colleges. **Methods:** Clinical breast examinations, breast health education and appraisal of breast health were offered by doctors and nurses to women in randomly chosen partner shopping mall, churches and colleges. Publicity was done through announcements in public gatherings and print and electronic media. All women were taught how to perform a self breast examination during the encounter with a health care provider. Each woman filled out a self administered questionnaire on her breast health and risk assessment. Interactive talks on cancer prevention, screening, and control were given in all campaigns. **Results:** In this ongoing program, 10,000 women have been screened through clinical breast examinations in retail outlets over the last 36 months. 15% of the women presented with defined breast problems, such as lumps with or without

#### Summary of Workshop 4

- Opportunities for synergy among programmes for better integration of NCD risk factor control, disease prevention and palliation require identification. Other models of the control of communicable diseases, such as Malaria and TB, need to be considered for the control of NCDs including cancer given the significant commonality (80-90%) of attributable causal factors between cancer and other NCDs.
- Community preparation and adaptation of the health delivery systems is critical before starting screening and early detection programmes.
- The skills of personnel and capacity of primary health care for providing integrated prevention and early detection programmes for cancer and NCDs need to be enhanced. Available resources, such as traditional healers, and their potential role in the control of NCDs should be considered.



lymph nodes or bloody nipple discharge. 20% have done mammograms which they would not have otherwise done. Other health issues, including Pap smears, were also addressed. **Conclusions:** Breast screening in retail outlets is a sustainable, low cost method of promoting early detection, reaching out to women, and demystifying cancer. Clinical breast examinations are a suitable option for countries in economic transition, where incidence rates are increasing but limited resources do not permit mass routine screening by mammography.

## Conclusions

ICCC-4 Session 2 addressed the issue of planning for the success of cancer control programs, primarily screening programmes, through multiple means of system planning and evaluation. It was noted that population-based cancer registries, even if they exist only for representative regions within a country, are the most fundamental building block to the understanding of cancer control. Once these are in place, many other options for evaluation can be built into programs, and this is fundamental to ongoing evaluation and success. It may be necessary, however, if programs do not have sufficient resources for population-wide evaluation, or if questions on specific sub-populations or alternative methods of delivery are required, to develop specific studies to understand new or specialized ways of delivering services.

The following themes were identified for further action:

- *Population based cancer registries:* It was noted that these are fundamental to understanding the cancer burden within a country, and that several countries in Africa, Asia, and South/Central America do not have them in place. Appropriate phased interventions are required to address this. A new global initiative was described, which brings together several international agencies, and is aiming to establish six IARC regional registration resource centres (hubs), over the next five years. These will provide training, support, infrastructure and advocacy to local networks of cancer registries, and, it is hoped, improve the host countries' ability to assess and act on cancer issues within their jurisdictions.

- *Use of national data for national and international comparisons:* While the primary motivator for each country to collect cancer data is to assess their own cancer burden, and, it is hoped, the impact of interventions undertaken to address it, the presence of such data in different countries can be used for international comparisons, which may allow countries the ability to compare their cancer control systems and to learn from one another. The OECD presentation demonstrated that a good deal of the variation in cancer survival can be explained by governance, resource input, and process quality. The better performing countries have established cancer policy priorities, implemented key elements of cancer control, introduced integrated care processes and actively worked on the improvement of service delivery. The use of such comparisons can allow countries contemplating cancer

strategies to identify potential key components within their own resource bases, and offer opportunities for countries with such strategies to learn from one another's experience.

- *Development of indicators and methods of indicator data collection that are customized for the resource base and stage of delivery:* Multiple methods of programme evaluation were presented across these sessions, but all were attuned to both the resource base and the specific questions to be addressed. Where innovative strategies were being tested, for example, customized evaluation strategies should be undertaken. However, where programmes are well-developed and data is being collected for evaluation, there is the opportunity for sophisticated analytical methods to be used to pinpoint specific areas or delivery sites for future quality improvement.

Finally, unique opportunities now exist to integrate the strategies developed in cancer control and evaluation with those under development for other non-communicable diseases. This area will likely be one for future development.

## Acknowledgements

This manuscript is a synthesis of plenary presentations, workshop discussions, including selected abstract presentations, and recommendations for ongoing actions derived from Session 2 of the 4th International Cancer Control Congress (ICCC-4) held in Seoul, Republic of Korea, Nov 3-5, 2011 (for a full listing of abstracts and affiliations from the Congress please refer to <http://icccassociation.com/>). The ICCC-4 working group was made up of Simon Sutcliffe, Kavita Sarwal, Catherine Sutcliffe, and Helen Torrance from the International Cancer Control Association, Jin Soo Lee and Sohee Park from the National Cancer Center in Korea, and Malcolm Moore from the UICC Asian Regional Office. The opinions expressed herein represent those of the authors alone and do not necessarily represent the institutions and organizations by which they are employed.

## References

- Cancer Council (2011). SunSmart. Retrieved December 16, 2011, from <http://www.sunsmart.com.au/default.asp>.
- Heenan M, Khan H, et al (2010). From boardroom to bedside: how to define and measure hospital quality. *Health Q*, 13, 55-60.
- IARC(2012). CI5: Cancer Incidence in Five Continents. Retrieved January 16, 2012, from <http://ci5.iarc.fr/>.
- Narayan KM, Ali MK, et al (2011). Global noncommunicable diseases--lessons from the HIV-AIDS experience. *N Engl J Med*, 365, 876-8.
- Ullrich A, Ott JJ, et al. (2011). Long-term care of AIDS and non-communicable diseases. *Lancet*, 377, 639-40.
- UNGASS (2011). Political Declaration of the High-Level Meeting on the Prevention and Control of Non-Communicable Diseases. New York, United Nations General Assembly; Sixty-sixth session.
- Wang L, Kong L, et al (2005). Preventing chronic diseases in China. *Lancet*, 366, 1821-4.

*Heather Bryant et al*

WHO (2010). Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings. Geneva, Switzerland, World Health Organization.

WHO (2011). Global Status Report on Noncommunicable Diseases 2010. Geneva, Switzerland, World Health Organization.