

Implications of evidence-based understanding of benefits and risks for cancer prevention strategy

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As the second leading cause of death worldwide, cancer has posed enormous burden to patients, their families, and the society as a whole. The shift from cancer treatment to prevention, with an emphasis on coordinated multisectoral actions, has become a global trend.

The Hong Kong Cancer Strategy 2019¹ recently released by the Hong Kong SAR Government is the first holistic plan to upscale cancer prevention and control in Hong Kong. Target outcomes of the seven aspects in the Strategy are expected to be achieved by 2025. The key strategies set for cancer prevention include reducing risk factors, providing population-based cancer screening based on evidence, seeking early detection and diagnosis, and strengthening primary healthcare services in Hong Kong. Globally, the UK has long been featured by its expanding role of primary care in cancer prevention.² Meanwhile, primary care is also being promoted increasingly in mainland China,³ where a community-based longitudinal study is in progress. Patients' adherence to healthy lifestyles is being followed up within the context of family doctor team-led activities to prevent long-term conditions that share common risk factors with cancer.

To date, a substantial body of research evidence in primary prevention of cancer has confirmed that modifiable lifestyles such as tobacco consumption, alcohol use, poor diet, physical inactivity, and overweight and obesity are associated with cancers, such as colorectal, lung, breast, prostate, and liver cancer, that are prevalent locally and internationally. Infections, exposure to environmental and occupational carcinogens, and exposure to radiation are also important in cancer development. Public health education and health policies that encourage healthy (or discourage unhealthy) behavioural practices can greatly benefit the prevention of cancer. Evidence from the UK suggested that approximately 4 in 10 cancer cases could be prevented through behavioural changes alone.^{4–6} Furthermore, a widespread adoption of vaccination administration approach, such as universal vaccination against hepatitis B virus that has been part of the Hong

Kong Childhood Immunisation Programme for 30 years, has shown to be safe and most cost-effective in reducing the incidence of liver cancer. Most recently, eligible female primary school students of suitable ages will be provided with human papillomavirus vaccination, starting from the 2019/20 school year, as evidence supports this vaccination strategy as effective in reducing the incidence of cervical cancer.

Of equal importance is the secondary prevention of cancer that aims to detect cancer at an early stage when treatment is more effective. Cancer screening and early detection is inevitably a multi-determined field with complexity illustrated by the overriding concern on whether screening does more good than harm to individuals and to society. Recommendations and controversies on the benefits and downsides of prevention and screening strategy have been brought to the public's attention with regard to cervical cancer,⁷ colorectal cancer,⁸ and breast cancer.^{9–12} At present, the cervical screening programme and the colorectal cancer screening programme are the two territory-wide strategies regularised in Hong Kong based on current evidence.¹ It is recommended that Hong Kong individuals aged 50 to 75 years with average risk for colorectal cancer should consult their physicians to consider either one of the three screening modalities (faecal occult blood test, sigmoidoscopy, or colonoscopy) at different screening intervals. This is consistent with UK policy, where asymptomatic individuals who are at average risk and aged ≥ 50 years are provided with flexible sigmoidoscopy and faecal occult blood test.² On certain types of cancers such as breast cancer, most criticisms of the screening are related to unfavourable cost-effectiveness, false-positive (or false-negative) results, overdiagnosis, overtreatment, complications arising from subsequent invasive procedures, and psychological distress.⁹ Therefore, population-based mammography screening still requires more robust evidence to ascertain the screening appropriateness for asymptomatic women at average risk. For prostate cancer, recent evidence of its incidence and mortality highlights the potential influence of cancer screening and diagnostic ascertainment on geographic

variations.¹³ A local study conducted among Chinese patients with prostate cancer¹⁴ reported that patients who presented with cancer-related symptoms had more metastatic disease and poorer prognosis than asymptomatic individuals who were diagnosed by an opportunistic case-finding preventive approach. This implied the importance of screening methodology in secondary prevention of cancer.

In this issue of the *Hong Kong Medical Journal*, Cheng et al¹⁵ examined incidence and types of complications and associated predictive factors for transrectal ultrasound-guided (TRUS) biopsy in diagnosing suspected prostate cancer. In their retrospective cohort study, the authors demonstrated a satisfactorily low level of overall post-biopsy complications that required subsequent visits to emergency departments or hospital admissions. Their findings support the use of TRUS biopsy as a safe procedure for diagnosing suspected prostate cancer. Although these findings from Hong Kong may not be readily generalisable to Western populations, they are compatible with guidelines released by the British Association of Urological Surgeons and the British Association of Urological Nurses that support the use of TRUS biopsy in early detection given its widespread availability, affordability, and easy-to-learn procedure.¹⁶ The UK National Institute for Health and Care Excellence recommends that physicians should explain the risks and benefits to patients with adequate time for informed consideration.¹⁷ As suggested by Cheng et al,¹⁵ more evidence generated from a multicentre study in the wider Asian population would be valuable to offer a comprehensive picture of the magnitude of the complications.

A methodological highlight of Cheng et al's study¹⁵ is the investigation performed on the basis of a territory-wide centralised electronic patient record system in Hong Kong. In the UK, electronic clinical decision support has been in use for adult cancer. Primary care clinical computers are integrated with diagnostic software, which can automatically search the records for relevant entries with an absolute cancer risk estimated.² As advocated in The Hong Kong Cancer Strategy 2019, the application of big data analytics should be given a priority to examine clinical information for better management of cancer patients.

Improvements in cancer detection and patient outcome, with reduced mortality, are the prime goal of cancer prevention. Emphasis on the individuals' continuous engagement in their care should be placed across the cancer continuum with enhanced capacity and expertise support. Primary prevention remains the single most effective and efficient strategy in both clinical and community settings for many decades. Secondary prevention, despite holding the potential for reduced morbidity and mortality through

concentrated efforts in screening and early detection, requires more cutting-edge science and high-quality data to ascertain the appropriateness at each risk stratum. The government should be proactive in developing structured cancer screening programmes, based on up-to-date and robust evidence confirming that the benefits outweigh risks and harms, and ensure adequate coverage for the target population. Cancer screening interventions that remain controversial should be subject to individualised consideration and undergo rigorous risk-benefit assessments before being recommended for implementation on a wider scale. Meanwhile, emphasis should be made on individual preferences and shared decision making with sufficient discussions that detail the benefits, uncertainties, and possible complications to patients, their families and carers.

The future of cancer prevention is challenging but promising. We look forward to a growing body of scientific work that can further advance the understanding of benefits and risks arising from emerging strategies and novel technologies in cancer prevention. Knowledge accumulated and transferred from evidence-based studies will ultimately help achieve the vision and mission of The Hong Kong Cancer Strategy 2019.

Author contributions

All authors contributed to the concept or design; acquisition of data; analysis or interpretation of data; drafting of the article; and critical revision for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

The authors have declared no conflict of interest.

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