

# Lowering the burden of cancer in a middle-income country: The idealist versus the pragmatist approach

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The lifetime risk for a Malaysian man and woman of developing cancer is one in ten and one in nine, respectively, and the majority of cancer cases in Malaysia are detected late (stage III and IV). While Malaysia relies heavily on World Health Organization (WHO) recommendations on prevention and control of noncommunicable diseases, particularly cancer, we have taken a more pragmatic approach that matches our existing healthcare system, resources and population's needs. The key learning has been the importance of collaboration with a range of stakeholders and building strong partnerships that enable the best use of existing, and often limited, resources and provide opportunities for innovative solutions.

Malaysia is an upper-middle-income country with a population of approximately 32.7 million in 2019. Life expectancy at birth was estimated to be 74.5 years in 2019. Due to rapid urbanization, over 70% of Malaysia's population currently live in urban areas. By 2040, Malaysia is expected to be an "aged" society, with 14.5% of its population aged 65 or older (1). This converging issues have caused a rise in noncommunicable diseases (NCDs), such as cardiovascular diseases and cancer, adding pressure to the already stretched national health system (2).

Malaysia has a two-tier healthcare system. This comprises a tax-funded and government-administered public sector, which offers comprehensive, easily accessible primary-to-tertiary services subsidized for the population, as well as a thriving private sector (3). The majority of the public health services are centrally administered by the Ministry of Health (MOH), which also regulates the public and private healthcare services, pharmaceutical industry and food safety.

## The burden of NCDs and current strategies

In Malaysia, NCDs contribute to an estimated 73% of total deaths (4). Premature mortality from NCDs continues to be one of the major development challenges for this country. In response, the first National Strategic Plan for NCD (NSP-NCD) was developed in 2010 by a task force headed by the Director-General of Health Malaysia (5). This was aligned to mandates and resolutions of the World Health Assembly, in particular the 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of NCDs.

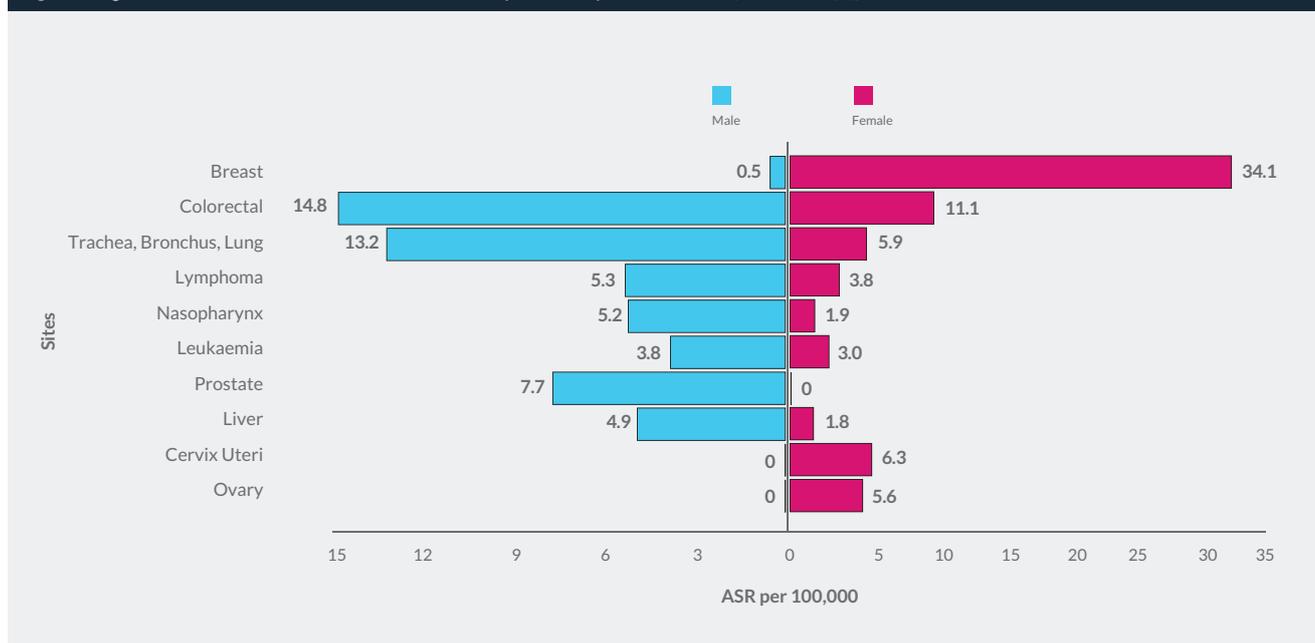
The subsequent NSP-NCD 2016–2025 was also in line with the Global Action Plan for the Prevention and Control of NCDs 2013–2020 (6). The NSP-NCD 2016–2025 was formulated to match the timeline of the nine voluntary global targets for NCDs. It clearly states the NCD targets for Malaysia by the year 2025 and outlined seven specific policies that were formulated to address specific NCD risk factors, utilising the World Health Organization (WHO) "best buys" and "good buys" interventions. In terms of governance, the implementation of policies and regulatory interventions are supported by a Cabinet Committee for a Health Promoting Environment, chaired by the Deputy Prime Minister. One of these specific policies addresses the prevention and control of cancers.

## The burden of cancer and the National Strategic Plan for Cancer Control Programme 2016–2020

The Malaysian National Cancer Registry Report 2012–2016 estimated that the lifetime risk of developing cancer for a Malaysian man and a Malaysian woman is one in ten and one in nine, respectively (7). This report found that almost 60% of cancers in Malaysia are detected late (stage III and IV) (7). A study amongst breast cancer patients in Malaysia found that poor breast health literacy, fatalistic fears and external decision-making pressures contributed to delay in presentation (8). Follow-up research is currently ongoing to further understand these barriers and enable more effective interventions.

The 10 most frequent cancers in the general population, males and females in Malaysia, for the period of 2012–2016

Figure 1: Age-standardized rate for ten common cancers by sex, Malaysia 2012–2016 (taken from (7))



are shown in Figure 1 (7). The three most common cancers among males in Malaysia were colorectal (14.8%), lung (13.2%) and prostate (7.7%); whilst the three most common cancers among females in Malaysia were breast (34.1%), colorectal (11.1%) and cervix (6.3%).

The overall objective of the National Strategic Plan for the Cancer Control Programme is to reduce the negative impact of cancer by decreasing the disease morbidity and mortality, and to improve the quality of life of cancer patients and their families (9). The strategies include prevention, screening, early detection, diagnosis, treatment, rehabilitation, palliative care, traditional and complimentary medicines, and research and development. In addition, the document acknowledges cross-cutting issues, such as quality of care, surveillance, and monitoring and evaluation mechanisms.

In Malaysia, opportunistic screening services are available for the following four types of cancer: breast, cervical, colorectal and oral cancer. These services are provided in public health clinics throughout the country. Cancer screening for high-risk groups for certain cancers, such as liver, prostate and nasopharyngeal cancer, are conducted as hospital-based screening services. These screenings are also available for a fee in the private setting. In addition, several cancer-related non-governmental organizations (NGOs) conduct breast, colorectal and cervical cancer screening in communities through outreach programmes using mobile screening facilities.

Here, we present Malaysia's approach to primary and secondary prevention of cervical cancer as a case study for the comparison between the strategies and measures that Malaysia has taken (the pragmatist) compared to WHO

recommendations (the idealist).

### The idealist

In 2013, the WHO issued a guidance note that formed part of the overall guidance on women's cancer (10). This document was aimed at senior policy makers and programme managers, providing a broad vision of what a comprehensive approach to cervical cancer prevention and control means. It outlined the complementary strategies for comprehensive cervical cancer prevention and control, and highlighted the need for collaboration across programmes, organizations and partners. There is a need to act across the life course using the natural history of the disease to identify opportunities in relevant age groups to deliver effective interventions (Figure 2) (10). The three key WHO recommendations to be implemented at scale in countries are: human papillomavirus (HPV) vaccination, screening and treatment, and treatment of cancer and access to palliative care.

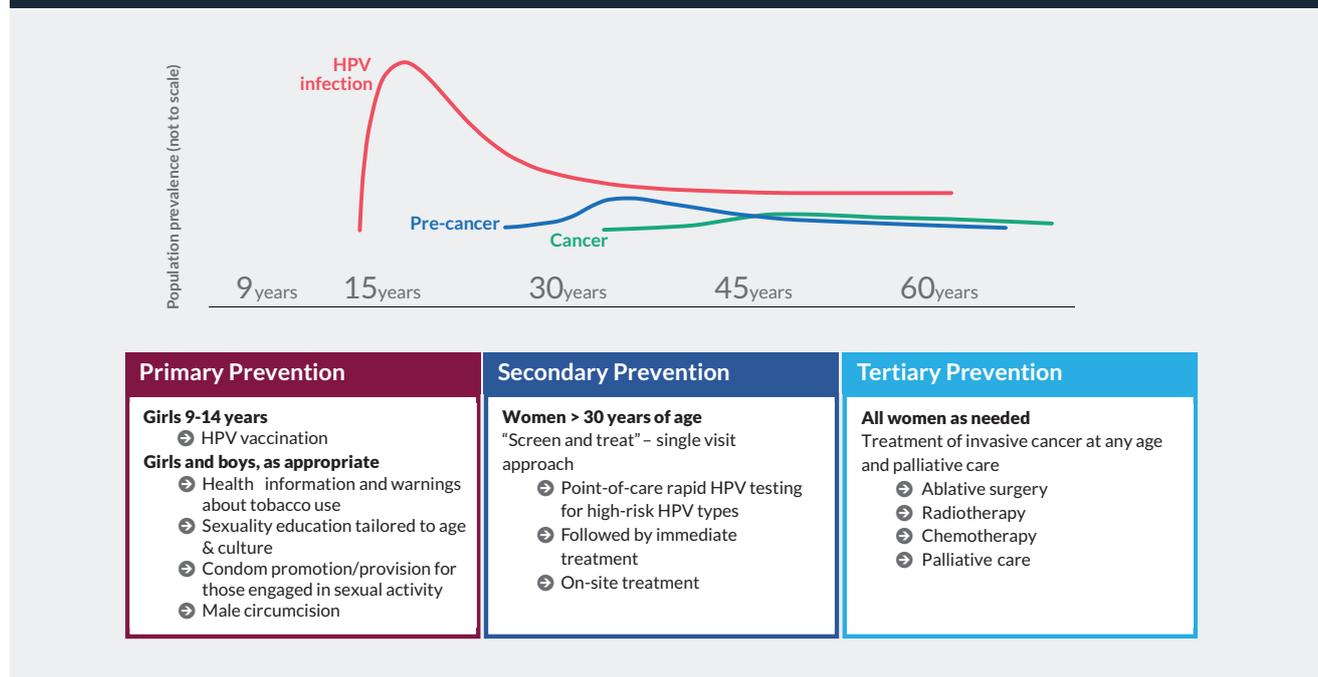
### HPV vaccination in Malaysia

The WHO's recommendations are (10):

- ➔ two doses for girls aged 9 to 14 years, minimum six months apart.
- ➔ introduce to multi-age cohort, aged 9 to 14 years (15 to 18 if feasible) in first year.
- ➔ three doses for girls 15 years and older, and for immunocompromized individuals.

The HPV Vaccination Programme in Malaysia was launched in August 2010 and was added to the National Immunization Programme (NIP), which provides selected vaccines free

Figure 2: Overview of programmatic interventions over the life course to prevent HPV infection and cervical cancer (taken from (10))



of charge to all citizens as a public health service (11). The programme used the existing school health services to target girls aged 13 years attending school. The school health service already provides a comprehensive package that includes learning disability assessments; health appraisals, including BMI monitoring, vision screening and thalassaemia screening; and health education. High rates of school enrolment for 13-year olds (96.0%) and retention of female students in secondary schools supported using the school health services (12).

From 2010–2014, each recipient received three doses of HPV vaccine at an interval of 0, 1 and 6 months. From 2015 onwards, two doses of HPV vaccine were introduced (0 and 6 months) following the more recent WHO guideline (13).

At the outset, several major challenges were identified, in particular, poor parental awareness and public confusion; perceived religious and cultural issues; and logistic issues that could delay or disrupt vaccine delivery (14). These were against our existing strengths that included a strong working relationship between MOH and Ministry of Education (MOE) resulting in a good school health services infrastructure and programme; and overall public trust in the NIP. The close working relationship between MOH and MOE enabled efficient coordination of related national policies and corresponding managerial and operational mechanisms (14).

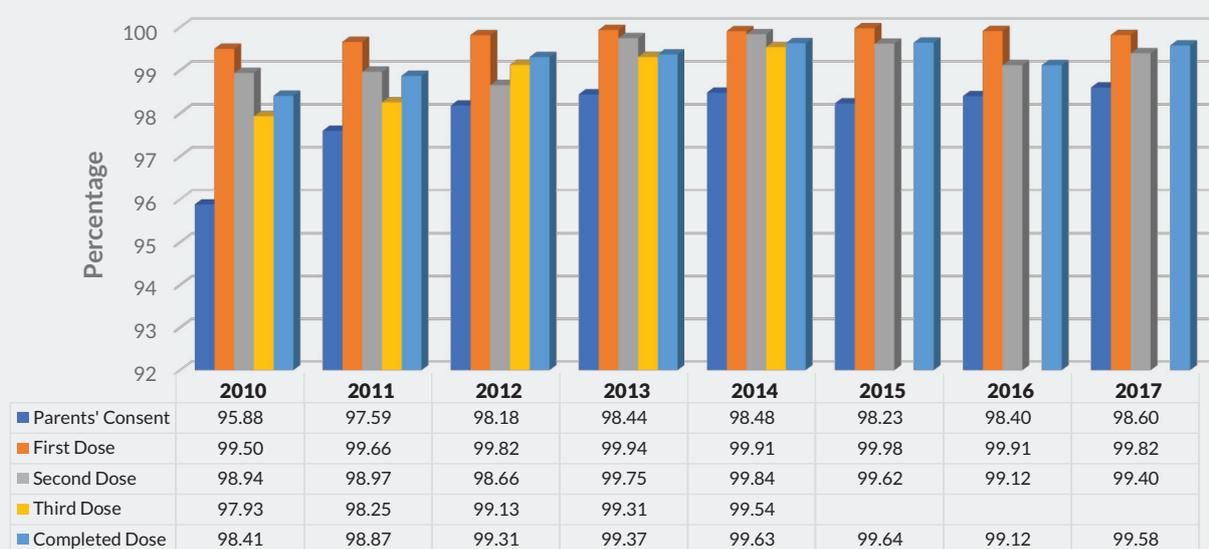
In addressing the challenges, several strategies were employed. First, strategic communication to parents and school children, who were provided with HPV vaccination information through various media platforms. Targeted media campaigns were started early for public awareness. The

campaign featured female students and the key underlying message was to “protect your daughter from cervical cancer”. A comprehensive website was created within the MOH’s MyHealth web portal and this website was linked to all promotional materials. A substantial budget was allocated to secure prime time advertisement spaces. Active media campaigns were sustained for two years from the launch of the vaccination programme. The messages were tailored to local cultural context, religion and information needs of parents, students and the general public to alleviate fear and misconception about the vaccine being new and to reinforce the vaccine’s safety (15).

Second, religious belief-related concerns were also actively addressed. MOH worked closely with the Malaysian religious authority to issue an Islamic ruling (fatwa) on HPV vaccination, addressing concerns about the halal status and the underlying importance and need for this vaccination programme.

Third, the MOH developed a detailed implementation guideline for the programme. The existing relationship between MOH and MOE facilitated obtaining voluntary parental consent through schools. School health nurses delivered talks on HPV infection, cervical cancer and HPV vaccination to the schoolgirls, followed by a health assessment. After the injection, the girls were observed for 20 minutes for any immediate adverse reactions and were subsequently given an Adverse Event Following Immunization (AEFI) monitoring form and vaccination card. All girls were advised to report and seek medical care in the event of any adverse reaction. The AEFI forms were later collected as per the guideline.

Figure 3: Parental consent and HPV vaccination rates in Malaysia, 2010 to 2017 (taken from (14))



Fourth, a robust monitoring and reporting system was also put in place, and this included rumour surveillance from both traditional and social media. A hotline was created at the early stages of implementation to immediately address public concerns. Active AEFI reporting was encouraged and the AEFI monitoring mechanism also had the co-benefit of increasing student and parental awareness of the vaccine and vaccination safety. All negative feedback and reports on HPV vaccination locally and internationally were closely monitored and addressed accordingly.

Lastly, the inclusion of HPV Vaccination into the NIP and the government's commitment to annual funding has ensured sustainability of the programme. Through a transparent national procurement mechanism, MOH secured competitive pricing for the vaccines. At the initial phase of implementation, there was a concerted effort by the private sector to assist MOH in overcoming vaccine transportation and storage constraints, particularly to hard-to-reach places in Malaysia.

In terms of the programme outcome in Malaysia, parental consent for HPV vaccination has been more than 95% from year one of the programme. Of those who consented, the rate of completion of three doses has been more than 98% (15). Population coverage has been more than 80% throughout implementation (Figure 3), despite a decline of four percentage points after a policy change in 2013 that restricted free immunization to public schools. Vaccine wastage has remained low (at 80 of 70,000 doses in 2010), as have adverse events following immunization, which have ranged from 0.06% to 0.45% (15).

### Screening for pre-cancer lesions in Malaysia

The WHO's recommendations are :

- women aged 30 to 49 years be screened at least once in their lifetime for cervical cancer, and re-screened every five years.
- HIV-positive women should be screened every three years.
- immediate treatment where possible.

Cervical cancer screening in Malaysia was introduced in 1969, targeting post-partum mothers in family planning programmes in several clinics using the conventional Pap smear screening method. In 1995, the Pap smear screening programme was expanded to women aged between 20 to 65 years. Opportunistic screening is offered by a variety of agencies (MOH, National Population and Family Development Board, university hospitals, private hospitals and clinics, Ministry of Defence and NGOs) but there is no formal registry or a centralized system of cytology laboratories.

The uptake rates are currently estimated to be around 25%, despite media campaigns and the availability of Pap smear services nationwide (16). One study reports that 48% of cervical cancer patients diagnosed at eight major hospitals in Malaysia had never had a Pap smear, while 95% had not had the test within the last three years (17).

A study on cervical screening in Malaysia identified both structural and patient-related factors that contributed to the low uptake (18). Specifically, these included patients' fear, embarrassment, low perceived benefits of screening, inconvenience of procedure (lack of time for clinic visit, discomfort caused by procedure), negative experiences

and low awareness (19). Healthcare-related barriers were lack of space and privacy, lack of trained human resources, and screening infrastructure and support systems. Deeper understanding of behaviours of the population and new or optimized screening methods are required in the context of low- and middle-income countries.

While Pap smear remains as a strategy, the MOH is currently in the process of securing the necessary funding from the Government to shift from Pap smear to self-sampling HPV DNA testing since it has the potential to increase cervical cancer screening rates. A study in Malaysia on the acceptability by women for HPV self-sampling found results that were consistent with other countries, but with some differences (20). More than 90% of women expressed willingness to do self-sampling in the future, however more than half were willing to do the self-sampling at the clinic rather than at home (20). The majority of respondents felt that self-sampling was easy to perform and acceptable.

Programme ROSE (Removing Obstacles to Cervical Screening) is a partnership between University Malaya of Malaysia and VCS Foundation of Australia (21). It is a novel approach to cervical screening that integrates the latest advances in self-sampling, HPV screening and digital health platforms to effectively respond to the needs of Malaysian women. It empowers women to take their own cervical screening sample and have the initial result sent to them via SMS that same day. A pilot implementation in 2018 found that 99% of women were willing to do ROSE again, 95% would recommend it to family and friends, and 94% preferred it to Pap smear screening (22). Reasons given were that ROSE was simple, quick, self-performed, enabled fast results, enabled receipt of results by phone and offered follow-ups and treatment.

## Conclusion

As an upper-middle-income country, Malaysia is well positioned to strengthen its response to the increasing burden of NCDs, particularly cancer. For cervical cancer particularly, Malaysia is aligned to the currently proposed 90-70-90 cervical cancer elimination targets by 2030:

- ➔ 90% of girls fully vaccinated with the HPV vaccine by 15 years of age;
- ➔ 70% of women screened with a high-precision test at 35 and 45 years of age;
- ➔ 90% of women identified with cervical disease receive treatment and care.

We must continue to retain vaccine uptake among female students of above 90%. It is also necessary for Malaysia to transition from Pap smear to HPV testing and to institute

a monitoring and surveillance mechanism to achieve 70% screening targets with 90% of abnormal screens being followed up.

While Malaysia often relies heavily on recommendations from WHO, we have taken a more pragmatic approach to match our existing healthcare systems, resources and acceptability of the population. There have been many lessons learned over the years, but the key learning was the importance of collaboration with a range of stakeholders and building strong partnerships. Such collaborations enabled the mobilization and best use of existing, and often limited, resources and provided opportunities for innovative solutions. ■

## Disclosure

*The authors have declared no conflicts of interest.*

## Author Contribution

*Feisul Idzwan Mustapha and Arunah Chandran: Paper concept, literature search, manuscript preparation and review.*

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