

# Overview of colorectal cancer screening programme in Malaysia

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## ABSTRACT

**Introduction:** Colorectal cancer (CRC) is the second most common cancer in Malaysia with 65% detected at stage III and IV. Despite the increasing incidence of cancers including CRC, Malaysia has yet to implement population-based screening for cancers. The objective of this paper is to review the strategic planning and implementation of the CRC screening program in Malaysia.

**Methods:** A desk review was conducted from August to October in 2018, to examine, review and describe the historical perspective, strategic planning and implementation of the current CRC screening program in Malaysia.

**Results:** The main policy documents related to CRC screening are the National Strategic Plan for Cancer Control Programme 2016-2020, the Clinical Practice Guideline for Management of Colorectal Carcinoma 2017, and the Implementation Guideline for CRC Screening in Malaysia 2014. Several papers have been published on the epidemiology of CRC in Malaysia. Between 2014 and 2018, 127,957 men and women were screened using immunochemical Faecal Occult Blood Test (iFOBT); 9.3% had positive iFOBT results and were referred for colonoscopy. For those who underwent colonoscopy, CRC detection rate was 4.1% and 13.9% for pre-malignant conditions. Barriers were identified along the continuum of screening process, including patient, provider, and system factors.

**Conclusion:** Although population-level organised screening programmes are preferable to opportunistic screening, the CRC programme in Malaysia was tailored to meet the needs of the population based on available existing resources. A well-mapped budget for the entire screening programme continuum, a strong partnership between stakeholders and an opportunistic screening strategy is crucial to address the rising incidence of CRC.

## KEY WORDS:

*Colorectal cancer; Malaysia; cancer screening; health system*

## INTRODUCTION

Mortality and morbidity from Non-Communicable Diseases (NCDs) are a main public health challenge for Malaysia, a

multi-ethnic upper-middle income nation in South East Asia. The National Cancer Registry in Malaysia reported that colorectal cancer (CRC) was the most common cancer in men (16.3%) and second most common in women (10.7%) after breast cancer.<sup>1</sup> The age-standardised incidence rate in men and women from 2007 to 2011 was estimated to be 14.6 and 11.1 per 100,000 population respectively. Unfortunately, 65% of the CRC are detected at late stages (Stage III and IV)<sup>1</sup> with an observed 5-year survival of 40.8%.<sup>2</sup> In Malaysia, there was also ethnic disparities in the incidence of CRC and mortality.<sup>2</sup> The high CRC burden is similar to other South East Asian countries such as Singapore,<sup>3</sup> Thailand,<sup>4</sup> and Philippines.<sup>5</sup>

Despite the heavy burden, findings on public awareness of CRC is mixed. A study on an urban Malaysian population found that 87.5% and 91.3% participants were aware that CRC is ranked as the top three cancer in Malaysia and that screening can detect early stages of CRC where treatment is most effective.<sup>6</sup> Another study conducted in the rural population found that level of awareness of CRC warning symptoms and signs across different ethnic groups were generally low.<sup>7</sup>

Population-based CRC screening through a faecal occult blood test was identified by the World Health Organization (WHO) as a 'best buy' for the prevention and control of NCDs.<sup>8</sup> The aim of CRC screening is to diagnose pre-malignancies such as colonic polyps or CRC at early stages in average-risk adults, when success rates of treatments and survival rates are higher. While colonoscopy is the gold standard for examining the bowel, there are evidence that screening via immunochemical Faecal Occult Blood Test (iFOBT) is cost-effective when offered to asymptomatic population.<sup>9,10</sup>

Despite the increasing incidence of cancers including CRC, Malaysia has yet to implement population-based screening for cancers. The National Cancer Control Blueprint 2008-2015,<sup>11</sup> which was endorsed by the Malaysian Cabinet in 2008 proposed for a nationwide CRC screening programme.

The objective of this paper is to review the strategic planning and implementation of the CRC screening programme in Malaysia. The paper focuses on CRC screening service delivery in primary care via iFOBT.

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## MATERIALS AND METHODS

A desk review was conducted in December 2018 to examine the past and current national CRC screening activities in Malaysia via a triangulation of evidence. Firstly, policy and other programme documents related to CRC screening in Malaysia from 2008 to 2018 were identified. These policies were identified through documents searched at government offices and websites, published newspaper articles and through discussions and consultations with Malaysian experts and officers from the Non-Communicable Disease Section of Disease Control Centre at the Ministry of Health (MOH) Malaysia.

Then, routine monitoring data collected at all health clinics implementing the CRC screening at Ministry of Health (MOH) was examined. This monitoring data is collected monthly at health clinics, submitted to district and state health departments where it is compiled and finally submitted to the Cancer Unit, Ministry of Health, Malaysia (MOH). This data was analysed and performance indicators were identified.

To identify barriers and enablers, written feedback on CRC screening from implementers and programme managers at MOH health facilities were collected during a national level technical meeting for officers managing primary care, using a specified format. This information was collated and categorised by sub-headings determined *a priori*.

## RESULTS

### *Policy Documents Related to Colorectal Cancer in Malaysia*

There were several policy documents related to CRC screening in Malaysia. The National Strategic Plan for Cancer Control Programme 2016-2020 outlined the need for policymakers to implement CRC screening as an organised screening, including the need for patient navigation services for those screened.<sup>12</sup> Two additional documents were published by MOH to support the implementation of the screening; the Clinical Practice Guideline for Management of Colorectal Carcinoma 2017<sup>13</sup> and the Implementation Guideline for CRC Screening in Malaysia 2014.<sup>14</sup>

### *Feasibility Study and Pilot Implementation of CRC Screening*

Prior to the initiation of the current CRC screening programme, a feasibility study was first conducted in a state in Malaysia in 2010. The main objective of this study was to determine the feasibility of using iFOBT as a screening tool for colorectal cancer, particularly in terms of the population acceptance and the cost incurred. The respondents were asymptomatic population aged 50 years and above. This study utilised three different approaches to iFOBT screening; House-to-house approach, awareness campaign and opportunistic screening at healthcare facilities. It found that the acceptance rate ranged from 87.6% to 95.4% for the three different approaches. While house-to-house approach had the highest acceptance rate, it had also had the highest cost per respondent.<sup>15</sup>

Following these findings, the CRC screening programme using qualitative iFOBT and followed by colonoscopy was

initiated as a pilot implementation in six states in Malaysia from March 2012 to March 2013. The main objective of this screening programme was to detect pre-lesion and colorectal malignancy at the earliest stage possible among asymptomatic population aged 50 to 70 years. Local awareness and promotion campaigns were conducted in these six states. Individuals attending MOH health clinics and meeting the selection criteria were provided with the iFOBT kit, and they were requested to return the kit with the stool sample back to the health clinic for qualitative analysis at the laboratory. Those with positive results would be referred for colonoscopy at the nearest MOH hospital.<sup>16</sup>

A total of 3,559 people were screened during the pilot implementation. During the pilot implementation, the positive rate for the iFOBT screening test was 4.3%. Subsequently, 63.9% of clients who tested positive underwent colonoscopy. Of those who underwent colonoscopy, 7.1% were detected to have colonic polyps and 4.7% were detected to have CRC.<sup>16</sup>

A health technology assessment conducted by MOH in 2012 found that iFOBT can be used as a screening method in Malaysia.<sup>17</sup>

### *National Colorectal Cancer Screening as an Organised Programme*

Following the findings in the pilot implementation, CRC screening was implemented nationwide as an opportunistic screening programme in 2014. The Cancer Unit, Disease Control Division, MOH is the national coordinating agency for the programme.

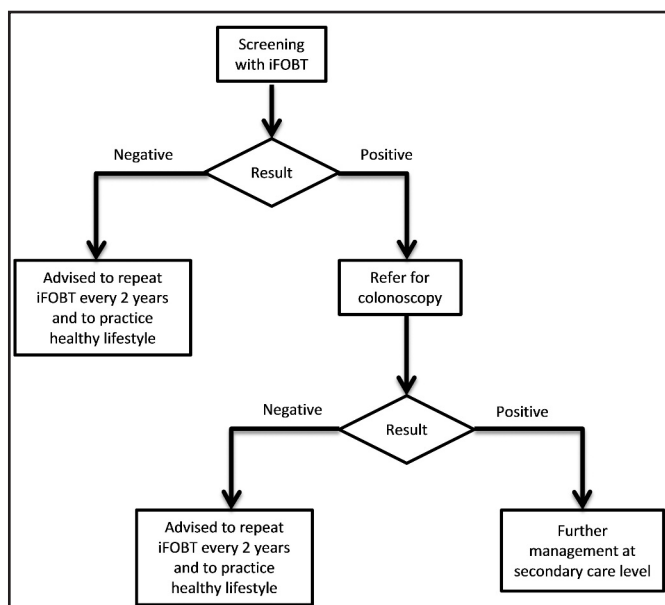
Every year, iFOBT kits were procured by a central national tender and distributed to all participating MOH health clinics. At these clinics, eligible clients fulfilling the selection criteria were offered the screening test. The demographic information of clients participating in this screening programme were documented manually into a screening registration book at the respective facilities. Clients were counselled on the importance of CRC screening and that the iFOBT test is not a confirmatory test and the need for a colonoscopy if they tested positive. To avoid the risk of incorrect handling of the iFOBT kit, clients were requested to send their stool sample to the health clinics, where the healthcare providers will perform the iFOBT testing.

If the results were positive, the clients were informed and referred to the nearest hospital for colonoscopy. To facilitate the referral process, the healthcare providers at the clinic obtained colonoscopy appointments at the hospital. Liaison officers were appointed at the referral hospitals to further facilitate the colonoscopy appointments, and in obtaining the colonoscopy results and histopathological reports for further management. Clients with negative iFOBT results were given an appointment in two years for a repeat screening and counselled to practice a healthy lifestyle.

A summary of the work flow of the CRC screening programme is shown in Figure 1.

**Table I: Performance indicators of the Colorectal Cancer Screening Programme in Malaysia, 2014-2018**

	2014 N = 11,230		2015 N = 16,743		2016 N = 29,551		2017 N = 32,464		2018 N = 37,969	
	n	%	n	%	n	%	n	%	n	%
Positive iFOBT	874	7.54	1,509	9.01	2,697	9.13	3,391	10.45	3,386	8.92
Referred for scope	777	88.90	1,311	86.88	2,371	87.91	3,073	90.62	2,990	88.30
Refused referral	61	6.98	174	11.53	327	12.12	318	9.38	394	11.64
Underwent scope	521	67.05	685	52.25	1,460	61.60	1,992	64.82	1,890	63.21
Result: cancer	18	3.45	29	4.23	59	4.04	86	4.31	74	3.92
Result: colonic polyps	25	4.80	47	6.72	181	12.40	354	17.77	300	15.87
CRC detection rate among screened		0.18		0.16		0.20		0.26		0.19



**Fig. 1:** Flowchart of the colorectal cancer screening programme in Malaysia.

The monitoring of the implementation of the CRC screening programme was conducted using a paper-based format, coordinated by the Cancer Unit, Disease Control Division MOH. The format is completed at the health clinic level, and subsequently collated at the district and state levels. Aggregated data were submitted quarterly to the Cancer Unit to monitor the iFOBT positivity rate, and pre-cancer and cancer rates. The compliance rate for colonoscopy referrals was also monitored. These process indicators were analysed annually at the national level, with comparison over time and between states. The results of the analysis were provided to the implementers annually to strengthen the implementation of the screening programme.

Monitoring of effectiveness of CRC screening was conducted using data from the National Cancer Registry, through indices of down-staging of diagnosis and improvement in survivorship of CRC patients. However, as the programme was only initiated recently in 2014, it is still early to expect any down-staging and improvements in survivorship due to the short time frame and the current low screening coverage. A summary of the performance indicators of the CRC screening programme from 2014 to 2018 is shown in Table I. From 246 MOH health clinics in 2014, the number of participating health clinics had doubled to 571 in 2018. The number of screening done throughout the country has

increased progressively, to over three-fold in 2018 as compared to 2014. Between 2014 and 2018, 127,957 clients were screened using iFOBT. Of those screened, 11,857 (9.3%) tested positive for iFOBT and were referred for colonoscopy. Colonoscopy was performed for 6,548 patients; 907 (13.9%) patients were found to have colonic polyps and 266 (4.1%) diagnosed with CRC.<sup>18</sup>

*Barriers and enablers of National Colorectal Cancer Screening Programme*

Information on the barriers and enablers on the implementation of the CRC screening programme were derived from the written feedback from implementers and programme managers working at health facilities. As such, we are only describing issues from the providers' perspectives, and not from the perspectives of the clients or patients.

Despite the encouraging results from the pilot implementation, barriers for screening uptake among clients were similar to other countries.<sup>19</sup> One main identified barrier faced by implementers was the reluctance of clients to undergo screening due to hygiene and privacy concerns related to the collection of stool samples. Other client-related barriers identified by implementers were refusal of referral and defaulting referral appointments to secondary care centres for colonoscopy due to issues such as fear of possible positive findings. In some parts of the country, geographical variations and logistics also contributed to the poorer access to colonoscopy. The implementers also found that there was still poor awareness among clients on the availability of CRC screening in the MOH health clinics.

Since the screening process is opportunistic, poor recommendation from the healthcare providers to have a screening was a major barrier. The process of referral to secondary care and back-referral to primary care was also not well established in certain states. Existing data also showed that a certain proportion of patients with positive iFOBT who were referred for colonoscopy were not scoped. Instead of performing colonoscopy based on the positive iFOBT, the clinicians at these hospitals repeated the iFOBT, and a colonoscopy was not performed if this second iFOBT was negative. This is not in line with the current CRC implementation guideline in Malaysia.

At the systemic level, the promotion of screening activities was not done extensively because of limited infrastructure to cope with a high demand for CRC screening. This was also the reason for delayed colonoscopy appointments in certain MOH hospitals, in addition to limited skillful operators and the cost of colonoscopy procedures.

## DISCUSSION

In the absence of a population-based CRC screening, Malaysia opted for a nationwide opportunistic screening in its health facilities rolled out in an organised manner. This structured programme offered a robust screening method, follow-up and data collection methods. There were high-level documents for governance and guidelines for implementation. However, since its initiation in 2014 up to 2018, the coverage of screening remained low.

Based on the national census data, an estimated 5.6 million Malaysians aged 50 to 74 years would be eligible for screening in 2018. Of these however, only about 0.68% underwent iFOBT screening. Substantial funding would be required to increase the availability iFOBT kits, as well as the availability and accessibility of the colonoscopy services in the country, particularly in the public sector. However, at the current low levels of screening, the iFOBT positive rate among screened population in Malaysia of 8.9% was higher than Thailand (1.1%), Australia (8.1%) and United Kingdom (2.0%).<sup>20-22</sup>

In the pilot implementation, it was found that clients often did not return the iFOBT kits, leading to wastage. Therefore, the current screening programme was modified to provide only stool collection containers to clients that needed to be returned to the health clinic for iFOBT testing. Although this did not necessarily increase screening rates, it reduced wastages as stool containers were less costly than iFOBT kits. However, the access to CRC screening in this manner was dependent on access to healthcare services, and also awareness and motivation of both the public and health care providers to undergo screening.

Therefore, it is important to expand the coverage of healthcare facilities offering screening. The screening of CRC needs to be seen as an essential task in daily clinical work at the primary care level. However, this has to be done with caution taking into account the capacity of the secondary care facilities to provide colonoscopy services. There is also a need for additional and specific funding to enhance the policy to address the entire CRC screening continuum.

To strengthen the quality of services, annual training sessions are conducted for healthcare providers involved in the screening processes. Due to the high turnover of healthcare providers, particularly doctors and nurses working at the MOH health clinics, the training needs to be conducted continuously. Annually, the Cancer Unit organises a national-level training-of-trainers workshop, following which, the states would then conduct echo training. To strengthen this capacity building process, efforts are underway to elevate the current modules into a blended learning approach *via* an online training platform by year 2020.

To further strengthen quality of care at the primary care level, clinical audits of the CRC screening activities are conducted regularly by teams from the Cancer Unit MOH and State Health Departments. Health clinics were randomly selected, and the clinical audits were conducted based on a

specific format. A report on the findings and recommendations was then provided to the related stakeholders after each audit.

Currently, patients referred for colonoscopy and the results of the colonoscopy were tracked manually. It is also noted that the only 55.2% of those who tested positive for iFOBT underwent colonoscopy. This proportion was suboptimal because this result is lower to the pilot evaluation and another earlier evaluation of CRC screening in two districts in Malaysia.<sup>23</sup>

The appointment of a liaison officer or counterpart in the MOH hospitals was a unique way to ensure smooth transfer of care and monitoring between primary and secondary care, including defaulter tracing.

Patient navigation is an important approach to reduce cancer disparities by addressing barriers to cancer care.<sup>24</sup> Patient navigation will include assisting patients to identify and overcome barriers; providing support and facilitating patients' access to clinical services; and for cancer screening, ensuring adherence to screening guidelines, reducing the number of patients lost to follow-up, and improving timeliness of diagnosis and treatment. Currently the Cancer Unit is developing patient navigation for CRC screening to address several of the barriers that were described earlier. Patient navigation will also provide an opportunity to strengthen collaboration with all main stakeholders, particularly with the cancer-related NGOs.

The main lessons learnt from the Malaysia National CRC screening programme are:

- (1) When planning for an organised national CRC screening, a budget for the entire screening programme continuum needs to be adequately mapped;
- (2) Building a stronger partnership between primary and secondary care is required for effective implementation;
- (3) Patient navigation must be developed to further ensure high uptake and maximum utilisation of the CRC screening; and
- (4) Opportunistic CRC screening is an option for cancer prevention strategy when organised population-based screening is not established, whereby each screening programme can be tailored to meet the needs of the population.

## CONCLUSION

Although population-level organised screening programmes are preferable to opportunistic screening, the CRC programme in Malaysia is currently tailored to meet the needs of the population based on available existing resources. Currently, CRC screening participation remains sub-optimal. There is a need to better understand the health screening behavior of the population to tailor the programme to different geographical regions and ethnicities. However, the implementation of CRC screening program in Malaysia showed encouraging results and should be expanded further.

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**CONFLICTS OF INTEREST**

The authors have declared no conflicts of interest.

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