



MINISTRY OF HEALTH
MALAYSIA

**NATIONAL STRATEGIC PLAN
FOR
COLORECTAL CANCER (NSPCRC)
2021 – 2025**





Non-Communicable Disease Section (NCD)
Disease Control Division
Ministry of Health Malaysia
Level 2, Block E3, Complex E
Federal Government Administration Centre
62590 WP Putrajaya
MALAYSIA

Year of publication: June 2021

Suggested citation

Ministry of Health Malaysia 2021. National Strategic Plan for Colorectal Cancer 2021-2025

Copyright © Ministry of Health Malaysia

All rights reserved. This book may not be reproduced, in whole or in part, in any form or means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system now known or hereafter invented, without written permission from the publisher.

This document is available at the MOH Website: <http://www.moh.gov.my>

Prepared by:

Non-Communicable Disease Section

Disease Control Division
Ministry of Health Malaysia

Primary Healthcare Section

Family Health Development Division
Ministry of Health Malaysia

Medical Development Division

Ministry of Health Malaysia

and

Gastroenterology and Hepatology Services

Ministry of Health Malaysia

Colorectal/General Surgery Services

Ministry of Health Malaysia

Table of Contents

ACKNOWLEDGEMENT	i
EXECUTIVE SUMMARY	ii
1.1 Background	1
1.1.1 Colorectal Cancer Worldwide	1
1.1.2 Colorectal Cancer in Malaysia	1
1.2 The Current National Pragmatic Response	4
1.2.1 Health Promotion and Prevention	4
1.2.2 The Availability and Use of Colorectal Cancer Screening	4
1.2.3 Colorectal Cancer Surveillance and Notification	4
1.3 Developing the National Strategic Plan for Colorectal Cancer 2021-2025	5
2 NATIONAL STRATEGIC PLAN FOR COLORECTAL CANCER 2021-2025	6
2.1 Vision	6
2.2 Mission	6
2.3 Objectives	6
2.4 Overall targets	6
2.5 Patient Navigation	7
2.6 Strategies	11
2.7 Plan of Action	11
2.7.1 Strategy 1: Prevention and Health Promotion	11
2.7.2 Strategy 2: Screening and Early Diagnosis	12
2.7.3 Strategy 3: Diagnosis	14
2.7.4 Strategy 4: Treatment	15
2.7.5 Strategy 5: Palliative Care	16
2.7.6 Strategy 6: Monitoring and Surveillance	16
2.7.7 Strategy 7: Human Capacity Building	17

3 CONCLUSION	18
REFERENCES	19
APPENDICES	21
ABBREVIATIONS	54
EDITORS AND CONTRIBUTORS	57

ACKNOWLEDGEMENT

The Non-Communicable Disease Section, Disease Control Division, Ministry of Health Malaysia would like to express its gratitude to all individual and organisation who have directly or indirectly contributed to the development of the National Strategic Plan for Colorectal Cancer 2021 - 2025.

Special thanks especially to the following:

1. YBhg. Tan Sri Dato' Seri Dr. Noor Hisham bin Abdullah
Director General of Health Malaysia
2. YBhg. Datuk Dr. Chong Chee Kheong
Deputy Director General of Health (Public Health)
3. YBhg. Dato' Dr Norhizan bin Ismail
Deputy Director General of Health (Medical)
4. YBhg. Datuk Dr Hishamshah bin Mohd Ibrahim
Deputy Director General of Health (Research and Technical Support)
5. YBhg. Datuk Dr Norhayati binti Rusli
Director Disease Control Division
6. Dr Ahmad Razid bin Salleh
Director Medical Development Division
7. Suraiya binti Syed Mohamed
Director Health Education Division
8. Dr Mohd Anis bin Haron@Harun
Director National Cancer Institute

EXECUTIVE SUMMARY

Colorectal cancer is the second most common cancer in Malaysia and contributed to 13.5% of all new cancer cases diagnosed in 2012-2016. The incidence increased with age and slightly higher in males (14.8/100,000) to female (11.1/100,000).

Colorectal cancer is one of the cancers which is highly preventable and treatable through early detection. However, the 2012-2016 cancer report showed, around 70% of colorectal cancer patients in Malaysia were diagnosed at stage III or IV. This is the stage where treatment is more complicated and the outcome is poorer. Stage of cancer at diagnosis plays an important role in determining the treatment and possible survivals.

Colorectal cancer screening programme using immunological Faecal Occult Blood Test (iFOBT) followed by colonoscopy targeting asymptomatic men and women aged 50-75 was initiated in 2014 with 2-year screening intervals. Due to resource limitation, the programme is implemented in phases. In 2020 a total of 598 health clinic under the MOH providing the service. Yearly, the number of population screened by the health clinics was less than one percent of the total eligible population in the country. Out of those screened, only 60% of positive iFOBT cases referred for colonoscopy actually underwent the procedure.

The aim of the NSPCRC 2021-2025 is to control the colorectal cancer burden in Malaysia by improving early detection and diagnosis, enhance treatment outcomes and reduce the socioeconomic impact of colorectal cancer in the country.

To achieve this aim, the NSPCRC has identified seven (7) strategies, where their respective specific objectives, strategic actions and targets are essential for instituting a comprehensive prevention and control program for colorectal cancer.

The NSPCRC addressed colorectal cancer control from all relevant aspects that spans across primary prevention, screening, early detection, diagnosis, treatment, palliative care, monitoring & surveillance and human capacity building. The NSPCRC also addressed the importance of patient navigation process, an effort to guide patient through the diagnosis and treatment journey and reduce possible defaulter.

Combine effort from all stakeholders including continuous monitoring and evaluation of the various initiatives is very important in ensuring the successful implementation of the NSPCRC 2021-2025.

NATIONAL STRATEGIC PLAN FOR COLORECTAL CANCER 2021-2025

1. INTRODUCTION

1.1 Background

1.1.1 Colorectal Cancer Worldwide

The World Health Organisation (WHO) in their Globocan 2020 reported that worldwide, colorectal cancer (CRC) was the third most common cancer in men and contributed to 10.6% of the total all men cancer, whilst in women, it was the second most common (9.4%) after breast cancer (24.5%) (1).

The Age Standardised Incidence Rate (ASR) for CRC is higher in men (23.4 per 100,000 population) compared to in women (16.2 per 100,000 population). Whereas, the Age Standardised Mortality Rate (ASMR) was 19.5 per 100,000 in men and 9.0 per 100,000 in women.

The incidence and mortality rates for CRC increase markedly with age. CRC ranks third in terms of incidence, but second in terms of mortality. The incidence rates have been steadily rising in many countries in Eastern Europe, South Eastern and South Central Asia, and South America. The declines in colorectal cancer incidence in some high-incidence countries have been attributed to population-level changes toward healthier lifestyle choices, such as, declines in smoking and the uptake of screening (2).

1.1.2 Colorectal Cancer in Malaysia

In Malaysia, colorectal cancer is the second most common cancer among the general population. According to Malaysia National Cancer Registry (MNCR) 2012-2016, colorectal cancer is the most common cancer amongst males (16.9%) and the second most common (10.7%) cancers amongst females in Malaysia.

The incidence increased with age and was slightly higher in males compared to females. The ASR for male was 14.8 per 100,000 and for female was 11.1 per 100,000. The incidence was highest amongst Chinese compared to Malay and Indian. In males, the ASR were 19.9/100,000, 12.2/100,000 and 11.0/100,000 for Chinese, Malay and Indian respectively. While for female, the ASR were 15.2/100,000 (Chinese), 9.4/100,000 (Malay) and 8.5/100,000 (Indian).

The Figure 1 below described the incidence rate for colorectal cancer among males and females in comparison with the incidence rate for the other common cancers in Malaysia whilst Figure 2 and Figure 3 described the incidence rate among males and females according to specific age-groups in 2007 – 2011 and 2012 – 2016.

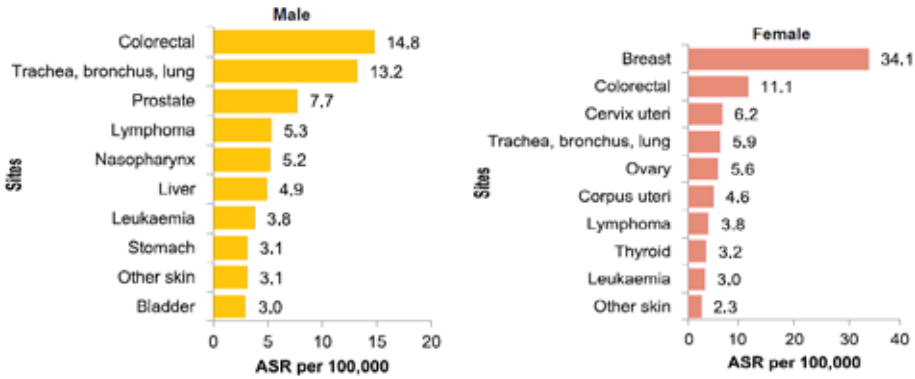


Figure 1: Ten most frequent cancers in males and females, Malaysia, 2012-2016

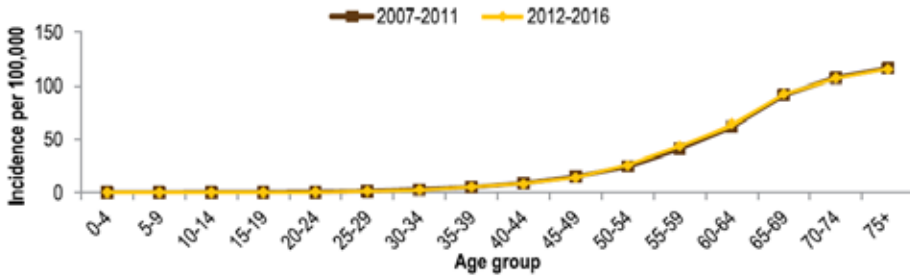


Figure 2 : Age-specific incidence rate by age-groups and year in males

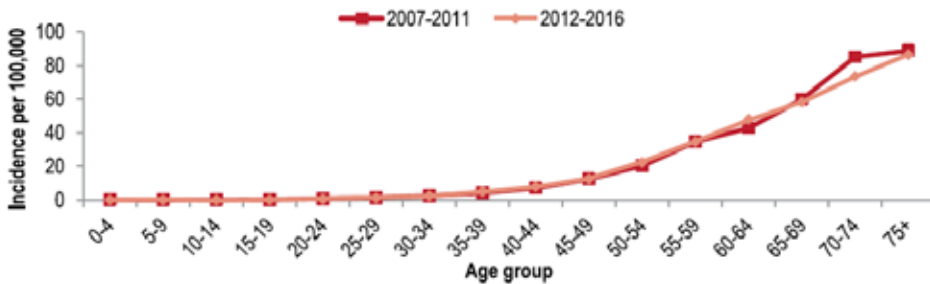


Figure 3: Age-specific incidence rate by age-groups and year in females

Colorectal cancer is one of the cancers which is highly preventable and treatable through early detection. Figure 4 showed the percentage of staging for CRC at time of diagnosis, by gender, as reported for the year 2012-2016 (3). Although CRC can be detected early by screening, more than 70% of CRC cancer patients in Malaysia were diagnosed at stage III or IV of the disease at time of diagnosis.

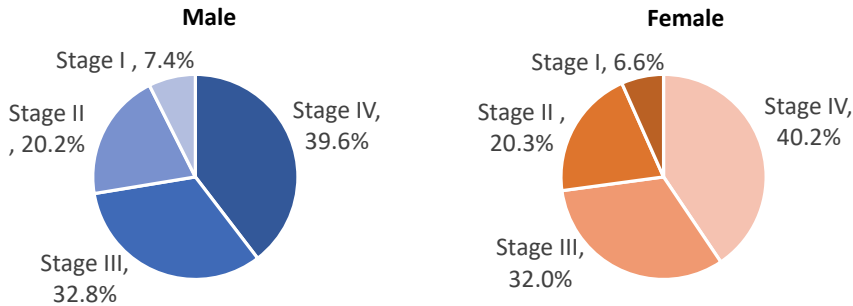


Figure 4: Staging of CRC cancer at diagnosis by gender for, 2012-2016, Malaysia

Stage is a measure of cancer growth and spread, with later stages having poorer outcomes. Stage at diagnosis is probably the most important determinant of survival. According to Malaysian Study on Cancer Survival (MySCan), the overall 5-year relative survival (RS) for colorectal cancer was 51.1%. The RS was highest at stage I compared to stage IV (Table 1) (4).

Table 1: Relative survival by stage of diagnosis for colorectal cancer, period of diagnosis 2007-2011 and followed up to 2016, Malaysia

	<i>Stage I</i>	<i>Stage II</i>	<i>Stage III</i>	<i>Stage IV</i>
<i>1-year relative survival rate (%)</i>	87.8	89.9	86.0	55.1
<i>5-year relative survival rate (%)</i>	75.8	72.5	55.6	17.3

Improving stage at diagnosis can be achieved by earlier detection of cancer. Colorectal cancer is one of the cancers which can be detected early through screening and early diagnosis.

¹ Relative survival refers to the probability of being alive for a given amount of time after diagnosis compared with all mortality in the general population

1.2 The Current National Pragmatic Response

1.2.1 Health Promotion and Prevention

The public awareness and health promotion on colorectal cancer was emphasised by the Ministry of Health (MOH) during Colorectal Cancer Awareness Month that falls in March every year as well as during the World Digestive Health Day in May. However, localised promotion is one of the ongoing activities at state and district level throughout the year. Health education materials for colorectal cancer are also available at MyHealth portal website via www.myhealth.gov.my. Such activities also being carried out by certain non-government organisations (NGOs) such as the National Cancer Society Malaysia (NCSM) and Colorectal Cancer Survivorship Society (CORUM).

1.2.2 The Availability and Use of Colorectal Cancer Screening

A nation-wide colorectal cancer screening, using immunological faecal occult blood test (iFOBT) kit was initiated by the MOH in 2014. This screening test is provided at the public health clinics by opportunistic approach. It is currently offered to every male and female aged 50-75 years who are asymptomatic and attended the clinics. This target population will be offered and counselled to do the screening.

iFOBT kit is a qualitative test and used as a tool to detect the presence of blood in stool. The test kit consists of a small bottle (buffer) with sampling stick and a test cassette.

Clients are either requested to send their stool sample to the lab at the health clinic OR are offered to do a self-test at home. Those who are positive iFOBT are referred to hospital for colonoscopy.

A 5-year evaluation study looking at the outcomes of MOH-led initiatives to scale up CRC screening in Malaysia between year 2014 and 2018 reported that iFOBT uptake constantly increased over the years following the introduction of iFOBT screening in public health clinics (5).

1.2.3 Colorectal Cancer Surveillance and Notification

Colorectal cancer surveillance is very important in providing reliable information on colorectal cancer statistic in Malaysia. The surveillance should be ongoing, timely, systematic data collection and analysis which include information on new colorectal cancer cases, extent of the disease, screening, treatment, survival and mortality.

The information on colorectal cancer is collected along with other cancers by the population-based National Cancer Registry (NCR) as well as by the National Colorectal Patient Registry (NCPR), which is a specific disease registry. The NCR collects information on incidence and trend whilst the NCPR collects specific information on treatment and outcomes.

Currently an online cancer notification system, namely the Modul2b under the Patient Registration Information System (PRIS) had been developed by the MOH and all Medical Practitioners providing service to cancer patient should notify the case using this system. An accurate and timely notification on colorectal cancer cases is very important to obtain correct statistic on incidence and outcome of treatment for colorectal cancer.

1.3 Developing the National Strategic Plan for Colorectal Cancer 2021-2025

The National Strategic Plan for Colorectal Cancer covers the period of 2021 until 2025. The development of the first NSPCRC was in line with the National Strategic Plan for Cancer Control Programme (NSPCCP) 2021-2025.

A technical working group of professionals from various backgrounds was involved in developing this NSPCRC 2021-2025. The process was initiated in August 2020, followed by series of meetings and workshop. An action plan was then developed to facilitate the implementation at all levels.

2 NATIONAL STRATEGIC PLAN FOR COLORECTAL CANCER 2021-2025

2.1 Vision

To control colorectal cancer burden in Malaysia.

2.2 Mission

To improve early detection and diagnosis, enhance treatment outcomes and to reduce the socioeconomic impact of colorectal cancer in Malaysia.

2.3 Objectives

1. To establish and strengthen national policies for the prevention, control, diagnosis and treatment of colorectal cancer based on systematic implementation of evidence-based care.
2. To reduce the morbidity and mortality of colorectal cancer through screening, early diagnosis, prompt treatment and management.
3. To improve quality of life among individuals with colorectal cancer.
4. To provide a systematic patient navigation from community, primary care centres to relevant specialties.
5. To advocate and establish partnerships with relevant stakeholders for colorectal cancer.

2.4 Overall targets

While this NSPCRC document and the accompanying action plan are for the time frame 2021-2025, the overall targets are set for 2030.

The targets of NSPCRC to be achieved by 2030 are;

1. To increase screening coverage in target age group (50 to 75 years) population from 10.8% (NHMS 2019) to 40.0% by 2030.
2. To have a reduction in the incidence rate among males and females by 2030 (baseline MNCR 2012-2016; male 14.8/100,000 and female 11.1/100,000).
3. To down-stage colorectal cancer at the time of diagnosis by 25% by the year 2030 (baseline stage III and IV MNCR 2012-2016; male from 72.4% to 54.4%, female from 73.1% to 54.8%).
4. To improve the 5-year relative survival (RS) for colorectal cancer. The baseline of 5-year RS for colorectal cancer over the period of 2007 to 2011 was 51.1% (MySCan 2018).
5. To reduce 30% risk of premature death due to colorectal cancer by 2030, namely from 0.8% in 2019 to 0.5% by year 2030.

2.5 Patient Navigation

Patient navigation is a healthcare delivery support system with the principle function of eliminating barriers to timely delivery of health care for individual patients across the healthcare continuum. Patient navigators may be assigned to specific phases of the patient navigation model, which include prevention, detection, diagnosis, treatment and survivorship through the end of life.

In Malaysia, Patient Navigation Programme (PNP) was initiated in 2014 spearheaded by Cancer Research Malaysia (CRM) in collaboration with the MOH, aiming in managing breast cancer patients in the country especially those from B40 community. The pilot programme involving Hospital Tengku Ampuan Rahimah Klang (HTAR) and CRM aim to overcome barriers faced by patient in the continuum of care by allocating a meeting room, known as Pink Ribbon Centre (PRC), as the location for the hospital-based navigation.

In 2015, the programme in this centre alone has successfully navigated 669 breast cancer patients and recorded a total of 7,585 registered visit to PRC. Integrating patient navigation within a breast clinic in Malaysia was proved to be feasible and in the long run could improve outcomes for breast cancer patients (6). In 2019, through collaborative efforts, PNP for breast cancer has expanded to other centres mainly Hospital Queen Elizabeth II (HQEII), Hospital Tuanku Jaafar Seremban (HTJS) and Hospital Umum Sarawak (HUS).

Patient Navigation Programme for Colorectal Cancer

Since the launch of iFOBT opportunistic-based screening in 2014, there is an increasing trend of screening uptake over the years but there is still less than 1% of eligible population in Malaysia being screened (5). Several studies was conducted to evaluate the barriers and attitudes among Malaysian towards colorectal cancer screening and these are some of the common barriers identified: (7,8)

- (i) Fear of result
- (ii) Belief that screening is not needed (no symptoms and no family history)
- (iii) Being busy and not bothered
- (iv) Lack of knowledge on iFOBT screening, CRC symptoms and availability of test
- (v) Embarrassment from colonoscopy procedure
- (vi) Fear of colonoscopy procedure being painful

Irrespective of an increasing trend in the screening uptake, there are also approximately 30% of individuals who tested positive for iFOBT that were found to have either missed or refused hospital appointments (5). Based on these findings, it is evident that a navigation pathway will be beneficial as a tool to increase screening and treatment for colorectal cancer.

Currently, there is no PNP for colorectal cancer in Malaysia. Hence, for NSPCRC 2021-2025, we aim to initiate a patient navigation pathway to provide a link between colorectal cancer patients in the community to health care services. The proposed objectives of PNP for Colorectal Cancer are mainly to;

1. Reduce the barriers for timely care across all segments of healthcare continuum accessing screening;
2. Acts as bridge between community and services provided in primary health care sites as well as tertiary care sites;
3. Reduce the defaulter rate from screening right up to treatment modality;
4. Increase the treatment completion rate.

The scope for PNP for Colorectal Cancer will consist of outreach and screening, diagnostic, treatment (surgical, radiological and oncological) and survivorship (including medical and vocational rehabilitation). Besides involving primary and secondary health care providers as patient navigators, this proposed PNP will also be focusing on two community groups;

1. *Komuniti Sihat Pembina Negara (KOSPEN)* / Community Empowers the Nation Programme; and
2. NGOs with related work in Colorectal Cancer

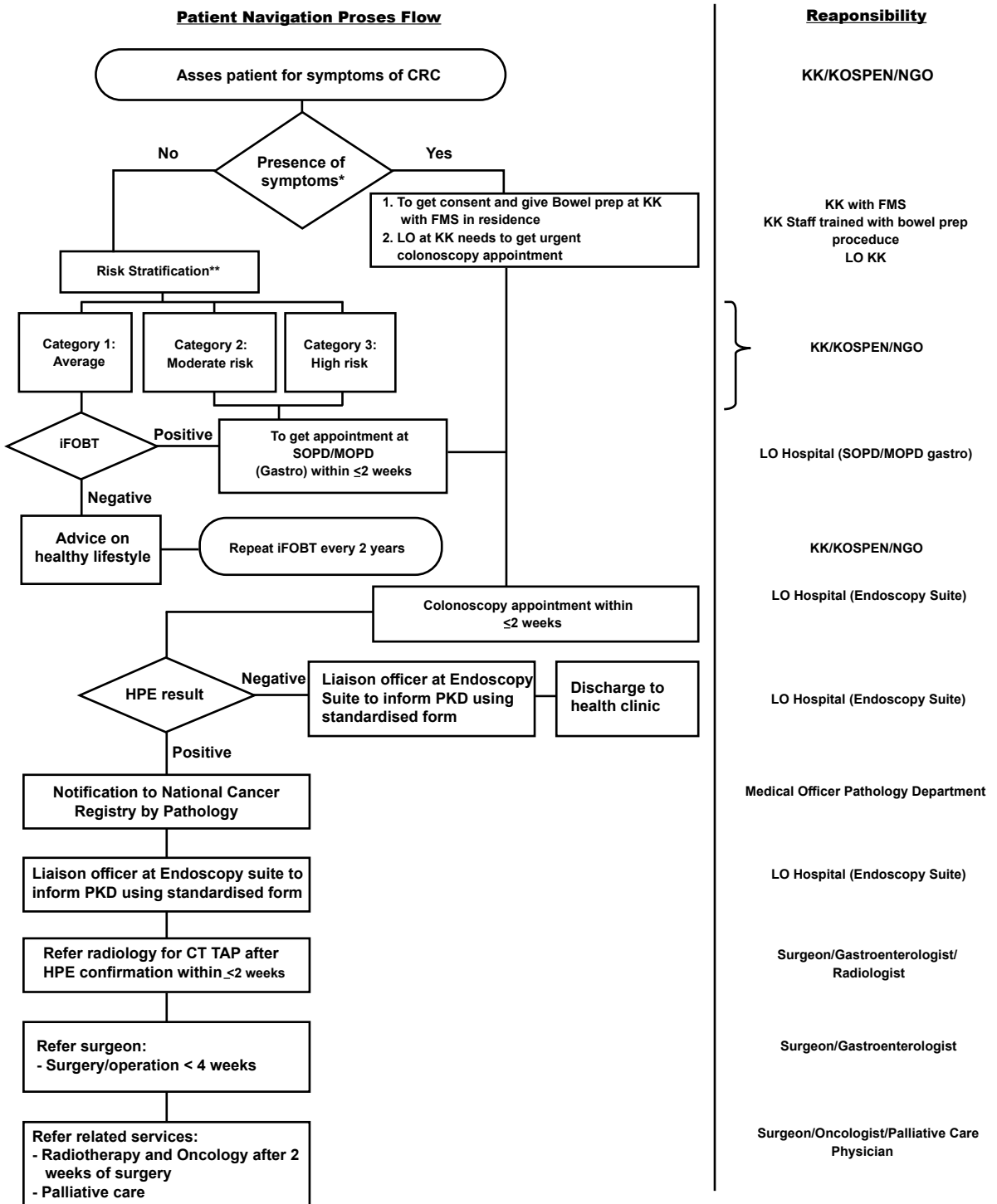
The volunteers from related NGOs and KOSPEN will be trained and certified as Patient Navigators by MOH. However, no specific funding will be provided for them. The role of patient navigators is simply to guide a patient through the healthcare system from screening, diagnosis, treatment and follow up of cancer. Patient navigators also has a role in building rapport, provide a patient-centred education regarding importance of follow-up care, help in setting up appointments, assist in social or financial support and identifying the challenges to healthcare.

The planned activities of PNP for Colorectal cancer will include:

1. Identifying the relevant NGO with related work in Colorectal Cancer
2. Development of structured training module
3. Establishment of database on Certified Patient Navigators

An algorithm pathway was developed for navigation of patient with suspected colorectal cancer, including navigators responsible at each process flow. Please refer to **Algorithm A** for the proposed PNP for colorectal cancer.

ALGORITHM A: PROPOSED NAVIGATION PATHWAY FOR PATIENT WITH SUSPECTED COLORECTAL CANCER



*Refer to Table 2 for signs and symptoms

**Refer to Table 3 for risk stratification category

Table 2: Signs and symptoms for suspected Colorectal Cancer

No	Signs / Symptoms
1	Change in bowel habits, such as diarrhea or constipation that lasts for more than a few weeks
2	Tenesmus (a feeling of need to empty bowel but nothing passes)
3	Rectal bleeding
4	Blood in stool
5	Abdominal or pelvic pain
6	Weakness and fatigue
7	Unexplained weight loss
8	Unexplained Anemia

Table 3: Risk stratification category for asymptomatic patients

Category	Description
Category 1: Average risk	i. No family history of CRC ii. Age > 50 years
Category 2: Moderate risk	Family history of CRC either: <ul style="list-style-type: none"> • ≥ 1 First-degree relative (FDR); • 1 FDR and > 1 Second-degree relative (SDR); • > 3 and one of them must be FDR.
Category 3: High risk	Family history of: <ul style="list-style-type: none"> • CRC at age <50 years • Familial Adenomatous Polypos (FAP) • Hereditary non-polyposis colorectal cancer (HNPCC) / Lynch syndrome • Peutz-Jegher Syndrome • Juvenile polyposis • MUYTH-Associated Polyposis (MAP)

2.6 Strategies

There are seven main strategies to be undertaken under this plan, namely:

- Strategy 1 : Prevention and Health Promotion
- Strategy 2 : Screening and Early Diagnosis
- Strategy 3 : Diagnosis
- Strategy 4 : Treatment
- Strategy 5 : Palliative care
- Strategy 6 : Monitoring and Surveillance
- Strategy 7 : Human Capacity Building

2.7 Plan of Action

2.7.1 Strategy 1: Prevention and Health Promotion

2.7.1.1 *Background*

According to the WHO, about 30% of all cancer deaths are due to the five leading behavioural and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. For colorectal cancer, the International Agency for Research on Cancer (IARC) World Cancer Report 2020 reported that a substantial proportion of the colorectal cancer burden is attributable to modifiable lifestyle factors and provides sufficient to strong evidence linking diet, physical activity and smoking with risk of colorectal cancer (9).

Prevention efforts, both primary and secondary, can improve overall cancer outcomes as well as reducing the burden of cancer in the population. A study was conducted in 2013 to estimate potential reductions in case incidence of colorectal cancer attributable to the modifiable risk factors particularly alcohol consumption, overweight and physical inactivity among the Malaysian population. The study concluded that approximately 18% of colorectal cancer cases in Malaysia would be prevented through appropriate preventive measure (10).

The biggest challenge in cancer prevention is changing the perception and behaviour among general public on transferring knowledge of risk factors and correct health seeking behaviour into practice. Currently there is limited national information available on the level of public knowledge on cancer risk factors, its preventability and on the sign and symptoms. A study in 2014 served as baseline where

general knowledge on cancer risk factors was 62% and general knowledge on sign and symptoms was 52% (11). An evaluation study on public health intervention in the form of mass media campaign for colorectal cancer awareness was conducted in 2018 and concluded that there was significant improvement in the recognition of CRC symptoms post-campaigns (12).

Prevention strategies and health promotion effort must be taken between all stakeholders involved in cancer prevention and care.

2.7.1.2 *Plan of action matrix for Prevention and Health Promotion* Refer to **Appendix 1**

2.7.2 Strategy 2: Screening and Early Diagnosis

2.7.2.1 Background

Early detection of cancer saves lives. It is based on the concept that the sooner cancer is detected, the more effective the treatment is likely to be and reduces premature death. There are two main components for early detection, namely, screening and early diagnosis.

Screening aims to identify individuals with abnormalities suggestive of a specific cancer or pre-cancer, whom are asymptomatic, and refer them promptly for diagnosis and treatment. Currently, Malaysia is adapting opportunistic-based screening using iFOBT targeting asymptomatic individuals aged 50 to 75 years old as screening programme for colorectal cancer. Asymptomatic individuals who are at higher risk for colorectal cancer should get medical advised for assessment and screening.

Early diagnosis is identifying cancer among those presented with the signs and symptoms of colorectal cancer. When colorectal cancer is identified early, cancer is more likely to respond to effective treatment and can result in a greater probability of surviving, less morbidity, and less expensive treatment. Early diagnosis is relevant in all settings and in the majority of cancers. In the absence of early diagnosis, patients are diagnosed at late stages when curative treatment may no longer be an option.

There are several issues and barriers identified that affect the effectiveness of colorectal cancer screening and early diagnosis within Malaysian population. These issues and barriers are:

1. Lack of awareness regarding colorectal cancer screening;
 - There is insufficient promotional activities for colorectal cancer screening in primary health centres. Hence, those eligible group who attend clinics are unaware of screening availability.
 - In some centres, patient who presented with symptoms were given iFOBT instead of being referred directly to hospital for colonoscopy.
2. Stigma of completing iFOBT test;
 - Patients felt embarrassed carrying stool samples to public places (as they will need to send their stool sample to the lab at clinic).
 - Patients felt uncomfortable to collect their own stool sample, hence avoid the iFOBT screening.
3. Lack of patient commitment;
 - There were several referred cases following iFOBT positive as well as those with symptoms who defaulted or missed their appointments for colonoscopy. These defaulters lead to missed diagnosis and also delay in diagnosis for colorectal cancer.
4. Poor access to colonoscopy care especially those living in rural areas.
5. Follow-up and data monitoring issues;
 - Lack of monitoring and follow-up for patients who were given iFOBT kit for self-test at home and also those who were given stool sample collection bottle.
 - Currently there is no National Colorectal Cancer Screening Registry available. Hence there is lack of data collection regarding screening that was done in private setting and by NGOs.

In view of these, an early detection strategy plan involving various stakeholders need to be constructed and executed in order to overcome these barriers.

2.7.2.2 *Plan of action matrix for Screening and Early Diagnosis*

Refer to **Appendix 2**

2.7.3 Strategy 3: Diagnosis

2.7.3.1 Background

An accurate diagnosis is the first step in colorectal cancer management. Colorectal cancer diagnosis involves a combination of careful clinical assessment and diagnostic investigations including colonoscopy, histopathology and imaging. An accessible and affordable diagnostic facility should be widely available.

Colonoscopy is considered the gold standard for colorectal cancer detection. It allows a detailed look at rectum and entire colon. Because all colorectal cancer begins as precancerous polyps, removing these polyps during colonoscopy procedure can completely prevent this cancer. Colonoscopy services are provided at all major hospitals and specialist hospitals throughout Malaysia and is provided by both surgery and gastroenterology services.

Pathology services for colorectal cancer diagnosis and monitoring are mostly carried out in the state and major specialist hospitals. Anatomical Pathology services are available in the 14 state hospitals and 8 major specialist hospitals, while chemical pathology, haematology and microbiology services are available in all specialist hospitals.

Radiology plays an important role in screening, diagnosis, staging, imaging guided procedure for the colorectal cancer treatment and disease surveillance.

Barium Enema is the established radiological method to investigate patient with symptoms suggestive of CRC or large polyps in clinical practice although its utilisation is declining and replaced by colonoscopy.

Recent advent CT colonography (CTC) is an effective and safe, with high sensitivity and specificity is identifying carcinoma and polyps when compared with conventional colonoscopy. It is also more sensitive test than Barium Enema. It can be the preferred radiological test for patients with symptoms suggestive of colorectal cancer thus, has a role as a screening modality.

Computed Tomography (CT) is routinely used and remains the mainstay technique for primary staging and disease surveillance. It is also routinely used for image guided treatment delivery by the Interventional Radiologist using radio frequency ablation (RFA) or Cryoablation to treat colorectal liver metastases.

High resolution Magnetic Resonance Imaging (MRI), which consistently shows the mesorectal fascia is the best modality in assessing the relation of the rectal carcinoma with the potential circumferential resection margins. Preoperatively, MRI predicts whether the surgical resection margins will be clear or affected by the carcinoma. It is feasible, reproducible and reliable for preoperative staging. It also provides an accurate assessment of cancer local spread preoperatively.

As for the accurate detection of liver metastases, MRI is used for the characterisation of focal liver lesion due to its high contrast resolution. When performed in combination with liver specific contrast agent, enhanced MRI will significantly improve the accuracy in identification of liver metastases.

2.7.4 Strategy 4: Treatment

2.7.4.1 Background

Colorectal Cancer is a common malignancy among adults worldwide. It poses a great threat to the health of many. Early detection inevitably results in better outcomes. Nevertheless, poor awareness among the general population coupled with lack of comprehensive screening programs deter early detection of these potentially aggressive tumours. Similar to most other malignancies, the management of colorectal cancer involves a multidisciplinary approach comprising the expertise of surgeons, oncologists, radiologist, pathologist, stoma nurses and palliative care personal among others in ensuring holistic care. (13)(14)

Besides the stage of disease at diagnosis and available treatment options, patient factors such as age, performance status and presence of other comorbidities make a significant impact in outcomes. The importance of timely blood, tissue and radiological investigations which aid in clinching the diagnosis and completing the staging cannot be emphasized further. Delays in any one of these steps as well as in treatment delivery have a significant negative impact in long term outcomes.

Surgery is curative in Stage I to III colorectal cancer, ranging from minimally invasive endoscopic polypectomy to radical bowel and secondary tumour deposit resections.

Following curative surgery, adjuvant chemotherapy is recommended in high risk Stage II and III colon cancer patients to reduce risk of relapse and death. Microsatellite instability/ deficient mismatch repair testing is incorporated in the decision making of adjuvant therapy for Stage II colon cancer (15)(16). Adjuvant chemotherapy aims to reduce local recurrence, distant spread of disease and hence improve overall survival of patients.

Locally advanced rectal cancer patients benefit significantly from neoadjuvant chemoradiation prior to surgery. This aims to downsize tumours, improve resectability and achieve higher rates of clear margins which have shown a clear survival advantage in many clinical trials (17)(18).

Unfortunately, about 40% of patients diagnosed with colorectal cancer in Malaysia are diagnosed with Stage IV disease. In this setting, the treatment intent is for palliation which aims to improve quality of life and prolong the survival of these patients as much as possible. Multidisciplinary discussion is again important in order to provide optimal treatment, i.e. systemic therapy, radiotherapy, local radio ablation therapies, palliative surgery and supportive care.

Nevertheless, early detection and timely management makes the biggest positive impact in improving the quality of life and survival of patients.

2.7.4.2 Plan of action matrix for Treatment

Refer to **Appendix 4**

2.7.5 Strategy 5 : Palliative Care

As stated in the National Strategic Plan for Cancer Control Programme 2021-2025, the strategy for Palliative Care is to refer the National Palliative Care Policy and Strategic Plan 2019-2030

2.7.6 Strategy 6: Monitoring and Surveillance

2.7.6.1 Background

Colorectal cancer surveillance is undeniably one of the important components in any colorectal cancer prevention and control programme. Accurate and comprehensive data coverage on colorectal cancer are essential for planning and evaluating colorectal cancer control policies, planning program related to colorectal cancer and improving patient's care. The data on colorectal cancer which are

collected along with other cancers will be analysed by the National Cancer Registry according to the specified time frame and a comprehensive report will be produced. The information provided by the report is used to evaluate the impact of the colorectal cancer prevention and control programme in the country.

Information on screening and early diagnosis is also an important aspect in Colorectal Cancer Control Programme. Currently information on colorectal cancer screening is collected manually using standardised return format collected every quarter of the year. In-line with today's development towards online data collection, this NSPCRC 2021-2025 plans to develop an online monitoring system to monitor screening coverage and performance that can be accessed in timely manner. This system requires possibility of linkages with other relevant information system within the MOH such as PRIS and outside MOH such as NGO.

Monitoring on quality of screening performance at the district and health clinics level which is conducted through audit visit will be continued.

2.7.6.2 Plan of action matrix for Monitoring and Surveillance Refer to **Appendix 5**

2.7.7 Strategy 7: Human Capacity Building

2.7.7.1 Background

The number of cancer cases for all sites in Malaysia is showing an exponential growth. In 2007 to 2011, 103,507 cancer cases were reported to Malaysian Cancer Registry, and the number had increased to 115,238 cases in 2012 to 2016. This rising trend also apply to colorectal cancer as the number increased to 15,515 cases in the year period of 2012-2016 from 13,693 cases for year 2007-2011 (3). In view that more people are affected by colorectal cancer, there is also a rapid growth in demand of healthcare cancer services. In order to ensure high-quality colorectal cancer care services, it is essential to have a skilled and sustainable workforce in the field. There is also the need to overcome the shortages in some areas of essential workforce.

2.7.7.2 Plan of action matrix for Human Capacity Building and Enhancement Refer to **Appendix 6**

3 CONCLUSION

Colorectal cancer is one of the cancers which is highly preventable and treatable through screening and early diagnosis. However, more than 70% of the cases were detected late where treatment is more complicated and costly. Late diagnosis can be due to patients' factors or service provider factors.

This National Strategic Plan for Colorectal Cancer (NSPCRC) 2021-2025 is developed to improve the colorectal cancer prevention and control in Malaysia by increasing the awareness and promotional activities for the public, strengthening the service provided for screening and early detection, diagnosis and treatment. It also addresses the importance of patient navigation which is considered as an important approach to navigate the patient/public, reducing the defaulter rate, improve patients care, reducing the possibilities of late diagnosis, complicated treatment and poorer outcome. The ability to implement the strategised action plans are essential to enable Malaysia in achieving the overall targets set. To achieve this, a concerted effort from relevant stakeholders and commitment from everyone including the public is strongly required.

REFERENCES

1. IARC. Colorectal cancer Source: Globocan 2020 Number of new cases in 2020, both sexes, all ages [Internet]. 2020 [cited 2021 June 21]. Available from: <https://gco.iarc.fr/today/>
2. Hyuna Sung et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA: A Cancer Journal for Clinicians. Volume 71(3). 2021. 209-49
3. Azizah AM, Hashimah B, Nirmal K, Siti Zubaidah AR, Puteri NA, Nabihah A, et al. Malaysia National Cancer Registry Report (MNCR) 2012-2016. 2019.
4. National Cancer Institute. Malaysian study on cancer survival (MySCan). Vol. 4, National Cancer Institute, Ministry of Health Malaysia. 2018. 1-72 p.
5. Tamin NSI, Razalli KA, Sallahuddin SN, Chan HK, Hassan MRA. A 5-year evaluation of using stool-based test for opportunistic colorectal cancer screening in primary health institutions across Malaysia. Cancer Epidemiol [Internet]. 2020;69(June):101829. Available from: <https://doi.org/10.1016/j.canep.2020.101829>
6. Yeoh ZY, Jaganathan M, Rajaram N, Maniam S, Teo SH, Rawat S, et al. Feasibility of patient navigation to improve breast cancer care in Malaysia. J Glob Oncol. 2018;2018(4).
7. Al-Naggar RA, Al-Kubaisy W, Yap BW, Bobryshev Y V., Osman MT. Attitudes towards colorectal cancer (CRC) and CRC screening tests among elderly Malay patients. Asian Pacific J Cancer Prev. 2015;16(2):667-74.
8. Yusoff HM, Daud N, Noor NM, Rahim AA. Participation and barriers to colorectal cancer screening in Malaysia. Asian Pacific J Cancer Prev. 2012;13(8):3983-7.
9. Bernard WS, Christopher PW. World cancer report 2020 [Internet]. World Health Organization. 2020. 630 p. Available from: <http://publications.iarc.fr/Non-Series-Publications/World-Cancer-Reports/World-Cancer-Report-2014>
10. Naing C, Lai PK, Mak JW. Immediately modifiable risk factors attributable to colorectal cancer in Malaysia. BMC Public Health. 2017;17(1):1-7.
11. Schliemann D, Ismail R, Donnelly M, Cardwell CR, Su TT. Cancer symptom and risk factor awareness in Malaysia: Findings from a nationwide cross-sectional study. BMC Public Health. 2020;20(1):1-10.
12. Schliemann D, Paramasivam D, Dahlui M, Cardwell CR, Somasundaram S, Ibrahim Tamin NSB, et al. Change in public awareness of colorectal cancer symptoms following the Be Cancer Alert Campaign in the multi-ethnic population of Malaysia. BMC Cancer. 2020;20(1):1-12.
13. MacDermid E, Hooton G, MacDonald M, McKay G, Grose D, Mohammed N P c. Improving patient survival with the colorectal cancer multidisciplinary team. Color Dis. 11(3):291-5.
14. Ye YJ, Shen ZL, Sun XT, Wang ZF, Shen DH, Liu HJ, Zhang WL, Chen YL, Zhou J, Poston GJ WS. Impact of multidisciplinary team working on the management of colorectal cancer. Chin Med J. 125(2):172-7.

15. Popat S, Hubner R HR. Systematic review of microsatellite instability and colorectal cancer prognosis. *J Clin Oncol.* 23(3):609–18.
16. Jover R, Zapater P, Castells A, Llor X, Andreu M, Cubiella J, et al. Mismatch repair status in the prediction of benefit from adjuvant fluorouracil chemotherapy in colorectal cancer. *Gut.* 2006;55(6):848–55.
17. Li Y, Wang J, Ma X, Li T, Yan Y, Xue C, et al. A review of neoadjuvant chemoradiotherapy for locally advanced rectal cancer. *Int J Biol Sci.* 2016;12(8):1022–31.
18. Zhao F, Wang J, Yu H, Cheng X, Li X, Zhu X, et al. Neoadjuvant radiotherapy improves overall survival for T3/4N+M0 rectal cancer patients: A population-based study of 20300 patients. *Radiat Oncol.* 2020;15(1):1–11.

APPENDICES

Appendix 1: Plan of Action Matrix for Prevention and Health Promotion

Appendix 2: Plan of Action Matrix for Screening and Early Diagnosis

Appendix 3: Plan of Action Matrix for Diagnosis

Appendix 4: Plan of Action Matrix for Treatment

Appendix 5: Plan of Action Matrix for Monitoring and Surveillance

Appendix 6: Plan of Action Matrix for Human Capacity Building

STRATEGY 1: PREVENTION AND HEALTH PROMOTION					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
1	To increase health literacy of general public and health care providers on colorectal cancer	<p>1.1 Increase promotional activities for general public via conventional media (TV- RTM, TV3, Astro, Radio) during Colorectal Cancer Awareness Month in March AND via new media (social media*) throughout the year, highlighting on:</p> <ul style="list-style-type: none"> • Modifiable risk factors intervention • Awareness of signs and symptoms of colorectal cancer and where to seek treatment if symptomatic • Importance of screening and addressing negative perception towards screening (especially stool sampling and fear of result outcome) • Importance of prompt treatment • Advice on preventing unproven therapies and avoiding traditional healers • Myths and facts 	<p>1.1.1 Number of Radio station for <i>Bual bicara</i> and broadcasting (Public service announcement)</p> <p>1.1.2 Number of TV Channel for <i>Bual bicara</i></p> <p>1.1.3 Broadcasting of TV Commercial</p> <p>1.1.4 Number of reach and view of social media based on hits/likes/shared (survey)</p> <p>1.1.5 Number of infographics uploaded on Social Media</p>	<p>Five (5) Radio channels during awareness month</p> <p>Two (2) TV channel for <i>Bual bicara</i> during awareness month</p> <p>At least two (2) TV channel during awareness month</p> <p>Increase 5% of views/year (based on baseline in 2021)</p> <p>12 infographics uploaded/year</p>	<p>MOH (BPK, BKP, IKN) NGOs Academy of Family Physicians of Malaysia</p>

APPENDIX 1

STRATEGY 1: PREVENTION AND HEALTH PROMOTION					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		<p>* List of social media: -KKM: Portal MyHealth, Facebook, Telegram, Instagram, Twitter, Youtube -IKN: Portal IKN, Facebook, Instagram -MySejahtera</p>			
		<p>1.2 Development of promotional materials of colorectal cancer in multi-language (Malay/English/Chinese/Tamil) for dissemination through media / outreach programme - Infographic - Video - Printed materials (flyers/pamphlet)</p>	Number of publication on infographic /video/printed materials	<p>Infographic: 3/year Video: 1 /year Printed materials: 1 topic/year</p>	MOH (BPK & IKN, BKP)
		<p>1.3 Promotional activities for colorectal cancer specifically in high risk population</p>	At least one (1) programme per year conducted by JKN at State level	One (1) activity / State / year	MOH (BKP, BPK, JKN)

STRATEGY 1: PREVENTION AND HEALTH PROMOTION					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		<p>1.4 To include colorectal cancer topic in existing PKD outreach programmes (action in line with National Strategic Plan for Cancer Control Programme 2021-2025)</p> <p>Colorectal cancer topics: risk factors, signs and symptom, and importance of colorectal cancer screening, myths and taboo included in outreach programmes at community level organised by district</p>	At least one (1) programme per year conducted by PKD at district level	One (1) activity / district / year	MOH (JKN, PKD)
		<p>1.5 To include colorectal cancer topic as one component in KOSPEN module within KOSPEN/COMBI (action in line with National Strategic Plan for Cancer Control Programme 2021-2025)</p> <p>Colorectal cancer topics: risk factors, signs and symptom, and importance of colorectal cancer screening, myths and taboo included in every outreach programme at</p>	Number of KOSPEN/COMBI locality conducting colorectal cancer outreach programme per year – At least one (1) activity/year	One (1) CRC awareness activity / locality / year	MOH (BKP, JKN/PKD and KOSPEN / COMBI)

APPENDIX 1

STRATEGY 1: PREVENTION AND HEALTH PROMOTION					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		Community level organised by HQ, State, District			
		1.6 Colorectal Cancer Outreach programmes with NGO and involving cancer survivors (action in line with National Strategic Plan for Cancer Control Programme 2021-2025)	Outreach programmes with various NGOs conducted at regular basis	At least two (2) programmes per year conducted by MOH with NGO at HQ level	MOH (BKP, BPK) NGOs
		1.7 To include colorectal cancer into the landing page of development of Malaysian Cancer Awareness Portal which features resources for public and e-learning module Portal will consist of: a. Resources for public and caregivers (common signs and symptoms of colorectal cancer, risk factors, and support groups, as well as mapping of available colonoscopy services) b. E-learning for health care providers c. E-learning for NGO	Landing page developed	2022	MOH (BKP, BPK, IKN)

STRATEGY 1: PREVENTION AND HEALTH PROMOTION					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.8 Training of health care providers (Private and government) using e-learning module on colorectal cancer and referral pathways	Percentage of MO in <i>Klinik Kesihatan</i> trained per year	Increment 5% of MO in <i>Klinik Kesihatan</i> trained per year	MOH (BKP, JKN, PKD) Professional Bodies
		1.9 Training of NGO using e-learning module on colorectal cancer and referral pathways. The module can be used by other agencies	Number of NGOs trained	Two (2) NGO/state/year	MOH (BKP, BPK) NGOs
2	To strengthen the community-based intervention of colorectal cancer modifiable risk factors	2.1 To continue the implementation of Tobacco Control Programme to reduce the national smoking prevalence	NHMS 2019 (21.3% adult current smoker) Liaise with FCTC	Reduction in the percentage of current smokers in Malaysia	MOH (FCTC), NGO
		2.2 To continue the implementation of <i>Program Pengurusan Berat Badan</i> by MOH to reduce obesity prevalence	NHMS 2019 (50.1% adult overweight or obese)	Reduction in percentage of overweight and obese in Malaysia	MOH (BKP, BKP, Nutrition Division, BPKK)
		2.3 To continue implementation of healthy lifestyle initiatives to increase active living among adult.	Index score for physical activity behaviour among adult (Malaysia Healthy Lifestyle Index)	Increment of index score for physical activity behaviour among adult	MOH (BPK)

STRATEGY 2: SCREENING AND EARLY DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
1	To increase and strengthen early detection (screening and early diagnosis) of colorectal cancer	<p>1.1 Improving knowledge and skills in identifying and managing symptomatic individuals</p> <p>1.2 Improving knowledge and skills in providing screening options among Medical Officers in primary health care, including pre and post screening counselling by virtual CME training</p> <p>1.3 To promote and encourage screening for asymptomatic first-degree relatives of Colorectal Cancer using current modalities</p>	<p>Number of Medical Officers completed training via virtual CME training</p> <p>Screening for asymptomatic first-degree relatives included in the Colorectal Cancer Screening and Early Diagnosis Programme</p>	<p>2022 – 100% Medical Officers from current KK providing screening training via virtual CME training (yearly training)</p> <p>By 2021, screening for first degree relatives of colorectal cancer is being promoted and practised</p>	<p>MOH (BKP, JKN)</p> <p>MOH (BKP/BPP/ BPKK / JKN)</p>

APPENDIX 2

STRATEGY 2: SCREENING AND EARLY DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.4 Empowering eligible KOSPEN volunteers to do CRC screening via self-test	Number of KOSPEN localities conduct CRC screening activity for their KOSPEN volunteers via self-test	By 2025 all KOSPEN localities conduct CRC screening for the volunteers via self-test	MOH (KOSPEN)
		1.5 Empowering KOSPEN volunteers to function as Patient Navigator for CRC screening at respective locality	Number of KOSPEN volunteers trained as Patient Navigator for CRC	By 2025, all KOSPEN Volunteers trained as Patient Navigator for CRC	MOH (BKP/JKN/PKD, PKK, PKB/KK)
		1.6 Strengthening colorectal screening activity for health & medical staff	Number health & medical staff screened for CRC	50% of eligible Health & Medical Staff screened for CRC	MOH (BKP/JKN/PKD, PKK, PKB/KK)

STRATEGY 2: SCREENING AND EARLY DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.7 Providing additional screening avenue to B40 groups via PeKa B40	iFOBT screening included in PeKa B40 Screening Package	iFOBT screening services included in PeKa B40 by 2025	MOH (BKP) Protect Health
		1.8 Exploring feasibility of involving GPs in CRC screening	Meetings with relevant GPs associations and Academy of Family Physicians of Malaysia (AFPM) conducted	By 2021 GPs participate in CRC screening activities	MOH (BKP/GP associations/ AFPM
		1.9 Exploring feasibility of involving SOCSO in CRC screening	Meetings with relevant officers at SOCSO conducted	By 2025 SOCSO included CRC screening in their health screening policy	MOH/SOCSO

APPENDIX 2

STRATEGY 2: SCREENING AND EARLY DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
2	Providing a systematic patient navigation from screening, diagnosis to treatment	2.1 Developing patient navigation and referral pathway	Development of navigation and referral pathway	Navigation and referral pathway developed / incorporated under Guideline for Screening & Early Detection and being used as reference	MOH (BKP, JKN, PKD/PKK/PKB) NGOs
		2.2 Appointment of Liaison Officer (LO) at KK and Hospital	All KK and Hospital providing CRC screening appoints Liaison Officer (LO)	100% KK and Hospital providing CRC screening activities appoints LO	MOH (BKP), JKN, PKD/PKK/PKB, KK, relevant hospitals
		2.3 Mapping of available colonoscopy services	Facilities with colonoscopy services successfully mapped with referring KK	First mapping activity completed in 2021 (to do yearly mapping)	MOH (BPP)

APPENDIX 2

STRATEGY 2: SCREENING AND EARLY DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		2.4 Improving appointment system from KK to Hospital	All facility to utilise Online Appointment System (by MAMPU)	80% facilities using Online Appointment System (by MAMPU)	MOH (BPM)
		2.5 Development of training module for Patient Navigation Program (CRC)	Training module for Patient Navigation Program (CRC) developed	2022 – training module developed	MOH
		2.6 Appointment of NGO Volunteers as Patient Navigator	Numbers of NGO Volunteers certified as Patient Navigator	Increase in numbers of volunteers certified as Patient Navigators yearly	MOH/ Relevant NGO

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
A. COLONOSCOPY					
1	Increase capacity and quality in colorectal and gastroenterology sub-speciality services within MOH facilities	1.1. Increase the number of centres providing endoscopic services by surgeon and gastroenterologist	All Cluster Hospitals has endoscopy services performed by General / Colorectal Surgeon or Gastroenterologist in residence	<p>Gastroenterologist: 30 Gastroenterologist by 2025 At least one (1) trainer with two (2) trainees for every gastroenterology centre</p> <p>Surgeon: - General Surgeon - 30 Colorectal Surgeons by 2025. 1) Two (2) per training centre. [2x5=10]. 2) 1 per Cluster Hospital</p>	MOH, BPP

APPENDIX 3

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.2. Providing adequate infrastructure and equipments to support the service	All Cluster Hospitals equipped with Colonoscopy services	<p>One (1) Colonoscopy per 350 procedures. Portable Scope for Hospitals without resident Specialist. To train staff. To provide infrastructure.</p> <p>New colonoscope will be provided according to the number of patient undergoing colonoscopy one (1) colonoscope: 350 patients)</p> <p>To achieve percentage of patients with waiting time of \leq two (2) weeks for colonoscopy (according to CPG</p>	MOH, BPP

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
				Guideline Management of Colorectal Cancer	
B. PATHOLOGY					
1	To upgrade the scope and efficiency of existing laboratory diagnostic services in all national, regional and state hospitals to provide total support for cancer patients	1.1 To establish IHC, ISH, PCR and sequencing-based molecular tests at identified centres on solid tumours	1.1.1 To enhance molecular-based IHC in centres with subspecialty services (HKL, HSBAS) for CRC 1.1.2 To establish PCR and sequencing diagnostics in HKL focusing primarily on solid tumours	By 2025, all centres with subspecialty services will be able to provide molecular-based IHC. To establish PCR and sequencing diagnostics in HKL for colorectal carcinoma by 2022 and other cancers by 2025	MOH MOH

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
C. RADIOLOGY					
1	To reduce waiting time for staging and image guided procedures.	<p>1.1 Staging to be carried out within 2 weeks of confirmed diagnosis by HPE</p> <p>1.2 Urgent image guided procedure perform for clinical / radiological diagnosis 'consistent with/suspicious for / probable' of colorectal cancer ($\geq 75\%$ level of certainty) to be done within one (1) week</p>	<p>90% of cases</p> <p>80% of cases</p>	<p>2021-2025</p> <p>2021-2025</p>	<p>MOH</p> <p>MOH</p>
2	To upgrade and replace aging radiology equipments	To replace CT scan, MRI, ultrasound, fluoroscopy, angiography and general X-ray machine more than 10 years old	Number of CT Scan, MRI, ultrasound, fluoroscopy, angiography and general X-ray machines replace yearly	As per NSPCCP 2021-2025 document	MOH

APPENDIX 3

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
3	To expand diagnostic and therapeutic radiology services.	3.1 CT scan	<p>3.1.1 Number of CT Scan machines install in minor specialist hospital</p> <p>3.1.2 To install second CT Scan in hospital in state and major hospital with high workload. (Peninsular Malaysia: 15,000 cases per year; Sabah and Sarawak: 12,000 per year)</p>	<p>As per NSPCCP 2021-2025 document</p> <p>As per National Strategic Plan for Cancer Control Programme 2021-2025 document</p>	<p>MOH</p> <p>MOH</p>
		3.2 MRI	3.2.1 Number of MRI machines install in major specialist hospital	As per NSPCCP 2021-2025 document	MOH

APPENDIX 3

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaboration Agencies
			3.2.2 Number of MRI machines install in hospitals with workload more than 2500 cases/year		MOH
		3.3 Multipurpose C-arm, angiogram machine	Number of multipurpose C - Arm, angiogram installed	As per NSPCCP 2021-2025 document	MOH
		3.4 Establish public private partnership (PPP)	Outsourcing service for staging CT Scan/ MRI of colorectal cancer if waiting time exceed 2 weeks	100%	MOH
		3.5 Install RIS-PACS for all centre with oncology services	Number of centres with RIS/PACS installed.	As per NSPCCP 2021-2025 document	MOH

STRATEGY 3: DIAGNOSIS					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaboration Agencies
4	To strengthen our human capital development	<p>4.1 To produce Oncology-Radiology Reporting perform.</p> <p>4.2 'Advance competency programme/training' (sabbatical or equivalent leave given to Senior Consultants in area of subspecialty working in MOH)</p> <p>4.3 Colorectal cancer detection using CT Colonography</p>	<p>Structured reporting for CT staging of colorectal cancer</p> <p>One (1) senior consultants for onco-radiology in 5 years</p> <p>To equip Automated CO2 insufflation system with a software for CT-colonography at state Hospitals</p>	<p>2021-2025</p> <p>2021-2025</p> <p>2021-2025</p>	<p>MOH</p> <p>MOH</p> <p>MOH</p>

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
A. COLORECTAL SURGERY					
1	Increase capacity and quality in colorectal sub-speciality services within MOH facilities	<p>1.1 Providing adequate infrastructure and equipments to support the service</p> <p>1.2 Increase human resource by ensuring uptake of two Scholarships per year to pursue training is approved</p> <p>1.3 Planning in terms of state-based centres with Colorectal services - ensure performance quality</p>	<p>All Cluster Hospitals with Specialists equipped with Colonoscopy</p> <p>Percentage of patients with waiting time of ≤ 4 weeks for CRC surgery is increased</p> <p>Rate of unclear surgical margins in colorectal surgery</p>	<p>One (1) Colonoscopy per 350 procedures. Portable Scope for Hospitals without resident Specialist. To train staff. To provide infrastructure</p> <p>>80%</p> <p><5 %</p>	<p>MOH</p> <p>MOH</p> <p>MOH</p>

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
		1.4 Enhance centres with minimally invasive surgeries	Number of Cluster Hospitals with Colorectal Surgeons providing minimally invasive surgery	90% by 2025	MOH
B. RADIOTHERAPY AND ONCOLOGY					
1	To improve access to oncology services in MOH	1.1 Increase number of cancer treatment facilities within MOH	1.1.1 Establishing Northern Oncology Centre equipped with radiotherapy, chemotherapy and basic nuclear medicine services. 1.1.2 Establishing East Coast Oncology Centre at Kuantan/ Kuala Terengganu 1.1.3 Establishing Sarawak Cancer Centre	Northern Oncology Centre operating in 2025. East Coast Oncology Centre expected to be operating by 2030. Sarawak Cancer Centre expected to be operating by 2025	MOH (BPP, Planning & Development Division, BPL, BSKB), MOF, SPA, JKR. MOH MOH

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
		1.2 To establish Clinical Oncology Unit (COU) at MOH Hospital	Developing (COU) in Periphery Hospitals: 1. Hospital Selayang 2. Hospital Batu Pahat 3. Hospital Tawau	COU to be set up in Hospital Selayang and Batu Pahat by 2021 and Hospital Tawau by 2025	MOH (BPP), Hospital Directors, State Health Directors)
2	To provide radiotherapy services in timely manner	2.1 Upgrade of Radiotherapy facilities within MOH.	2.1.1 Hospital Kuala Lumpur - To replace CT simulator (2002) - To replace Linear Accelerators (2002 and 2009) - To increase treatment Planning system 2.1.2 Institut Kanser Negara -To add 5 th Linear Accelerator -To add treatment planning system	CT simulator to be replaced by 2022 Linear accelerators replaced by 2021-2022.	MOH (BPP)
				New Linear accelerator installed by 2021.	

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
			<p>2.1.3 Hospital Sultan Ismail -To replace Linear Accelerator (2005)</p> <p>2.1.4 Hospital Umum Sarawak -To add CT simulator -To replace CT simulator (2008) -To replace LINACs (2008 and 2009)</p> <p>2.1.5 Hospital Wanita & Kanak-Kanak Sabah -To add CT simulator -To replace LINAC (1997) at HQE2</p>	<p>Linear accelerator replaced by 2022.</p> <p>New CT simulator to be installed by 2022 CT simulator to be replaced by 2023 Old Linear Accelerator to be replaced on 2021 and new one to be installed on 2023</p> <p>New CT simulator to be installed by 2021. Linear accelerator replaced 2023</p>	

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
		2.2 To outsource radiotherapy services to private oncology centres.	2.2.1 To outsource radiotherapy services to private oncology centre for patients in Klang Valley	Patients from Klang Valley will get radiotherapy treatment at private centre every year to reduce the waiting time	MOH
			2.2.2 To outsource radiotherapy services to private oncology centre for patients in Perak	Patients from Perak will get radiotherapy treatment at private centre by 2023	MOH
3	To improve personalised care of colorectal patients	3.1 To form multidisciplinary team in all oncology centres and state hospitals	To increase number of oncologists in each oncology centre	All oncology centres (six (6) centres) to have MDT team/ meeting by 2025	MOH

STRATEGY 4: TREATMENT					
No.	Specific Objective	Strategised Actions	Performance Indicators	Target	Coordinating/ Collaborating Agencies
		3.2 To tailor the systemic therapy based on biomolecular profile of the cancer	To work together with molecular pathologists to establish the service	All oncology centres with molecular pathology laboratory will decide the treatment of Stage II colorectal cancer patients according to MSI/MSR status. Tests like extended KRAS and BRAF mutation will be requested when indicated in Stage IV patients.	MOH

STRATEGY 5: MONITORING & SURVEILLANCE					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
1	Enhancement of quality cancer data and information systems (NCR & PRIS) for colorectal cancer data entry	<p>1.1 NCR and State Health Departments - Training on notification of colorectal cancer and ICD-O coding via Patient Registry Information System (PRIS-M2b)</p> <p>1.2 NCR with support from MHTC, and MOS - to improve the notification submission rate for colorectal cancer among specialists and medical officers in private health facilities</p> <p>1.3 Audit visits to facilities</p>	<p>i. Number of facilities to notify via Patient Registry Information System (PRIS)</p> <p>ii. Number of facilities with ICD-O trained officer</p>	All government and private hospitals notify all newly diagnosed colorectal cancer cases via PRIS by 2025	<p>MOH (KN, BKP, PIK, BPP)</p> <p>MOH (IKN, PIK, BPP) MHTC, MOS</p> <p>MOH (IKN)</p>

STRATEGY 5: MONITORING & SURVEILLANCE					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.4 MyHDW – PIK to strengthen all LIS available in the state and specialist hospitals to support NCR in colorectal cancer surveillance	Number of state and specialist hospitals with LIS interfaced with PRIS	PRIS and LIS has interface in all state and specialist hospitals by 2025	PIK/ Pathologists
		1.5 To improve data submission of colorectal cancer registry under PRIS	Cancer data entered into PRIS	By 2023, all information of new cases for colorectal cancer registry under PRIS are submitted	MOH: IKN, PIK
2	Timely reporting of cancer data	2.1 Establishing a sharing networks between NCR, other sub-module cancer registries and Universities	i. Comparable and comprehensive data coverage ii. Support of evidence-based cancer clinical management and cancer prevention decision makings	Each year / 5-years data reported by the subsequent 2 years	MOH (Sub-module cancer registries, BKP, IKN), Universities

APPENDIX 5

STRATEGY 5: MONITORING & SURVEILLANCE					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		2.2 Short term training in cancer data epidemiology analysis and quality management	High quality of data		MOH (BKP, IKN, JKN) IARC
		2.3 Recruitment of research officers trained for checking accuracy of data, active search of unnotified cases in facilities and key in data into the system	Two (2) research officers / PSH		MOH (BSM, IKN)

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
	To strengthen human capital development and improve career development within MOH	<p>A. PATHOLOGY SERVICES</p> <p>1.1 Strengthen specialized human resource by having qualified and highly-skilled Pathologists, Scientific Officers and Medical Laboratory Technologist trained in Molecular Pathology</p>	<p>1.1.1 Pathologist: one candidate under Subspecialty programme with Hadiah Latihan Persekutuan (HLP) for Molecular Pathology</p> <p>1.1.2 Scientific Officer: to train one candidate per year for Subject Matter Expert (SME) trained in Molecular Pathology in solid tumours and Bioinformatics as Subject Matter Expert (SME)</p>	<p>One (1) Pathologist to be trained abroad by 2025</p> <p>Five (5) Scientific Officers to be trained by 2025</p>	<p>MOH/Universities /Private Sector</p> <p>MOH/Universities /Private</p>

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
			1.1.3 Scientific Officer and Medical Laboratory Technologist: In-house/local training and workshops: one candidate per year	Five (5) officers to be trained by 2025	MOH/Universities /Private Sector
B. RADIOLOGY SERVICES					
		1.2 To further expand Radiology sub-specialty training into: -Interventional Onco-Radiology - Onco-Radiology	Number of sub-specialist train in interventional Onco-radiology / Onco-radiology within five (5) years	Five (5) sub-specialists trained in interventional Onco-radiology / Onco-radiology within five (5) years	MOH
		1.3 Radiographers to go for short courses/intensive training/advance diploma programmes locally or abroad to be modality expert	Percentage of radiographer undergo short courses / intensive training/ advance diploma programmes	20% of radiographer should obtain Advance Diploma certification training in CT scan or relevant future advanced programme	MOH

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.4 Radiology Nurse Training	Number of Radiology Nurse undergoing training	20 nurses to undergo Advance Diploma Perioperative Nursing (Radiology) over the next five (5) years	MOH
		1.5 <i>Pegawai Sains (Fizik)</i>	Number of <i>Pegawai Sains (Fizik)</i> obtaining Post-Graduate qualification	All <i>Pegawai Sains (Fizik)</i> should obtain a Post Graduate Qualification after five (5) years in service	MOH
C. COLORECTAL SURGERY SERVICES					
		1.6 Increase the number of centres providing colorectal sub-speciality services	All Major Specialist Hospitals has a Colorectal Surgeon in residence	30 Colorectal Surgeons by 2025. 1) Two (2) per training center [2x5=10]. 2) One (1) per Major Hospital	MOH

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.7 Improve colorectal skills in general surgeons	Training program and credentialing by colorectal surgeon	At least one (1) Major hospital without colorectal surgeon	MOH
D. RADIOTHERAPY & ONCOLOGY SERVICES					
		1.8 To increase number of Clinical Oncologist	To maintain at least ten (10) candidates per intake in Masters in Clinical Oncology	Aim to have 50 Oncologists by 2025	MOH (BPL and Planning & Development Division), Universities
		1.9 To increase number of Physicist - Strengthening Medical Physicist through education and Structured Training Programme specializing in Radiotherapy	To retain those trained in radiotherapy to be kept in that field upon promotion by increasing number of promotional posts in radiotherapy	The expected increment in number of posts as follows: HUS- 6 posts HSL -9 posts IKN- 6 posts HWKKS – 5 posts HKL - 1 post Northern cancer centre: 10 posts	MOH (BPL and Planning & Development Division)

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.10 To increase number of Radiation Therapists	To enrol 10 radiation therapists every year in Advanced Diploma Program	50 radiation therapists with Advanced Diploma by end of 2025	MOH (BPL), Head of Profession for Radiation Therapist, UKM
		1.11 To increase number of Oncology Trained Nurses	1.11.1 To increase the intake for post basic nursing program every year	30% of the oncology nurses completed post basic training in Oncology	MOH (Clinical oncology, Haematology, Paediatric Oncology, Gynaecology), Private hospitals which run oncology services, Oncology Centres, Hospital directors
			1.11.2 To train nurses in periphery hospitals for 2 weeks on chemotherapy administration at Oncology Centres	All oncology patients should receive chemotherapy by nurses trained in chemotherapy administration at Oncology centres	

APPENDIX 6

STRATEGY 6: HUMAN CAPACITY BUILDING					
No.	Specific Objectives	Strategic Actions	Performance Indicator	Target	Coordinating / collaborating Agencies
		1.12 To increase number of Pharmacists	1.12.1 To credential at least two Oncology Pharmacists in all states depending on the number of established Oncology Departments/Clinical Oncology Units nationwide	16 credentialed oncology pharmacists by 2025	Pharmaceutical Services Program, MOH, JPA
			1.12.2 To ensure sufficient number of pharmacists in each Pharmacy Oncology Units; - CDR unit: 20 preparation/day = One (1) oncology trained pharmacist, - Oncology ward: One (1) Oncology Pharmacist / ward	One (1) centre (160 preparations) = Eight (8) Oncology Pharmacists One (1) Oncology pharmacist in every oncology ward in each centre	

ABBREVIATIONS

AFPM	Academy of Family Physicians of Malaysia
ASR	Age-standardised Rate
ASMR	Age-Standardised Mortality Rate
B40	Bottom 40% of income group
BER	Beyond economic repair
BKP	Bahagian Kawalan Penyakit (Disease Control Division)
BPF	Program Perkhidmatan Farmasi (Pharmaceutical Services Division)
BPK	Bahagian Pendidikan Kesihatan (Health Education Division)
BPKK	Bahagian Pembangunan Kesihatan Keluarga (Family Health Development Division)
BPL	Bahagian Pengurusan Latihan (Training Management Division)
BPM	Bahagian Pengurusan Maklumat (Information Management Division)
BPP	Bahagian Perkembangan Perubatan (Medical Development Division)
BRAF	B-Raf Proto-Oncogene, Serine/Threonine Kinase
BSKB	Bahagian Sains Kesihatan Bersekutu (Allied Health Science Division)
BSM	Bahagian Sumber Manusia (Human Resource Division)
CME	Continuing Medical Education
CO ₂	Carbon Dioxide
COU	Clinical Oncology Unit
CORUM	Colorectal Cancer Survivorship Society
CPG	Clinical Practice Guideline
CRC	Colorectal Cancer
CRM	Cancer Research Malaysia
CT	Computerised Tomography
DE	Development Expenditure
DG	Director General

DOSM	Department of Statistic Malaysia
FCTC	Framework Convention on Tobacco Control
GPs	General Practitioners
HA	Hospital Ampang
HCP	Health Care Provider
HKL	Hospital Kuala Lumpur
HLP	Hadiah Latihan Persekutuan
HOD	Head of Department
HPE	Histopathological Examination
HPJ	Hospital Putrajaya
HPP	Hospital Pulau Pinang
HQ	Headquarter
HQE	Hospital Queen Elizabeth
HQEII	Hospital Queen Elizabeth II
HRPB	Hospital Raja Permaisuri Bainun
HRPZII	Hospital Raja Perempuan Zainab II
HSA	Hospital Sultanah Aminah
HSBAS	Hospital Sultanah Bahiyah Alor Setar
HSI	Hospital Sultan Ismail
HSNZ	Hospital Sultanah Nur Zahirah
HTAA	Hospital Tengku Ampuan Afzan
HTAR	Hospital Tengku Ampuan Rahimah Klang
HTJS	Hospital Tuanku Jaafar Seremban
HUS	Hospital Umum Sarawak
HUSM	Hospital Universiti Sains Malaysia
HWKKS	Hospital Wanita dan Kanak-Kanak Sabah
IARC	International Agency for Research on Cancer
iFOBT	immunological Faecal Occult Blood Test
IHBR	Institute Health Behavioural Research
IHC	Immunohistochemistry
IHSR	Institute for Health Systems Research
IKN	Institut Kanser Negara (National Cancer Institute)
ISH	In situ hybridization

	Scheme for B40)
PIK	Pusat Informatik Kesihatan (Health Informatic Centre)
PKD	Pejabat Kesihatan Daerah (District Health Office)
PNP	Patient Navigation Programme
PPP	Public-Private-Partnership
PRIS	Patient Registry Information System
PSH	Pekerja Sambilan Harian (Daily part-time worker)
RIS	Radiology Information System
SME	Subject Matter Expert
SOCSO	Social Security Organisation
SPA	Suruhanjaya Perkhidmatan Awam (Public Service Commission)
TV	Television
UKM	Universiti Kebangsaan Malaysia (National University of Malaysia)
WHO	World Health Organisation

EDITORS AND CONTRIBUTORS

Main Editors

1. Dr Nor Saleha binti Ibrahim Tamin
Public Health Physician
Cancer Unit, NCD Section
Disease Control Division
Ministry of Health Malaysia
2. Dr Siti Norain Binti Sallahuddin
Principle Assistant Director
Cancer Unit, NCD Section
Disease Control Division
Ministry of Health Malaysia
3. Dr Feisul Idzwan bin Mustapha
Deputy Director (NCD)
Disease Control Division
Ministry of Health Malaysia

List of Contributors

1. Dr Rosnah binti Ramly
Sector Head
CVD-Diabetes-Cancer (NCD)
Disease Control Division
Ministry of Health Malaysia
2. YBhg. Datuk Dr Muhammad Radzi bin Abu Hassan
National Head Gastroenterology and Hepatology
Hospital Sultanah Bahiyah
Alor Setar
3. YBhg Dato' Dr. Fitzerald Henry
National Head of General Surgery
Hospital Selayang
4. Dr Yun Sii Ing
National Head Radiology
Hospital Sungai Buloh
5. Dr Arni binti Talib
National Head of Pathology
Hospital Kuala Lumpur
11. Dr Nasrul Muhaimin bin Mohd Mokhtar
Senior Principal Assistant Director
Family Health Development Division
Ministry of Health Malaysia
12. Dr Siti Zubaidah binti Ahmad Subki
Senior Principal Assistant Director
Medical Development Division
Ministry of Health Malaysia
13. Dr Umawathy a/p Sundrajoo
Senior Principal Assistant Director
Medical Development Division
Ministry of Health Malaysia
14. Dr Norhayati binti Omar
Pathologist
Hospital Kuala Lumpur
15. Dr. Prathepamalar a/p Yehgambaran
Oncologist
Hospital Kuala Lumpur

6. Dr Ros Suzanna binti Ahmad Bustaman
National Head of Radiotherapy & Oncology
Hospital Kuala Lumpur
7. Dr Tengku Norita binti Tengku Yazid
Head of Pathology Department
Hospital Selayang
8. Miss Jasiah Binti Zakaria
Head of Surgical Department
Hospital Tuanku Jaafar
Seremban
9. Dr Rosaida binti Hj Md Said
Gastroenterology Consultant
Hospital Selayang
10. Dr Siti Norbayah binti Yusof
Head of Cancer Registry
Department
National Cancer Institute
16. Dr Noridah binti Mohd Salleh
Public Health Physician
Family Health Development Division
Ministry of Health Malaysia
17. Dr Mastura binti Ismail
Family Medicine Specialist
Klinik Kesihatan Seremban 2
18. Puan Azlina binti Abdul Aziz
Head of Health Education Unit
National Cancer Institute
19. Puan Hidayatun Fadillah binti Mohd Nor
Senior Assistant Director
Health Education Division
Ministry of Health Malaysia
20. Norfarhainy binti Yahya
Assistant Director
Health Education Division
Ministry of Health Malaysia

NATIONAL STRATEGIC PLAN FOR COLORECTAL
CANCER (NSPCRC)
2021 - 2025

