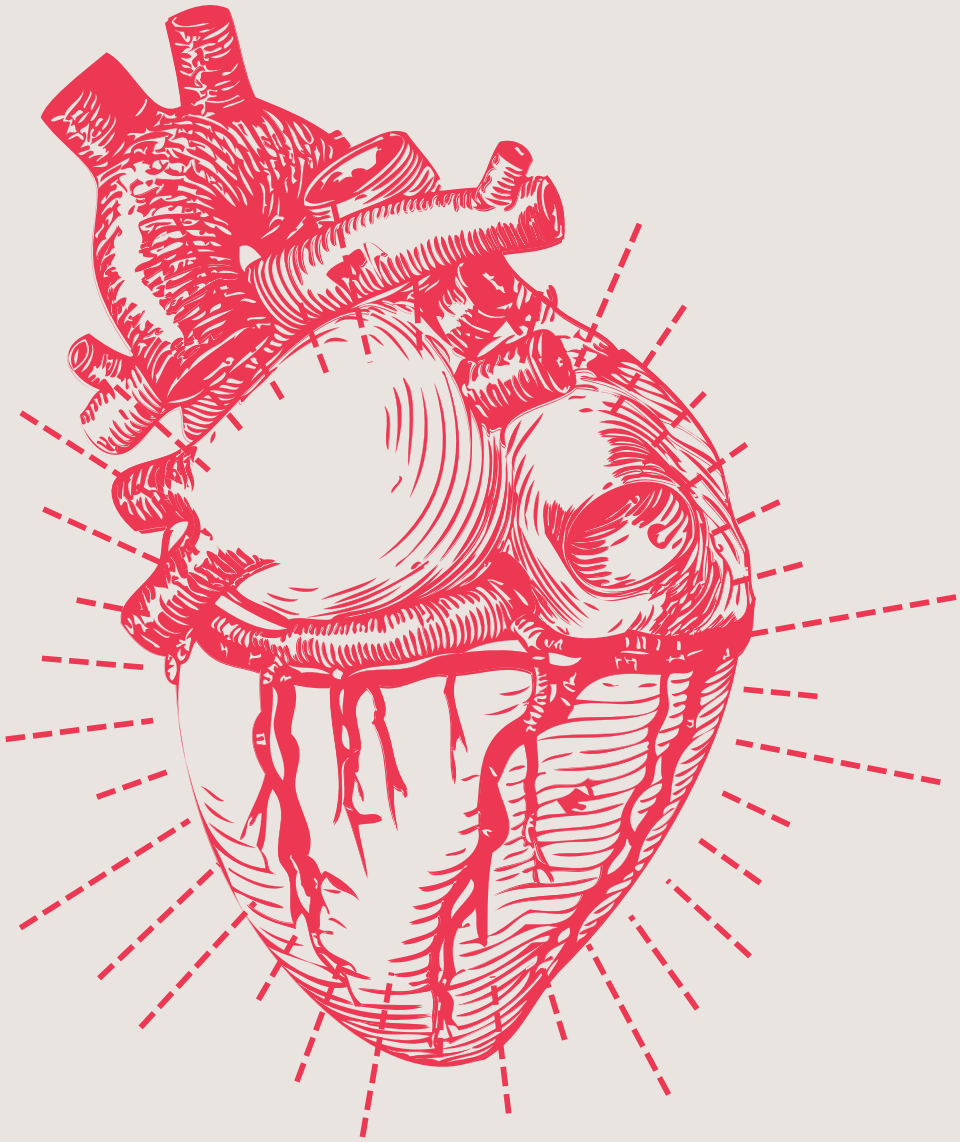
MOH/P/PAK/572.25(GU) – e

MINISTRY OF HEALTH MALAYSIA

HEART FAILURE CLINIC PROTOCOL



Protocol of Heart Failure Clinic for Non-Cardiologist in Hospitals Under Ministry of Health Malaysia

MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

BORANG MAKLUMBALAS PELANGGAN

PROTOCOL HEART FAILURE CLINIC FOR NON-CARDIOLOGIST IN HOSPITALS UNDER MOH MALAYSIA (FEB 2025)

https://tinyurl.com/aywdpkt4

PROTOCOL OF HEART FAILURE CLINIC FOR NON-CARDIOLOGIST IN HOSPITALS UNDER MINISTRY OF HEALTH MALAYSIA

MINISTRY OF HEALTH MALAYSIA

Medical Development Division
Ministry of Health Malaysia

This document was developed by the Medical Services Unit, Medical Development Division, Ministry of Health Malaysia and the Heart Failure Service for Non-Cardiologist in Hospitals under the Ministry of Health Malaysia Technical Working Group.

Published in February 2025

A catalogue record of this document is available from the library and Resource Unit of the Institute of Medical Research, Ministry of Health;

MOH/P/PAK/573.25(GU) - e

And also available from the National Library of Malaysia;

ISBN number: ISBN 978-629-95051-2-8

Published by:
Medical Services Unit
Medical Development Division
Ministry Of Health Malaysia

PREFACE

The prevalence of heart failure in Malaysia is estimated to be at 6.7% of the population.[1] Malaysia had one of the highest heart failure prevalence rates in Southeast Asia, with 721 cases per 100,000 persons in year 2017, an increase of 7.7% as compared to year 1990.[2] The high prevalence of heart failure translates into astronomical cost of healthcare for heart failure, which is divided into direct cost and indirect cost (taking into account among others; loss of productivity and disability).

Heart failure is associated with a high 30-day rehospitalization rate (~ 27.8%), and this is noted to be higher in those of older age or with concomitant chronic kidney disease.[3] Each readmission is associated with increased length of stay (LOS) and decreased time length between each subsequent hospitalisation. This in turn contributes to the high burden of cost for heart failure management.

According to national data generated by MoH Casemix Unit, the cost per an inpatient case of heart failure ranges from RM 4913.96 to RM 6547, depending on the category of severity of illness (SOI).[4] Additionally, a cost analysis on chronic heart failure in 3 public hospitals in Sabah, Kelantan and Pulau Pinang showed the mean total cost per HF patient per-year (PPPY) was RM 8,224 ± RM 5,236, of which inpatient cost accounted for 74.7% of the total cost.[5] It was estimated in 2021 that the cost burden of heart failure in Malaysia is approximately RM 2.28 trillion per year.[6] Mortality risk also increases with each hospitalisation as it is shown that mean survival after 4 hospitalisations is only 1.3 years as compared to 2.6 years with first hospitalisation of heart failure.[7] Thus reducing hospitalisation rate among heart failure has been recognised as the crucial target in not only reducing the financial burden of heart failure but also in reducing mortality risk.[8]

In Malaysia, the landscape of heart failure care is divided into inpatient care and outpatient care. The outpatient care of heart failure is shared among a few healthcare providers: - primary care, Medical Outpatient Department (MOPD) in hospitals, designated Heart Failure Clinic in hospitals and cardiologist-led Heart Failure Clinic. Currently there are 10 cardiology centres in MoH hospitals nationwide and the majority of heart failure patients are being seen in settings without cardiology services.

In view of Heart Failure Clinic being the key towards optimising heart failure care and reducing readmissions, mortality and financial burden for heart failure care; it is crucial and timely to have a structured Heart Failure Clinic in MoH hospitals without a resident cardiologist. The establishment of a Heart Failure Clinic in MoH hospitals should consider the centre's strengths and weaknesses while looking into existing health care resources. It is our hope that this protocol will contribute towards the establishment of a structured and sustainable Heart Failure Clinic in Malaysia's healthcare settings.

Reference:

1. Savarese, G., & Lund, L. H. (2017). Global public health burden of heart failure. *Cardiac failure review*, *3*(1), 7.
2. Bragazzi, N. L., Zhong, W., Shu, J., Abu Much, A., Lotan, D., Grupper, A., ... & Dai, H. (2021). Burden of heart failure and underlying causes in 195 countries and territories from 1990 to 2017. *European Journal of Preventive Cardiology*, *28*(15), 1682-1690.
3. Cook, C., Cole, G., Asaria, P., Jabbour, R., & Francis, D. P. (2014). The annual global economic burden of heart failure. *International journal of cardiology*, *171*(3), 368-376.
4. Casemix data 2022-2023, MoH Casemix Unit
5. Ong, S. C., & Low, J. Z. (2023). Financial burden of heart failure in Malaysia: A perspective from the public healthcare system. *Plos one*, *18*(7), e0288035.
6. Ong, S. C., Low, J. Z., Yew, W. Y., Yen, C. H., Abdul Kader, M. A. S., Liew, H. B., & Abdul Ghapar, A. K. (2022). Cost analysis of chronic heart failure management in Malaysia: A multi-centred retrospective study. *Frontiers in Cardiovascular Medicine*, *9*, 971592.
7. Mohd Ghazi, A., Teoh, C. K., & Abdul Rahim, A. A. (2022). Patient profiles on outcomes in patients hospitalized for heart failure: a 10‐year history of the Malaysian population. *ESC Heart Failure*, *9*(4), 2664-2675.
8. Lin, A. H., Chin, J. C., Sicignano, N. M., & Evans, A. M. (2017). Repeat hospitalizations predict mortality in patients with heart failure. *Military medicine*, *182*(9-10), e1932-e1937.

FOREWORD
DIRECTOR GENERAL OF HEALTH
MINISTRY OF HEALTH MALAYSIA

The paradigm of heart failure (HF) management in Malaysia over the years has been shaped by a 'spoke-and-hub' model for cardiovascular care, where non-cardiac centers manage the majority of heart failure cases. This model aims to facilitate accessible heart failure care while ensuring that more complex heart failure cases be directed to specialised cardiology care. This collaborative model ensures that patients receive holistic care that addresses various aspects of heart failure management, from diagnosis to treatment and rehabilitation.

Thus, I am pleased to see the initiative for the development of Protocol of Heart Failure Clinic for Non-Cardiologist in Hospitals Under Ministry Of Health Malaysia that strengthens the above model for patients' care and also solidifies Malaysia's healthcare systems' response to a growing public health challenge.

This protocol serves as a vital reference for healthcare providers in Malaysia who may not specialize in cardiology but are involved in the care of patients with heart failure (HF). The protocol aims to provide a targeted and structured approach in establishing a Heart Failure Clinic which includes operational and practical considerations in the management of a heart failure clinic.

I find all the 11 chapters have been thoughtfully written, providing clear and practical guidance that is easy to follow especially for those who are initiating the service. I believe the implementation of this protocol will yield a positive outcome which reflects its effectiveness and practicality.

This protocol reflects the commitment and dedication of the working group in the Internal Medicine Fraternity. I would like to congratulate everyone for their hard work and it is my sincere wish that this document will further elevate the standard of service of Heart Failure Clinic and reduce the burden of heart failure in Malaysia.

Datuk Dr. Muhammad Radzi Abu Hassan
Director General of Health
Ministry of Health Malaysia

FOREWORD
DEPUTY DIRECTOR-GENERAL OF HEALTH (MEDICAL)
MINISTRY OF HEALTH MALAYSIA

As the Deputy Director-General of Health, it is with great pride that I introduce this Protocol of Heart Failure Clinic for Non-Cardiologist in Hospitals under Ministry of Health Malaysia, aimed at providing guidance on establishing structured Heart Failure Clinic with operational standards at MoH hospital without resident cardiologists.

I am deeply aware of the challenges that heart failure presents to both healthcare providers and patients. Heart failure continues to be one of the leading causes of morbidity and mortality, thus placing a huge financial burden on Malaysia's healthcare system.

Collaboration between healthcare providers and optimization of guideline-directed medical therapy (GDMT) is the core of heart failure management. I trust this protocol will serve as an invaluable tool in achieving this target. This protocol not only strengthens our collective understanding of heart failure but also emphasizes the importance of communication and coordination in delivering optimal care. By adhering to evidence-based protocols, we hope that heart failure patients receive the most efficient and compassionate, patient-centered services.

Finally, I would like to congratulate and commend the tireless efforts of Internal Medicine Fraternity, particularly a team of dedicated Internal Medicine Physicians, in putting this protocol together. I am also pleased to acknowledge the contributions from the advisors and external contributors in finalizing this protocol.

Dato' Indera Dr. Nor Azimi binti Yunus
Deputy Director General of Health (Medical)
Ministry of Health Malaysia

FOREWORD
HEAD OF SPECIALTY INTERNAL MEDICINE
MINISTRY OF HEALTH MALAYSIA

Heart failure remains a significant health problem and a main contributor leading to patients' readmission to hospitals. For the majority of these patients that do not need procedural intervention, healthcare could be made accessible to them in line with the well distributed physicians through proper training and an organised system.

Based on clinical evidence from multiple major randomised controlled trials, guideline-directed medical therapy (GDMT) is the cornerstone of pharmacological therapy for patients with heart failure. However, there is an underutilization of GDMT in clinical practice.

Hence, the importance for the development of a protocol that will promote the implementation of GDMT through a structured Heart Failure Clinic. This service needs to be widely available and highly accessible.

Therefore, I am proud to present the Protocol of Heart Failure Clinic for Non-Cardiologist in Hospitals under the Ministry of Health Malaysia. This protocol is comprehensive; suitable for centres which are planning to start the service and centres which are ready to advance to the next level of care. It also contains a logbook for training of the medical officers. I believe that this protocol will be an invaluable reference source for hospitals to deliver high quality outpatient heart failure management.

I am pleased to acknowledge and commend the collective efforts of the esteemed contributors from a group of Internal Medicine Physicians supported by the Medical Development Division of MoH Malaysia and Fellow Consultant Cardiologists for their invaluable work in creating this protocol. This commendable endeavour comes at a pivotal time when heart failure care has gained paramount importance in our nation's healthcare landscape.

Finally, I would like to emphasise that a protocol is only successful if it is accepted and implemented. I truly hope and encourage non-cardiologists in all MoH hospitals who are involved in the outpatient management of heart failure to adopt these recommendations in the practice.

Dr. Cheah Wee Kooi
Head of Specialty Internal Medicine MoH Malaysia

LIST OF CONTRIBUTORS

ADVISORS

YBhg. Dato' Indera Dr. Nor Azimi binti Yunus
Deputy Director General of Health (Medical)
Ministry of Health Malaysia

YBhg. Dato' Dr. Mohd Azman bin Yacob
Director of Medical Development Division
Ministry of Health Malaysia

Dr. Nor Hayati binti Ibrahim
Senior Deputy Director
Medical Development Service Section
Ministry of Health Malaysia

TECHNICAL WORKING COMMITTEE

Advisor	**Dr. Cheah Wee Kooi** Consultant of Internal Medicine and Geriatrician Hospital Taiping
Scientific Advisor	**Datuk Dr. Liew Houng Bang** Senior Consultant of Internal Medicine and Cardiologist Hospital Queen Elizabeth, Kota Kinabalu
	Prof. Dr. Chee Kok Han Consultant Cardiologist University Malaya Medical Centre
Technical Advisor	**Dr Shahanizan bt Mohd Zin** Senior Principal Assistant Director Head of Medical Services Unit Medical Development Division,MoH (Malaysia)
	Dr. Puteri Aida Alyani binti Mohamed Ismail Senior Principal Assistant Director Medical Development Division, MoH (Malaysia)
Chairperson	**Dr. Nur Asyikin binti Mohd Yunus** Internal Medicine Physician Hospital Tengku Ampuan Rahimah, Klang

Vice Chairperson	**Dr. Noor Hidayah Yahya** Internal Medicine Physician Hospital Enche' Besar Hajjah Kalsom, Kluang
Secretary	**Dr. Izzatul Nadzirah binti Ismail** Internal Medicine Physician Hospital Enche' Besar Hajjah Kalsom, Kluang
Members	**Dr. Aznita binti Ibrahim** Internal Medicine Physician Hospital Sultan Abdul Halim, Sg. Petani
	Dr. Lim Jun Sian Internal Medicine Physician Hospital Sultan Abdul Halim, Sg. Petani
	Dr. Ng Boon Han Internal Medicine Physician and Rheumatologist Hospital Sultan Abdul Halim, Sg. Petani
	Dr. Koh Ewe Jin Internal Medicine Physician Hospital Taiping
	Dr. Yap Chee Jiek Internal Medicine Physician Hospital Kuala Lumpur

OTHER CONTRIBUTORS

Dr. Gan Pou Wee
Medical Officer
Medical Department
Hospital Kuala Lumpur

EXTERNAL REVIEWER

Dr. Jason Tan Seng Hong
Internal Medicine Physician
Hospital Banting

TABLE OF CONTENT

LIST OF FLOW CHARTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ACEi	Angiotensin-Converting Enzyme Inhibitor
ADL	Activities of Daily Living
AHA	American Heart Association
AMO	Assistant Medical Officer
ARB	Angiotensin Receptor Blocker
ARNI	Angiotensin Receptor/ Neprilysin Inhibitor
BP	Blood Pressure
CABG	Coronary Artery Bypass Graft
CAD	Coronary Artery Disease
CFS	Clinical Frailty Score
CHFQoLQ-20	Chronic Heart Failure Health-related Quality of Life Questionnaire
CPET	Cardiopulmonary Exercise Test
CRTD	Cardiac Resynchronisation Therapy Device
CVA	Cerebrovascular Accident
ECG	Electrocardiography
ECHO	Echocardiogram
ECOG	Eastern Cooperative Oncology Group
eGFR	Estimated Glomerular Filtration Rate
EQ-5D-3L	European Quality of Life 5 Dimensions 3 Level Version
ESRF	End Stage Renal Failure
GDMT	Guideline-Directed Medical Therapy
HbA1c	Haemoglobin A1c
HF	Heart Failure
HFmrEF	Heart Failure with Mildly Reduced Ejection Fraction
HFpEF	Heart Failure with Preserved Ejection Fraction
HFrEF	Heart Failure with Reduced Ejection Fraction

HR	Heart Rate
ICD	Implantable Cardioverter-defibrillator
KCCQ	Kansas City Cardiomyopathy Questionnaire
KPI	Key Performance Indicator
LOS	Length of Stay
LVAD	Left Ventricular Assist Device
LVEF	Left Ventricular Ejection Fraction
MDT	Multi-disciplinary Team
MLHFQ	Minnesota Living with Heart Failure Questionnaire
MMC	Malaysian Medical Council
MO	Medical Officer
MoH	Ministry of Health
MOPD	Medical Outpatient Department
MRA	Mineralocorticoid Receptor Antagonist
MTAC	Medication Therapy Adherence Clinic
MYHF	National Malaysian Heart Failure
NT pro-BNP	N-Terminal Pro-Brain Natriuretic Peptide
NYHA	New York Heart Association
PIC	Person-in-Charge
PCI	Percutaneous Coronary Intervention
POCT	Point Of Care Test
PPPY	Per Patient Per Year
Pro-BNP	Pro-Brain Natriuretic Peptide
PROS	Patient-Reported Outcomes
QoL	Quality of Life
RAS	Renin-Angiotensin System
SGLT2-i	Sodium-glucose Cotransporter-2 Inhibitor
SOI	Severity Of Illness

UFEME	Urine Full Examination, Microscopic Examination
6MWT	6-minutes' Walk Test

RATIONALE & PROCESS OF PROTOCOL DEVELOPMENT

This is the first national protocol that is being developed to empower Internal Medicine physicians and medical officers in hospitals under the Ministry of Health (MoH) Malaysia to initiate and sustain a Heart Failure Clinic.

Recommendations in this protocol are aimed to provide a targeted and structured approach in establishing a Heart Failure Clinic which include operational considerations like prerequisites of Heart Failure Clinic, proposed models of Heart Failure Clinic, optimal clinic staffing models and resources required, while placing emphasis on holistic patient-centred care and patient empowerment.

The protocol was developed in 2024 by a technical committee appointed by the Medical Development Division, MoH Malaysia. The committee comprises Internal Medicine Physicians who have experiences in managing established Heart Failure Clinic and doctors from the Medical Development Division.

Objectives of this protocol are:

1. To outline operational standards of a Heart Failure Clinic in MoH hospitals that are managed by non cardiologists.
2. To promote establishment of a structured Heart Failure Clinic in MoH hospitals.
3. To provide guidance on escalation of care to Cardiology Centre in MoH hospitals.
4. To provide guidance on transition care to other centres and/or primary health care centres.

Process of development of the protocol:

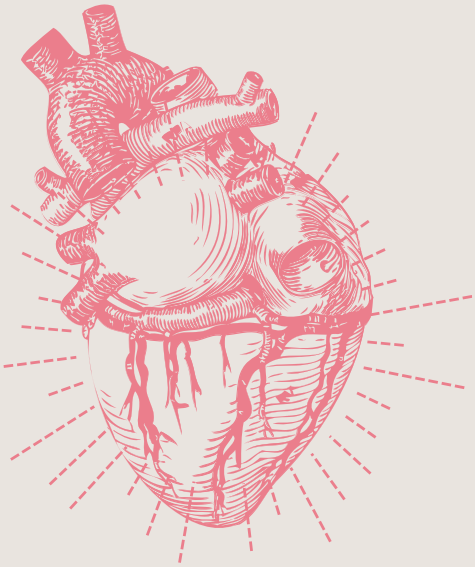
The technical committee started to convene in 2023 and outlined common issues in establishing and managing a Heart Failure Clinic in MoH hospitals . A review of available local and international Clinical Practice Guidelines or protocols was done by the committee to address the issues and provide practical solutions. The protocol was written with consensus of the technical committee and reviewed by appointed experts from the Ministry of Health and Ministry of Education.

Applicability of the Protocol and Resources Implications:

This protocol was developed taking into consideration availability of local health resources. Staffing considerations include optimisation of existing human resources involving Internal Medicine Physicians, medical officers (MO) and assistant medical officers (AMO). A structured logbook, which was developed to ensure adequate and standardised training, is provided to medical officers involved in Heart Failure Clinic. For AMO, expanded job scope with detailed job description is outlined to facilitate running operations of Heart Failure Clinic.

Optimisation of guideline-directed medical therapy (GDMT) is recognised as a key component of Heart Failure Clinic and utilises medications that have been approved for use in Malaysia and are available in MoH hospitals. This protocol also places emphasis on the role of clinicians and supporting staff to provide patient education and empower the patients in management of their heart failure. Achievable quality measures with targeted outcomes are also outlined to evaluate efficacy of Heart Failure Clinic.

Chapter 1
PREREQUISITES TO SETTING UP A HEART FAILURE CLINIC



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 1
PREREQUISITES TO SETTING UP A HEART FAILURE CLINIC

1. Introduction

1.1. Setting up a Heart Failure Clinic requires careful planning and considerations of various factors. This protocol aims to provide a contemporary, practical guide to set up and sustain a Heart Failure Clinic.

1.2. Patient empowerment should be the key focus in Heart Failure Clinic as it will contribute to optimal patient-centred outcomes.

1.3. Prerequisites of a Heart Failure Clinic can vary depending on the level of care to be delivered and local setting of the specific organisation. Specific considerations put forth in this document are broadly categorised into:

a. Key clinical services associated with improving patient outcomes.

and

b. Administrative components to optimise patient access, promote a systematic coordination of care, as well as engage in audit and evaluation activities for the purposes of quality improvement.

2. Prerequisites of a Heart Failure Clinic

These are the prerequisites for setting up Heart Failure Clinic:

No.	Prerequisites
1	Establish objectives of Heart Failure Clinic
2	Assemble a team for Heart Failure Clinic
3	Determine specific heart failure patient population to be cared for (inclusion and exclusion criteria)
4	Establish investigations' capabilities
5	Determine a suitable and designated area/room for the clinic
6	Develop human resource planning
7	Create clinic flow of care
8	Adhere to available guidelines in terms of management of heart failure
9	Provide patient education services to empower patient
10	Ensure quality improvement and outcome measurement

Table 1 : Prerequisites to setting up a Heart Failure Clinic

2.1. Establish objectives of Heart Failure Clinic

a. In general, the establishment of Heart Failure Clinic is to ensure the delivery of a consistent, evidence-based care and patient-centred approach to reduce admission and subsequently reduce mortality.

b. The detailed objectives of the Heart Failure Clinic are stated in Chapter 3 of this protocol.

c. To achieve the objectives, a Heart Failure Clinic should aim to perform these plans:

   i. Identify and enrol suitable patients with diagnosis of heart failure

   ii. Initiate and titrate guideline-directed medical therapy (GDMT) to maximal tolerated dose.

   iii. Provide patient empowerment & education resources to patients with heart failure.

   iv. Refer patients to the Cardiology Centre (if patients meet the criteria outlined in this protocol).

   v. Educate and engage with the community on heart failure.

   vi. Determine a mechanism for continuous quality improvement.

2.2. Assemble a team for Heart Failure Clinic

a. One of the vital decisions when developing a Heart Failure Clinic is assigning a Person-in-Charge (PIC) who will lead the clinic.

b. The Person-in-Charge (PIC) can be an Internal Medicine Physician or trained medical officer who coordinates the clinic and determines the direction of care for the patients, depending on the size and scope of the Heart Failure Clinic.

c. Although there will be some variety in Heart Failure Clinic staffing models, every clinic requires a manager (Assistant Medical Officer) for operational and administrative duties of the clinic.

2.3. Determine specific heart failure patient population to be cared for (inclusion and exclusion criteria)

a. Generally, every Heart Failure Clinic should be prepared to receive Stage B and C heart failure patients.

b. Many patients will have cardiac comorbidities, including atrial fibrillation, valvular heart disease, or coronary heart disease, which will also need to be addressed. Each individual clinic will need to determine whether it has sufficient expertise and resources required to care for patients with stage D heart failure, including those patients who are under palliative care.

c. Although not all clinics may have the resources or expertise to support the care of patients in stage D heart failure, centres not directly providing advanced heart failure services should establish a close relationship with the closest advanced heart failure centre and develop a mechanism for efficient patient referral.

2.4. Establish investigations' capabilities

a. The clinic should have access and support to a range of tests including routine haematology, biochemistry as well as ECG services, echocardiograms and NT-proBNP to determine the type and progression of heart failure.

2.5. Determine a suitable and designated area/room for the clinic

a. There are many considerations when choosing a location for a Heart Failure Clinic. Key factors to consider include accessibility to diagnostic tests, outpatient and inpatient care, and a team of healthcare professionals; including pharmacists, clinic assistants, dieticians, and rehabilitation specialists if available.

b. Other important factors include incorporation of existing clinical management processes and availability of patient education resources in situ. The location should also be accessible to patients and have necessary tools, as well as information to help patients transition from hospital to home.

2.6. Develop human resource planning

a. A multidisciplinary suggested model for the Heart Failure Clinic had been shown to have a better outcome.

b. Minimum human resource requirements to start a Heart Failure Clinic are Internal Medicine Physician/ trained medical officer and Heart Failure Clinic assistant.

c. The number of additional health care professionals within any Heart Failure Clinic is dependent on the level of care that will be provided, the human resource policies within the organisation, and the resources available to provide the service.

2.7. Create clinic flow of care

a. The Heart Failure Clinic should have a local flow of receiving referrals from others and referring to the Cardiology Centre.

b. Ultimately, frequency and type of follow-up would be determined by the local organisation of care and resources.

2.8. Adhere to available guidelines in terms of management of heart failure.

a. A standardised heart failure treatment algorithm is important for consistent care to be delivered. This can be derived from available local and international guidelines.

b. Management of heart failure patients should adhere to available guidelines to ensure the best possible outcomes, especially those patient-centric recommendations for clinicians to diagnose and manage patients with heart failure. Adhering to these guidelines can lead to delayed progression, decreased mortality, and improved quality of life for patients with heart failure.

c. Serial evaluations serve to assess a patient's status, response to therapy, development of complications and disease progression.

d. Key components of assessment include:

   i. Functional capacity - New York Heart Association (NYHA) functional class (mandatory) and/or 6-minute walk test

   ii. Fluid status and body weight

iii. Blood pressure, heart rate and rhythm

iv. Examination of the cardiovascular and respiratory systems

v. Cognitive status and nutritional status

vi. Review of pharmacotherapy - up titration of dose, compliance and side effects

vii. Renal profile and eGFR as necessary

viii. Diet and sodium intake

ix. Consumption of alcohol or illicit drugs

x. Smoking history

xi. Mental status and welfare of patient

e. Guideline-Directed Medical Therapy (GDMT) has been shown to reduce all-cause mortality and stopping medications when patient or ejection fraction improved is associated with a high recurrence risk.

f. Multidisciplinary care teams have been associated with improvements in mortality and function for patients with heart failure.

g. Therefore, adherence to available guidelines is crucial in providing comprehensive and effective care to heart failure patients.

2.9. Provide patient education services to empower patient

a. Heart Failure Clinic should provide patient education services by offering educational materials, interactive tools, and resources to patients and their families.

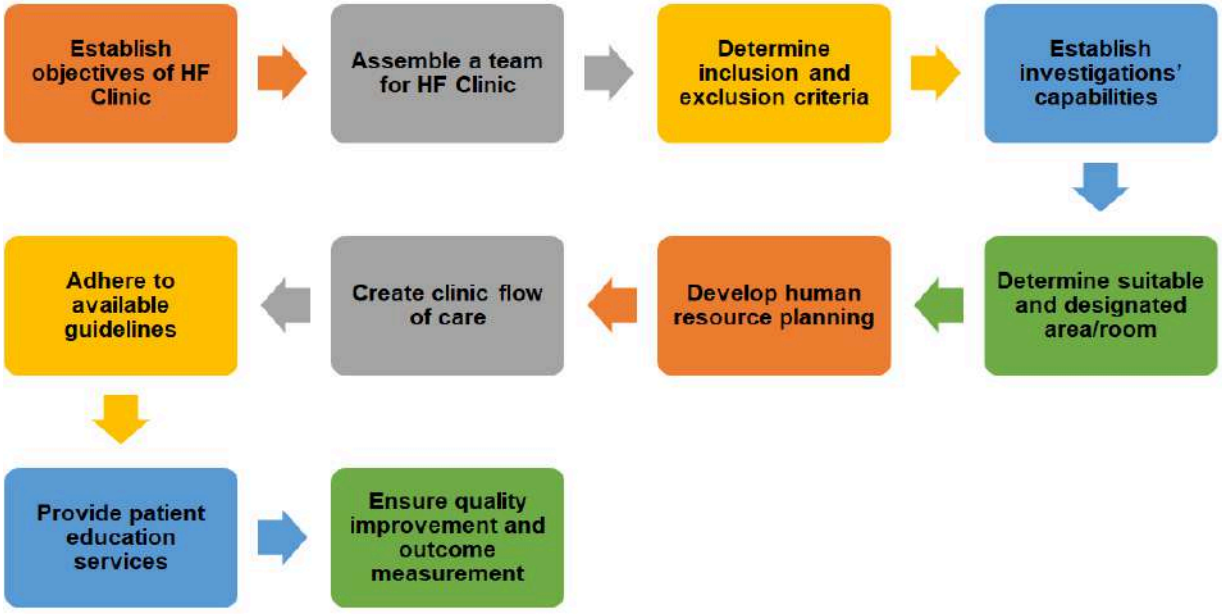
b. These resources can include information on heart failure, its causes, symptoms, and treatment options, as well as lifestyle changes that can help manage the condition. Patients can also be educated on how to monitor their symptoms, take their medications, and recognize warning signs of worsening heart failure.

c. Empowerment of patients can only be achieved when patients have a good understanding of their disease. This will improve patient outcomes and quality of life.

2.10. Ensure quality improvement and outcome measurement

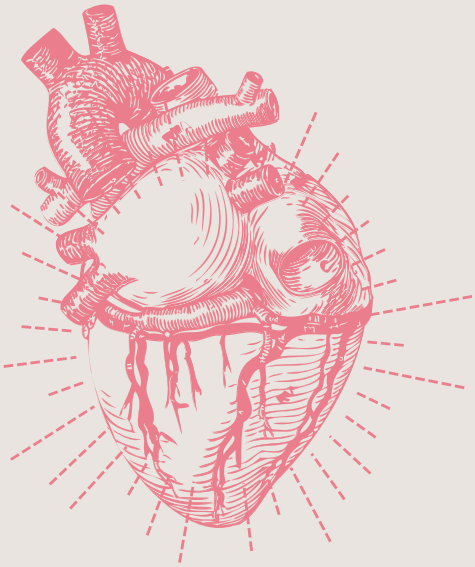
a. The clinic should have quality assurance processes in place and follow standardised performance measures to ensure continuous quality improvement is at the core of the organisation's culture.

b. Heart Failure Clinics should rigorously track objective clinical outcomes such as mortality and hospital admission, as well as process outcomes for delivering high-quality care to the patient.



Flow Chart 1 : Prerequisites to setting up a Heart Failure Clinic

CHAPTER 2
OBJECTIVES OF HEART FAILURE CLINIC



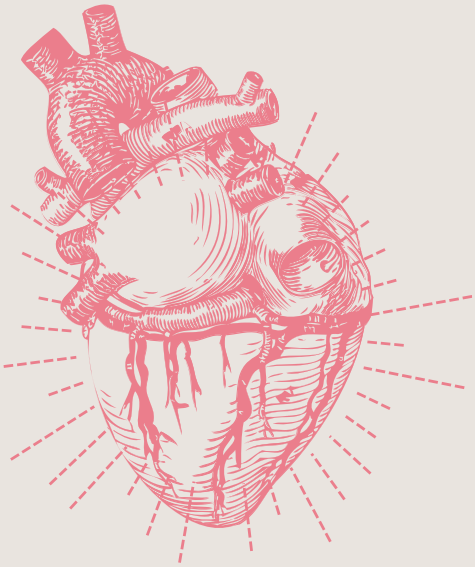
MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 2
OBJECTIVES OF HEART FAILURE CLINIC

In order to improve long-term patient outcomes, all Heart Failure Clinic should aim to achieve objectives as mentioned below:

1. To reduce heart failure mortality rate.
2. To reduce readmission rate due to decompensated heart failure.
3. To provide patient-centred care with a multidisciplinary approach.
4. To ensure adherence to GDMT initiation and titration.
5. To improve the quality of evidence-based health care service delivered to patients with heart failure.
6. To improve quality of life in heart failure patients.
7. To promote and instil patient empowerment among heart failure patients.

Chapter 3
PROPOSED MODELS OF HEART FAILURE CLINIC



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 3
PROPOSED MODELS OF HEART FAILURE CLINIC

1. Introduction

1.1. There is not one single model of Heart Failure Clinic that fits all centres. We advise centres to evaluate their objectives, target population and resources prior to choosing a Heart Failure Clinic model.

1.2. The Heart Failure Clinic should have a set of inclusion and exclusion criteria that are predetermined by the centre for the clinic to achieve its objectives. Inclusion and exclusion criteria serve as a filter for the type of heart failure patients that are going to be managed in the clinic.

2. Category of Heart Failure Clinic

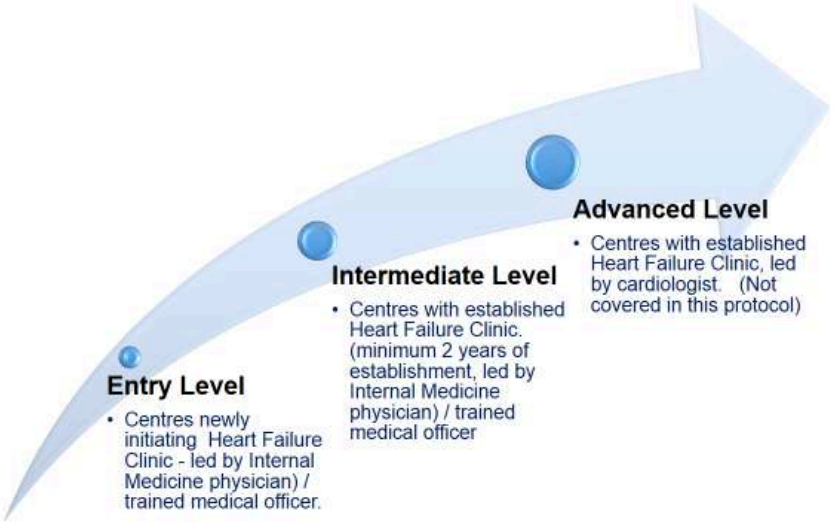
Centres may be categorised into:

2.1. Entry level

Centres newly initiating a Heart Failure Clinic - led by an Internal Medicine Physician/ trained medical officer

2.2. Intermediate level

a. Centres with established Heart Failure Clinic (minimum 2 years of establishment, led by an Internal Medicine Physician/ trained medical officer)



Flow Chart 2: Category of Heart Failure Clinic

Table 2: The proposed models of Heart Failure Clinic according to their category

Category	Suggested Population	Proposed Models (to choose one or adopt several)	Team requirement
Entry	Depends on inclusion or exclusion criteria (can be focusing on HFrEF or can cater to all phenotypes of EF)	1. HF clinic with specific inclusion and exclusion criteria (narrow target population) ***and/ or*** 2. Quick Review Medication Clinic	1. Internal Medicine Physician or trained Medical Officer as a PIC in the clinic 2. Medical Officer(s) 3. HF Clinic Assistant
Intermediate	All phenotypes of HF	1. HF clinic with expanded inclusion criteria ***and/ or*** 2. Quick Review Medication Clinic ***and/ or*** 3. S.O.S Walk-In Clinic (furosemide titration for walk in patient) ***and/ or*** 4. Multidisciplinary Heart Failure clinic	1. Internal Medicine Physician or trained Medical Officer as a PIC in the clinic 2. Medical Officer(s) 3. HF Clinic Assistant ***and/ or*** 4. Pharmacist 5. Dietician 6. Cardiac Rehabilitation Team 7. Physiotherapist 8. Occupational Therapist

3. Models of Heart Failure Clinic

These are the examples of Heart Failure Clinic models that can be adopted based on the local centre's preferences and resources. A centre can opt to have one model of care or several models of clinic running at the same time: depending on the spectrum of heart failure patients' population in the centre.

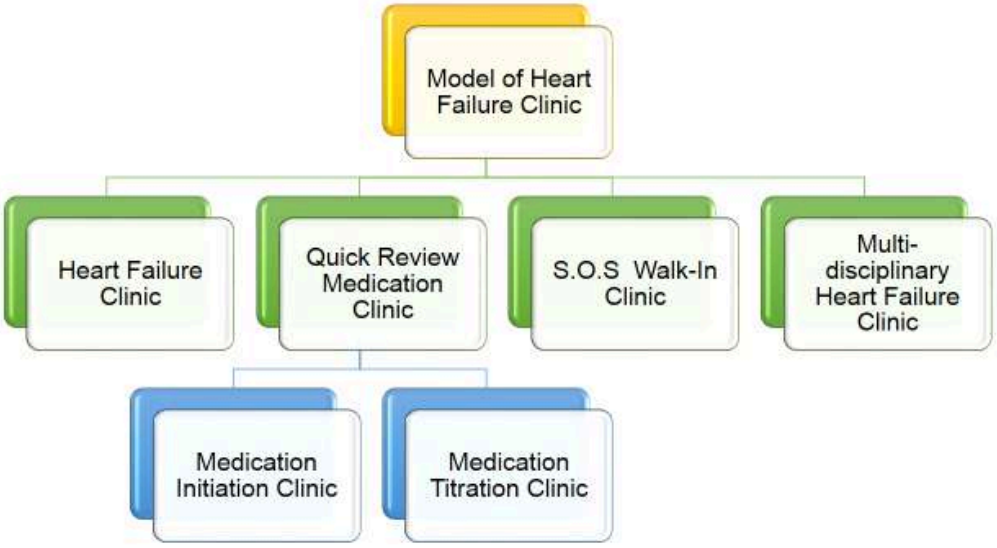


Figure 1 : Model of Heart Failure Clinic

3.1. Heart Failure Clinic

a. This is a clinic that focuses on managing heart failure patients (De Novo or Chronic HF patients). Patients receive regular follow-up appointments, ideally on a monthly basis for newly enrolled patients and every three months for those who are stable and optimised. Heart failure management should adhere to local or international guidelines and using a holistic approach, patient empowerment should be the key focus of management of the clinic. Whenever possible, comorbidities are addressed within the same clinic, and multidisciplinary collaboration is sought when necessary.

b. The Person-in-Charge of the clinic should be an Internal Medicine Physician or a trained medical officer. Engagement with patients involves consultation by physician/ medical officer and counselling by a Heart Failure Clinic assistant, a multidisciplinary engagement is encouraged in an intermediate-level Heart Failure Clinic. An entry level clinic should focus on managing a heart failure case that has an established diagnosis. Complicated cases should be referred to MoH Cardiology Centres.

c. We recommend assessing patients at one year after their enrolment in the clinic to determine the feasibility of transitioning them to a step-down care facility. The Heart Failure Clinic should establish criteria for transitioning stabilised and optimised patients (to e.g. MOPD/ other hospitals/ health clinic) in order to have a manageable number of patients in the clinic population.

3.2. Quick Review Medication Clinic

a. One of the challenges identified in management of heart failure is optimisation of GDMT despite GDMT being the key factor in reduction of morbidity and mortality risks in heart failure patients.

b. Several barriers to optimising GDMT have been identified, including medication intolerance (such as hyperkalaemia or hypotension), the presence of kidney failure or fluctuating trends in estimated Glomerular Filtration Rate (eGFR), physicians' perceptions or lack of familiarity with GDMT titration and dosages, frequent readmissions due to decompensated heart failure, and non-compliance.

c. A strategy to optimise the GDMT involves a prompt review in medication initiation clinic or medication titration clinic.

d. GDMT should be initiated promptly following a diagnosis of heart failure: four pillars of GDMT for HFrEF or for HFpEF - SGLT2i. Based on current guidelines, initiation of certain GDMT should not be delayed while waiting for stratification of heart failure phenotype by echocardiogram.

e. Clinicians must be cautious to prevent medication initiation/titration clinics from becoming a primary venue for reviewing other associated comorbidities or investigations. The focus of these clinics should be on achieving optimal GDMT in patients, rather than managing other concurrent conditions or issues.

3.2.1. Medication Initiation Clinic

i. Medication initiation clinic is designed to initiate GDMT in heart failure patients who have been discharged from the ward or those who are diagnosed de Novo. Following this initiation, patients undergo dose optimization at nearby centres and health clinics.

ii. The clinic operates on the principle of a quick review and focuses solely on medications. Patients are typically seen only once at the clinic, and each consultation is brief, primarily dedicated to the initiation of GDMT and providing counselling regarding the prescribed medications.

3.2.2. Medication Titration Clinic

i. The medication titration clinic is a quick review clinic that focuses on titration of GDMT to achieve maximal tolerated dose for HF patients who are discharged from the ward or those who are newly initiated on GDMT.

ii. The goal of optimization ideally falls within a 4-6 week timeframe from discharge or diagnosis in order to reap maximum benefits from the GDMT. Duration/ timing of follow up in the clinic is ideally scheduled 1-2 weekly within 4-6 weeks period and should not last beyond 6 weeks period of time for a patient.

iii. Dose titration can be done by either doctors (Internal Medicine Physician or trained medical officer) or pharmacists in MTAC settings based on locally derived protocol. The titration of GDMT should include a review of blood investigations, such as renal profiles, when necessary. After patients had been deemed to achieve maximal tolerated dose of GDMT - patients should be sent for subsequent follow up in MOPD/ other hospitals/ Health Clinic.

3.3. S.O.S Walk-In Clinic (Furosemide titration clinic)

a. This clinic operates as a walk-in clinic for heart failure patients (who are already under Heart Failure Clinic follow up) experiencing early symptoms of decompensation.

b. The primary objective of this service is to prevent these patients from requiring admission or presenting at the Emergency Department in a state of decompensated heart failure.

c. Upon assessment of the patient and if the patient exhibits symptoms and signs of decompensated heart failure that do not require

admission, the furosemide dose will be titrated as per patient's needs/according to local or international guidelines or protocol.

d. Patients who frequently come for furosemide titration should be re-evaluated by a physician to identify factors contributing to frequent decompensation or fluid overload.

3.4. Multidisciplinary Heart Failure Clinic

a. An intermediate-level Heart Failure Clinic may benefit from implementing a multidisciplinary clinic that involves one or more disciplines, such as pharmacist, dietician, rehabilitation specialist, physiotherapist, occupational therapist, or palliative care team.

b. Ideally, the multi-disciplinary clinic should be organised to facilitate bi-directional interaction and collaborative management among the involved disciplines, allowing for joint management of patients within the same setting or area. This approach enables comprehensive care that addresses the various aspects of heart failure management and promotes holistic patient well-being.

c. Benefits of having a multidisciplinary Heart Failure Clinic include, among many, reduction of overwhelming appointments for a HF patient and comprehensive care for HF.

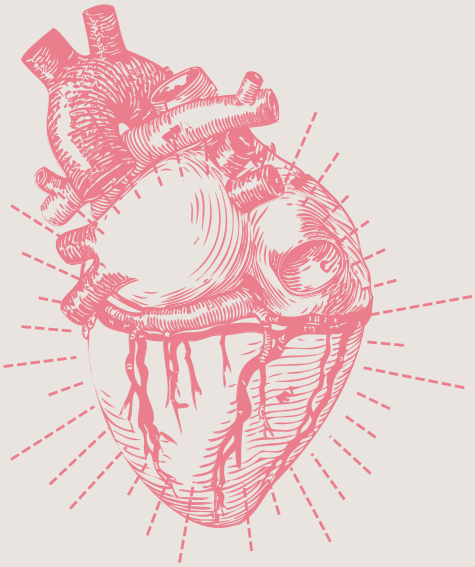
4. Inclusion and Exclusion Criteria

Centres should consider adhering to a set of inclusion and exclusion criteria when recruiting patients into HF clinics. Examples of inclusion and exclusion criteria to be considered are as below:

Model	Examples of Inclusion Criteria	Examples of Exclusion Criteria
Entry	To specify phenotypes of HF ***and/or*** Recurrent admission of 2 admissions in 3 months (centre to define own frequency of admission according to local setting) ***and/or*** Range of age if applicable ***and/or*** Good social support/ ability to come for frequent clinic visit	eGFR < 30 mL/min/1.73m^2 or on dialysis ***and/or*** Poor baseline ADL dependency/ CFS score (not due to HF condition e.g. bed-ridden due to recurrent CVA, poor ECOG due to advanced malignancy/ active malignancy) ***and/or*** Pregnancy
Intermediate	Any phenotypes of HF ***and/or*** Advanced HF ***and/or*** Recurrent admission of 2 admissions in 3 months (centre to define own frequency of admission according to local setting) ***and/or*** Range of age if applicable ***and/or*** Good social support/ ability to come for frequent clinic visit ***and/or*** Concomitant lungs, kidney, liver diseases	eGFR < 15 mL/min/1.73m^2 or on dialysis ***and/or*** ESRF with or without dialysis ***and/or*** Poor baseline ADL dependency/ CFS score (not due to HF condition e.g. bed-ridden due to recurrent CVA, poor ECOG due to advanced malignancy/ active malignancy) ***and/or*** Pregnancy

Table 3 : Inclusion and exclusion criteria of Heart Failure Clinic

CHAPTER 4
REQUIREMENT OF HUMAN RESOURCE, ASSETS AND MEDICATIONS



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 4
REQUIREMENT OF HUMAN RESOURCES, ASSETS AND MEDICATIONS

HUMAN RESOURCES (HR)

1. Introduction

1.1. A Heart Failure Clinic is a specialised health care facility that provides outpatient care to patients with heart failure. The clinic is staffed by a team of healthcare professionals who work together to provide comprehensive care to patients. The clinic provides education to patients on their condition, including regular weighing and compliance with medical therapy and fluid management. HFC also helps patients with self-management around diet, exercise and medication.

1.2. The human resource for Heart Failure Clinic may recruit manpower from local settings to be the Person-in-Charge (PIC) of a Heart Failure Clinic.

1.3. Requirements for Human Resource can be varied and divided; as below:

a. Entry Level of Heart Failure Clinic

b. Intermediate Level of Heart Failure Clinic

2. Human Resource Requirements for Entry Level Heart Failure Clinic

2.1. Core Members

a. Internal Medicine Physician

i. Guide the medical officer including those under the Heart Failure Clinic training program.

ii. Provide comprehensive care and support to patients with heart failure. They are responsible for providing treatment for heart failure as per guidelines, monitoring side effects of treatment, coordinating overall patient care, managing risk factors, patient education, collaborating with multidisciplinary teams and identification of patients in need of further/ advanced intervention and referral to cardiology centres.

and/ or

b. Trained Medical Officer

i. Provide comprehensive care and support to patients with heart failure with/without physician's guidance.

ii. They are responsible for providing aggressive treatment for heart failure as per guideline, monitoring side effects of treatments, coordinating overall patient care, managing risk factors, patient education, collaborating with multidisciplinary teams and identification of patients in need of further/advanced intervention and referral to cardiology centres.

c. Heart Failure Clinic Assistant (Assistant Medical Officer (AMO))

i. Dedicated to Heart Failure Clinic and all relevant job descriptions pertaining to Heart Failure Clinic.

ii. The role of the Assistant Medical Officer in charge of Heart Failure Clinic will include areas of patient assessment and care, patient education, coordination of care, quality improvement and communication.

iii. Specific roles of the Assistant Medical Officer are:

- Provide education to patients in Heart Failure Clinic
- Provide psychosocial support to patients and family
- Provide integrated care across hospital settings and primary care settings
- Ensure continuity of care, e.g. defaulter tracking by teleconsultation
- Monitor patient adherence to medications
- Promote patient empowerment through tailored management plan
- Facilitate multidisciplinary team review/appointment
- Facilitate transition of care/step down care from Heart Failure Clinic
- Facilitate post discharge follow up including teleconsultation

- Provide follow up phone call and receive telephone inquiry from patients
- Facilitate follow up date and schedule imaging/investigations if needed
- Managing assets in Heart Failure Clinic including (if required) POCT NT- proBNP
- Record keeping including key performance index (KPI), Heart Failure Registry and patient chart
- Assist in clinical audit/ data collection involving Heart Failure Clinic
- Clinical management includes:
    - Check on vital signs and weight of patient
    - Perform ECG
    - Performing venepuncture
    - Administration of vaccination (e.g. influenza and pneumococcal vaccinations)
    - Administration of intravenous diuretic in outpatient setting
    - Provide triaging assessment in S.O.S Walk-In Clinic
    - Performing 6-Minute Walk Test (6MWT)
    - Performing Point of Care Test (POCT) NT-proBNP

2.2. Supporting Members: Optional

Can be visiting/ referred services:

a. Pharmacist

i. Pharmacists play a crucial role in the care of patients with heart failure including medication reconciliation, education, initiation, dosage titration and collaborative medication management. There are different models of Heart Failure Clinic and specific job descriptions, and training may be different as per different clinic models.

ii. Training (optional): MTAC Heart Failure training

iii. If the Pharmacist is in charge of a medication titration clinic led by only the pharmacist, he/she is required to have MTAC training.

b. Dietician

i. Responsible for medical nutrition therapy to patients including evaluating diet, suggesting dietary changes, educating on sodium restriction and dietary pattern, supporting positive lifestyle changes and may provide media and educational materials.

c. Physiotherapist

i. Providing exercise-based cardiac rehabilitation, thorough assessment, as well as guidance and monitoring during exercise sessions to improve physical fitness and quality of life of heart failure patients.

3. Human Resource Requirement for Intermediate Category

3.1. Core Members

a. Internal Medicine Physician

i. Provide comprehensive care and support to patients with heart failure.

ii. They are responsible for providing aggressive treatment for heart failure as per guidelines, monitoring side effects of medications, arrangement of further imaging and investigation, coordinating overall patient care, managing risk factors, patient education, collaborating with multidisciplinary teams and identification of patients in need of further/advanced intervention and referral to cardiology centres.

b. Trained Medical Officer

i. Provide comprehensive care (under supervision of physician) and support to patients with heart failure.

ii. They are responsible for providing aggressive treatment for heart failure as per guideline, monitoring side effects of medications, arrangement of further imaging and investigations, coordinating overall patient care, managing risk factors, patient education, collaborating with multi-disciplinary teams and identification of patients in need of further/advanced intervention and referral to cardiology centres.

c. Heart Failure Clinic Assistant (Assistant Medical Officer (AMO))

i. Dedicated to Heart Failure Clinic and performs all relevant job descriptions pertaining to Heart Failure Clinic.

ii. The role of the Assistant Medical Officer in charge of Heart Failure Clinic will include areas of patient assessment and care, patient education, coordination of care, quality improvement and communication.

iii. Specific roles of the Assistant Medical Officer are:

- Provide education to patients in Heart Failure Clinic
- Provide psychosocial support to patients and family
- Provide integrated care across hospital settings and primary care settings
- Ensure continuity of care, e.g. defaulter tracking by teleconsultation
- Monitor patient adherence to medications
- Promote patient empowerment through tailored management plan
- Facilitate multidisciplinary team review/appointment
- Facilitate transition of care/step down care from Heart Failure Clinic
- Facilitate post discharge follow up including teleconsultation
- Provide follow up phone call and receive telephone inquiry from patients
- Facilitate follow up date and schedule imaging/investigations if needed

- Managing assets in Heart Failure Clinic including POCT NT- proBNP
- Record keeping including key performance index (KPI), Heart Failure Registry and patient chart
- Assist in clinical audit/ data collection involving Heart Failure Clinic
- Clinical management includes:
    - Check on vital signs and weight of patient
    - Perform ECG
    - Performing venepuncture
    - Administration of vaccination (e.g. influenza and pneumococcal vaccinations)
    - Administration of intravenous diuretic in outpatient setting
    - Provide triaging assessment in S.O.S Walk-In Clinic
    - Performing 6-Minute Walk Test (6MWT)
    - Performing Point of Care Test (POCT) NT-proBNP

3.2. Supporting Members

a. Pharmacist

i. Pharmacists play a crucial role in the care of patients with heart failure including medication reconciliation, education, initiation, dosage titration and collaborative medication management. There are different models of Heart Failure Clinic and specific job descriptions, and training may be different as per different clinic models.

ii. Training (optional): MTAC Heart Failure training.

iii. If the Pharmacist is in charge of medication titration clinic led by only the pharmacist, he/she is required to have MTAC training

b. Dietician

   i. Responsible for medical nutrition therapy to patients including evaluating diet, suggesting dietary changes, educating on sodium restriction and dietary pattern, supporting positive lifestyle changes and may provide media and educational materials to patients and caregivers.

c. Physiotherapist

   i. Responsible for providing exercise-based cardiac rehabilitation, thorough assessment, as well as guidance and monitoring during exercise sessions to improve physical fitness and quality of life of heart failure patients.

   ii. Help patients with heart failure in returning to their life roles and in developing client-centred strategies to encourage and enable optimal living.

d. Occupational Therapist

   i. Responsible for comprehensive care of individuals with heart failure including promoting the quality of life, physical function, Activities of Daily Living (ADL) participation, providing education to patients and caregivers, creating treatment plan to support independence, addressing the emotional and cognitive impact of heart failure, supporting patients in lifestyle medicine and chronic disease self-management.

   ii. Help patients with heart failure in returning to their life roles and in developing client-centred strategies to encourage and enable optimal living.

e. Psychologist

   i. Psychologists contribute to the prevention, treatment and rehabilitation of patients with heart failure.

   ii. Their role includes providing support and helping patients deal with any setbacks, develop new skills, change unhealthy behaviour, help patients with depression, enhance emotional adjustment and provide intervention that support health behaviour changes.

f. Social worker

i. Social workers play an important role in supporting patients and their families by addressing various needs such as financial stress and emotional instability, managing social factors, addressing psychological issues, involved in palliative care, providing support in psychosocial assessment, advanced care planning and patient-medical team communication.

g. Palliative Care Team

i. Provide palliative care to patients with heart failure and collaborate with Physician in charge of Heart Failure Clinic to provide an extra layer of support to patients and families. It can be offered at any stage of the illness integrated with curative treatment.

ii. Palliative care is appropriate for heart failure patients in the advanced stages of the illness focusing on addressing the symptoms and anxiety.

iii. Other roles include to help patients and families plan in advance as heart failure deterioration can be sudden and unpredictable.

h. Rehabilitation Physician

i. Provide comprehensive care including medical evaluation to determine patient's needs and limitations, tailoring physical activity programs to the patient's specific need and limitations, counselling and education, support and training to help patients return to work or their normal activities and providing collaborative care with Heart Failure Multidisciplinary team.

FACILITIES AND ASSETS

1. Introduction

1.1. Heart Failure Clinics are specialised facilities that provide diagnostic and therapeutic services for patients with heart failure. Setting up the clinic may require use of the existing facilities in the hospital.

1.2. The basic facilities required for the Heart Failure Clinic service are:

a. Consultation room with table, chairs and examination couch

b. Computer and printer for IT-based hospital

1.3. The basic assets required for the Heart Failure Clinic depends on the category of Heart Failure Clinic and can be divided as below:

a. Entry Level Heart Failure Clinic

b. Intermediate Level Heart Failure Clinic

2. Requirement for Entry Category

2.1. Compulsory

a. Vital signs monitor (3 parameters)

b. ECG machine (12 leads)

c. Weighing machine

d. Glucometer

e. Supporting service:

i. Radiology : Chest Radiograph

ii. Laboratory : Full Blood Count, Renal Profile, Liver Function Test, Fasting Blood Sugar, Fasting Serum Lipid, HbA1c, UFEME

2.2. Optional

a. POCT : NT-proBNP

b. Echocardiography or ultrasound with cardiac probe (the machine may not be available at the Heart Failure Clinic, however the access to echocardiography must be readily available at other facilities)

3. Requirement for Intermediate Category

3.1. Compulsory

a. Vital sign monitor (3 parameters)

b. ECG machine (12 leads)

c. Weighing Machine

d. Glucometer

e. Echocardiogram* or ultrasound with cardiac probe

f. POCT : NT-proBNP

g. Holter (24 or 48- or 72-hours ambulatory ECG Monitoring)

h. Supporting services:

i. Radiology : Chest X-Ray

ii. Laboratory : Full Blood Count, Renal Profile, Liver Function Test, Fasting Blood Sugar, Fasting Serum Lipid, HbA1c, UFEME

iii. Quit Smoking Clinic

*Preferably the echocardiogram machine is available inside the facility. If not available, there is an access for the service.

3.2. Optional

Optional services to be considered:

a. Cardiac stress testing

b. Cardiac catheterization

c. Cardiac MRI

3.3. NT-proBNP is important in Heart Failure Clinic for the diagnosis, risk stratification, prognostic marker, monitoring treatment response, hospitalisation criteria and longitudinal management of heart failure as they correlate with clinical status and prognosis. (**recommendations given by Malaysian Clinical Practice Guideline and American College of Cardiology/ American Heart Association/ European Society of Cardiology*).

3.4. Routine serial echocardiogram is not recommended during follow up. If there has been a recent change in clinical status or if the patient has received treatment that might significantly change certain echocardiographic parameters, a follow-up echocardiogram is reasonable to assess the LVEF and structural remodelling.

MEDICATIONS

1. Introduction

1.1. The pillars of guideline directed medical therapy (GDMT) for heart failure are Renin-Angiotensin System (RAS) blockers, Beta-blockers, Mineralocorticoid Antagonists (MRA) and Sodium Glucose Cotransporter 2 inhibitors (SGLT2-i). The utilisation of these medications is based on the results of multiple major randomised control trials demonstrating improved clinical outcomes in patients maintained on these medications.

1.2. For heart failure with reduced ejection fraction (HFrEF), the effect is most beneficial when medications from the four main drug classes are used in conjunction.

1.3. For Heart Failure with preserved ejection fraction (HFpEF), latest evidence has shown that SGLT2-i conveys the most benefits.

1.4. However, multiple cross-sectional reviews have demonstrated that these medications are greatly underutilised or utilised at suboptimal doses.

1.5. In Malaysia, the MYHF Heart Failure Registry has revealed that the proportion utilisation of medications at discharge varied from 79% for beta-blockers to only 43% on MRA.

1.6. Therefore, the pillars of guideline directed medical therapy (GDMT) for heart failure should be made available and should be actively prescribed to patients without any known contraindications.

1.7. Liaison with the hospital's pharmacy department is required to ensure that availability and stock keeping of these medications are made accessible to the Heart Failure Clinic team.

2. Availability of medications in MoH Hospital

2.1. Symptomatic relief

a. Diuretics

2.2. Four pillars of GDMT

a. Renin-angiotensin system (RAS) blockers:

i. Angiotensin converting enzyme inhibitors (ACEi) ***or***

ii. Angiotensin receptor blockers (ARB) ***or***

iii. Angiotensin receptor neprilysin inhibitor (ARNI)

b. Beta-blockers

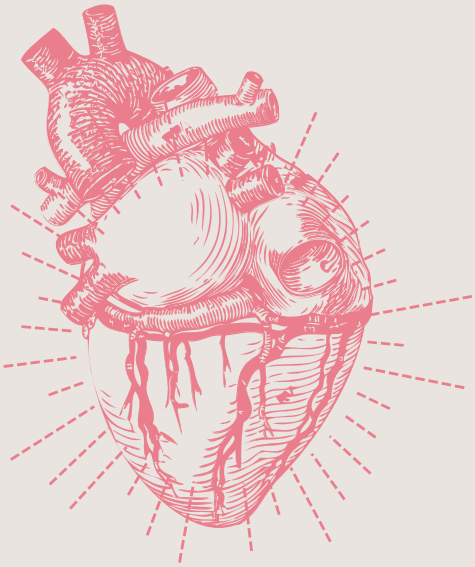
c. Mineralocorticoid Antagonists (MRA)

d. Sodium glucose cotransporter 2 inhibitors (SGLT2-i)

Pillar	Group		List of medications
1.	RAS blockers	ACEi	Captopril
			Enalapril
			Lisinopril
			Perindopril
			Ramipril
		ARBs	Losartan
			Valsartan
		ARNI	Sacubitril/ Valsartan
2.	Beta-blocker		Bisoprolol
			Carvedilol
			Metoprolol Tartrate
			Nebivolol
3.	MRA		Spironolactone
4.	SGLT2-i		Dapagliflozin
			Empagliflozin

Table 4: List of medications available in MoH Hospitals

Chapter 5
APPOINTMENT STRUCTURE OF CLINIC



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 5
APPOINTMENT STRUCTURE OF CLINIC

1. Introduction

1.1. In the Heart Failure Clinic, appointments are offered in various formats to cater different patient needs. Appointment structure should have appropriate workflow for:

a. New Case Appointment.

b. Follow Up Appointment

c. Urgent Appointment

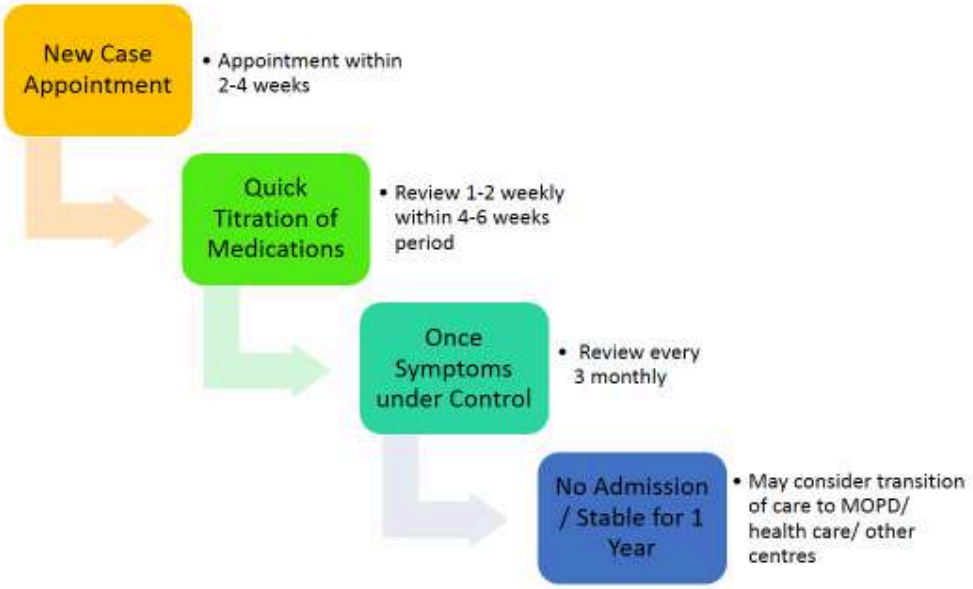
1.2. The timeline of the appointment should be tailored according to the model of Heart Failure Clinic that has been chosen.

2. Acceptable Timeline for Follow Up

2.1. First physical follow up appointment for a stable patient should be given within 4 weeks. However, a patient who has a recent episode of decompensation or clinical instability, ideally should be seen sooner e.g. 2 weeks.

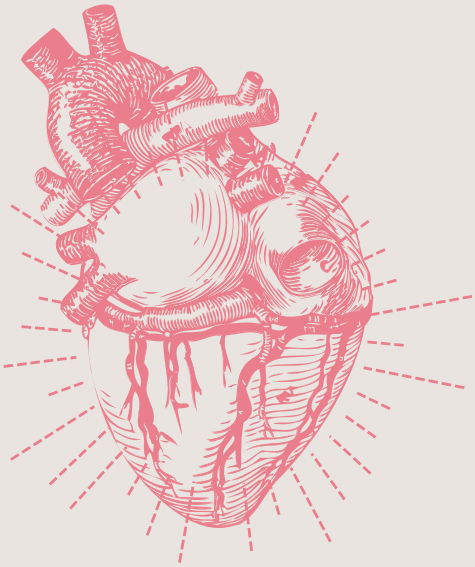
2.2. If the patient is discharged from the ward, ideally a phone call/ teleconsultation follow up is performed within 1 week post discharge by a doctor or Heart Failure Clinic assistant.

2.3. Ultimately, the frequency of follow-up will depend on the local capability, patient's clinical stability and need for pharmacotherapy optimization. The intensity and type of follow-up would be determined by the local organisation of care and resources.



Flow Chart 3: Summary of Acceptable Timelines for Follow Up in Heart Failure Clinic

CHAPTER 6
MULTIDISCIPLINARY COLLABORATION



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 6
MULTIDISCIPLINARY COLLABORATION

1. Introduction

1.1. Multidisciplinary approach to management of heart failure patients involves a team of healthcare professionals from different specialties working together to provide comprehensive care to the patient. The team comprises Internal Medicine Physicians (in hospitals without a resident cardiologist), pharmacists, nurses, dieticians, physiotherapists, social workers, psychologists, additional subspecialty providers etc.

1.2. It aims to provide comprehensive care to heart failure patients which includes improving patient outcomes, managing symptoms and reducing healthcare cost burden. The same team shall manage the patients from first diagnosis of heart failure, through critical events, periods of apparent stability and its terminal stages.

1.3. However, there are limitations while implementing a multidisciplinary approach for management of heart failure patients. Some of the key challenges include:

a. Heavy patient load in each hospital which limits the average consultation time to be spent with each patient by the team

b. Limited space in clinic for multiple teams to sit in in same clinic session

c. Shortage of manpower from different subspecialties or health alliance teams to contribute staff for each clinic session.

2. Multidisciplinary Team (MDT) Care

2.1. MDT care is defined as two (2) or more teams (involving 1 or more supporting team) managing heart failure patients in the same setting, depending on the complexity of the cases in the local setting.

2.2. A separate MDT case discussion can be offered as an alternative method if there is limitation of services depending on complexity of the cases.

2.3. Multidisciplinary Team (MDT) Members

a. Internal Medicine Physician

b. Medical officer

c. Heart Failure Clinic assistant

d. Heart failure pharmacist/ Clinical pharmacist

e. Physiotherapist

f. Dietician

g. Palliative Care Team

h. Social worker

i. Psychologist

j. Rehabilitation team

2.4. Roles of MDT Members

Multidisciplinary Team Member	Roles
Internal Medicine Physician	● Leader for final decision-making of patient care ● Establishes a patient roadmap
Heart Failure Clinic Assistant	● Provides comprehensive and continuing HF education e.g. symptoms, vitals monitoring, dietary adherence, and medications ● Provides early post-discharge phone call contact ● Coordinates post-discharge clinic visits ● Provides protocol-based diuretic management
Heart Failure Pharmacist/ Clinical Pharmacist	● Evaluates and assists in GDMT selection, dosing ● Assists titration of GDMT in titration clinic ● Assists with deprescribing or discontinuation of inappropriate prescription, over the counter, and/or nutraceutical medications that can potentiate or worsen heart failure ● Provides advice on vaccinations ● Ensures discharge medication reconciliations ● Assists with access to medications

Multidisciplinary Team Member	Roles
Physiotherapist	● Coordinates and implements exercise programs in cardiac rehabilitation for outpatients ● Provides complete exercise evaluation and prescribes exercise during hospitalisation or in clinics ● Offers frailty screening and assessment
Dietician	● Provides dietary education (e.g. sodium intake, potassium rich diet) ● Provides non-pharmacological interventions for comorbidities (e.g. hypertension, diabetes, dyslipidaemia) ● Educates patients on weight management (cachexia prevention, obesity management) ● Provides nutritional interventions for patients with cardiac cachexia, sarcopenia, or low albumin levels ● Manages enteral and parenteral nutrition during hospitalisation
Palliative Care Team	● Provides guidance and emotional support to patients, caregivers, families, and providers throughout the journey of complex decision-making and advanced care planning ● If engaged early, can ease the transition to hospice as appropriate throughout the heart failure journey
Social worker	● Assesses and plans patient and caregiver's social needs ● Provides financial funding for transportation issues, GDMT medications (patient assistance program) and medical issues ● Assists in discharge planning ● Provides assistance in sourcing medical support equipment such as weighing scale, BP machine, glucometer, ICD, CRTD etc.
Psychologist	● Identifies, consults and manages psychosocial support

*Supporting team members depend on the availability in local setting

Table 5: Heart Failure Multidisciplinary Team (MDT) Members Delineated Roles

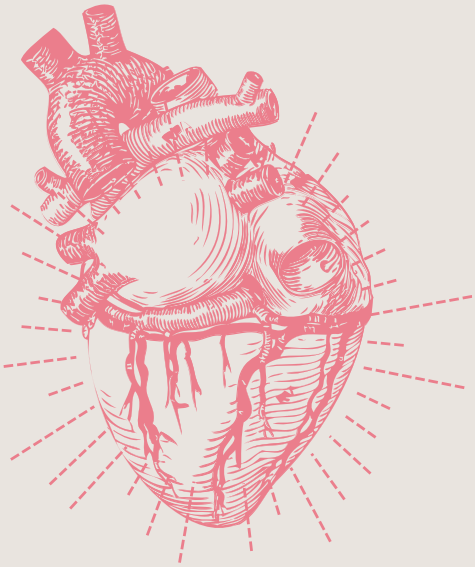
2.5. Characteristics in Successful Multidisciplinary Team

Level of Care	Characteristics
Hospital/ Facility	● Initiation of GDMT ● Adequate decongestion ● Involvement of pharmacists ● Frailty/ nutrition assessment and education ● Identifying barriers to self-care and follow up ● Reduced length of in-patient stay ● Transition of care if criteria met ● Timely follow up after discharge ● Appropriate staffing
Clinic	● Appropriate time to appointment ● Timely titration of therapy ● Identify lack of treatment response ● Referral to other services - cardiology referral, palliative care ● QoL or other instruments of patient centred outcomes assessment ● Ensure patient empowerment ● Rehabilitation education and referral ● Nutrition assessment ● Medication reconciliation and timely refill ● Assistance in overcoming barriers related to nutrition, transport, medication
Community	● Home based services ● Advocacy in community for prevention, self-care, support services

*Adapted from Sokos, G., Kido, K., Panjrath, G., Benton, E., Page, R., 2nd, Patel, J., Smith, P. J., Korous, S., & Guglin, M. (2023). Multidisciplinary Care in Heart Failure Services. *Journal of cardiac failure*, *29*(6), 943–958.

Table 6: Key Characteristics in Successful Multidisciplinary Team

CHAPTER 7
TRANSITION OF CARE



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 7
TRANSITION OF CARE

Transition of care of patients in Heart Failure Clinic can be divided to step down care and step up care.

1. Step Down Care

1.1. The Heart Failure Clinic team may consider stepping down the patient to MOPD/ other hospitals/ health clinic if:

a. The patient has been optimised with the maximum tolerated dose of GDMT.

with / without

b. No hospitalisation due to heart failure for 1 year.

1.2. Discharge note is crucial in ensuring effective communication between the referring and receiving team for continuity of care and patient safety.

1.3. Comprehensive discharge note should have a list of information as below: (Refer to **Appendix 2**)

a. Patient's demographic details:

i. Full name

ii. Identification card number (IC)

iii. Date of discharge

b. Diagnosis

c. Comorbidities

d. NYHA classification

e. Symptoms of heart failure

f. Vital signs and/or physical examination findings

g. Key baseline blood investigations

h. Procedures and Imaging/significant tests

i. List of medications including the four pillars drugs/other medications, with dosage and frequency, or any medications that were omitted with valid reason

j. Patient Empowerment

k. Signature and official stamp

2. Step Up Care

2.1. It is important to identify a patient in a Heart Failure Clinic (entry/ intermediate) who needs a cardiologist assessment. Here are the following situations that require cardiology referral:

a. Complex de novo heart failure (unsure aetiology, if suspected mimic of heart failure, or has reversible aetiology of heart failure for example tachycardia induced cardiomyopathy and rare diseases such as infiltrative and familial cardiomyopathy).

b. Clinical deterioration or symptomatic NYHA 3-4 despite optimisation of GDMT therapy in appropriate duration.

c. Heart failure that is complicated with symptomatic hypotension or excessive bradycardia or tachycardia, limiting up titration of pharmacotherapy.

d. Symptomatic stable CAD and/or acute coronary syndrome for consideration of revascularization (PCI or CABG).

e. Consideration of an implantable cardioverter-defibrillator (ICD) and/or cardiac resynchronization therapy.

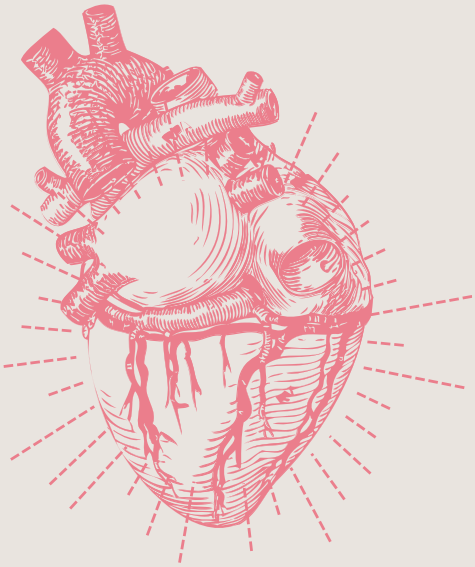
f. Documented or suspected significant arrhythmias e.g. atrial fibrillation, ventricular tachycardia, heart block.

g. Significant valvular disease not previously assessed or documented or worsening valvular dysfunction.

h. Complex congenital cardiac lesions.

i. Progressive intolerance or down titration of GDMT due to symptoms.

Chapter 8
PATIENT EMPOWERMENT AND SELF-CARE



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 8
PATIENT EMPOWERMENT AND SELF-CARE

1. Introduction

1.1. Patient Empowerment

a. Patient empowerment programs have been shown to have significant benefits for individuals with heart failure. Patients have an essential role in improving their own health outcomes because heart failure must be managed on a daily basis – away from hospitals, doctors and healthcare staff.

b. These programs play a vital role in enhancing self-care behaviours, reducing hospital readmissions, and improving the overall quality of life for individuals with heart failure. It empowers patients to take control of their health outcomes and effectively manage their condition through education, support, and regular follow-ups.

1.2. Self-care education

a. Self-care education should be:

i. Initiated early and continued as an integral part of heart failure management.

ii. Delivered by a multidisciplinary team to the patient with heart failure and their family/carers.

iii. Tailored to each patient and their needs, considering potential barriers and additional health conditions that may hinder self-care.

b. The objective of self-care education is to help patients and family/ carers increase knowledge, understanding, and develop the skills necessary for self-care and reducing cardiovascular risk factors.

c. Education with ongoing support with feedback helps patients build the knowledge and skills for both patients and family.

1.3. Patient empowerment and self-care in heart failure includes:

a. Self-care maintenance

b. Self-monitoring of heart failure symptoms

2. Self-care maintenance

2.1. Adherence to the medication plan

The heart failure clinic team should provide written and verbal information about the medication plan, making each person with heart failure aware of the purpose, benefits and potential side effects of the medications they are prescribed.

2.2. Exercise

The heart failure clinic team should offer tailored exercise advice, recognising physical or functional limitations such as frailty and other health conditions. Exercise plans should be created around settings (home or other facilities) that are easy for people with heart failure to access.

2.3. Smoking cessation

Heart failure patients should refrain from smoking and avoid passive smoking. The heart failure clinic team can support people with heart failure to stop smoking by offering smoking cessation services and psychological support.

2.4. Diet and fluid management

People with heart failure should be encouraged to avoid excessive salt and fluid intake. The Heart Failure Clinic team may provide dietary information through brochures and refer heart failure patients to a dietitian.

2.5. Limiting alcohol consumption

Binge alcohol intake should be avoided. Alcohol intake should be limited to one unit per day in women and two units per day in men (one unit equals 76 ml of wine, 250ml of beer or 25 ml of spirit), while people with previous complications from excessive alcohol consumption should abstain.

2.6. Mental health support

People with heart failure are encouraged to seek mental health support to maintain emotional and psychological wellbeing.

3. Self-Monitoring of Heart Failure Symptoms

3.1. The heart failure clinic team should educate people with heart failure how to spot significant changes in their symptoms and respond adequately.

3.2. For example, they may teach patients with heart failure to adjust their diuretics in response to symptom changes.

3.3. Monitoring weight, heart rate and blood pressure at home is essential for early detection of worsening symptoms.

4. Heart Failure Toolkit

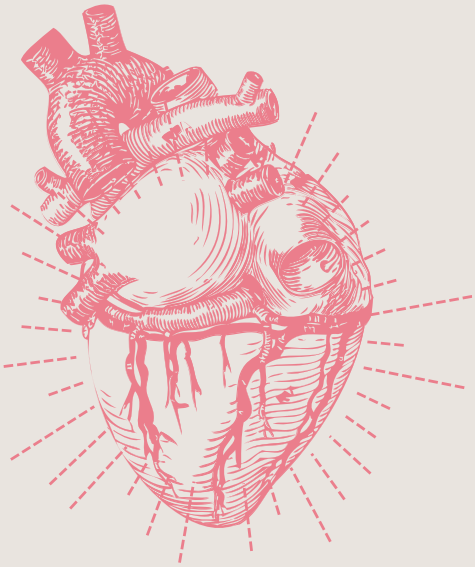
4.1. To enhance heart failure patient empowerment, The Heart Failure Toolkit and personalised care strategies are essential.

4.2. The Heart Failure Toolkit serves as a valuable resource for healthcare providers to enhance patient education and improve outcomes.

4.3. By utilising this toolkit, healthcare professionals can deliver patient-centred care and monitor heart failure care based on patient-centred outcomes.

4.4. For the purpose of this protocol, please refer to **Appendix 5** for Patient Empowerment and Education Toolkit, and **Appendix 6** for Heart Failure Self-Monitoring.

Chapter 9
QUALITY MEASURES



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 9
QUALITY MEASURES

1. Introduction

1.1. Heart Failure Clinic should have a quality assurance process in place to ensure adherence to standardised performance measures as well as the delivery of high-quality care.

1.2. Quality of care given at Heart Failure Clinic can be measured by assessing clinical outcomes and process performances.

1.3. Clinical outcomes describe end points result from our care whereas process performances refer to efficacy of clinical service delivered to our patients.

1.4. We recommend that each Heart Failure Clinic should have a minimum of one (1) quality measure for clinical outcome and minimum of one (1) quality measure for process performance.

2. Clinical Outcome measurement in Heart Failure Clinic

2.1. In-patient Mortality Rate (among patients registered under Heart Failure Clinic)

2.2. 30-day Readmission Rate (among patients registered under Heart Failure Clinic)

Clinical Outcome 1.1	**In-patient mortality rate**
Numerator	Number of deaths due to heart failure
Denominator	Total number of patients admitted with heart failure
Standard	≤ 8%
Clinical Outcome 1.2	**30-day readmission rates**
Numerator	Number of patients readmitted for within (≤) 1 month of initial heart failure admission
Denominator	Total number of patients admitted with heart failure
Standard	≤ 20%

Table 7: Clinical Outcomes Measurement of Heart Failure Clinic

3. Process Performance measurement in Heart Failure Clinic

There are many process performance measurements described in the local and international guidelines. However, this protocol is proposing four suitable indicators.

It is advisable for Heart Failure Clinic to choose one (1) out of four (4) proposed indicators (among patients registered under Heart Failure Clinic)
as below based on model of Heart Failure Clinic:

3.1. Proportion of patients with HFrEF who achieve four pillar therapy in absence of contraindications.

3.2. Proportion of patients who have documentation of NYHA functional class during follow up.

3.3. Proportion of patients post discharge who are enrolled in Heart Failure Clinic and followed up within 2 weeks.
(first follow up can be conducted physically or via teleconsultation)

3.4. Proportion of patients who receive transition care to MOPD/health clinic/other hospital after 1 year of follow up at Heart Failure Clinic.

Process Performance 2.1	**Proportion of patients with HFrEF achieve 4 pillar therapy in absence of contraindications**
Numerator	Number of patients with HFrEF who receive 4 pillar therapy
Denominator	Total number of patients with HFrEF enrolled in HF clinic without contraindications for 4 pillar therapy
Standard	≥ 60%
Process Performance 2.2	**Proportion of patients who have documentation of NYHA functional class during follow up**
Numerator	Number of patients who have documentation of NYHA functional class
Denominator	Total number of patients in HF clinic
Standard	≥ 60%
Process Performance 2.3	**Proportion of patients post discharge who are enrolled in HF clinic and followed up within 2 weeks**
Numerator	Number of patients post discharge who are enrolled in HF clinic and followed up within 2 weeks
Denominator	Total number of new referrals to HF Clinic post discharge
Standard	≥ 60%

Process Performance 2.4	**Proportion of patients who receive transition care to MOPD/ health clinic/ other hospital after 1 year of follow up at HF Clinic**
Numerator	Number of patients who receive transition care to MOPD/ health clinic/other hospital after 1 year of follow up
Denominator	Total number of patients who fulfil criteria for transition care to MOPD/health care/other hospital after 1 year of follow up
Standard	≥ 60%

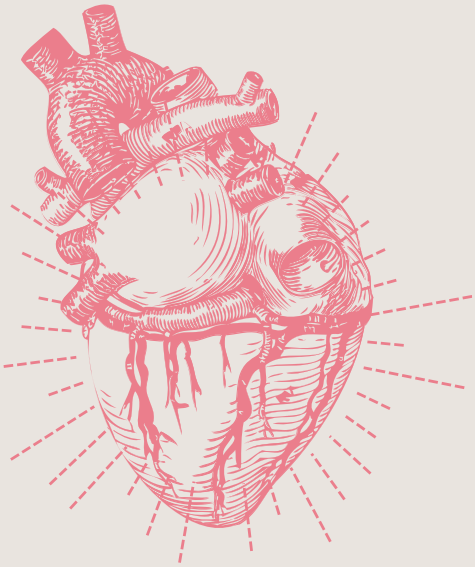
Table 8: Process Performance Measurement of Heart Failure Clinic

4. Monitoring and data collection

4.1. State Heart Failure Clinic Service Liaison Officer is advised to monitor Quality Measures performance in Heart Failure Clinics within the state.

4.2. Although there are few possible barriers in collecting data for quality measures, the process is essential for improving patient care and ensuring the patient receives the best possible treatment for their heart failure condition. Examples of possible barriers are lack of manpower or reliable data collection process, lack of interest, technical difficulty in retrieving data from hospital databases and unexpected operational crisis within the organisation.

Chapter 10
TELEMEDICINE



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 10
TELEMEDICINE

1. Introduction

1.1. Telemedicine is a medical service provided remotely via information and communication technology.

1.2. According to systematic review, there are many forms of telemedicine. Among them, below are the methods commonly used in our local setting:

a. Teleconsultation

i. Virtual consultation

ii. Structured telephone support/ Phone consultation

b. Telemonitoring

1.3. Virtual consultation is a remote video consultation between clinician and patient/ family members.

1.4. Structured telephone support/ phone consultation is the monitoring and/or self-care management that was delivered using simple telephone technology (data may have been collected and stored by a computer).

1.5. Telemonitoring is a remote health monitoring technology that allows patients to stay connected to their doctor and receive continuous health support and personalised care. It involves usage of digital/ broadband/ satellite/ wireless or blue-tooth transmission of physiologic and other non-invasive data.

1.6. There are two ways of teleconsultation: synchronous and asynchronous.

Figure 2: Types of Teleconsultations

1.7. Given the constraints of limited health funding and a rapidly growing population of heart failure patients, healthcare systems face increasing challenges in delivering high-quality care to these individuals.

1.8. Availability of multidisciplinary Heart Failure Clinics is limited, and some might not have the capacity for frequent patient reviews.

1.9. Additionally, patients may be unwilling or unable to attend clinics frequently due to financial, transportation, or disability-related constraints.

1.10. Hence, telemedicine will be able to provide specialised heart failure care to those patients with limited access to healthcare services and subsequently improve heart failure outcomes.

2. Act

2.1. The Telemedicine Act 1997 proposes a definition of telemedicine that includes the utilisation of audio, visual, and data communications for the practice of medicine.

2.2. Malaysian Medical Council (MMC) stipulates that doctors are advised to conduct virtual consultations exclusively with individuals who are already under their care, viewing it as a continuation of their ongoing care.

2.3. Digital healthcare products or medical devices are primarily regulated by the Malaysian Medical Device Act, 2012.

2.4. It is compulsory to adhere to the Personal Data Protection Act (PDPA) 2010 of Act 709.

3. Patient criteria

The criteria for eligible patients are as below:

a. Registered patient with a documented history of admission to the ward or visit to the outpatient clinic.

b. Patients who require early review or follow up - to be determined by the local organisation of care and resources.

c. Follow-up patients who have missed or defaulted on their clinic visits.

4. Suggested Tools Required for Patients

a. Laptop/ Desktop with/ without Camera

b. Smartphone with Mobile Data

c. Broadband Internet Connection

d. Blood Pressure Machine

e. Weighing Scale

f. Finger Pulse Oximetry

5. Suggested Platforms and Smartphone Apps

a. Smartphone e.g. WhatsApp, Telegram

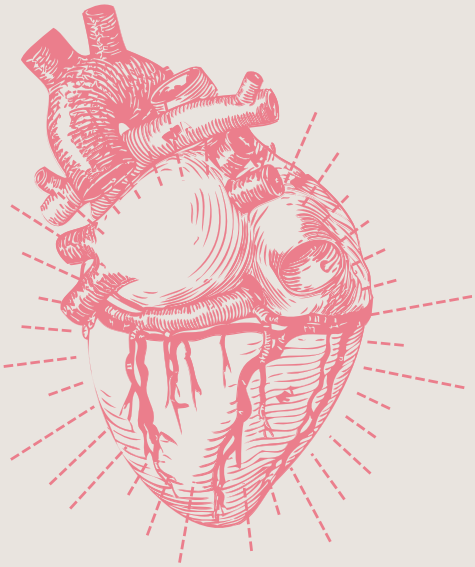
b. Email

c. Google meet (using MyGOVUC email account)

d. Zoom

e. Microsoft Teams

Chapter 11
FUTURE CONSIDERATIONS AND RESEARCH POTENTIAL



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

CHAPTER 11
FUTURE CONSIDERATIONS AND RESEARCH POTENTIAL

1. Future Considerations

1.1. Online training module for heart failure

a. It is suggested for relevant stakeholders to develop an online training module, utilising practical case-based scenarios at the centre of learning.

b. The online course will provide modules with slides using recommendations from guidelines and comprise case-based discussions to illustrate the learning points.

c. It is also suggested that a certificate of completion be offered to candidates upon successful completion of the online training module.

d. The aims of the online training module would be to equip learners with a basic to intermediate level of understanding of heart failure care.

e. This understanding would promote better patient care, by providing health professionals with the appropriate level of knowledge, skills and experience to deliver care for people with heart failure.

1.2. Development of Patient Support Group

a. Patient support groups are pivotal in providing a platform for patients living with heart failure to share their experiences with each other.

b. These support groups should have educational sessions, as well as focused group discussions about the way to manage heart failure such as diet, lifestyle and exercise.

c. Group activities involving the public to raise awareness about heart failure such as walkathons, public campaigns and public awareness talks should be encouraged.

d. Doctors can act as advisors to patient support groups.

e. The establishment of patient support groups will also serve as a good public health initiative.

2. Research Potential

2.1. The burden of heart failure has a major impact on healthcare costs at the national level. The aim remains to adequately manage heart failure to reduce the rate of hospitalisation and mortality. This is in line with current guidelines.

2.2. To spur future developments, areas of potential research interest are as follows:

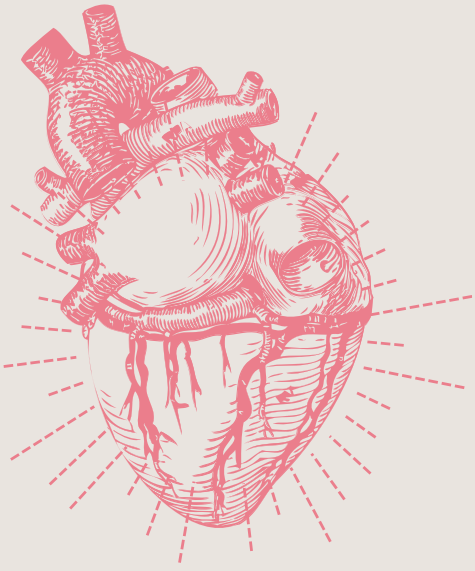
a. Identifying the 30-day readmission rate for heart failure patients.

b. Identifying the inpatient mortality rate for heart failure patients.

2.3. These areas are also the quality outcome measures which are the main goal of the performance of Heart Failure Clinics.

2.4. The person in charge of Heart Failure Clinics and the state liaisons may collaborate in contributing data to form a nationwide registry of Heart Failure Clinics. The formation of a registry will contribute to valuable data that may be impactful to our national heart failure service and care.

APPENDICES



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

Appendix 1
CONSENT FORMS

BORANG PERSETUJUAN PERKHIDMATAN KONSULTASI SECARA MAYA

Perkhidmatan Konsultasi Secara Maya adalah penyampaian perkhidmatan kesihatan secara maya (virtual), langsung (live) dan interaktif yang merangkumi konsultasi klinikal dan pelan rawatan pelanggan di antara anggota kesihatan dan pelanggan. Perkhidmatan ini merupakan satu inisiatif yang dilaksanakan bagi memastikan penjarakkan sosial dan menyediakan perkhidmatan kesihatan yang berterusan setaraf dengan kemajuan teknologi.

Saya telah diberi penerangan oleh Pengamal Perubatan tentang perlaksanaan Perkhidmatan Konsultasi Secara Maya ini dan bersetuju;

1. Untuk menyertai Perkhidmatan Konsultasi Secara Maya ini.
2. Maklumat klinikal semasa sesi konsultasi boleh dikongsi dengan Pengamal Perubatan lain untuk tujuan rujukan sekiranya perlu, bagi kesinambungan perawatan.
3. Sebarang rakaman video atau audio sepanjang sesi konsultasi secara maya ini tidak boleh ditular/dikongsi/disebar kepada pihak luar oleh kedua-dua pihak.
4. Rakaman tidak boleh digunakan sebagai bukti untuk tindakan undang- undang terhadap KKM.
5. Pengamal perubatan yang bertugas boleh memberhentikan konsultasi jika:
    a. Berlaku gangguan akses capaian internet atau sebarang masalah teknikal.
    b. Jenis perbualan tiada berkaitan dengan tujuan konsultasi kesihatan saya.
6. Saya berhak untuk tidak meneruskan konsultasi secara maya ini atas pilihan saya sendiri.
7. Saya akan hadir/membawa pelanggan hadir ke klinik sekiranya terdapat keperluan untuk pemeriksaan lanjutan.

Ditandatangani:

_____	_____
(Pesakit/penjaga)	(Saksi**)
Nama :	Nama :
No. K/P :	No. K/P :
Tarikh :	Jawatan :
Jika penjaga,	Tarikh :
hubungan dengan pelanggan :	Cop Klinik kesihatan
Nama pelanggan :	
No. K/P :	

Peringatan:
Pelanggan perlu dibuat persediaan awal bagi janji temu untuk Perkhidmatan Konsultasi Secara Maya seperti yang ditetapkan

* Saksi boleh terdiri dari Pakar Perubatan/Pegawai Perubatan/Penyelia Penolong Pegawai Perubatan/Penyelia Jururawat

Appendix 2

DISCHARGE SUMMARY

MINISTRY OF HEALTH MALAYSIA

KEMENTERIAN KESIHATAN MALAYSIA
DISCHARGE NOTE / NOTA DISCAJ
PESAKIT *HEART FAILURE*
HOSPITAL _____

1.NAME/NAMA:	2.AGE/UMUR:
3.IC NO./PASSPORT/NO. KP:	4.GENDER /JANTINA :
5.DATE OF ADMISSION/ TARIKH KEMASUKAN :	6.DATE OF DISCHARGE/ TARIKH DISCAJ :
7. FINAL DIAGNOSIS/ DIAGNOSIS AKHIR:	
SUMMARY OF WARD MANAGEMENT AND MEDICATIONS/ RUMUSAN KEMASUKAN DAN PERAWATAN & UBAT DI WAD:	
On discharge /Sewaktu discaj 1. NYHA Class : 2. Dry weight : 3. Blood pressure : 4. HR :	Physical Findings/Penemuan Fizikal

Investigations / Keputusan ujian makmal 1. ECG On Discharge 2. FBC On Discharge 3. Renal Function on Discharge 4. ECHO findings 5. Chest Xray 6. Fasting Lipid Profile 7. Fasting Blood Sugar 8. Others/Lain-lain yang berkenaan	Rhythm : _____ QRS duration: _____ Paces : _____ LBBB Present :_____

Medications On Discaj /Ubat-ubatan semasa discaj

	Drug Regime/Senarai Ubat (Name/Dose/Frequency)	
RAAS Inhibitor	ACEi	
	ARB	
	ARNI	
Reason Not Prescribed/ Alasan Tidak Dimulakan	Contra indication	
	Intolerant	
	Patient Refused	
Beta Blockers		
Reason Not Prescribed /Alasan tidak dimulakan	Contra indication	
	Intolerant	
	Patient Refused	
MRA		
	Contra indication	

	Intolerant	
	Patient Refused	
Diuretics		
	Contra indication	
	Intolerant	
	Patient Refused	
Others		

TCA / Rawatan Susulan :
Discharge care plan / Rancangan discaj -

Tandatangan Pegawai:
Name/ Nama:
Official stamp /Cop Rasmi:
Date /Tarikh:

Reference :

1. Bodagh, Neil & Farooqi, Fahad. (2017). Improving the quality of heart failure discharge summaries. British Journal of Cardiology. 24. 10.5837/bjc.2017.015.

Appendix 3

MEMO OF STEP-DOWN CARE FROM HEART FAILURE CLINIC

(SAMPLE)

Name: _____

IC : _____ Age: _____

Diagnosis:_____

Comorbidities

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Current Status:

NYHA Classification _____

Heart failure symptoms(*circle it*): Improved Status Quo Worsening

Vital signs and Physical Examination:

BP :_____ Pulse Rate:_____ (regular / irregular) SPO_2:_____

Pedal Edema: (Yes / No) CVS : _____ Lungs: _____

Key Baseline Blood Investigation:

1. Full Blood Count :
2. Renal Profile :
3. Full Liver Function :
4. Fasting Blood Sugar :
5. Fasting Lipid Profile:
6. Other relevant blood investigations:

ECG : (Date) _____

Chest X-ray : (Date) _____

Titration of medications:

Medication	Name	Dose and Frequency	Remark
ACEi/ARB/ARNi			
Beta-blocker			
MRA			
SGLT2-i:			
Diuretic			

Other medications:

1. _____ 6. _____
2. _____ 7._____
3. _____ 8._____
4. _____ 9._____
5. _____ 10. _____

Any medications that were omitted:

1. _____ Reason:_____
2. _____ Reason:_____
3. _____ Reason:_____

4. _____ Reason:_____
5. _____ Reason:_____

Patients' Empowerment: (tick ✔ if done)

1. Education	
2. Self-monitoring	
3. Medication Management	
4. Dietary Management	
5. Physical Activity	
6. Symptoms Recognition	
7. Follow Up Care	

Signature & Stamp:

Date:

Appendix 4

SAMPLE OF CLERKING SHEET IN HEART FAILURE CLINIC

PATIENT'S STICKER

TYPE OF HEART FAILURE:

☐	HFrEF	:_____ (%)	Date of diagnosis of HF	:_____
☐	HFmrEF	:_____ (%)		
☐	HFpEF	:_____ (%)	No. of admission for decompensated HF i 1 year	:_____
☐	HFimpEF	:_____ (%)		

BASELINE:

Height (cm) :_____ Weight (kg) :_____ BMI :_____

COMORBIDITIES:

☐ DM	☐ Anaemia	☐ COVID Category ____	☐ Chronic Liver Disease
☐ HPT	☐ Dyslipidaemia	☐ CKD Stage _____	☐ Peripartum Cardiomyopathy
☐ AF	☐ LV Clot/PE/DVT	☐ History of MI/ NSTEMI	☐ IHD Angiogram _____ (date)
☐ COPD	☐ Stroke	☐ Thyroid disease	Cardiac MRI _____(date)

SIGNIFICANT PMHx/ PSHx/ CV COMPLICATIONS:

MEDICATIONS LIST:

ALLERGY:

SOCIAL HX

☐ Device Therapy :_____

☐ Alcohol :_____

☐ Smoking :_____

VACCINATION

☐ Pneumococcal :_____ (date)

☐ Influenza :_____ (date)

☐ COVID :_____(date)

OCCUPATION	: _____
FAMILY SUPPORT	: _____
FINANCIAL SUPPORT	: Work/ Zakat/ Pensioner/ Other

NAME OF DR. & SIGNATURE

Appendix 4

SAMPLE OF CLERKING SHEET IN HEART FAILURE CLINIC

CLINICAL EXAMINATION FINDINGS:

Appendix 5
PATIENT EMPOWERMENT & EDUCATION KIT

Introductions on Heart failure

- In heart failure, the heart is unable to pump blood to meet the body's needs.
- Subsequently this will cause fluid to accumulate in organs such lungs, stomach, liver, intestine or legs.

Symptoms of heart failure

New York Heart Association's symptom scale

NYHA Class	Your symptoms
I	I am able to be physically active without any shortness of breath or palpitations
II	I do get short of breath when doing heavy physical activity such as walking uphill or climbing stairs. At rest, I feel fine.
III	Day-to-day activities make me feel short of breath and tired, such as walking on a flat road. I am fine when resting.
IV	I am not able to move around without shortness of breath or palpitation. Even at rest, I feel discomfort. I am housebound.

Treatment of heart failure

- Certain types of medication will help to prevent future heart failure episodes and may help you to live a longer life with better quality of life

- What will your doctor do:

    - Prescribe and adjust the dose of medications
    - Suggest hospital admission for treatment
    - Suggest cardiac surgery/ devices to help with the condition

- Medications for heart failure

    - Take the medication regularly even if you feel well, and do not stop taking them unless you are told to do so by your doctor.
    - Know every detail of your medication (name, dosage, special instruction or consideration for taking it), and always take medication at the same time every day to maintain a constant level of medication in your bloodstream.
    - You should be aware of the side effects of your medication and ensure to have adequate stock of medications before they run out.

Lifestyle modifications

Salt restriction

- Limit salt consumption about ¾ teaspoon per day (200mg)
- Read the nutrition label and choose low sodium foods
- Use spices to flavour food

Fluid restriction

- To discuss with your doctors regarding the suitable amount of fluid to be taken.

Exercise

- Consult your doctor before starting any exercise program. It's essential to seek guidance from your healthcare provider to ensure safety and suitability.
- Start your exercise slowly and begin with light activities, then gradually increase intensity over time.
- Regularity - aim for at least 30 minutes of activity most days of the week to reap the benefits of exercise.

- Variable exercises which are suitable for heart failure patient:

a. Cardiovascular exercise
    - Aerobic, walking, cycling, swimming.
    - Improve the way your body uses oxygen and has a positive impact on your heart health.

b. Flexibility exercise
    - Yoga, stretching
    - Improve balance and prevent injury/ strain.

c. Strength training
    - Exercise with weights or resistance bands (do not use weight heavier than 5kg).
    - Promotes lean muscle growth, and aids in weight control.

<u>Quit smoking</u>

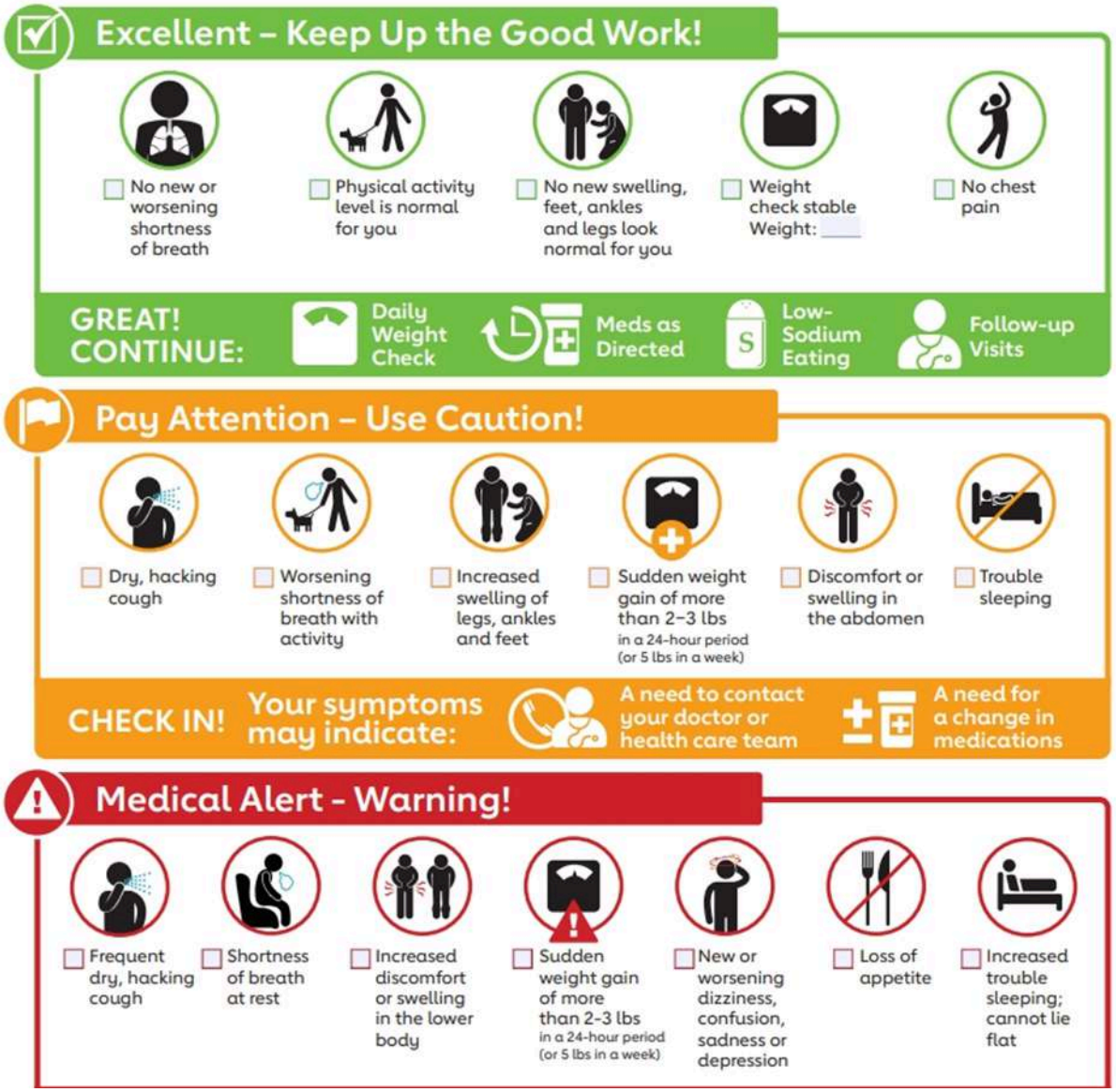
- Smoking should be stopped.

<u>Alcohol consumption</u>

- Heavy binge drinking should be avoided as it can predispose to fast heartbeat and lead to decompensation of heart function.
- Limit alcohol intake to no more than seven drinks per week (one drink equals 150ml of wine, 350 ml of beer or 44 ml of spirit).
- Patients with alcohol induced heart failure should abstain from alcohol.

Symptoms tracker

- A colour coded symptom tracker can help you to keep track of how you are feeling on an everyday basis.
- Aim to be in the green zone.



*Adapted from American Heart Association. Heart Failure Tools and Resources - Symptom tracker

Appendix 6

HEART FAILURE SELF MONITORING DIARY

Name:

Date of birth:

Age of first diagnosis of heart failure:

Aetiology of heart failure:

Contact No:

Hospital:

Dry weight:

Height:

Co-morbid:

1.

2.

3.

4.

My Tracker

Date	Weight	Heart rate	Blood pressure	Symptoms						Self-adjustment frusemide dose
				Please indicate symptoms on a scale of 0-3 0 – no symptom; 1 – mild; 2 – moderate; 3 - severe			Tick (√) whichever applies			
				Shortness of breath	Tiredness	Swelling in the ankle, legs or joints	Weight gain	Loss of appetite	Change in mood and/or sleeping patterns	

*Empowerment of self-adjustment of diuretic dose can be advised to patient who is well verse with self-monitoring

My Medication

Date Name of medicine & dose													

My Appointment

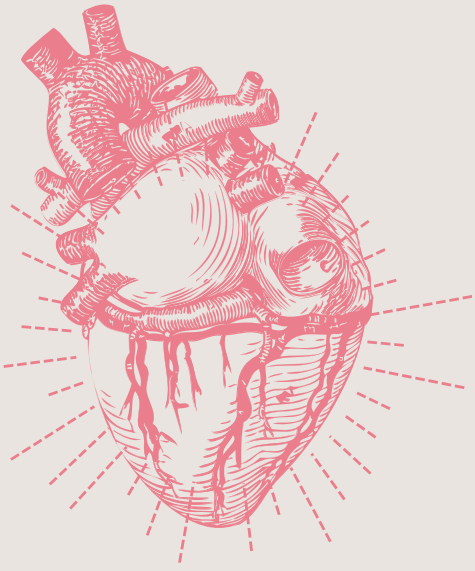
Date	Time	Clinic/ Hospital	Notes

Appendix 7

EXAMPLE OF PATIENT-REPORTED OUTCOMES (PROS) TOOLS FOR HEART FAILURE

Component	The Kansas City Cardiomyopathy Questionnaire (KCCQ)	Minnesota Living with Heart Failure Questionnaire (MLHFQ)	EuroQoL5D-3L (EQ-5D-3L)	The Chronic Heart Failure Questionnaire (CHF QoLQ-20)
Instrument	**KCCQ-23** 23 items instruments **KCCQ-12** 12 items instruments	21 items	5 items	20 items
Score	0 to 100	0 to 105	0 to 100	20 to 140
Domains	Quantify physical limitations, symptoms, self-efficacy and QoL	Physical, socio-economic and emotional/psychological aspects	Mobility, self-care, activities, pain, and anxiety and depression and visual analog scale	Dyspnoea, fatigue, emotional function
Interpretation	Higher score better health status	Lower scores indicating better health status	Higher score better health status	Higher scores indicating more severe symptoms or limitations related to heart failure
Language	Many languages including English, Malay, Tamil and Mandarin	At least 34 languages	176 languages	English and Chinese

REFERENCES



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

REFERENCES

1. Savarese, G., & Lund, L. H. (2017). Global public health burden of heart failure. *Cardiac failure review*, *3*(1), 7.
2. Bragazzi, N. L., Zhong, W., Shu, J., Abu Much, A., Lotan, D., Grupper, A., ... & Dai, H. (2021). Burden of heart failure and underlying causes in 195 countries and territories from 1990 to 2017. *European Journal of Preventive Cardiology*, *28*(15), 1682-1690.
3. Cook, C., Cole, G., Asaria, P., Jabbour, R., & Francis, D. P. (2014). The annual global economic burden of heart failure. *International journal of cardiology*, *171*(3), 368-376.
4. Casemix data 2022-2023, MoH Casemix Unit
5. Ong, S. C., & Low, J. Z. (2023). Financial burden of heart failure in Malaysia: A perspective from the public healthcare system. *Plos one*, *18*(7), e0288035.
6. Ong, S. C., Low, J. Z., Yew, W. Y., Yen, C. H., Abdul Kader, M. A. S., Liew, H. B., & Abdul Ghapar, A. K. (2022). Cost analysis of chronic heart failure management in Malaysia: A multi-centred retrospective study. *Frontiers in Cardiovascular Medicine*, *9*, 971592.
7. Mohd Ghazi, A., Teoh, C. K., & Abdul Rahim, A. A. (2022). Patient profiles on outcomes in patients hospitalized for heart failure: a 10-year history of the Malaysian population. *ESC Heart Failure*, *9*(4), 2664-2675.
8. Lin, A. H., Chin, J. C., Sicignano, N. M., & Evans, A. M. (2017). Repeat hospitalizations predict mortality in patients with heart failure. *Military medicine*, *182*(9-10), e1932-e1937.
9. Greene, Stephen J. et al. Building a Heart Failure Clinic: A Practical Guide from the Heart Failure Society of America Journal of Cardiac Failure, Volume 27, Issue 1, 2 - 19
10. Theresa A.McDonagh et al., European Society of Cardiology Heart Failure Association Standards for Delivering Heart Failure Care, European Journal of Heart Failure (2011) 13,235-241
11. Huitema AA, Harkness K, Heckman GA, McKelvie RS. The Spoke-Hub-and-Node Model of Integrated Heart Failure Care. Can J Cardiol. 2018 Jul;34(7):863-870. doi: 10.1016/j.cjca.2018.04.029. Epub 2018 May 4. PMID: 29960615.
12. Patel J, Rassekh N, Fonarow GC, Deedwania P, Sheikh FH, Ahmed A, Lam PH. Guideline-Directed Medical Therapy for the Treatment of Heart Failure with Reduced Ejection Fraction. Drugs. 2023 Jun;83(9):747-759. doi: 10.1007/s40265-023-01887-4. Epub 2023 May 31. PMID: 37254024.

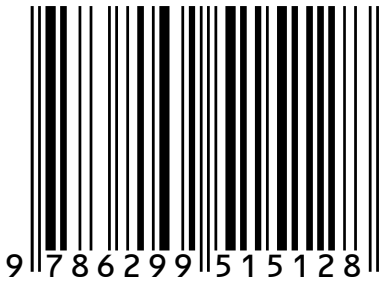
13. Authors/Task Force Members:, McDonagh, T. A., Metra, M., Adamo, M., Gardner, R. S., Baumbach, A., ... & Waltenberger, J. (2022). 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). With the special contribution of the Heart Failure Association (HFA) of the ESC. *European journal of heart failure*, *24*(1), 4-131.
14. McDonagh, T. A., Metra, M., Adamo, M., Gardner, R. S., Baumbach, A., Böhm, M., ... & Kathrine Skibelund, A. (2021). 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: Developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) With the special contribution of the Heart Failure Association (HFA) of the ESC. *European heart journal*, *42*(36), 3599-3726.
15. Sokos, G., Kido, K., Panjrath, G., Benton, E., Page II, R., Patel, J., ... & Guglin, M. (2023). Multidisciplinary care in heart failure services. *Journal of Cardiac Failure*.
16. Srisakul, U. (2023). *Development of Multidisciplinary Care Model with Participatory Action Research for Heart Failure Clinic in Bangkok, Thailand* (Doctoral dissertation, College of Public Health Sciences, Chulalongkorn University).
17. Caraballo, C., Desai, N. R., Mulder, H., Alhanti, B., Wilson, F. P., Fiuzat, M., ... & Ahmad, T. (2019). Clinical implications of the New York heart association classification. *Journal of the American Heart Association*, *8*(23), e014240.
18. Giannitsi, S., Bougiakli, M., Bechlioulis, A., Kotsia, A., Michalis, L. K., & Naka, K. K. (2019). 6-minute walking test: a useful tool in the management of heart failure patients. *Therapeutic advances in cardiovascular disease*, *13*, 1753944719870084.
19. Buber, J., & Robertson, H. T. (2023). Cardiopulmonary exercise testing for heart failure: pathophysiology and predictive markers. *Heart*, *109*(4), 256-263.
20. Rubio, R., Palacios, B., Varela, L., Fernández, R., Correa, S. C., Estupiñan, M. F., ... & Comin-Colet, J. (2021). Quality of life and disease experience in patients with heart failure with reduced ejection fraction in Spain: a mixed-methods study. *BMJ open*, *11*(12), e053216.
21. Dianati, M., Asmaroud, S. R., Shafaghi, S., & Naghashzadeh, F. (2020). Effects of an Empowerment Program on Self-Care Behaviours and Readmission of Patients with Heart Failure: a Randomized Clinical Trial. *Tanaffos*, *19*(4), 312.
22. Yu, D. S. F., Li, P. W. C., Li, S. X., Smith, R. D., Yue, S. C. S., & Yan, B. P. (2022). Effectiveness and cost-effectiveness of an empowerment-based self-care education program on health outcomes among patients with heart failure: a randomized clinical trial. *JAMA Network Open*, *5*(4), e225982-e225982.
23. Kärner Köhler, A., Tingström, P., Jaarsma, T., & Nilsson, S. (2018). Patient empowerment and general self-efficacy in patients with coronary heart disease: a cross-sectional study. *BMC family practice*, *19*, 1-10.

24. Ponikowski, P., Voors, A. A., Anker, S. D., Bueno, H., Cleland, J. G., Coats, A. J., ... & Van Der Meer, P. (2016). 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *Kardiologia Polska (Polish Heart Journal)*, *74*(10), 1037-1147.
25. Lainscak, M., Blue, L., Clark, A. L., Dahlström, U., Dickstein, K., Ekman, I., ... & Jaarsma, T. (2011). Self-care management of heart failure: practical recommendations from the Patient Care Committee of the Heart Failure Association of the European Society of Cardiology. *European journal of heart failure*, *13*(2), 115-126.
26. Ontario, C. (2018). Minimal Requirements and Key Clinical Services for Heart Failure Programs within a Spoke-Hub-Node Model of Care.
27. Ponikowski, P., Voors, A. A., Anker, S. D., Bueno, H., Cleland, J. G., Coats, A. J., ... & Van Der Meer, P. (2016). 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *Polish Heart Journal (Kardiologia Polska)*, *74*(10), 1037-1147.
28. Inglis, S. C., Clark, R. A., McAlister, F. A., Ball, J., Lewinter, C., Cullington, D., ... & Cleland, J. G. (2010). Structured telephone support or telemonitoring programmes for patients with chronic heart failure. *Cochrane database of systematic reviews*, (8).
29. Nur Farahana et al., Primary Care Virtual Consultation Between Doctor and Patient Using Mobile Phone Applications/ Web platforms, Health Technology Assessment Section ,Medical Development Division, Ministry of Health Malaysia,003/2019
30. Timothy Siaw Yean Hwa et al. A Global approach to Trends and Practices: IBA Healthcare and Life Sciences Law Committee Telemedicine Survey
31. *Garis Panduan Perkhidmatan Konsultasi Secara Maya* (Virtual Consultation Services) *Di Klinik Kesihatan*, *Bahagian Pembangunan Kesihatan Keluarga, Kementerian Kesihatan Malaysia,* 2022
32. Laws Of Malaysia , Act 564 Telemedicine Act 1997 [Reprint 2002] http://www.commonlii.org/my/legis/consol_act/ta1997113/
33. Malaysian Medical Council Advisory (2024) on Malaysian Medical Council Guideline on Telemedicine
34. Ileana L. Piña, Carl S. Apstein, Gary J. Balady, Romualdo Belardinelli, Bernard R. Chaitman, Brian D. Duscha, Barbara J. Fletcher, Jerome L. Fleg, Jonathan N. Myers and Martin J. Sullivan; A Statement From the American Heart Association Committee on Exercise, Rehabilitation, and Prevention; Circulation. 2003;107:1210–1225
35. Eloisa Colin-Ramirez, Nariman Sepehrvand, Sarah Rathwell, Heather Ross, Jorge Escobedo, Peter Macdonald, Richard Troughton, Clara Saldarriaga, Fernando Lanas, Robert Doughty, Finlay A. McAlister and Justin A. Ezekowitz; Sodium Restriction in Patients With Heart Failure: A Systematic Review and Meta-Analysis of Randomized Clinical Trials; Circulation: Heart Failure. 2023;16

36. American Heart Association. Heart Failure Tools and Resources - Symptom tracker. Available from https://www.heart.org/-/media/files/health-topics/heart-failure /hf-symptom-tracker.pdf
37. University of Ottawa Heart Institute. Heart failure, a guide for patients and families. Available from: https://www.ottawaheart.ca/sites/default/files/uploads/heart-failure-patient-guide.pdf. Assessed on 4 March 2024

PROTOCOL OF HEART FAILURE CLINIC FOR NON-CARDIOLOGIST IN HOSPITALS UNDER MINISTRY OF HEALTH MALAYSIA

ISBN 978-629-95051-2-8

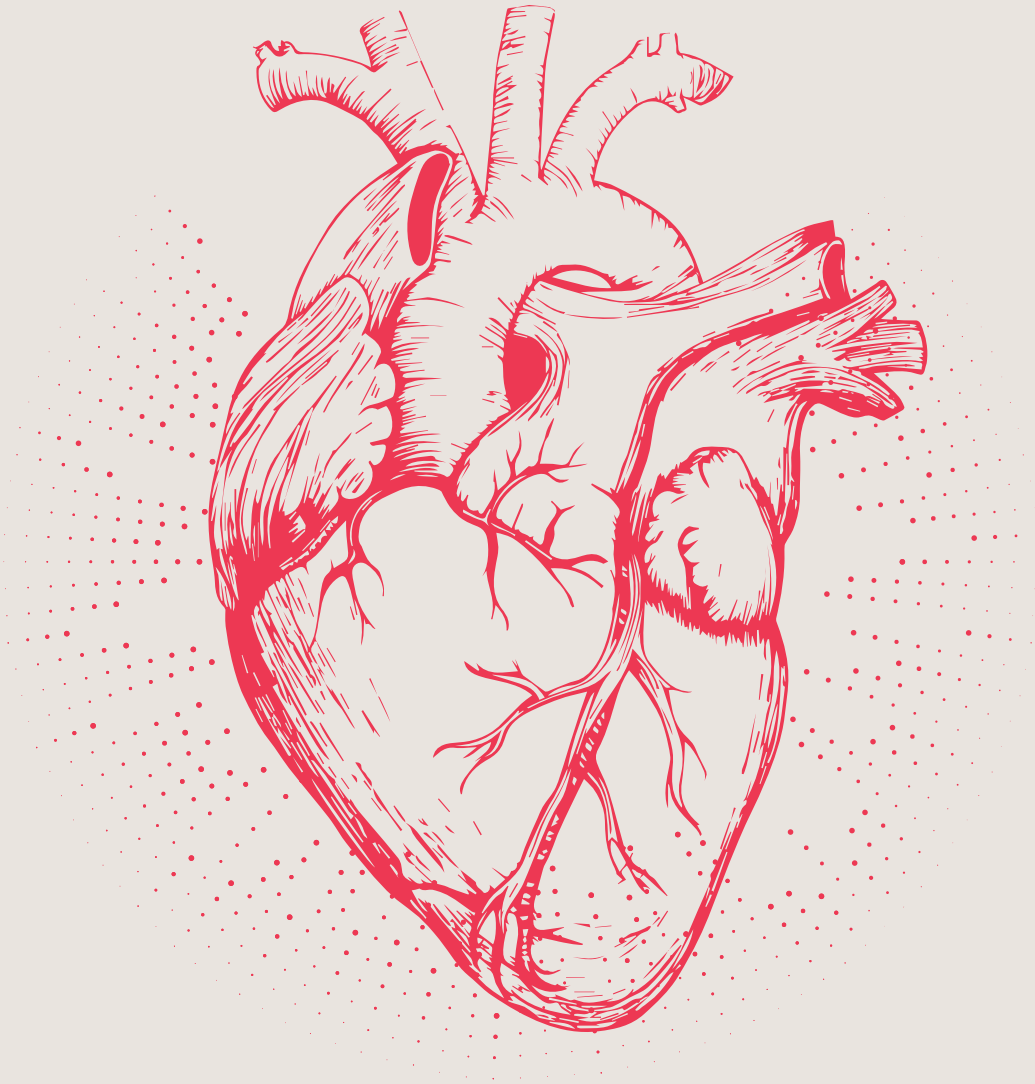


Medical Services Unit, Medical Development Division, Ministry of Health Malaysia

(paperback)

MEDICAL SERVICES UNIT
MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA
Level 5, Block E1, Parcel E,
Federal Government Administration Centre
62590 Putrajaya, Malaysia
www.moh.gov.my

MEDICAL SERVICES UNIT
MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA
Level 5, Block E1, Parcel E,
Federal Government Administration Centre
62590 Putrajaya, Malaysia
www.moh.gov.my



ISBN 978-629-95051-2-8