A PROJECT TO IMPLEMENT SHARED CARE IN MANAGING PATIENTS WITH NON-COMMUNICABLE DISEASES (NCDs) IN NATIONAL HOSPITAL KANDY CLUSTER

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THE DECLARATION

Topic of the research project:

A Project to Implement Shared Care in Managing Patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

I declare that the work presented in the project report is the candidate's own and that no part of the project report has been submitted earlier or concurrently for any other degree.

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Signature of the student:

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Date : 20/02/2023

CERTIFICATION OF THE SUPERVISOR

I hereby certify that above research project report was prepared under my supervision by Dr. K.M.P.D Jayasundara in partial fulfillment of the requirements of the degree of Doctor of Medicine (MD) in Medical Administration by the Post Graduate Institute of Medicine (PGIM), University of Colombo.

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SYNOPSIS

Introduction

Non-Communicable Diseases (NCDs) are rising at an alarming rate and pose a significant threat to the well-being of people. It was observed that most clinics of tertiary care hospitals in Sri Lanka are overcrowded with NCD patients. This has been compromising the comprehensiveness of care. “Shared Care” is an approach that uses the skills and knowledge of a range of health professionals who share joint responsibility concerning an individual’s care. This study was conducted to design and implement a shared care model to manage patients registered at the cardiology clinic of National Hospital Kandy (NHK) with the “NHK Cluster of Hospitals”.

Methodology

This was an interventional research project conducted in three phases. During phase one a situational analysis was carried out in NHK and 5 selected Primary Medical Care Institutes (PMCIs) in the NHK cluster. A purposive sample of 322 cardiology clinic patients was studied using an interviewer-administered questionnaire to get their demographic and disease-related data, knowledge of NCDs, experience with the services of NHK, and perception of managing in a shared care cluster. A facility survey was conducted to assess the readiness of hospitals to manage NCDs and to obtain statistics on clinic patients and KII and FGD were conducted to reason out the issues identified in the quantitative data collection. After analyzing pre-intervention data, stakeholders have identified the gaps and designed a package with six interventions to address them.

In the second phase, the interventions ((1. Designing/Implementing a referral/back referral pathway, 2. Develop, Print, and Disseminate Information Education Communicationmaterial to patients on shared care, 3. Conducting awareness programs for health staff on the shared care concept, 4. Training medical officers at PMCIs on clinical management of cardiac patients, 5. Developing a mechanism to distribute drugs to PMCIs from Regional Medical Supplies Division Kandy requires managing cardiac patients, 6. Establishing a communication channel to provide clinical support to PMCIs from the cardiology unit NHK) were implemented. Post-intervention assessment was

done to assess the results of the intervention. An evaluation was conducted by the evaluation team of the project after three months of implementing shared care.

Results

Most of the cardiology clinic patients were satisfied with the services provided by NHK. A majority (N=252, 81.2%) of clinic patients were happy to be managed in a shared care cluster provided that the services are optimized at PMCIs. Lack of training for medical officers in managing cardiac diseases and other NCDs, lack of digital infrastructure, and non-availability of certain cardiac-specific drugs were evident in PMCIs

Of the 129 patients referred to PMCIs with stable cardiac diseases, 95.4% (N=123) continued to follow up. Only 4.6 % (N=6) of referred patients defaulted to managing in shared care and of them, 2.3% (N=3) were returned to the cardiology clinic for the continuation of follow-up due to traveling difficulties to PMCIs. The rest (N=3, 2.3%) were lost to follow-up. Of the 59 referred patients who were reviewed at the cardiology clinic after managing in PMCIs, 72.9% (N=43) were satisfied to be managed in shared care and were happy to continue their follow-up at PMCIs. The evaluation proved the relevance, coherence, effectiveness, and, sustainability of the project in managing stable cardiac patients in a shared care cluster.

Conclusion

The model implemented to manage patients with stable cardiac diseases at the cardiology clinic NHK in a shared care cluster was effective and it would be possible to reduce overcrowding at the cardiology clinic NHK and improve the comprehensiveness of care.

Recommendations

Continuous supervision and monitoring of the project activities and maintaining the supply chain are essential to improve the effectiveness and sustainability of the project.

***Keywords*:** Cardiology Clinic NHK, Stable Cardiac Diseases, PMCI, Shared Care

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ABBREVIATIONS

NCDs.....	Non-Communicable Diseases
WHO.....	World Health Organization
CVDs.....	Cardiovascular Diseases
CAD.....	Coronary Artery Disease
CHD.....	Coronary Heart Disease
PAD.....	Peripheral Vascular Disease
GBD.....	Global Burden of Disease
DALYs.....	Disability-adjusted Life Years
IHD.....	Ischemic Heart Disease
PI.....	Principal Investigator
NHK.....	National Hospital Kandy
PMCI.....	Primary Medical Care Institute
NHKCH.....	NHK Cluster of Hospitals
DH.....	Divisional Hospital
RDHS.....	Regional Director Health Services
DHK.....	Divisional Hospital Katugastota
DHW.....	Divisional Hospitals Wattegama
DHM.....	Divisional Hospitals Manikhinna
DHT.....	Divisional Hospitals Thiththapajjala
DHG.....	Divisional Hospitals Galagedara
IEC.....	Information Education Communication
HIMS.....	Hospital Information Management System

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CHAPTER ONE

PLANNING

1.1. Introduction

1.1.1. Background

There are four Non-Communicable Diseases (NCDs) considered important by World Health Organization (WHO). They are cardiovascular disease, diabetes mellitus, chronic respiratory diseases, and, cancer(WHO, 2022). The WHO defines Cardiovascular Diseases (CVDs) as a group of disorders of the heart and blood vessels(WHO, 2023a). CVD comprises four main types; Coronary Artery Disease (CAD) which is also referred to as Coronary Heart Disease (CHD), Cerebrovascular Disease (stroke), Peripheral Vascular Disease (PAD), and, Aortic Atherosclerosis(Lopez et al., 2022). At present, 550 million people across the world are diagnosed with CVDs(British Heart Foundation, 2022).

Globally, CVDs are the leading cause of death. According to the World Heart Federation, more than 75% of CVD deaths occur in low and middle-income countries(World Heart Federation, 2023). The WHO estimates that each year CVDs account for 17.9 million deaths(WHO, 2023a). 80% of these deaths are due to heart attacks and strokes. Moreover, one-third of them are premature deaths (less than 70 years of age)(WHO, 2023a). It is projected that the annual number of CVD deaths globally will exceed more than 23 million in 2030 and by 2060, it would exceed 34 million (British Heart Foundation, 2022).

According to the estimates of the Global Burden of Disease (GBD) study in 2019, the Disability-adjusted Life Years (DALYs) and years of life lost increased significantly and, years lived with disability due to CVD doubled over the study period (Roth et al.,

2020). This reflects the significant threat of CVDs to health and development worldwide. Especially, in low and middle-income countries with inadequate healthcare resources.

In Sri Lanka, 14.2% of the population aged between 40-69 years with, a "10-year CVD risk ≥ 20% with existing CVDs". (Males 16.9% compared to 11.8% of females)(MOH Sri Lanka, 2021). According to the information given in the annual health bulletin 2019, diseases of the circulatory system have shown increasing trends in-hospital morbidity and mortality. In addition, the most common cardiac disease, Ischemic Heart Disease (IHD) displayed increasing trends in hospitalization over the past eight years (455.4 in 2011 and 667.2 in 2019 per 100,000 population)(MOH Sri Lanka, 2019). Moreover, it is estimated that NCDs caused 83% of the country's total deaths, where 34% were due to CVDs(WHO, 2018b).

Cardiac diseases (heart diseases) are a class of disorders of the heart. There are many different types of cardiac diseases and they can be grouped based on how they affect the structure or the function of the heart. Broadly, they are classified as; coronary artery disease (disorders of the heart's vasculature), heart rhythm disorders, structural heart disease, heart failure, infections, cardiomyopathies (heart muscle disease), and congenital heart disease. There are many modifiable and non-modifiable risk factors for cardiac disease. Risk factor reduction is essential in the prevention of most cardiac diseases and their complications(Heart & Stroke Foundation, Canada, 2022).

Most cardiac diseases require complex interventions and procedures throughout disease management. For some disease entities complex surgical interventions are the only option. Also, a higher percentage of patients with cardiac diseases need long-term medical follow-up. A multidisciplinary approach is essential in managing these patients effectively, as most of them suffer from comorbid conditions such as diabetes mellitus,

chronic obstructive pulmonary disease, osteoarthritis, low vision, depression, etc. (Buddeke et al., 2019).

Increased incidence of cardiac diseases and their complications affect the well-being of people and the country's economy. With the increased patient numbers, it is no longer feasible to manage these diseases in the long term mainly through specialists in major hospitals as the high volume of patients has the potential to overwhelm such institutes. This results in high costs to both the health system and individuals(WHO, 2021c). According to the Sri Lanka National Health Account, NCDs absorb 35% of the annual current health expenditure, and 4% of it is attributed to cardiovascular diseases(MOH, 2018b).

The fast-growing NCD epidemic is causing disparities in the coverage of NCD services (MOH, 2018a). It has become a challenge to provide patient-centered optimal care to many patients with NCDs, especially in secondary and tertiary healthcare institutes, which causes overcrowding, compromising optimal care. This applies to managing CVDs as well. In addition, overcrowding adds stress to healthcare staff, can erode patient experience of care, and have a negative impact on health outcomes(Moore, 2019). Despite many measures taken by health authorities, overcrowding at outpatient clinics has remained unresolved, and further studies are needed to design and implement suitable interventions to provide better care(Bahadori et al., 2017).

1.1.2. Shared Care

The shared care concept has attracted interest worldwide as it has been used to manage many chronic disease conditions to ensure patient-centered care(Gu et al.,2015). It assumes that shared care delivers better care than primary or specialty care alone to

provide patient-centered services, especially in managing chronic disease conditions(Smith et al., 2017).

Hickman et al. (1994) define shared care as “a joint participation of general practitioners and specialists in the planned delivery of care for patients with a chronic condition, informed by an enhanced information exchange, over and above the routine discharge and referral letters”.

There are many examples of proof of concept that shared care has delivered effective outcomes in managing chronic NCDs (Millard J, 2005). With the reorganizing of primary healthcare the Ministry of Health Sri Lanka has focused on addressing gaps in the primary curative care services aiming to establish shared care in managing NCD patients (MOH, 2021).

The government of Sri Lanka has foreseen the burden of uprising NCDs in the population and prioritizes prevention and treatment activities over the past few years. The Ministry of Health has taken multiple initiatives in collaboration with WHO, World Bank, and, Asian Development Bank to implement shared care to establish patient-centered care in managing NCDs (Perera et al., 2019).

1.2 Justification

The prevalence of CVDs has shown a significant rise in Sri Lanka over the past decades and it is observed that patients with CVDs also suffered from other NCDs. Most of these patients require long-term care that is proactive, patient-centered, and sustainable. It was evident that most patients with CVDs tend to attend larger secondary or tertiary care institutions for follow-up even when their disease condition is under satisfactory control. This results in overcrowding of secondary and tertiary care institutions that compromise care quality and comprehensiveness.

The Principal Investigator (PI) who had worked for more than five years at National Hospital Kandy (NHK) has witnessed this situation in most of the clinics including the cardiology clinic of NHK. Furthermore, this observation was confirmed by the consultant cardiologists at NHK(Senior Consultant Cardiologist, NHK, personal communication, June 15, 2021).

Shared care has been a proven concept for the effective management of patients with chronic diseases. This has been implemented in managing patients with hypertension and diabetes mellitus in a few local settings. Thus, this concept could also be implemented to manage patients with cardiac diseases of long-term follow-up in the cardiology clinic of NHK.

The availability of a structured shared care model would be useful to manage these patients effectively in a conveniently located Primary Medical Care Institute (PMCI). Also, by referring patients with cardiac diseases of satisfactory control to PMCIs, the congestion of clinics will be reduced, and the patients who need further specialized care will have more opportunities to get regular follow-up at the cardiology clinic of NHK under the close supervision of cardiologists.

Most cardiac disease patients are older with multiple comorbid conditions. They have difficulties traveling long distances and waiting for long hours to obtain care. In addition, with the fuel shortage of the country due to current economic constraints, the transport costs have increased adding more burden to patients on traveling. Moreover, some of the patients have to be accompanied to the clinic by another person and at times this person has to be paid. When family members accompany the patient there is a loss of earnings. Thus, managing them in a PMCI closer to their homes will be more convenient and reduces the opportunity cost.

National health costs in managing NCDs can be reduced with the improved utilization of PMCIs, by minimizing the number of patients with NCD-related complications and increasing the quality of life due to improved clinical outcomes. Therefore, implementing a patient-centered shared care system will benefit both patients and the health system of the country.

Improvements in the facilities and care protocols at the primary care level with the introduction of shared care initiatives will increase the utilization of the services at PMCIs and minimize the bypass. Thus, the availability of an established shared care system will be useful to provide continuous care for patients.

1.3. Objectives and Purpose of the Research Project

1.3.1. Objectives

1.3.1.1. General Objective

To design and implement a shared care model to manage patients registered at the cardiology clinic of National Hospital Kandy (NHK) with the "NHK Cluster of Hospitals" (NHKCH).

1.3.1.2. Specific Objectives

1. To describe the care provided at present to patients registered at the cardiology clinic of NHK and selected PMCIs in the NHKCH.

2. To design a model to provide shared care for patients registered at the cardiology clinic of NHK and selected PMCIs in the NHKCH.

3. To Implement the designed model to establish shared care for patients registered at the cardiology clinic of NHK and selected PMCIs in the NHKCH.

4. To evaluate the relevance, coherence, effectiveness, and sustainability of the shared care model in managing patients registered at the cardiology clinic of NHK and selected PMCIs in the NHKCH.

1.3.2. Purpose of the Study

National Hospital Kandy provides multidisciplinary services to manage patients with cardiac diseases. Although there are cardiology units established in the District General Hospitals (DGH) Nuwara Eliya, Nawalapitiya, and Matale within the central province, it was observed that patients tend to overcrowd the cardiology clinic at NHK. It was also noted that a significant number of patients currently followed up at the cardiology clinic of NHK have satisfactory control of their disease conditions and can be effectively managed at a PMCI under the guidance and supervision of specialized staff at the cardiology clinic of NHK.

At present, shared care is practiced for patients followed up at medical clinics in PMCIs where the patients are referred to secondary or tertiary level health institutions for specialized opinion and investigations. Yet, the shared care practice has not been implemented to manage patients with NCDs who are followed up at a specialized unit in a secondary or tertiary care setting.

In this research project, the care provided to patients registered at the cardiology clinic of NHK and selected PMCIs of NHKCH was studied and a model was designed,

implemented, and, evaluated to provide shared care for patients registered at the cardiology clinic of NHK and selected PMCIs in the NHKCH.

1.4. Literature Review

Over the past few decades, with the rapid development of modern medical practices, the principles and protocols of managing patients with disorders such as chronic NCDs were redefined to achieve better clinical outcomes for the patients. Reforming the health systems to cater to the rising burden of NCDs has become a challenge globally, especially in countries with low-resource settings.

Classification of NCDs, principles of managing NCD patients such as patient-centered shared care concept, re-orienting the health systems, upgrading the primary healthcare settings, establishing management guidelines at different healthcare levels, Introduction of Information Communication Technology (ICT) advancements in patient care, health promotion activities, and expanding the rehabilitation services were thoroughly considered and studied to combat the increasing burden of NCDs both in the global and local settings.

1.4.1. Non-communicable Diseases (NCDs)

NCDs are a group of diseases with characteristic features. Considering the long duration and slow progression of this group, they are also known as chronic diseases.

NCDs result due to a combination of genetic, physiological, and environmental factors such as air pollution and behavioral factors such as smoking, unhealthy diet, physical inactivity, and harmful use of alcohol which can lead to high blood pressure and obesity that increases the risk for many NCDs. These diseases are not transmissible directly from one person to another, and there is a protracted period of impairment once manifested. The metabolic risk factors for NCDs are raised blood pressure, obesity,

raised cholesterol, and blood sugar. Most NCDs are preventable as they are caused by modifiable risk factors. However, uncontrolled NCDs cause premature morbidity, dysfunction, and reduced quality of life(WHO, 2021b).

NCDs account for 41 million deaths per year which is equivalent to 74% of total deaths globally.77% of NCD-related deaths occur in low-and middle-income countries. Most NCD deaths are due to cardiovascular diseases claiming 17.9 million lives annually(WHO, 2022). In addition, deaths due to cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million) are the next in line to contribute to the total of 80% of premature NCD deaths(WHO, 2021a). A recent study done by Zaho revealed that there were 10.8 million deaths due to CVDs in Asia in 2019 which accounted for 35% of annual total deaths(Zhao, 2021). In the South-East Asia Region, it is estimated that NCDs cause 9 million deaths annually and 52% of them are below 70y(WHO, 2023b).

1.4.1.1. NCDs in Sri Lanka

During the last two decades, the NCD burden of the country increased at an alarming rate. Interestingly, the results of the 2021 STEP survey show increased percentages of all NCDs compared to the 2015 STEP results. The prevalence of diabetes was recorded as 14.6%. The females were having a higher prevalence (14.7%) than males (14.5%). In addition, 13% of the population was prediabetic. The prevalence of raised blood pressure is 34.8% (males 35.8% and, females 34%)(Ministry of Health, Sri Lanka, 2021).

NCDs are estimated to account for 83% of all deaths in Sri Lanka. Of them, 34% are due to cardiovascular diseases whereas 14%, 9%, and 8% of deaths are due to cancers, diabetes mellitus, and, chronic respiratory disorders respectively(WHO, 2018a).

1.4.1.2. Cardiovascular Disease Burden in Sri Lanka

Among the disease categories of cardiovascular disease, Ischemic Heart Disease (IHD) which is also called Coronary Heart Disease and Coronary Artery Disease(American Heart Association, 2023) is the most common type(CDC, 2022) and IHD is higher among males(Gheisari et al., 2020)

According to the 2019 annual health bulletin of Sri Lanka, from 2010 to 2019, IHD is the leading cause of hospital deaths and in 2019, 15.1% of hospital deaths occur due to IHD. It is also ranked 12th among the leading causes of hospitalization in 2019 accounting for 2.3% of total hospital admissions(MOH Sri Lanka, 2019). In 2020, deaths due to IHD in Sri Lanka reached 26,304 (age-adjusted death rate 101.31 per 100,000 population) accounting for 22.66% of the total deaths that occurred during the year(World Life Expectancy, 2020). This emphasizes the magnitude of the rising disease burden due to IHD.

Efficient and effective management of patients with NCDs is complex as it requires sustainable, patient-centered, long-term proactive, community-based care that can only be delivered through a strengthened primary care health system. Good health governance, adequate health workforce, availability of essential medicines and health technologies, and affordability, together with appropriate health financing, play a pivotal role in combatting the dreaded outcomes of the alarmingly increasing global burden of NCDs(WHO, 2021c).

The NCD Bureau of the Ministry of Health, Sri Lanka, is the focal point in developing policies and implementing programs nationally to control the burden of NCDs.

1.4.2. Shared Care Concept

Shared care has attracted interest internationally with the increase in complex long-term disease conditions(Gu et al., 2015).

Hickman et al.(1994). define shared care as "a joint participation of primary care physicians and specialty care physicians in the planned delivery of care for patients with a chronic condition, informed by an enhanced information exchange over and above routine discharge and referral".

Another definition is, "Shared care is an approach to care which uses the skills and knowledge of a range of health professionals who share joint responsibility concerning an individual's care. This implies monitoring and exchanging patient data and sharing skills and knowledge between disciplines"(Millar, 2004).

National Health Service of England defines shared care as a particular form of the transfer of clinical responsibility from a hospital or specialist service to general practice in which prescribing by the GP, or other primary care prescribers, is supported by a shared care agreement(2018).

Shared care is a widely discussed concept globally in managing chronic disorders. The concept of "shared care" has synergies with terms such as "coordinated care," "collaborative care," and "integrated care." The New Zealand National Shared Care Planning Program (NSCPP) has identified that shared care is a complex and multifaceted concept that requires a significant effort of multidisciplinary teams to implement and evaluate(Warren et al., 2012).

Over the years, many countries have piloted and implemented several shared care models to improve the care outcomes of patients with NCDs. The shared care concept

was initially used to manage diabetes mellitus. Later, it has been used to manage many conditions with successful outcomes, especially in cancer care and mental health disorders.

In Sri Lanka, several projects are in progress aiming to implement the shared care concept. The Primary Health Sector Strengthening Project (PSSP) and Health Sector Enhancement Project (HSEP) are notable projects.

1.4.3. Shared Care Models

Many countries have designed and adopted shared care models to manage chronic disorders(Hampson et al., 1996) (Millard J, 2005). It is well accepted that innovation is necessary to design the best-fit model to manage different disease conditions in varied settings. Thus, wholesale implementation of imported models will be ineffective and non-sustainable(Lim et al., 2014).

A study carried out in the Northern Province of Sri Lanka on managing Atrial Fibrillation has revealed inefficiencies in the referral pathways, diagnosis, and management. They conclude to strengthen primary care to tackle inefficiencies of the care pathway (Sheron et al., 2022).

Results of a collaborative care model for stable IHD revealed that primary care physicians accepted the model and modestly improved managing patients with given guidelines(Fihn et al., 2011).

There are many ways of classifying shared care models. One way is to classify the models according to the variation across the Health Continuum, Complexity, and Lead(Millard J, 2005).

Variation across the health continuum means, principally, what sector of the model is based in. It could be in primary care, secondary care, or the community and often involve more than one sector. Complexity denotes how the different care providers are aligned in the model. For example, a simple model will combine a primary care physician and a nurse in the GP practice setting. In contrast, complex models will consist of multiple health providers from various disciplines, various agencies, and all levels of the health system. The lead means the person initiates or assumes the responsibility of shared care arrangement. This could either be a single person or a team.

Another way of classifying shared care models is by considering the method used to transfer patient data. Models are broadly classified and constructed into six different groups(Hickman et al., 1994). (Figure 1)

Figure 1.1 Shared Care Models Based on the Method Used to Transfer Patient Data

	Model	Features
1	Community clinic Model	Specialist undertakes a clinic in general practice
2	Basic Model	Communication comprises the regular exchange of letters or standardized record sheets
3	Liaison Model	The hospital team and (GP) meet to discuss and agree on the management of patients under shared care
4	Shared care record cards model	The exchange of information is made through a booklet or card, commonly carried by the patient
5	The computer-assisted shared care model	A circuit of information is established between GP and hospital specialist based on data collected at each patient visit and mediated through computer-generated summaries
6	Electronic mail model	Hospital specialists and GP both have access to the same data on patients shared between them

1.4.4. Implementing Shared Care – Factors to be concerned

Research has shown that there are multiple factors to be considered when designing and implementing a shared care model to manage chronic disorders effectively. These can be broadly grouped into Patient-related factors, Provider related factors, and availability of resources(Hampson et al., 1996).

In Sri Lanka, the existing health policy provides the patient to choose the health care provider at any level of care without a gatekeeping mechanism. Therefore, many patients tend to seek healthcare even for trivial conditions from higher-level health facilities by bypassing primary-level health institutes. It has been found that the absence of well-demarcated draining areas and lack of clear referral policies have allowed patients in rural Sri Lanka to bypass primary care facilities, and the patient perception of the availability of much better health facilities at higher health care facilities has been found as the most common reason to bypass(Perera & Weerasinghe, 2015).

Valaitis et al. (2018). explain the influence of inter and intrapersonal factors of the health care providers that affect the successful implementation of a shared care system. Five interpersonal factors are identified as (1). The trust and inclusive relationships among providers (2). Shared values, beliefs, and attitudes (3). Clarity of the role of each provider (4). Effective communication (5). Process of decision making. The two intrapersonal factors revealed were, (1). Personal qualities, skill, and knowledge (2). Personal values, beliefs, and attitudes.

Availability of substantial resources at primary health care levels that includes adequate infrastructure, adequate number and, mix of skilled health care workers, essential medicines to manage NCDs, laboratory investigation facilities, medical equipment, and technologies to share patient information among providers plays a pivotal role in

implementing a successful shared care model(Hampson et al., 1996) (Perera et al., 2019).

1.5. Plan of Implementation

1.5.1. Project Design

This was an interventional research project that consisted of three phases. The three phases were; the Pre-Interventional phase, the Interventional phase, and, the Post-interventional phase.

1.5.2. Project Setting

The project setting consisted of six hospitals in the Kandy district and all the hospitals belong to NHKCH. The National Hospital Kandy as the apex hospital and the Divisional Hospitals (DH) Katugastota, Wattegama, Manikhinna, Thiththapajjala, and Galagedara as the PMCIs of NHKCH.

1.5.3. Pre-Intervention Phase

A primary survey was conducted in this phase at the cardiology clinic of NHK and the selected PMCIs in the NHKCH to study selected factors affecting managing patients with NCDs. Data collection was done to study the following main areas.

- The patients' statistics of the study setting include demographic data, socio-economic data, clinic follow-up details, etc.
- Assessment of the availability of resources for NCD care in the study setting by conducting a readiness assessment. The resources studied were the availability of infrastructure, health care staff, types of services (Clinics, Pharmacy, Laboratory, Health promotion), and, health information systems, etc.

- The existing referral and back referral system of patients between the cardiology clinic of NHK and the selected PMCIs of the NHKCH
- The patient experience of the services of NHK, the knowledge about NCDs, and the attitude of the patients followed up in the cardiology clinic of NHK towards getting their disease condition managed in a shared care cluster of hospitals close to their homes.
- The perception of relevant healthcare staff of the cardiology clinic of NHK and the selected PMCIs of the NHKCH in managing NCD patients of the cardiology clinic of NHK in a shared care cluster

1.5.3.1 Profile of the Study Setting

There are four tertiary care institutions (NHK, Teaching Hospital Peradeniya, Sirimavo Bandaranayake Specialized Children Hospital Peradeniya, and DGH Nawalapitiya), two secondary care institutions (Base Hospitals Gampola and Teldeniya), 73 PMCIs (47 Divisional Hospitals and 26 Primary Medical Care Units) & nine special units/campaigns in the Kandy district delivering healthcare to the community(Department of Health Services : Central Province, Sri Lanka, 2021).

The NHK is under the administration of the line Ministry of Health and the selected five PMCIs (DH – Katugastota, Wattegama, Manikhinna, Thiththapajjala, Galagedara) for this project are under the administration of the Provincial Health Ministry of the Central Province and managed by the Regional Director of Health Services (RDHS) Kandy District.

1.5.3.1.1. National Hospital Kandy

National Hospital Kandy is the second-largest government medical institution in Sri Lanka. It is the specialized care institution of excellence serving the Central Province that includes the Kandy, Matale, and, Nuwara Eliya districts. Moreover, it is the main tertiary care referral center in the Central Province that offers multidisciplinary services to combat the burden of NCDs. And also, the NHK is the only institution in the Central Province with a state-of-the-art cardiology unit that provides a range of specialized cardiology services to adult patients with complex cardiac diseases.

The NHK with a bed capacity of 2629 has 78 wards and 13 specialized units for in-patient care. In addition, it consists of 11 Intensive Care Units and 11 operating theaters(National Hospital Kandy, 2020). In 2020, the NHK recorded 196,936 inpatient admissions and the total number of registered clinic patients was 154,617. There were 817,473 clinic patient visits during the year, where the majority were patients with NCDs (National Hospital Kandy, 2020).

About 50 different clinics in multiple specialties are conducted at NHK. Patients with NCDs are followed up mainly at Visiting Physicians' Out Patient Clinics (VP-OPD), Diabetic Clinics, Cardiology Clinics, General Medical Clinics, Psychiatry Clinics, Neurology Clinics, Nephrology Clinics, Oncology Clinics, Endocrine Clinics, and Respiratory Clinics. The specialist medical officers, senior registrars, registrars, and medical officers of the respective clinical specialties conduct these clinics. The

distribution of patients in these clinics in the year 2022 is shown in table 1.

Table 1.1. The Distribution of Patients According to Clinics at NHK

Clinic	Registered patients
VP OPD	14,138
Diabetic Clinic	13,644
Cardiology Clinic	12,761
General Medical Clinic	8,822
Psychiatry Clinic	7,580
Neurology Clinic	6,761
Nephrology Clinic	4,517
Oncology Clinic	4,149
Endocrine Clinic	2,193
Respiratory Clinic	1,029

(Source: Health Information Unit data – NHK)

The cardiology clinic of the NHK was selected as the NCD clinic setting to conduct this research project.

1.5.3.1.2. "National Hospital Kandy Cluster of Hospitals" – PMCIs

For this project, the 47 DHs of the Kandy district are considered the "National Hospital Kandy Cluster of Hospitals" and five of them were selected for this research project; Divisional Hospital Katugastota (DHK), Divisional Hospital Wattegama (DHW), Divisional Hospital Manikhinna (DHM), Divisional Hospital Thiththapajjala (DHT), and, Divisional Hospital Galagedara (DHG). 1973 patients of the total registered cardiology clinic patients of NHK comprise the patients living close to these five hospitals at present (NHK patient database). The summary of profiles of the selected five PMCIs is given in table 2.

Table 1.2. Summary of the Profiles of PMCIs

	Characteristic	DHK	DHW	DHM	DHT	DHG
1	Type	A	B	B	B	B
2	Distance to NHK (Km)	5	15	17	9	20
3	Bed capacity	50	60	60	60	60
4	Number of NCD clinics per week	4	2	3	4	2
5	Average no of patients per clinic	400	300	250	250	300
6	Number of doctors attending a clinic session	3	2	2	2	2
6	Total no of medical officers in the institution	6	3	5	5	6
7	Number of Grade Medical Officers in the institution	4	2	4	3	5
7	Total no of nursing officers in the institution	10	12	13	11	12
8	Total no of pharmacists/dispensers in the institution	2	1/2	1/2	1	1/2
9	Number of health care assistants in the institution	10	14	18	16	20
10	Availability of a functioning laboratory	Yes	Yes	Yes	No	Yes
11	Availability of a Healthy Life Style Centre	Yes	Yes	Yes	Yes	Yes
12	Availability of an ambulance	Yes	Yes	Yes	Yes	Yes

(Source: Planning Unit data - RDHS Kandy)

1.5.4. Project Period

The project was conducted from 01/01/2022 to 31/12/2022.

1.5.5. Study Instruments

Figure 1.2 explains the study instruments used to collect data required to study the below-mentioned areas

Figure 1.2. Areas of Study According to Primary Data Collection Method and Triangulation Method

	Areas of Study	Study Instrument	Triangulation Method
1	Part A – Patients Statistics NHK Part B – Readiness assessment NHK	Checklist 1: Patients Statistics and Readiness Assessment of NHK (PSRANHK)	KII/IAQ
2	Part A – Patients Statistics PMCIs Part B – Readiness assessment of PMCIs	Checklist 2: Patients Statistics and Readiness Assessment of PMCI (PSRAPMCI)	KII
3	Patient referral and back referral system at present in the study setting	KII	FGD
4	Assess the patient experience of the services of NHK, knowledge of NCDs, and their attitude to be managed in a shared care cluster of hospitals	Interviewer Administered Questionnaire	Checklist 1
5	Perception of the relevant healthcare staff of the study setting on managing NCD patients in a shared care cluster	FGD	KII

1.5.5.1. Checklist 1: Patients Statistics and Readiness Assessment of NHK (PSRANHK)

The PSRANHK was developed to collect data from the cardiology clinics of NHK

1.5.5.1.1. Development of PSRANHK

The PSRANHK was developed based on information gathered through a literature review and opinions from relevant experts

1.5.5.1.2. Contents of PSRANHK

The PSRANHK consisted of two parts:

Part A: Patients Statistics

Part B: Readiness Assessment

Part A: consisted of five subsections to collect data on,

1. Total number of registered clinic patients
2. Sex distribution of clinic patients: Male/Female
3. Age distribution of clinic patients
4. Distribution of selected NCDs among cardiology clinic patients (cardiac diseases, diabetes mellitus, hypertension, etc.)
5. Distribution of NCD patients attending the cardiology clinic based on their current place of residence to the five selected PMCIs of NHKCH

Part B consisted of eight subsections to collect data related to readiness assessment.

1. The procedure of registration of NCD patients:

   Information related to the patient registration system, time appointments for consultations, and reminder/recall system for appointments were obtained

2. The procedure for managing clinic patients:

   Information related to measuring clinical parameters such as blood pressure and body weight, specialized referral system for sub-specialties within NHK, periodic review mechanism of patients with long-term follow-up at cardiology clinic by consultant cardiologist, present referral/back referral method of patients to local hospitals for follow-up were obtained

3. Human resources:

   Information related to existing and approved cadres of specialist medical officers, grade medical officers, nursing officers, and healthcare assistants and about the nature of training given for grade medical officers, nursing officers, and healthcare assistants of the cardiology clinic were obtained

4. Equipment availability:

   Information related to the availability of functional equipment in the clinic (blood pressure measuring devices, weighing scales, stethoscope, etc.), calibration and accuracy checks of blood pressure measuring devices and weighing scales, and method of maintenance and repair of equipment were obtained

5. Infrastructure and basic facilities:

   Observations were made to study the space, seating facilities and, ventilation of the patient waiting area, quality of the patients' washrooms and, availability of drinking water

6. Laboratory investigations:

   Information about the commonly requested laboratory investigations, their frequency, the procedure of collection of specimens, and dispatch of reports by NHK laboratory was obtained

7. Availability of NCD drugs:

   Information obtained about the commonly prescribed drugs and their availability at NHK pharmacy, prescription counseling, and, availability of a home delivery mechanism for drugs

8. Health promotion:

   Information obtained about the staff involved and methods used for health promotion activities

1.5.5.1.3. Validation of PSRANHK

Face and content validity were obtained by carrying out discussions with the supervisor and a resource person experienced in facility surveys

1.5.5.2. Checklist 2: Patients Statistics and Readiness Assessment of PMCI (PSRAPMCI)

The PSRAPMCI was developed to collect data from the five selected PMCIs of NHKCH

1.5.5.2.1. Development of PSRAPMCI

The PSRAPMCI was developed based on information gathered through a literature review and opinions from relevant experts

1.5.5.2.2. Contents of PSRAPMCI

The PSRAPMCI consisted of two parts:

Part A: Patient statistics

Part B: Readiness Assessment

Part A consisted of four subsections to collect data on

1. Total number of registered clinic patients

2. Sex distribution of clinic patients: Male/Female

3. Types of NCD clinics conducted, frequency of clinics per week, and, the registered number of patients in each clinic

4. Distribution of selected NCDs among clinic patients (cardiac diseases, diabetes mellitus, hypertension, etc.)

Part B consisted of nine subsections to collect data related to readiness assessment.

1. <u>The procedure of registration of NCD patients at clinics:</u>

   Information related to the patient registration system, time appointments for consultations, reminder/recall system for appointments, and, the patient record-keeping system was obtained

2. <u>The procedure for managing clinic patients:</u>

   Information related to measuring clinical parameters such as blood pressure and body weight, patient referral system, distance, and duration to reach the closest referral institution, transport facilities, and, the details of the special services that can be obtained from the referral center in managing NCDs at PMCIs were obtained

3. <u>Human resources:</u>

   Information obtained related to existing and approved cadres of all health staff categories and about the nature of training given for grade medical officers, nursing officers, and other health staff categories on managing NCDs

4. Equipment availability:

Information obtained related to the availability of functional equipment (blood pressure measuring devices, weighing scales, stethoscope, ECG machine, etc.), calibration and accuracy checks of blood pressure measuring devices and weighing scales, method of maintenance and repair of equipment

5. Infrastructure and basic facilities:

Observations were made to study the space, seating facilities and, ventilation of the patient waiting area, quality of the patients' washrooms and, availability of drinking water. Additional information obtained related to the digital infrastructure of the institution (availability of Information Communication Equipment, Networking, Internet, and Wi-Fi facilities) and, the availability of a generator

6. Laboratory investigations:

Information about the commonly requested laboratory investigations for clinic patients, their frequency, the procedure of collection of specimens and dispatch of reports, and, types of laboratory tests performed by PMCI laboratory were obtained

7. Availability of NCD drugs:

Information obtained about the commonly prescribed drugs and their availability at PMCI pharmacy, prescription counseling, availability of a home delivery mechanism of drugs, and, the nature of availability of recommended NCD drugs

8. Health promotion:

   Information obtained about the availability of Healthy Lifestyle Centers, the staff involved, and, methods used for health promotion activities

9. Community links

   Information obtained on the availability of a Hospital Development Committee /Friends of Facility and the support of Non - Governmental Organizations to improve patient care

1.5.5.2.3. Validation of PSRAPMCI

Face and content validity were obtained by carrying out discussions with the supervisor and a resource person experienced in facility surveys

1.5.5.3. Interviewer-Administered Questionnaire for Patients Attending Cardiology Clinic at NHK (IAQPNHK)

An IAQPHNK was developed to collect data from the NCD patients of the cardiology clinic of the NHK

1.5.5.3.1. Development of IAQPHNK

Development of the questionnaire was done based on the information collected through a literature review and expert opinion. The questionnaire consisted of four parts. Both opened and closed-ended questions were included.

Part A: Socio-Demographic and Details of Disease Conditions of Clinic Patients

This section consisted of twenty-nine questions both in opened and closed-ended format

Part B: Patient Experience of the Services of NHK

This part of the questionnaire consisted of nine questions. All were closed-ended questions. Question number nine comprised six sub-questions (9.1 to 9.6). Four response categories (Excellent, Good, Fair, Poor) for all nine questions were formed to document the patient's response based on their experience.

Part C. Assessment of Basic Knowledge of NCDs

This section consisted of eight questions. All were closed-ended questions and the patient's responses were documented as YES or NO

Part D: Assessing the Perception of patients on the Continuation of Managing their NCDs in a Shared Care Cluster Hospital (PMCI)

This section consisted of two questions. Question 1 is an open question where the patient is asked to express his/her expectations on the improvements needed in local hospitals and the existing health system. (10 statements – documented as an interviewer's guide). Depending on the patients' expressions, in the relevant cage the response was marked (YES= Patient expressed, NO= Not expressed). By question 2 (close-ended), the patients' response on following up in shared care was explored if his/her requirements are satisfactorily fulfilled.

1.5.5.3.2. Contents of IAQPHNK

Part A: Socio-Demographic and Details of Disease Conditions of Clinic Patients

The questions in this section were directed to collect details such as Age, Sex, Marital Status, Education level, Occupation, Details of family support, Distance from the place of living to NHK, Time duration to reach from the place of living to NHK, nearest PMCI to place of living, Distance to closest PMCI form place of living, Gross monthly

income, Mode and cost of transport to NHK, Details whether accompanied to clinics, Details of disease conditions, Frequency of clinic visits, Details related to obtaining prescribed drugs and performing laboratory investigations and, health-seeking pattern, etc.

Part B: Patient Experience of the Services of NHK

Questions one to eight of this part of the questionnaire were formed to assess patient experience on kindness, respectfulness, listening to patients' views, effective communication, competencies, timeliness of health staff at the cardiology clinic, the pharmacy and, the laboratory during the provision of care. Sub questions of question nine (9.1 to 9.5) were directed to assess the patient experience of the basic facilities provided at the cardiology clinic, the pharmacy, and, the laboratory, and subsection (9.6) was directed to assess the experience of the quality of the patient canteen.

Part C. Assessment of Basic Knowledge of NCDs

The questions of this section were directed to assess the basic knowledge of NCDs. They were on,

- Present NCDs trends
- Common risk factors for NCDs
- Complications of NCDs
- Importance of lifestyle modification in the managing NCDs
- Importance of compliance with medications

Part D: Assessing the Perception of Patients on the Continuation of Managing their NCDs in a Shared Care Cluster Hospital (PMCI)

The questions of this section were developed to assess the preference of NCD patients in obtaining treatment from the nearest PMCI and to assess their expectations from a PMCI in continuation of care. Patients' expectations on, competencies of the health staff of PMCIs, availability of the prescribed drugs for NCDs, availability of laboratory facility, availability of a mechanism to obtain specialists' opinion from NHK when necessary in the provision of care, patient engagement, facilities for health education and promotion, and availability of basic facilities for clinic patients at the PMCI were assessed.

1.5.5.3.3. Validation and Reliability checking of the IAQPNHK

Face validity, content validity, and internal consistency of the IQAPNHK were obtained by carrying out discussions with the supervisor and a resource person experienced in behavioral science

1.5.5.4. Key Informant Interview Guide

Data collection was done by conducting Key Informant Interviews (KII) with health staff of multiple categories representing National, Regional, and Institutional levels.

1.5.5.4.1. Development of KII Guides

KII guides were developed for key informants of four different health staff categories. They were,

- KII Guide for Officers in Health Administrative Posts (KIIGOHA)
- KII Guide for Medical Staff (KIIGMS)

- KII Guide for Nursing Staff (KIIGNS)
- KII Guide for Para Medical Staff (KIIGPMS)

The question areas included in the different KII guides were decided based on the information collected through the literature review and the discussions held with the supervisor and an expert in health systems development. In addition, already collected information from other instruments was considered in developing KII guides.

1.5.5.4.2. Contents of the KII Guide

All questions were developed as open-ended questions and mainly targeted at getting the interviewees' opinions on the subject area and suggestions for successful interventions

1.5.5.4.2.1. Contents of KIIGOHA

The guide consisted of open-ended questions to obtain data on the existing policies, guidelines, and, practices in managing NCDs at the National, Regional, and Institutional levels, awareness of the shared care concept, the perception of interviewee on managing NCDs in a shared care cluster system, the challenges of implementing shared care for NCDs and, suggestion for successful implementation of shared care to manage NCD patients effectively.

1.5.5.4.2.2. Contents of KIIGMS

The guide consisted of open-ended questions to obtain data on awareness of statistics of NCD patients in general and specific to the study setting, the current clinical management practices of NCDs in the study setting, the patient referral system in place, awareness of the shared care concept, the perception of interviewee on managing NCDs especially the patients with cardiac diseases in a shared care cluster system, the supportive services to be improved at NHKCH to establish shared care, the challenge

of implementing shared care for NCDs and, the possible practical approaches and innovations for successful implementation of shared care to manage NCD patients effectively. Also, the technical aspects to be considered in monitoring and evaluation were questioned.

1.5.5.4.2.3. Contents of KIIGNS

The guide consisted of open-ended questions to obtain data on the nurses' role in managing NCD patients at clinics, the process of patient registration at clinics, the patient referral system in place, awareness of the shared care concept, the perception of managing NCD patients in a shared care cluster system, the supportive services to be improved at NHKCH, the challenge of implementing shared care for NCDs and, suggestions to overcome them for implementing shared care to manage patients with NCDs effectively.

1.5.5.4.2.4. Contents of KIIGPMS

The guide consisted of open-ended questions to obtain data on managing the drug supply chain and laboratory service for NCD patients managed in a shared care cluster of hospitals, the perception of managing NCD patients in a shared care cluster system, the possible practical approaches to provide NCD drugs from NHK that are not available at PMCIs and sharing laboratory service of the NHK in managing NCD patients, the supportive services to be improved at NHKCH, the challenge of implementing shared care for NCDs and, suggestions to overcome them for effective patient management.

1.5.5.5. Focus Group Discussion Guide

Data collection was done by conducting Focus Group Discussions (FGD) with the medical and nursing staff of the study setting. Subsequent FGDs were conducted with

a second FGD guide after the completion of the first round to obtain missing information.

1.5.5.5.1. Development of FGD Guides

Four FGD guides were developed. They were,

- FGD Guide for Medical Officers of the Cardiology Clinic of NHK (FGDGMOCC)
- FGD Guide for Nursing Officers of the Cardiology Clinic of NHK (FGDGNOCC)
- FGD Guide for Medical Officers of the selected PMCIs (FGDGMOPMCI)
- FGD Guide for Nursing Officers of the selected PMCIs (FGDGNOPMCI)

The open-ended questions included in the different FGD guides were decided based on the information collected through the literature review and the discussions held with the supervisor and a resource person and, information already derived from other data collection instruments.

1.5.5.5.2. Contents of the FGD Guides

The contents of the four FGD guides were arranged under the following subsections,

- The general understanding of the NCD burden
- The details of the NCD clinics conducted in the study setting
- The general understanding of the shared care concept and the shared care cluster system
- The Strengths, Weaknesses, Opportunities and, Threats in implementing shared care for NCD patients

1.5.5.5.2.1. Contents of FGDMOCC

The guide contained open-ended questions to obtain data on awareness of the current NCD trends, the factors associated with increased NCD burden, details of the patients treated in the cardiology clinic, awareness of NCDs among patients treated in the cardiology clinic, patient engagement in managing NCDs, patient satisfaction of the care provided at the cardiology clinic, awareness of the shared care concept, the perception of participants on managing NCDs especially the patients with cardiac diseases in a shared care cluster system, the training needs of medical staff to implement shared care, interventions require to promote shared care for NCD patients treated in the cardiology clinic, strengths and weaknesses to implement, and the opportunities and, threats of implementing shared care for NCD patients in the cardiology clinic of NHK.

1.5.5.5.2.2. Contents of FGDMOPMCI

The questions were designed and presented to suit the primary care setting

The guide contained open-ended questions to obtain data on awareness of the current NCD trends, the factors associated with increased NCD burden, details of the patients treated in NCD clinics of PMCIs, awareness of NCDs among patients treated at PMCI clinics, patient engagement in managing NCDs, patient satisfaction of the care provided at PMCI clinics, what measures to be implemented to increase patient satisfaction, awareness of the shared care concept, the perception of participants on managing NCDs especially the patients with cardiac diseases in a shared care cluster system, the training needs of medical officers to implement shared care, interventions require to promote shared care, strengths, and weaknesses to implement, and the opportunities and, threats of implementing shared care for NCD patients in NHKCH.

1.5.5.5.2.3. Contents of FGDNOCC

The guide contained open-ended questions to obtain data on awareness of the current NCD trends, details of the patients treated in the cardiology clinic, the nurses' role in managing NCD patients at clinics, patient engagement in managing NCDs, patient satisfaction with the care provided at the cardiology clinic, awareness of the shared care concept, the perception of participants on managing NCDs especially the patients with cardiac diseases in a shared care cluster system, the training needs of nursing staff to implement shared care, the challenge of implementing shared for patients in the cardiology clinic and, interventions required to promote shared care.

1.5.5.5.2.4. Contents of FGDNOPMCI

The guide contained open-ended questions to obtain data on awareness of the current NCD trends, details of the patients treated in PMCI clinics, the nurses' role in managing NCD patients at clinics, patient engagement in managing NCDs, patient satisfaction with the care provided at PMCI clinics, awareness of the shared care concept, the perception of participants on managing NCDs especially the patients with cardiac diseases in a shared care cluster system, the training needs of nursing staff to implement shared care, the challenge of implementing shared for NCD patients in NHKCH and, interventions required to promote shared care.

1.5.6. Language used in Study Instruments

The Checklists, Interviewer Administered Questionnaire, KII Guides, and FGD Guides were developed in English. Except for the checklists, all other study instruments were translated into both Sinhala and Tamil languages with the assistance of an expert in relevant languages. Then, they were translated back into English by different experts

with similar capacities. This was done to ensure the retention of the meanings of the questions.

1.5.7. Study Population

There were several study populations:

Study Population - 1: The population of patients with NCDs treated at the cardiology clinic of NHK

Study Population - 2: The population of health staff of the study setting

Study Population - 3: The population consists of key informants in the study setting

1.5.7.1. Study Population -1: The Population of Patients with NCDs Treated at the Cardiology Clinic of NHK

Study population one consisted of patients with NCDs registered and followed up at the cardiology clinic of NHK.

1.5.7.1.1. Inclusion Criteria

Patients whose current place of residence is closer to one of the five selected PMCIs (DH-Katugastota, DH-Wattegama, DH-Manikhinna, DH-Thiththapajjala, and DH-Galagedara) were included.

1.5.7.1.2. Exclusion Criteria

Patients whose disease conditions were not stable were excluded

Interviewer Administered Questionnaire for Patients attending the cardiology clinic at NHK (IAQPNHK) was administered for data collection

1.5.7.1.3. Sample Size and Sampling of Population-1

The sample size was calculated by using the Raosoft sample size calculator (Raosoft, 2004). Four parameters; margin of error, confidence level, population size, and, response distribution were required when using the Raosoft sample size calculator in deciding the recommended sample size.

In this study, the values of the four parameters were set as follows

1. Margin of error = 5%

2. Confidence level = 95%,

3. Population size = 1973 (eligible study population of cardiology clinic, NHK)

4. Response distribution = 50%

The recommended sample size was 322 patients

As the data on the distribution of eligible patients with NCDs of the 'Study Population 1' based on their nearest PMCI of the NHKCH was available, the calculation of the proportionate sample related to five selected PMCIs was possible.

Table 3 shows the total eligible patients in each PMCI and the proportionate sample selected.

Table 1.3. The Total Eligible Patients in each PMCI and the Proportionate Sample Selected

PMCI	Total no of eligible patients	Proportionate sample size
DH-Katugastota	991	162
DH-Wattegama	236	39
DH-Manikhinna	204	33
DH-Thiththapajjala	274	44
DH-Galagedara	268	44
Total	**1973**	**322**

(Source: Health Information Unit data – NHK)

1.5.7.1.4. Sampling Method of Population -1

Convenient sampling method was used.

1.5.7.2. Study Population -2: Grade Medical Officers and Nursing officers of the Study Setting (Cardiology clinic of NHK and selected PMCIs)

Study population two consisted of Grade Medical Officers and Nursing officers of the study setting (Cardiology clinic of NHK and selected PMCIs)

1.5.7.2.1. Inclusion Criteria

Grade Medical Officers and Nursing Officers who involve in managing clinic patients with NCDs in the study setting (Cardiology clinic of NHK and selected PMCIs) were included

1.5.7.2.2. Exclusion Criteria

Grade Medical Officers and Nursing Officers who are not involved in managing clinic patients in the study setting (Cardiology clinic of NHK and selected PMCIs) were excluded

- Eligible grade medical officers and nursing officers in the study setting who were on long-term leave at the time of study
- The staff of other health categories in the study setting were excluded

This population is used for FGDs.

1.5.7.2.3. Sample Size and Sampling of Population-2

Except for the FGD of the Nursing Officers attached to the cardiology clinic of NHK which was conducted with the participation of all 4 nursing officers, all other focus groups consisted of 8 to 10 participants from eligible staff categories. No sample size was calculated and the sample was elected purposefully.

1.5.7.3. Study Population - 3: The Population of Key Informants

Study population three consisted of officers selected for the Key Informants Interviews

1.5.7.3.1. Inclusion Criteria

Following officers were included.

- Director NHK
- RDHS Kandy
- In charge Medical Officers of the selected PMCIs of NHKCH
- Consultant Cardiologists at NHK
- Senior Medical Officer of the cardiology clinic of NHK
- In charge Nursing Officer of the cardiology clinic of NHK
- In charge Nursing Sisters of the selected PMCIs
- Chief Pharmacist of the NHK
- Pharmacists of the selected PMCIs
- Chief Medical Laboratory Technologist of NHK
- Medical Laboratory Technologists of selected PMCIs

1.5.7.3.2. Sample size and Sampling of Population-3

Sample size not calculated and the selection of the sample was done based on purposive sampling method.

1.5.8. Training of Research Assistants

Two graduates with a medical background and with experience in collecting data for medical research were recruited and trained for the collection of data. In the beginning, PI conducted an awareness session for them on the shared care concept and the purpose of the study. Then several training sessions were conducted by the PI, especially on administering the Interviewer Administered Questionnaire for patients attending the cardiology clinic of NHK to improve the quality of data collected. Also, they were

trained on how to explain the purpose of the study to participants and obtain their consent. In addition, another training session on collecting patient statistics and readiness assessment data of the study setting by using the checklists was conducted by the PI. Moreover, these two research assistants were trained on assisting the qualitative data collection during FGDs. They were trained and instructed on how to do recordings and documentation of the full contents of the FGDs.

1.5.9. Pre-testing Study Instruments

Piloting of the Interviewer Administered Questionnaire for patients was done among the patients whose nearest PMCI to the place of current residence is not among the five selected PMCIs of NHKCH for this study. Piloting revealed that it takes an average of 30 minutes to administer a questionnaire.

1.5.10. Ethical Considerations

1.5.10.1. Ethical Clearance

Ethical clearance was obtained from the Ethical Review Committee of the Post Graduate Institute of Medicine, University of Colombo before conducting the study. The reference number is ERC/PGIM/2022/020

1.5.10.2. Administrative Clearance

Permission to conduct the study was obtained from the Deputy Director General Non-Communicable Diseases of the Ministry of Health, National Hospital Kandy, and the Regional Director of Health Services in the Kandy district.

1.5.10.3. Consent from the Participants

All participants (Both selected patients and staff) were explained the purpose of this study before obtaining informed consent. Informed written consent was obtained from

the patients. Informed consent was obtained from the participants of FGDs and KIIs before they participated in the discussions/interviews. The confidentiality of the participants was ensured throughout the study and no personal information that can identify the participant was collected. It was assured that; any participant can withdraw from the study at any point of data collection by informing the data collector or PI without any influence of the treatment or any disadvantage. Participants were allowed to contact the PI over the phone to clarify any issues related to the study.

1.5.10.4. Confidentiality

Any identifiable details of the participants were not obtained (e.g. Name) in any form of data collected. Therefore, participants' data were kept anonymous. Data collectors were advised to refrain from exposing participants' identities and sensitive data. Storage of collected data was done in a secured place with access restricted only to the PI. Data was saved on the personal computer of the PI and a portable hard disk which was kept password protected. All data will be kept with the PI for 5 years after the completion of the research project. The data collection forms will be destroyed by burning after 5 years of the study.

1.5.10.5. Potential Risks and Benefits

There were no potential risks to the participants of this project. This project intended to design and implement a shared care model to manage patients with NCDs in the cardiology clinic of NHK in a shared care cluster system. Patients with controlled disease conditions without complications had the opportunity to be followed up in primary care institutions closer to their homes while being periodically followed up at the cardiology clinic of NHK.

1.5.10.6. Definition of Variables

Variable	Operational Definition
Shared Care	Managing patients with stable cardiac disease conditions in the cardiology clinic Kandy with joint participation of both health staff in cardiology clinic NHK and the selected five PMCIs
Referral	Referring a patient with stable cardiac disease form the cardiology clinic NHK to one of five selected PMCIs for shared care
Back Referral	Referring back a cardiac patient from a PMCI who had been referred from the cardiology clinic NHK for shared care

1.5.11. Dissemination of Results

The results of this project are planned to be disseminated among the relevant stakeholders. There will be project-disseminated meetings at the regional and institutional levels and It is planned to present the outcomes. A comprehensive project report will be prepared to be submitted to the Post Graduate Institute of Medicine. The outcome of the project is planned to be presented at both national and international conferences. In addition, publishing of the research will be done in reputed national and international journals in the future.

1.5.12. Conflict of Interest

The PI did not have any conflict of interest related to this research project.

1.5.13. Intervention Phase

At the end of the detailed pre-interventional assessment, the gaps were identified to implement shared care in managing patients with NCDs between NHK and selected PMCIs. Also, the outcomes of the KIIs and FGDs with the stakeholders provided recommendations to overcome the identified gaps.

The identified gaps were,

1. Non-availability of a proper patient referral and back referral system to manage patients from the NHK cardiology unit who are in a stable condition in a PMCI

2. Non-availability of a distance clinical support mechanism to PMCIs from the NHK to manage NCD patients

3. Non-availability of proper patient health information sharing mechanism

4. Deficiencies in digital infrastructure at PMCIs to manage data sharing with NHK in managing patients

5. Lack of awareness of the shared care concept among health staff

6. Lack of training for PMCI staff in clinical management updates

7. Inadequate and inconsistent supply of drugs to PMCIs

8. Inadequate laboratory facilities at PMCIs to manage patients with cardiac diseases

The PI presented the study results to the stakeholders. They proposed to the PI to design a shared care model to address the above gaps. With the recommendations given by the stakeholders and based on the review of national and international literature on the subject and in accordance with the existing health policies of primary health care in the country, the PI designed a shared care model with its components. The components of

the shared care model were developed as separate activities. Then by nominal group technique with identified stakeholders' prioritization of identified activities was carried out. Figure 3 shows the matrix used to prioritize activities according to the nominal group technique.

Figure 1.3. Prioritization Matrix for Selection of Possible Interventions to be Implemented

	Interventions	**1** Technical Feasibility for intervention **(13)**	**II** Administrative Feasibility. **(11)**	**III** Financial Feasibility. **(12)**	**IV** Practical possibility. **(18)**	**V** Impact **(17)**	**VI** Time – to implement **(15)**	**VII** Acceptance by patients/staff **(14)**	**Total 100**	**RANK Order**
1	Develop a patient referral and back referral system									
2	Introduce a telephone line to obtain clinical support to PMCIs from the cardiology unit NHK									
3	Provide telemedicine facility to PMCIs									
4	Conducting awareness programs to health staff on the shared care concept									
5	Conduct training for Medical Officers in PMCIs to manage cardiac disease patients with other NCDs									
6	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from NHK									
7	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from RMSD Kandy									

8	Develop a system to send samples from PMCIs to get laboratory tests done at NHK									
9	Improve laboratory facilities at PMCIs to perform tests required to manage cardiac disease patients									
10	Develop a health information sharing software compatible with NHK HIMS									
11	Arrange monthly consultants visits to PMCIs									
12	Allow patients to select a convenient PMCI for follow up									
13	Improving infrastructure in PMCIs									
14	Developing Information communication material to introduce shared care for patients									

Table 1.4. shows the ranking order of activities obtained by applying the nominal group technique.

Table 1.4. The Ranking Order of the Possible Activities Obtained from the Nominal Group Technique

Intervention		**1** Technical Feasibility for intervention **(13)**	**II** Administrative Feasibility. **(11)**	**III** **(12)** Financial Feasibility.	**IV** **(18)** Practical possibility.	**V** **(17)** Impact	**VI** **(15)** Time – to implement	**VII** **(14)** Acceptance by patients/staff	**Total 100**	**RANK Order**
1	Develop a patient referral and back referral system	09	08	09	12	14	10	12	74	**5**
2	Introduce a telephone line to obtain clinical support to PMCIs from the cardiology unit NHK	10	08	10	14	15	13	12	82	**1**
3	Provide telemedicine facility to PMCIs	5	5	4	8	14	5	12	53	**9**
4	Conducting awareness programs to health staff on the shared care concept	9	8	9	14	15	12	10	77	**3**
5	Conduct training for Medical Officers in PMCIs to manage cardiac disease patients with other NCDs	8	8	9	15	15	11	10	76	**4**
6	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from NHK	4	4	5	5	14	5	13	51	**10**
7	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from RMSD Kandy	8	8	7	13	14	9	13	72	**6**
8	Develop a system to send samples from PMCIs to get laboratory tests done at NHK	6	5	7	10	10	5	12	55	**8**
9	Improve laboratory facilities at PMCIs to perform tests required to manage cardiac disease	5	5	4	5	10	4	12	45	**13**

	patients									
10	Develop a health information sharing software compatible with NHK HIMS	4	5	4	6	1	3	8	42	**14**
11	Arrange monthly consultants visits to PMCIs	5	5	6	4	15	5	12	47	**12**
12	Allow patients to select a convenient PMCI for follow up	6	4	6	5	14	10	12	57	**7**
13	Improving infrastructure in PMCIs	5	6	4	5	12	5	12	49	**11**
14	Developing Information communication material to introduce shared care for patients	9	9	9	16	12	10	13	78	**2**

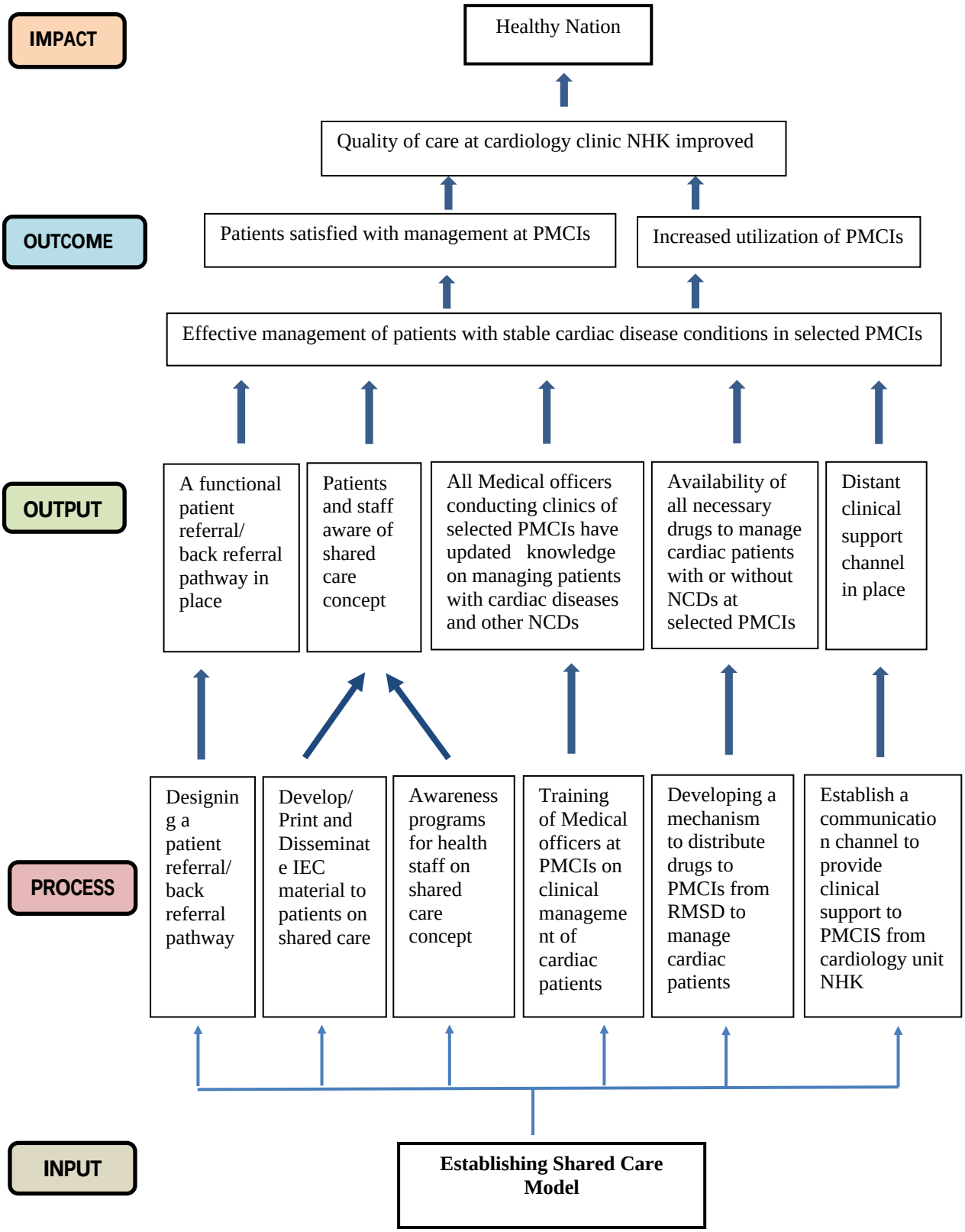
Table 1.5. Ranking of Activities According to Nominal Group Technique

		RANK Order
1	Develop a patient referral and back referral system	**5**
2	Introduce a telephone line to obtain clinical support to PMCIs from the cardiology unit NHK	**1**
3	Provide telemedicine facility to PMCIs	**9**
4	Conducting awareness programs to health staff on the shared care concept	**3**
5	Conduct training for Medical Officers in PMCIs to manage cardiac disease patients with other NCDs	**4**
6	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from NHK	**10**
7	Arrange distribution of drugs to manage cardiac disease patients to PMCIs from RMSD Kandy	**6**
8	Develop a system to send samples from PMCIs to get laboratory tests done at NHK	**8**

9	Improve laboratory facilities at PMCIs to perform tests required to manage cardiac disease patients	**13**
10	Develop a health information sharing software compatible with NHK HIMS	**14**
11	Arrange monthly consultants visits to PMCIs	**12**
12	Allow patients to select a convenient PMCI for follow up	**7**
13	Improving infrastructure in PMCIs	**11**
14	Developing Information communication material to introduce shared care for patients	**2**

The stakeholders have decided to implement ranking orders from 1 to 6. PI developed a theory of change based on the selected ranks to ensure the activities are capable of achieving the expected immediate outcomes. Figur 1.4 explains the theory of change.

Figure 1.4 Theory of Change



Based on the theory of change, the PI developed a logical framework to justify that the intended activities would produce the desired project outcomes. The developed logical framework is shown in figure the PI developed a logical framework to justify that the intended activities would produce the desired project outcomes. The developed logical framework is shown in figure 1.5.

Figure 1.5. Logical Framework

Result		Indicator	Baseline	Target	Means of verification	Achievement	Risks and assumptions
Outcome 1	Increased utilization of PMCIs	Number of patients with cardiac diseases treated at PMCI clinics	…….	150 patients (first Quarter)	Observation Checklist Monitoring framework		All referred patients will reach PMCIs
Outcome 2	Patients satisfied with management at PMCIs	% of patients satisfied with management at PMCI	Not applicable	80%	Questionnaire on patient experience		All referred patients are satisfied
Outcome 3	Effective management of patients with stable cardiac disease conditions in selected PMCIs	1. Number of patients returned /back referred to cardiology clinic NHK	Not applicable	0	Observation Checklist Questionnaire on patient experience		All referred patients continue management at PMCIs
		2. Number of patients lost to follow up	Not applicable	0	Observation Checklist		
Output 1	A functional patient referral/ back referral pathway in place	Number of patients referred to PMCIs for follow up	Not applicable	All stable from the covered area	Observation Checklist		All referred patients are with stable disease conditions
Output 2	All Medical officers conducting clinics of selected PMCIs have updated knowledge on managing patients with cardiac diseases and other NCDs	% Medical officers conducting clinics of selected PMCIs receiving updated knowledge on managing patients with cardiac diseases and other NCDs	None	100%	Observation Checklist		All medical officers will use the updated knowledge in treating patients with cardiac diseases and other NCDs

Output 3	Availability of all necessary drugs to manage cardiac patients with or without NCDs at selected PMCIs	Availability of all necessary drugs to manage cardiac patients with or without NCDs at selected PMCIs	Not available	Available	KII Observation Checklist		Able to develop an essential drugs list
Process 1	Designing a patient referral/back referral pathway	Documented referral/ back referral pathway available	Not available	Available	Observation Checklist Monitoring framework		Patients will be referred/back referred by using the pathway
Process 2	Develop/ Print and Disseminate IEC material to patients on shared care	IEC material on shared care is available	Not applicable	Available	Observation Checklist		Patients will read and understand the concept
Process 3	Awareness programs for health staff on the shared care concept	Number of awareness programs conducted for health staff	Not applicable	Eight programs	Observation Checklist Monitoring framework		Staff will attend the awareness programs
Process 4	Training of Medical officers at PMCIs on clinical management of cardiac patients	Number of training programs conducted for medical officers	Not available	Two programs	Observation Checklist Monitoring framework		Staff will attend the training programs
Process 5	Developing a mechanism to distribute drugs to PMCIs from RMSD to manage cardiac patients	Established process to distribute drugs to PMCIs	Not available	Available	KII (with Chief Pharmacist) Observation Checklist		MSD will supply adequate drug stocks
Input	Establishing Shared Care Model	Availability of a documented shared care model to manage cardiology clinic patients of NHK at selected PMCIs	Not available	Available and implemented	Observation Checklist		There will be a consensus among stakeholders about the contents of the package

After developing the logical framework, the PI developed an interventional package named: "**We Share Your Care**". This was a detailed document explaining the interventions to be implemented and includes a plan of action. Also, the PI developed a monitoring framework to monitor the activities. The interventional package and the monitoring framework are included in the results section (page 68) of chapter 2.

The monitoring team consisted of the Senior Medical Officer cardiology clinic NHK, MOICs of the selected PMCIs, and the PI.

1.5.14. Post-Intervention phase

The post-intervention phase consisted of two sections

1. Post-intervention assessment phase

2. Post-intervention evaluation phase

It is expected to conduct both assessment and evaluation with similar study methods used in the pre-intervention phase of the study.

1.5.14.1. Post-Intervention Assessment Phase

Considering the time constraints, it is expected to perform an assessment of the project after 3 months of implementing the interventions. Two observational checklists were developed to conduct the post-intervention assessment.

Checklist 3 = To collect the details of patients referred from the cardiology clinic of NHK to PMCIs with stable cardiac diseases

Checklist 4 = To collect the details of referred patients who attended the relevant PMCI clinics for follow-up.

1.5.14.1.1. Development of Checklists 3 and 4

Both checklists were developed by the PI with the opinion of the supervisor and based on the details documented in the patient registers of the referred patients from the cardiology clinic of NHK and follow-up patients at five PMCIs.

1.5.14.1.2. Contents of the Checklist 3 and 4

Both checklists 3 and 4 consisted of seven data collection areas. Except for question area 3 (Distribution of referred patients among five selected PMCIs) in checklist 3 and question area 7 (The monthly follow-up status of referred patients in PMCI clinics) in checklist 4, all other question areas are similar in both checklists. They are,

- Total no of patients referred or received for follow up
- Sex distribution of patients
- Age distribution of patients
- Primary diagnosis of patients
- Comorbidities of patients
- Special cardiac interventions for patients

1.5.14.2. Post-Intervention Evaluation Phase

A mid-term evaluation of the intervention was planned and data collection instruments were developed by the PI with the guidance of the supervisor and expert opinion. The study tools of this phase were developed to provide the necessary information to

measure the indicators of the logical framework and to get the necessary information to provide answers to the key evaluation questions.

Further, it was planned to conduct FGDs and KIIs with the relevant stakeholders to assess their experience of the implemented shared care model by using the same guides developed in the pre-intervention phase.

1.5.14.2.1. Interviewer-Administered Questionnaire for Patients with Stable Cardiac Disease Conditions Referred to PMCIs for Shared Care (IAQPSCD)

IAQPSCD was developed to collect data from the patients with stable cardiac diseases in the cardiology clinic of NHK who were referred to selected five PMCIs for shared care

1.5.14.2.1.1. Development of IAQPSCD

An interviewer-administered questionnaire was developed to assess the patient experience of the patients enrolled in shared care.

1.5.14.2.1.2. Contents of IAQPSCD

The questionnaire consisted of two parts

Part A: Socio-Demographic and Details of Shared Care Patients

This section consisted of five closed-ended questions. The three questions in this section were directed to collect details of the PMCI referred to, Age, Sex, Diagnosis, and Comorbidities of the patient.

Part B: Patient Experience of Managing their Disease Condition in a Shared Care Cluster

This part of the questionnaire consisted of 11 questions. All were closed-ended questions to be marked on a five-point Likert scale ranging from strongly disagree to strongly agree

Questions 1 to 10 of this part consisted of statements formed to assess the patient experience in the following areas.

- Information provided for patients about the project
- Information provided to patients about their care plan in shared care
- Kindness and respect of the PMCI staff toward the patient
- Competency of the medical officers in PMCIs when providing treatment
- Patient engagement
- Patient waiting time at PMCIs
- Availability of drugs at PMCIs
- Availability of basic laboratory facilities at PMCIs
- The state of the basic facilities provided for patients at PMCIs

The statement of question no 11 was formed to assess the overall satisfaction of enrolling in shared care and the willingness to continue to follow up.

1.5.14.2.1.3. Validation and Reliability Checking of the (IAQPSCD)

Face validity, content validity, and internal consistency of the IAQPSCD were obtained by carrying out discussions with the supervisor and a resource person experienced in behavioral science.

1.5.14.2.2. Evaluation Framework with Key Evaluation Questions

The relevance, Coherence, Effectiveness, and Sustainability of the project were selected for evaluation. One key evaluation question for relevance and coherence and

two for effectiveness and sustainability were developed by the PI. In addition, PI developed the indicators to measure each key evaluation question. Also, the PI has identified the necessary study instruments to collect data for evaluation and a team to conduct the evaluation: DD/NHK, CCP RDHS office Kandy and MO/NCD RDHS office Kandy. By including this information, an evaluation framework (Figure 1. 6) was developed.

Figure 1.6. Framework for Post-Intervention Evaluation

Evaluation area	Key Evaluation Question	Indicator	Tool/Instrument (Source of data)	Responsible person
Relevance	What is the relevance of the project in the existing health policy of the country?	The present policy is in line with existing policies	KIIs or FGDs Desk review	Evaluation team
Coherence	How well does the project match the existing projects and programs of the Ministry of Health?	Coherence with other existing projects and programs	Desk Review	Evaluation team
Effectiveness	1. How effective was the management of stable cardiac patients in PMCI?	% of referred patients continued followed up in PMCIs	Observation Checklist (Patients register in PMCIs)	Evaluation team
	How Satisfied were the patients referred from NHK with the services provided at PMCIs?	% of referred patients having a positive experience of the service delivery at PMCI clinics.	Questionnaire on patient experience FGDs with patients	Evaluation team

Efficiency	Not carried out due to time and resource constraints.			
Sustainability	1. Can referral/back referral pathway be sustained?	% of Medical Officers adhere to the developed referral and back referral pathway in managing cardiac patients in a shared care cluster	KII or FGD	Evaluation team
	2. Can continuous supply of IEC material and printed forms adequately to the cardiology clinic NHK to refer patients be sustained?	The supply chain for IEC materials is ensured.	KII	Evaluation team

1.5.15. Plan of Action

Figure 1.7 gives a detailed plan of action for the project

Figure 1.7. Plan of Action for the Project

Activity	Sub activity	Proposed Start date	End date	Resources	Progress
Preparatory phase	Preparation of pre-proposal of the project	01/05/2021	17/06/2021	PI Information Communication Technology (ICT) Facilities	Approved on 13/07/2021
	Preparation of a detailed proposal for the project	15/07/2021	16/12/2021	PI Supervisor ICT facilities	Approved on 20/01/2022
Pre-intervention phase	Development of study instruments	20/01/2022	20/03/2022	PI Supervisor Subject experts. Sources of Literature	Completed on 20/03/2022

				(Textbooks, Journal articles, Thesis, etc.)	
	Obtaining Ethical Clearance	31/03/2022	25/04/2022	PI Translator ERC	Approved on 25/04/2022
	Obtaining administrative clearance	15/03/2022	30/04/2022	DGHS DDG-NCD Director- NHK RDHS - Kandy	Approved on 30/04/2022 18/04/2022 30/04/2022
	Preparation for data collection- Recruiting and training of research assistants	01/05/2022	07/05/2022	PI	Completed on the due date
	Conducting Primary Survey	15/05/2022	15/06/2022	PI Research Assistant	Completed on the due date
	Piloting of the Interviewer-administered questionnaire to patients with NCDs at Cardiology Clinic NHK	09/05/2022	13/05/2022	PI Research Assistants	Completed on the due date
	Administration of Interviewer-administered questionnaire to patients with NCDs at Cardiology Clinic NHK	16/05/2022	30/06/2022	PI Research Assistant	Completed on the due date
	FGDs	15/06/2022	30/06/2022	Moderator Recorder	Completed on the due date
	KIIs	15/06/2022	30/06/2022	Interviewer Recorder	Completed on the due date
	Data entry and analysis	15/06/2022	01/07/2022	SPSS Experts in Qualitative data analysis	Completed on the due date
Intervention phase	Presenting the findings of the pre-interventional phase to stakeholders	02/07/2022	03/07/2022	ICT facilities	Completed on the due date
	Designing of the shared care model that includes intervention/s to be implemented	03/07/2022	30/08/2022	Consultant Cardiologist Supervisor ICT facilities	Completed on the due date

	Developing a Monitoring and Evaluation plan (draft)	03/07/2022	04/07/2022	Supervision and Monitoring Committee Supervisor	Completed on the due date
	Implementation of the designed shared care model to manage patients with NCDs in the cardiology clinic NHK	01/09/2022	05/09/2022	Working Committee Focal points Research assistants ICT facilities	Completed on the due date
Post-intervention Phase	Conducting post-intervention assessment	05/12/2022	15/12/2022	PI Research Assistant ICT facilities	Completed on the due date
	Evaluating the project	26/12/2022	30/12/2022	Evaluation Team	Completed on the due date
	Preparation of the project report and submission	01/01/2023	20/02/2023	PI ICT facilities	To be completed
	Dissemination of results	After being accepted by PGIM	-	Journal Conferences	Planned

1.5.16. Budget

Table 1.6. describes the total budget of the project. Costing has been done separately for each main activity conducted under the different phases of the project. Except for the cost of publication in a journal, all other expenses of the project were completed by now.

Table 1.6. Total Budget of the Project in Detail

Preparatory Phase				
Activity	**Sub Activity**	**Estimated Cost**	**Actual cost**	**Source of Funds**
Preparation of pre-proposal of the project	Formatting and Printing	Rs. 1000.00	Rs. 500.00	PI personal expenses
Preparation of a detailed proposal for the project	Formatting and Printing	Rs. 1000.00	Rs. 750.00	
Sub Total		**Rs. 2000.00**	**Rs. 1250.00**	
Pre-Intervention phase				
Activity	**Sub Activity**	**Estimated Cost**	**Actual cost**	**Source of Funds**
Obtaining Ethical Clearance	Formatting and Printing	Rs. 1000.00	Rs. 1000.00	PI personal expenses
	ERC Payment	Rs. 2000.00	Rs. 2000.00	
Preparing data collection instruments	Formatting and Printing – 350 questionnaires (unit cost Rs. 50)	Rs. 17500.00	Rs. 20000.00	
	Printing Checklists, KII, and FGD guides, and stationery	Rs. 1000.00	Rs. 1500.00	
Recruiting two Research Assistants	Training (Allowance)	Rs. 6000.00	Rs. 6000.00	
Conducting Primary survey	Transport to Five PMCIs and NHK	Rs. 6000.00	Rs. 7500.00	
	Refreshments	Rs. 3000.00	Rs. 3750.00	
	Payments for Research Assistants			
	1. Visits to PMCIs/NHK 2 days (Rs. 1000 per day)	Rs. 4000.00	Rs. 4000.00	PI personal expenses
	2. Data collection- 322 Interviewer Administered Questionnaires (Rs. 100 per questionnaire)	Rs. 32200.00	Rs. 32200.00	
	3. Assisting in conducting the FGDs	Rs. 4000.00	Rs. 4000.00	
Data entry and Analysis	Support from experts	Rs. 25000.00	Rs. 30000.00	

Sub Total		**Rs.101700.00**	**Rs.111950.00**	
Intervention Phase				
Activity	**Sub Activity**	**Estimated Cost**	**Actual cost**	**Source of Funds**
Preparing IEC Materials	Designing and Printing Patient Awareness Leaflets (150 Nos)	Rs. 3000.00	Rs. 3000.00	Sponsor
	Designing and Printing 2 Banners	Rs. 2000.00	Rs. 2000.00	
Conducting Staff Awareness Sessions	Transport to 5 PMCIs and NHK	Rs. 6000.000	Rs.1000.00	RDHS office Kandy Transport
Conducting Training for Medical Officers of PMCIs	Refreshments for Trainers/Trainees (Tea / Lunch) (Rs. 750 x 25)	Rs. 18,750	Rs. 20000.00	Sponsor
	Stationery (Files/Pens/Papers)	Rs. 2500.00	Rs. 2500.00	
Developing material for patient referral/ back referral mechanism	Designing and Printing 6 patient Registers	Rs. 3000.00	Rs. 4200.00	PI personal expenses
	Printing 150 Nos of Referral Forms/ Back referral forms/ Consent forms	Rs. 3000.00	Rs. 2250.00	
	Printing Sticker labels (150 Nos)	Rs. 1500.00	Rs. 1000.00	
	Other stationery	Rs. 2500.00	Rs. 2000.00	
Monitoring Activities	Printing monitoring charts	Rs. 1000.00	Rs. 1000.00	
Sub Total		**Rs. 43250.00**	**Rs. 38950.00**	
Post-Intervention Phase				
Activity	**Sub Activity**	**Estimated Cost**	**Actual cost**	**Source of Funds**
Conducting Post Intervention Assessment	Printing Checklists/Stationery	Rs. 500.00	Rs. 500.00	PI personal expenses
	Transport to Five PMCIs and NHK	Rs. 6000.00	Rs. 6000.00	
	Refreshments	Rs. 1500.00	Rs. 1500.00	

	Payments to Research Assistants (Rs. 1000 pp)	Rs. 2000.00	Rs. 2000.00	
Conducting Evaluation	Printing Questionnaires (75 Nos)	Rs. 1500.00	Rs. 1500.00	
	Payments for Research Assistants for conducting data collection	Rs. 10000.00	Rs. 10000.00	
Data Entry and Analysis	Support from experts	Rs. 15000.00	Rs. 20000.00	
Preparation of Project Report	Formatting / Printing/ Binding (One copy)	Rs. 5000.00	Rs. 6500.00	
Publication (In a reputed international Journal)	Proofreading of manuscripts/printing/publishing	Rs. 100000.00	Rs.100000.00	
Sub Total		**Rs.134500.00**	**Rs.147500.00**	

Other General Expenses

Activity	**Sub Activity**	**Estimated Cost**	**Actual cost**	**Source of Funds**
Communication	Telephone/Internet/SMS (Rs.1000 per month x 12)	Rs. 12000.00	Rs. 18000.00	PI personal expenses
Transport	Visits of PI for KIIs, Monitoring, Meetings	Rs. 10000.00	Rs. 15000.00	
Miscellaneous Expenses		Rs. 25000.00	Rs. 15000.00	
Sub Total		**Rs. 47000.00**	**Rs. 48000.00**	
Final Total		**Rs.328,950.00**	**Rs.348,150.00**	

1.5.17. Source of Funds

Most of the project expenses were covered by the PI personally. The transport costs for attending the staff awareness programs at PMCIs were beard by the RDHS Kandy. PI was able to obtain a personal donation from a private enterprise for the training expenses of the medical officers of PMCIs.

CHAPTER TWO

EXECUTION

2.1. Process of Execution

Ethical clearance for the study was obtained before the execution of the project. Also, administrative clearance was obtained from the Director General of Health Services, Director NHK, and the RDHS Kandy before data collection. Also, before data collection at the cardiology clinic NHK, permission was obtained from the senior cardiologist and the in-charge nursing sister of the cardiology clinic.

The execution of the project is presented in three parts:

- Execution of pre-intervention phase activities
- Execution of intervention phase activities
- Execution of Post-intervention phase activities.

2.1.1. Execution of Pre-Intervention Phase Activities

As the first activity, a facility survey and a desk review were conducted to complete checklist 1 (Patients Statistics and Readiness Assessment of NHK) and checklist 2 (Patients Statistics and Readiness Assessment of PMCI) by the PI and the two research assistants with the assistance of the relevant health staff of the NHK and selected PMCIs. The data collection was conducted after the usual clinic times without disturbing the regular activities of the clinics. In addition, data were obtained with the assistance of the Medical Officer of Health Informatics of the NHK through the NHK patient database. Also, data were obtained from the MOICs and other relevant staff of the PMCIs referring to their available records.

Interviewer-Administered Questionnaire for Patients Attending the Cardiology Clinic at NHK (IAQPNHK) was administered by the two research assistants at the cardiology clinic of NHK. PI supervised the data collection periodically. Data was collected for

consecutive five weeks from all the cardiology clinics. Cardiology clinics of NHK are conducted five days (Monday to Friday) per week and the study was conducted on all five days for five weeks. Each day, at the time of marking the attendance of the patients, the nurses at the clinic reception counter bookmark the eligible patients by using the information on the first page of the clinic book (Patients' present address) and also by verbally inquiring from them. Then, these patients were directed to the interviewers before referring to the medical officer for consultation. They double-checked the details of patients to ensure their inclusion in the study before explaining the purpose of the study. After the explanation, adequate time was given for patients to decide on participation in the study and informed consent was obtained from those agreeing to participate. The questionnaire was administered to patients in a room at the cardiology clinic premises. The interviews were conducted at the convenience of patients either before being consulted by the medical officer or after consultation. A convenient sample was collected until the required number of questionnaires were filled (Refer to page 36 and table 1.3 of chapter one for details).

A total of 322 interviews were conducted with eligible NCD patients of the cardiology clinic of NHK and the Interviewer-Administered Questionnaire for Patients Attending the Cardiology Clinic at NHK (IAQPNHK) was completed. The 322 interviews comprised 162, 39, 33, 44, and, 44 eligible patients with NCD whose nearest PMCI (from their current place of residence) was DH-Katugastota, DH-Wattegama, DH-Manikhinna, DH-Thiththapajjala, and DH-Galagedara respectively.

Focus Groups Discussions were conducted by PI with the two research assistants. Considering the Covid-19 pandemic situation and the time constraints, the FGDs of PMCI staff were conducted by using Zoom technology. All PMCIs are equipped with Information Communication Technology facilities. The PI provided a zoom link to the

staff of five PMCIs at a pre-agreed time with the permission of the RDHS Kandy and invited for FGDs. However, the FGDs of the staff of the cardiology clinic NHK were conducted physically. Participants for FGDs were chosen randomly from the eligible population of the relevant study setting. They were informed in writing and over the phone of the purpose, date, time, and place of FGD in advance. All possible measures were taken to conduct the FGDs in a conducive and convenient environment for the participants with minimum disturbance to their routine work.

PI conducted the FGDs guided by an FGD guide. One of the research assistants did the recording and the other documented the full discussion. PI obtained verbal consent from all participants at the beginning of the discussion for their participation and to do a recording. After concluding the FGDs PI studied the recordings and the documented information and identified any data gaps, on the same day. Then, PI developed a separate FGD guide and conducted a subsequent FGD on another day using the same technique. There were no data gaps after the second FGD.

KIIs were conducted by PI guided by a KII guide. Prior appointments from the relevant informants were obtained. KIIs of the staff of NHK and RDHS Kandy were conducted physically and PMCI staff were conducted by using Zoom technology due to time constraints and transport difficulties. Verbal consent was obtained from all participants at the beginning for their participation and to record the interviews.

2.1.2. Execution of Intervention Phase Activities

After the pre-intervention phase of the study PI identified the gaps and selected the interventions to be implemented with the assistance of the stakeholders of the project. Then PI developed an intervention package that includes the prioritized interventions. The interventions are implemented by using the intervention package as a guide. The

execution of the interventions of the project was carried out by PI with the assistance of multiple resource groups.

At the beginning of this phase, PI discussed with the relevant heads of the study setting and appointed several committees to supervise and monitor the activities of the project. An oversight committee was appointed for overall supervision of the project which consisted of the Director NHK (DNHK), RDHS Kandy (RDHSK), Senior Consultant Cardiologist (SCC) of the cardiology unit of NHK, and, PI. The oversight committee discussed the progress of the project every two months. In addition, PI was allowed to contact the members of the oversight committee in between to get opinions and advice on project matters.

To facilitate the execution of interventions, several working committees were formed at NHK and the PMCI level. These committees provided prompt solutions, advice, and suggestions to PI in implementing the interventions at the ground level.

<u>At NHK:</u>

The working committee consisted of a Consultant Cardiologist, a Senior Medical Officer (SMO), In charge Nursing Sister (INO), and a senior Health Care Assistant (HCA) of the cardiology clinic.

<u>At PMCIs:</u>

The working committee consisted of MOICs, Senior Nursing Officers (SNO), pharmacists, and a healthcare assistant (HCA)

In addition, for close coordination of the project activities at each level, PI identified focal points and developed a good rapport with them. The focal points communicate with the PI and the committees and assisted in the smooth implementation of the interventions of the project. The focal points are,

1. At NHK cardiology clinic – SMO
2. At RDHS office Kandy – MO/NCD
3. At PMCIs – INOs of the clinics

Furthermore, a team was appointed to monitor the project activities by PI with the support of the Director NHK and the RDHS Kandy. The monitoring team consisted of Deputy Director NHK (DDNHK), Consultant Community Physician (CCP) at the RDHS office Kandy, MO/NCD RDHS office Kandy, and, PI. The same members comprised the evaluation team except for PI.

To fulfill the source of funds to conduct certain activities of the project (Refer Budget. Page 59), PI forwarded requests to several private institutes that he knows personally and was able to get donations for printing IEC materials and conducting the training program for medical officers of PMCIs.

Monitoring of the project was done by PI and the monitoring team using the monitoring framework developed. Table 2.1 shows the completed monitoring framework.

Table 2.1. Completed Monitoring Framework of the Project

Activity	Sub activity	Expected date of completion	Frequency of monitoring	Monitoring responsibility	Actual date of completion	Action taken to improve progress (if applicable)
1. Designing and implementing a referral/back referral pathway	1.1. Design and print the pathway	02/08/2022	Daily	PI, Monitoring team	13/08/2022	This sub-activity got delayed due to the busy schedules of the cardiologist involved who also was absent to work due to an acute traumatic injury. PI discussed with him and arranged discussions via zoom technology to complete the referral and back referral pathway document and printed on 13/08/2022
	1.2. Distribution of the approved referral and back referral pathway to health institutions	15/08/2022	Daily	PI	15/08/2022	-
2. Develop/ Print and Disseminate IEC material to	2.1. Developing and printing leaflets to educate the enrolled patients about shared care	05/09/2022	Daily	PI	05/09/2022	-

patients on shared care	2.2. Disseminating leaflets among patients enrolled in shared care	Continuing activity	Daily	Monitoring Team/PI	Continuing activity	-
3. Conducting awareness programs for health staff on the shared care concept	Conducting presentations at cardiology clinic NHK, RDHS office Kandy and, five selected PMCIs	15/08/2022	Daily	Monitoring team PI	15/08/2022	-
	3.1. Presentation on shared care concept at cardiology clinic NHK for healthcare staff	04/07/2022	Daily	Monitoring team PI	22/07/2022	The awareness program had to be postponed due to unavailability of many medical officers and In-charge nursing sister on the scheduled day. PI discussed with the senior medical officer of the cardiology clinic and arranged a zoom session for medical officers in the clinic of their convenience and a physical session was conducted for nursing and healthcare staff on 22/07/2022
	3.2. Presentation on shared care concept RDHS office Kandy	04/07/2022	Daily	Monitoring team PI	04/07/2022	-
	3.3. Presentation on shared care concept DH Katugastota	28/07/2022	Daily	Monitoring team PI	28/07/2022	-

	3.4. Presentation on shared care concept DH Wattegama	27/07/2022	Daily	Monitoring team PI	19/08/2022	The program has to be postponed as the RDHS Kandy and MOICs of Divisional Hospitals had to attend an urgent official meeting on the scheduled date. PI discussed with the RDHS and reschedule the program on 19/08/2022
	3.5. Presentation on shared care concept DH Manikhinna	27/07/2022	Daily	Monitoring team PI	19/08/2022	
	3.6. Presentation on shared care concept DH Thiththapajjala	28/07/2022	Daily	Monitoring team	28/07/2022	-
	3.7. Presentation on shared care concept DH Galagedara	28/07/2022	Daily	Monitoring team PI	28/07/2022	-
4. Training of Medical officers at PMCIs on clinical management of cardiac patients	Conducting training of medical officers on the management of cardiac patients	02/10/2022	Daily	Consultant Cardiologists PI	02/10/2022	-
	4.1. Training 1– Training of medical officer of PMCIs at NHK (Physical presence)	29/09/2022	Daily	PI	29/09/2022	-
	4.2. Training 2 – Training of medical	02/10/2022	Daily	PI	02/10/2022	-

	officers of PMCIs (Virtual training)					
5. Developing a mechanism to distribute drugs to PMCIs from RMSD Kandy to manage cardiac patients	5.1. Developing a documented mechanism to distribute necessary drugs	20/08/2022	Weekly	Monitoring team / PI		Although PI initiated discussions with stakeholders, it was not possible to complete this activity as expected due to the shortage of drug supplies in the country during the period. However, PI managed to discuss with RDHS Kandy and the regional pharmacist of the RMSD Kandy and agreed on giving priority to the five PMCIs of the project when supplying essential drugs to manage cardiac diseases and other NCDs.
	5.2. Implementing the mechanism of distribution	31/08/2022	Every third day	Monitoring team / PI		
6. Establishing a communication channel to provide clinical support to PMCIs from the cardiology unit NHK	6.1. Develop a guideline for medical officers using the helpline	30/07/2022	Every third day	PI	30/07/2022	-
	6.2. Introducing a helpline for medical officers of PMCIs	04/08/2022	Daily	PI	04/08/2022	-

	6.3. Implementing the Helpline	07/08/2022	Daily	Monitoring team PI	07/08/2022	-
7. Monitoring the implementation of the shared care model	7.1. Monitoring conducted by PI	Continuing	Daily by over the phone and visiting study setting every other week	PI	Continuing	In some of the weeks, PI failed to visit the study settings due to academic involvement. In such instances, the PI communicated with the Sister In charge of clinics and got down WhatsApp images of the patient registers/ referral forms for monitoring the progress.
	7.2. Monitoring conducted by the monitoring team	Continuing	Monthly	Monitoring team (DDNHK, CCP RDHS Kandy, MO/NCD RDHS Kandy, and PI)	Continuing	-
8. Conducting committee meetings	8.1. Oversight committee meetings	Continuing	Two Monthly	Oversight Committee members (DNHK, RDHSK, SCC, PI)	Continuing	Conduct through Zoom

	8.2. Working committee meetings	Continuing	Two Weekly / Weekly	Working committees at NHK and PMCIs	Continuing	-
	8.2.1. Working committee meetings at NHK	Continuing	Two Weekly	Consultant Cardiologist, SMO, INO, and, HCA of cardiology clinic NHK	Continuing	-
	8.2.2. Working committee meetings at PMCIs	Continuing	Weekly	MOIC, SNO, Pharmacist, HCA	Continuing	-

There were six main activities included in the intervention package and each main activity had several sub-activities to be conducted to achieve the desired outcome. Three of the six main activities; Developing/ printing and disseminating IEC material to patients on shared care, training medical officers at PMCIs on clinical management of cardiac patients, and, establishing a communication channel to provide clinical support to PMCIs from the cardiology unit NHK were completed as expected without any delays. However, it was not possible to complete the activity of developing a mechanism to distribute drugs to PMCIs from RMSD Kandy to manage cardiac patients. Also, some of the sub-activities of the other two main activities were delayed due to several reasons and PI took appropriate actions to improve the progress.

The sub-activity, designing and printing the referral and back referral pathway of activity 1; Designing and implementing a referral and back referral pathway for patients in the cardiology clinic of NHK got delayed as the consultant cardiologist involved in designing had a busy working schedule and, also, he met with an accident where he was absent for work during this period. PI managed to conduct the discussions through zoom technology with him and completed the designing and printing part of the referral and back referral pathway without much of a delay.

The scheduled staff awareness program of the cardiology clinic at NHK had to be postponed due to the absence of key staff members of the clinic on the scheduled date. The measures taken by the PI to progress the activity are mentioned in table 2.1.

In addition, the staff awareness programs of DH-Wattegama and DH Manikhinna were also rescheduled as the RDHS Kandy and the MOICs were not available to participate on the expected date. PI took prompt action to reschedule the program for another day.

Although PI was able to initiate the discussions with the relevant stakeholders on developing a mechanism to distribute essential drugs to manage cardiac diseases to PMCIs, it was not possible to complete this activity mainly due to a shortage of drug supplies in the country during this period. However, PI requested the Deputy Director General, Medical Supplies Division of the Ministry of Health through the Deputy Director General NCD to facilitate the supply of essential drugs to RMSD Kandy. Moreover, PI discussed with RDHS Kandy and the regional pharmacist of the RMSD Kandy and agreed on giving priority to the five PMCIs of the project when supplying essential drugs to manage cardiac diseases and other NCDs.

Monitoring of the implementation of the shared care model was done by PI and the other members of the monitoring team. The monitoring team conducted monthly visits to study settings. Due to practical difficulties, all members could not visit all settings at once. Thus, some visited PMCIs, and others to the cardiology clinic NHK. However, they communicate over the phone to discuss the issues. Oversight committee meetings were conducted in zoom mode. Since the members of the working committees are from the same settings (NHK and PMCIs) they attend to issues at the time of their occurrence. Also, they informed the issues to PI regularly to take necessary actions. In addition, all members of the committees communicate through a WhatsApp group (Shared Care Kandy) created by the PI for the project.

2.1.3. Execution of Post-Intervention Phase Activities

Post-intervention activities commenced after three months of implementing the interventions. After informing the senior consultant cardiologist of the cardiology unit of the NHK and the MOICs of the PMCIs, the PI and the two research assistants visited each clinic to collect data on the patients enrolled in shared care under the project. They completed checklist 3 (checklist 3: shared care patient statistics of NHK and checklist 4: shared care patient statistics of PMCIs) by referring to the details of the shared care patient registers with the support of the nursing staff in clinics. Data collection was conducted post-clinic hours without disturbing the routine clinic activities.

After attending clinic sessions for two months at a PMCI, the patients enrolled in shared care were reviewed at the cardiology clinic of NHK. The interviewer-administered questionnaire (IAQPSCD) to assess the patient's experience of managing their disease condition in a shared care cluster was administered by the two research assistants during this visit. The interviews were conducted at the cardiology clinic premises in a separate room without disturbing the clinic activities. At the time of clinic registration, these patients were identified by the nursing staff and directed to a research assistant before consultation by the medical officers. The research assistants explained the purpose and obtained consent from patients agreeing to attend the interviews. Then, the interviews were conducted at the convenience of the patient either before or after the consultation.

The relevance, coherence, effectiveness, and, sustainability of the project were evaluated by the evaluating team utilizing the evaluation framework (Figure1.6 page 55 chapter 1) with key evaluation questions and indicators developed. Efficiency was not evaluated due to time and resource constraints.

2.2. Analysis

Data analysis was done by PI with the assistance of the supervisor and an expert in data science. Quantitative and qualitative data were collected in both the pre-intervention and post-intervention phases of the study. Descriptive and analytical techniques were used to analyze data. The internal consistency of the relevant section of the questionnaires was assessed by using Cronbach's Alpha. All questions of the tested sections were having more than 0.7 critical values and were included in the analysis. Further, the negatively phrased question no 6 of the Patient Experience Survey Questionnaire (Annexure I c) was rephrased to a positive statement during data analysis. The quantitative data were first entered into a Microsoft Excel sheet and the latest version of Statistical Package for Social Sciences (SPSS) was used for data analysis. The Qualitative data collected were analyzed by using the Thematic Analysis method with the assistance of an expert.

2.3. Results

The results of the study are presented in two parts

1. Results of the pre-intervention phase

2. Results of the intervention and post-intervention phase

2.3.1. Results of the Pre-Intervention Phase

The pre-intervention phase results consisted of,

1. Results of the desk review conducted on patient statistics of the cardiology clinic of NHK and PMCI clinics and the readiness assessment of the study setting to manage patients with NCDs

2. Results of the patient survey.

2.3.1.1. Results of the Desk review and readiness assessment survey

2.3.1.1.1. Results of Patient Statistics and Readiness Assessment of the Cardiology Clinic of NHK to manage NCDs

The total number of patients registered at present in the cardiology clinic NHK was 12,761 with 7810 (61.2%) males and 4951 (39.8%) females. More than 70% of clinic patients were above 50 years. Table 2.2 gives the age distribution of the cardiology clinic patients.

Table 2.2. Age Distribution of Cardiology Clinic Patients of NHK 2022

Males			**Females**		
Age group	Number	%	Age group	Number	%
=< 40 y	861	11.0	=< 40 y	729	14.7
41 – 50 y	1003	12.8	41 – 50 y	602	12.2
51 – 60 y	2049	26.2	51 – 60 y	1137	23.0
61 – 70 y	2253	28.8	61 – 70 y	1315	26.6
>70 y	1644	21.0	> 70 y	1168	23.6
Total	7810	100		4951	100

Cardiology clinics are conducted on all five-week days from 8.00 a.m. In addition, two special clinics; Senior Registrars' clinic and the Rehabilitation clinic conducted twice a week. The clinic arrangement is shown in figure 2.1.

Figure 2.1 Cardiology Clinic Arrangement – NHK

	Section of Clinic	Frequency	Patient Flow	Remarks
1	Consultant Clinic Section	Daily	• Referrals from consultants from other specialties • Patients from the main clinic/ SR clinic needing a specialized opinion • Post-procedural first visits • Patients underwent Exercise ECGs	Every consultant conducts a clinic per week No MOs attending this clinic
2	Senior Registrars Clinic	Twice a week	• Patients with complex issues referred from the main clinic • Patients referred from consultant clinic for follow up	Starts at 2.00 p.m. Around 30 patients per clinic Long patient waiting time Unable to get an opinion on same day
3	Main Cardiology Clinic	Daily around 500 patients attend	• Discharged patients from wards decided by the consultant • From Consultant/SR clinics referred back • Patients who underwent ECHO cardiogram needing follow up	Thursday Clinic is called INR clinic with70% of patients on Warfarin therapy Patients with the following diseases take Warfarin • Valve replacement • Ecstatic valve patients • Clots in heart • Atrial fibrillation • DVT/Pulmonary embolism

4	Rehabilitation Clinic	Twice a week	• From clinics • Discharge patients from wards – all patients are referred (Appointment basis)	This is a special clinic with multidisciplinary services for patients Along with the Patients, a member of the family attends consultation. 1. Medical Officers assess the patients 2. Physiotherapists assess patients and develop a physical exercise plan based on clinical condition- Treadmill exercise 3. Pharmacists – provides prescription counseling 4. Diet plans – Nutrition counseling 5. Psychology assessment by MO/Psychiatry if needed • Underutilized • Complex paperwork • Long time spent by a patient

Registration of patients in the clinic is done digitally and each patient provides a clinic number. An appointment system for clinic visits is maintained. Around 100 patient appointments are given per hour. The date and time of the appointment are marked in the patient's clinic books for the next clinic visit. In addition, a clinic appointment reminder method through a short message (SMS) to patients' mobile phones had been practiced earlier but is not in practice at present.

On a clinic day, only half of the clinic patients (Every other hour appointments) are been consulted physically by medical officers, and the rest is continued with prescribed drugs only. Therefore, most patients are physically examined only in two months. Patient information is managed through Health Information Management System (HIMS). The weight of the patient is only checked in the booking appointment and the blood pressure is checked during consultation. Follow-up patients who need a consultant cardiologist's opinion are referred on the same day. Referrals to other sub-specialties (Endocrinology, Ophthalmology, Respiratory medicine, Nephrology, etc.) are arranged accordingly. At present, there is no defined system to refer patients with stable cardiac diseases to local hospitals for follow-up. Back referrals are only done to institutions having the services of a consultant cardiologist or a consultant physician.

The distribution of selected health staff categories in the cardiology unit is given in table 2.3.

Table 2.3. Distribution of selected Health Staff Categories in the Cardiology Unit

Staff category	Existing Cadre	Approved Cadre
Specialist Medical Officers (Consultants)	08	08
Grade Medical Officers	26	34
Nursing Officers (in clinic)	04	06
Health Care Assistants (in clinic) HCA	06	08

There are 8 consultant cardiologists and 26 medical officers attached to the cardiology unit. Medical officers work in different departments on a roster basis. For a clinic session, only 3 to 4 medical officers attend and 4 Nursing officers and 6 HCA are permanently attached to the cardiology clinic. Both medical officers and nurses attend in-house training sessions to update their clinical knowledge in managing patients (table 2.3).

All necessary equipment and instruments (Blood Pressure measuring devices, weighing scales, etc.) are available in adequate quantities. However, calibration, accuracy checks, and, preventive maintenance are not done appropriately. Repairs are done by biomedical technicians in NHK.

The patient waiting area is not sufficient and compared to the daily patient turnover seating facilities are also inadequate (Seating facilities for only 80 patients). However, clinic ventilation and other basic facilities (Drinking water, patients' toilet) are satisfactory.

The most common laboratory tests requested for clinic patients are Fasting/Post Prandial Blood Sugar, Lipid Profile, Serum Creatinine, HbA1c, and, PT/INR (Prothrombin Time/ International Normalize Ratios). Adequate laboratory reagent stocks were available at the time of the survey. The frequency of performing tests varies with the patient's disease condition. However, most basic tests are done every three months. Patients attend the laboratory to perform tests on a separate day and collect their reports on the clinic day morning.

The most commonly prescribed drugs at the cardiology clinic are Aspirin, Clopidogrel, Losartan Potassium, Bisoprolol, Warfarin, and, Nicorandil. At the time of the survey, adequate stocks were available for most of the necessary drugs at NHK drug stores. Dispensing is done at the clinic pharmacy on appointments and the pharmacist conducts

prescription counseling. A well-organized home delivery mechanism of drugs for clinic patients during crises is available at NHK.

Health education and health promotion activities are conducted mainly by nursing officers of the health education unit. In addition, medical officers and nursing officers at the cardiology clinic also do health education. Patients are educated by giving health talks while they are waiting for consultation. Health information material (leaflets, video clips) were not available at the cardiology clinic. Patients are referred to nutrition counseling when needed. Patients attending the clinic after an acute cardiac event (Myocardial Infarction) or after an invasive cardiac procedure, are referred to a rehabilitation clinic, and a comprehensive care package is mentioned in figure 2.1. is offered.

2.3.1.1.2. Patient Statistics of NCD Clinics and Readiness Assessment of the PMCI in Managing NCDs

Clinic Patients statistics Related to PMCIs

The results of clinic patients' statistics of the 5 PMCIs are presented in table 2.4.

Table 2.4. Distribution of NCD Patients at PMCIs clinics by Gender

Hospital	Number of registered clinic patients with NCDs	Gender	
		Male	Female
DH Katugastota	5,420	2,256	3,164
DH Thiththapajjala	3,200	1,000	2,200
DH Manikhinna	2,968	1,044	1,924
DH Wattegama	2,609	870	1,739
DH Galagedara	3,011	1,007	2,004
Total	17,208	6,177	11,031
%	100.0	35.9%	64.1%

The majority of the patients were from DH-Katugastota and, the lowest was recorded in Wattegama. Of the total number of clinic patients, 64.1% (N=11031) were females and in all Divisional Hospitals, the number of female clinic patients was higher than the males.

Table 2.5. Distribution of NCD Patients by Type of Clinic

Hospital	Number of registered clinic patients with NCDs	Diabetic	Medical	psychiatric
DH Katugastota	5,420	2,005	3,118	297
DH Thiththapajjala	3,200	No clinic	3,200	No clinic
DH Manikhinna	2,968	1,035	1,933	No clinic
DH Wattegama	2,609	1,050	1,491	68
DH Galagedara	3,011	No clinic	2,826	185
Total	17,208	4,090	12,568	550
%	100.0	23.8%	73.0%	3.2%

Most of the NCD patients (N= 12,568, 73%) were followed up at medical clinics. DH Thiththapajjala conducts only a medical clinic. Both DH Thiththapajjala and DH Manikhinna do not conduct separate psychiatric clinics.

Table 2.6. Distribution of Clinic Patients by Disease and Gender

Disease	DH Katugastota		DH Thiththapajjala		DH Manikhinna		DH Wattegama		DH Galagedara			
	M	F	M	F	M	F	M	F	M	F	Total	%
Hypertension	1520	2220	600	1500	726	1207	581	950	408	1105	10817	62.8
Diabetes	902	1103	700	1400	318	717	448	620	298	529	7035	40.8
Cardiovascular Diseases	353	540	70	80	44	78	60	87	55	48	1415	8.2

Chronic Respiratory Disorders	365	424	50	60	42	65	208	152	65	86	1517	8.8
Others	43	65	20	25	37	40	30	38	106	76	480	2.8

(M= Male, F= Female)

**Total no of patients 17208*

** % of each disease was calculated by the no of patients with the disease/total no of patients x 100*

Out of the total number (N=17,208) of registered patients with NCDs in five PMCI clinics, Hypertension (N=10817, 62.8%) is the most common NCD followed by Diabetes Mellitus. (N=7035, 40.8%). In addition, there were 1415 (8.2%) patients with cardiac diseases followed up in PMCI clinics.

Table 2.7. Clinic Patient Registration and Record Keeping at PMCIs

	Katugastota	Thiththapajjala	Manikhinna	Wattegama	Galagedara
Availability of a standard patient registration system (Paper base)	Yes	Yes	Yes	Yes	Yes
Availability of time appointments for clinic patients	Yes	No	Yes	Yes	Yes
Availability of reminder system for clinic appointments (Document date in clinic books)	Yes	Yes	Yes	Yes	Yes
Do the patients keep a separate clinic book/record?	Yes	Yes	Yes	Yes	Yes
Does the facility keep a record of patients' clinic visits?	Yes	Yes	Yes	Yes	Yes
Availability of electronic patient database	No	No	No	No	No
Availability of adequate space to keep patients' records	Yes	No	Yes	Yes	Yes

All hospitals follow the standard paper-based patient registration system in clinics and mark the next clinic date and time in patients' clinic books except DH -Thiththapajjala which marks only the next clinic date (Table 2.7). All clinic patients were given a separate clinic book to keep with them and the hospitals also keep a patient record. None of the hospitals maintain health records in an electronic database.

Table 2.8 gives the measurements obtained during a consultation, details related to the transfer facilities, and, referral procedure of clinic patients

Table 2.8. Details of Consultations, Transfer facilities, and, Referral Procedures of Clinic Patients at PMCIs

	Katugastota	Thiththapajjala	Manikhinna	Wattegama	Galagedara
Checking patients' Weight and documenting	Y	N	Y	N	Y
Checking patients' blood pressure and documenting	Y	Y	Y	Y	Y
Can you refer patients to another facility in the event of an emergency for a patient with chronic disease?	Y	Y	Y	Y	Y
Distance to nearest referral center (km)	4	9	17.5	15	20
Approximate time to reach the nearest reference center (minutes)	15	30	45	45	45
Availability of an ambulance in the hospital	Y	Y	Y	Y	Y
If the facility does not have an ambulance, the ability to arrange one from the close hospital for patient transfer	Y	Y	Y	Y	Y
Ability to refer a clinic patient (NCD) for specialist opinion at NHK	Y	Y	Y	Y	Y
Do all the referred patients are back referred for a follow-up	N	N	N	N	N
Ability to refer clinic patients for special investigations at a reference institute? (NHK)	N	N	N	N	N
Ability to obtain specialized services from the nearest reference center (Nutrition counseling/Physical activity programs) for clinic patients at DHs	Y	N	N	N	Y

According to table 2.8, blood pressure is measured and documented in all clinic patients of all hospitals. Except in DH Thiththapajjala and Wattegama patients' weights are also measured and documented. All DHs have an ambulance or can arrange one to transfer a

patient in an emergency to the nearest referral center (NHK). It takes 45 minutes to transfer a patient to NHK from the most distantly located DH Galagedara (20 km) and takes only 15 minutes from DH Katugastota which is 4 km away from NHK. All DHs have the opportunity to refer patients for specialist opinion at NHK through Out Patient Department and some of them are back referred for follow-up when their disease condition is stable. Referring clinic patients of PMCIs to NHK to perform lab investigations or special investigations was not possible without being registered at an NHK clinic.

Human Resources

The distribution of existing and approved human resources for health in PMCIs is shown in Table 2.9

Table 2.9. Distribution of Human Resources – Existing and Approved Cadre by PMCI

	DHK Katugastota		DH Thiththapajjala		DH Manikhinna		DH Wattegama		DH Galagedara	
Human Resources	Existing Cadre	Approved Cadre	Existing Cadre	Approved Cadre	Existing Cadre	Approved Cadre	Existing Cadre	Approved Cadre	Existing Cadre	Approved Cadre
Specialist Medical Officers (Consultant Family Physician)	1	0	0	0	0	0	0	0	0	0
Medical Officers MBBS	5	6	2	3	4	3	4	0	5	6
RMO	1	0	3	2	1	4	1	2	2	2
Nurses	13	12	11	10	13	10	10	12	12	12
Pharmacists	1	1	1	1	1	0	1	1	1	1
Medical Laboratory Technologists (MLTs)	1	1	0	0	1	0	1	1	1	1
Public Health Midwives (PHM)	2	2	2	2	3	3	2	2	3	3
Public Health Nursing officer (PHNO)	1	0	1	0	1	0	1	0	1	0
Dispensers	2	2	2	2	2	2	1	1	2	2
Ambulance Drivers	1	1	1	1	1	1	1	1	1	1
Health Care Assistants	13	22	16	16	18	13	13	15	20	22

As shown in table 2.9, It was found that there was no significant shortage of staff in any category in all 5 PMCIs at present. No staff (Medical Officers and Nursing Officers) training was conducted recently to update their knowledge to manage NCDs. Further, none were trained specifically in managing cardiac diseases.

The study revealed that all hospital clinics are satisfactorily equipped with the necessary equipment and instruments (Blood pressure measuring devices, weighing scales, stethoscopes, ECG machines, pulse oximeters, etc.) required to manage NCD patients. However, calibration and accuracy checks of the measuring devices were not done appropriately except by DH Katugastota and DH Manikhinna. All hospitals do repairs of equipment through "Regional Biomedical Stores" in Kandy.

Details of physical and digital infrastructure facilities of the PMCIs and basic facilities provided for patients are mentioned in table 2.10

Table 2.10. Availability of Physical and Digital Infrastructure Facilities and Basic Facilities Provided to Patients in PMCIs

	Katugastota	Thiththapajjala	Manikhinna	Wattegama	Galagedara
Physical Infrastructure					
The adequate waiting area on the clinic premises	Y	N	Y	Y	Y
Availability of a comfortable clinic environment (AC/Fans/ lighting)	Y	N	Y	Y	Y
Satisfactory washroom facilities for patients	Y	N	N	Y	Y
Provision of drinking water (water dispensers at the clinic)	Y	N	Y	Y	Y
Generator	N	Y	N	Y	N
Digital Infrastructure					
Networked services - Functioning (OPD/Clinics/Pharmacy/Laboratory)	Y	N	N	N	N

Availability of adequate Information Communication Technology (ICT) equipment at clinics (In working condition)	Y	N	N	N	N
Computers	1	1	0	1	0
Printers	1	0	0	0	0
UPS	1	0	0	0	0
Televisions	1	1	1	1	1
Availability of satisfactory Internet facility	Y	Y	Y	Y	Y
Availability of Wi-Fi facility	Y	Y	Y	Y	Y

The study revealed that the physical and digital infrastructure facilities of DH Thiththapajjala are at a lower level. However, it was observed that constructions are ongoing to improve clinic facilities at DH Thiththapajjala.

Laboratory Investigations

Table 2.11 gives the basic information related to laboratory investigation of clinic patients of PMCIs.

Table 2.11. Information on Laboratory Investigations at PMCIs

		DH Katugastota	DH Thiththapajjala	DH Manikhinna	DH Wattegama	DH Galagedara
How do you perform laboratory tests on patients?	1. Hospital lab	Y		Y	Y	Y
	2. Ask to do from a Private lab	N	Y		Y	Y
	3. From a referral institute					
Frequency of performing laboratory investigations	1. Mostly monthly					
	2. Mostly every 3 months	Y				
	3. Whenever needed		Y	Y	Y	Y
Availability of an appointment system to do lab investigations		Y		Y	Y	N
Do the laboratory tests are performed on the clinic date itself?		Y		Y	Y	N
Do the patients have to collect the reports from the lab on clinic day?		Y		Y	Y	Y

Investigations performed at the hospital laboratory (if a laboratory is available)	Urine albumin/protein	Y	N	N	N	N
	Blood sugar	Y	N	Y	Y	Y
	HbA1C	N	N	N	N	N
	Blood cholesterol	Y	N	Y	Y	Y
	Serum creatinine	Y	N	Y	N	N
	Troponin I	N	N	Y	Y	N

Except for DH Thiththapajjala, the other 4 DHs have hospital laboratories. The most common laboratory tests requested for clinic patients are Blood sugars (Fasting and Post Prandial), Total cholesterol, Urine full report, and Serum creatinine. Except for DH Galagedara, all other hospitals with laboratories practice an appointment system for patients to perform tests. This is done by giving a date before the next month's clinic date. The patients have to come to the hospital laboratory to give the samples. Then on the morning of the clinic day, they have to collect the reports. All hospital laboratories are capable of performing blood sugars and total cholesterol. Troponin I could only be performed at DH Wattegama and DH Manikhinna. HbA1c cannot be performed at any DH laboratory.

Availability of Drugs and Usage

The study revealed that Losartan Potassium, Aspirin, Atorvastatin, Clopidogrel, and Furosemide are the most commonly prescribed drugs at local hospitals for patients with cardiac disease. All 16 essential drugs to be available at PMCI level to manage NCDs {Aspirin, Atenolol, Enalapril, Furosemide, Hydrochlorothiazide (HCT), Captopril, Losartan Potassium, Calcium channel blockers (Nifedipine, Amlodipine), Isosorbide Dinitrate (ISDN), Isosorbide Mononitrate (ISMN), Glyceryl Trinitrate (GTN), Statins

(Atorvastatin or Simvastatin), Metformin and, Insulin} are available at all DHs except for Isosorbide Dinitrate (ISDN).

Except for DH Thiththapajjala, all other hospital pharmacies have a mechanism to distribute drugs to patients' homes in a crisis. However, prescription counseling is not done in any of the pharmacies satisfactorily.

Health Education and Health Promotion activities

Table 2.12 shows the process of conducting health education and health promotion activities at PMCIs

Table 2.12. Health Education and Promotion Activities at PMCIs

		Katugastota	Thiththapajjala	Manikhinna	Wattegama	Galagedara
Health Education for clinic patients is done by	Medical officers	1	0	1	1	1
	Nursing Officers	1	1	1	1	1
	PHNO	1	1	1	1	1
Available methods for health education/promotion at clinics	Health IEC material (leaflets/Posters)	1	0	1	1	1
	Health talks	1	1	1	1	1
	Telecast of video clips	1	0	1	1	0

Nursing officers at clinics and PHNOs conduct health education activities for patients. Except in DH Thiththapajjala, Medical Officers are also involved in health education and promotion activities. The most common method used by health staff is delivering health talks at clinics.

2.3.1.2. Results of the Patient Survey - Cardiology Clinic NHK

Data collection was done from 322 eligible respondents to draw insight to identify the key areas to focus on in designing and implementing a shared care model to manage patients with NCDs registered in the cardiology clinic NHK in National Hospital Kandy Cluster of Hospitals. Descriptive statistics are presented through the Frequency table, Presentation table, and appropriate charts.

A. Socio-Demographic Data of Study Sample

Table 2.13. Distribution of the Demographic Features of Respondents

Demographic Feature	Category	Frequency	%
Age	=< 40y	14	4.3
	41 - 50y	21	6.5
	51 - 60y	83	25.8
	61 - 70y	123	38.2
	> 70y	81	25.2
	Total	**322**	**100.0**
Gender	Male	189	58.7
	Female	133	41.3
Marital Status	Unmarried	19	5.9
	Married	268	83.2
	Widow/Divorce/Separated	35	10.9
Education	No formal Education	6	1.9
	Up to Primary Education	34	10.6
	Up to Grade 8	58	18.0
	Up to O/L	140	43.5
	Up to A/L	69	21.4
	Undergraduate	5	1.6
	Postgraduate degree	5	1.6
	Other	5	1.6
Monthly Income	=< Rs. 25,000	217	67.4
	Rs. 26,000 to Rs. 50,000	90	28.0
	Rs. 51,000 to Rs. 100,000	15	4.7
	> Rs.100,000	0	0.0
	Total	**322**	**100.0**

The majority of the respondents (N= 123, 38.2%) were in the age group of 61 to 70 years, and 287 (89.1%) respondents are above 50y of age. The majority of the respondents (N=189, 58.7%) were male and 41.3% (N=133) were female. 83.2% (N=268) of the respondents are married and 10.9% (N=35) were widows/Divorce/Separate. Further, most respondents (N=140, 43.5%) have studied up to O/L, and only 21.4% (N=69) have studied up to A/L. A very small percentage (N=15, 4.8%) of the respondents were either undergraduates or above. Most of the respondent's (N=217, 67.4%) monthly income was equal to or less than Rs. 25,000.00 (table 2.13).

Table 2.14. Distribution of Respondents According to Employment and Living Arrangement

Employment and living pattern	Category	Frequency	%
Employed at present	No	252	78.3
	Yes	70	21.7
	Total	322	100
Living arrangement	Alone	14	4.3
	With Spouse only	64	19.9
	With Spouse & Children	191	59.3
	With Children only	37	11.5
	With Relatives only	13	4.0
	Other	3	0.9
	Total	**322**	**100.0**

The majority (N=252, 78.3%) of respondents were currently unemployed. The study examined the living arrangement of the respondents and found that the majority (N=191, 59.3%) were living with their spouses & children (table 2.14).

Table 2.15. Descriptive Statistics of the Traveling-Related Factors of Respondents

	Min.	Max.	Mean	Median	Std. Deviation
Distance from present residence (Km)	4	38	10.27	9.00	5.865
Duration of travel to NHK (in minutes)	10	180	50.11	45.00	24.962
Approximate distance to the nearest local hospital from present residence (Km)	0.3	26	2.51	2.00	2.691

The nearest respondent lives within 4km of NHK and the longest lives 38 kilometers from NHK. The average distance from the present residence to NHK is 10.27 kilometers. The average travel duration to NHK is 50.11 minutes.

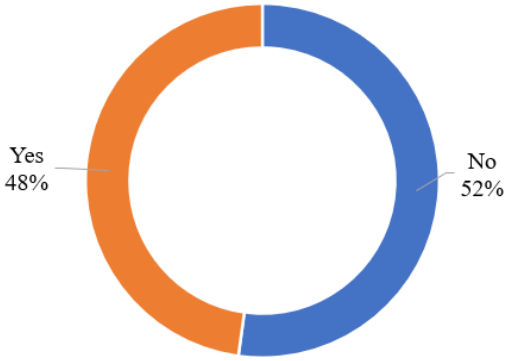
Duration of Diagnosis and Follow-up duration at Cardiology Clinic

The study found the respondents had been diagnosed from one month (lowest) and 372 months highest. The mean duration of being diagnosed was 97.7 months and the median was 72. The difference between the 25th percentile and 75th percentile (IQR) was 96 months and the distribution is highly skewed to the right side. It too had a relatively high peak of the data distribution as the kurtosis is 1.477. On the other hand, respondents have been attending the clinic for one month to 372 months and the average attending time was 92 months with a median of 60 months. It also showed a distribution skewed to the right.

Other Chronic Diseases

Figure 2.1 represent the percentage of respondents diagnosed with other chronic diseases

Figure 2.2: Percentage of Respondents Diagnosed with Other Chronic Diseases



It was found that only 48% (N=154) of the respondents had been diagnosed with another chronic disease.

Table 2.16. Distribution of Other Chronic Diseases among Respondents

Disease condition	Frequency	%
Hypertension	114	35.0
Dyslipidemia	97	30.1
Diabetes Mellitus	95	30.0
Chronic Respiratory Diseases	11	3.0
Cancers	1	0.3
Other Diseases	3	1.0
Place of obtaining medicine for these chronic diseases **(n = 154)**	Frequency	Percent
From the cardiology clinic NHK	146	94.8
From a separate clinic in NHK	6	3.9
From Ayurveda/Traditional practitioner	2	1.3
Total	154	100.0

**No of patients with another NCD is = 154*

Out of the 322 respondents, 154 (47.8%) were having other chronic disease conditions as shown in table 2.16. The most common disease was Hypertension (N=114, 35%) whereas Dyslipidemia (N=97, 30.1%) Ranked second and, Diabetes Mellitus (N=95, 30%) ranked third. The majority of these patients (N= 146, 94.8%) obtained medicine for their other chronic diseases from the cardiology clinic NHK.

Treatment-Related Factors

Table 2.17. Treatment-Related Factors

Did you obtain medicine from another place before attending this clinic	Frequency	%
No	300	93.2
Yes	22	6.8
	322	100.0
Who referred you to this clinic at NHK		
Self-referral	4	1.2
By local hospital (Government)	19	5.9
By Family Doctor (GP)	11	3.4
By a Consultant in the Private Sector	17	5.3
OPD- NHK	17	5.3
Another Clinic-NHK	3	0.9
From a ward in NHK	245	76.1

Any other	6	1.9
	322	**100.0**
With whom you are attending this clinic		
Alone	242	75.2
Accompanied by spouse	37	11.5
Accompanied by a child	39	12.1
Accompanied by a relative	4	1.2
	322	100.0
Can you manage the clinic day's activities alone	Frequency	%
No	53	16.5
Yes	269	83.5
	322	100.0
Does the person who accompanies you lose earnings for that day **(N = 80)**		
No	47	14.6
Yes	33	10.2

The study revealed that only 6.8% (N=) of the respondent attended another place to take medicine for their current illness before attending this clinic. The majority of respondents (N=245, 76.1%) were referred to this clinic from an NHK ward. 75.2% (N=242) attend the clinic alone. The majority of respondents (N=269, 83.5%) mentioned that they can manage clinic activities alone. Further, it was found that only 33 (10.2%) people accompanying the respondents lose their daily earnings. All respondents attend the clinic every month (table 2.17).

Table 2.18. Transport-Related Factors

Most frequent mode of transport	Frequency	%
By Bus	292	90.7
By Train	1	0.3
By hired vehicle	7	2.2
By own vehicle	22	6.8
On average how much to be spent on a day for transport (Rs)		
=< 200	136	42.2
201 to 400	132	41.0
401 to 600	23	7.1
> 600	31	9.6
Total	322	100.0

The study found that the majority of the respondents use the bus to visit the clinic. About 42.2% (N=136) of the respondents spend equal to or less than Rs.200 a day on transportation and 41% (N=132) spend in the range of Rs. 201 to Rs. 400 a day. The average is about Rs. 441 where some respondents had to spend a maximum of up to Rs. 7,000 and some spent Rs. 40 depending on the location and complexity of the medical condition (table 2.18).

Details Related to Obtaining Drugs

Table 2.19. Distribution of Place and Reason for Obtaining Drugs as Given by the Respondents

Place of obtaining the drugs	Frequency	%
Only from the NHK pharmacy	123	38.2
Only from a pharmacy in the private sector	19	5.9
From both	180	55.9
Total	322	100.0
What is/are the reason/s for you to obtain medicines from other places (n = 199)		
For my convenience	4	2.0
Due to the non-availability of some drugs at NHK pharmacy	188	94.5
Due to a delay in dispensing at NHK	7	3.5
Total	199	100

**No of patients obtaining drugs from both hospital and outside pharmacy=199*

It was found that the majority of respondents obtain drugs from both hospitals and outside pharmacies (N=180, 55.9%). Interestingly, 123 respondents take drugs only from NHK pharmacy. The most common reason for obtaining medicine from another place was the non-availability of some drugs at NHK (table 2.19).

Details Related to Utilizing Laboratory Facilities

Table 2.20. Utilization of the Laboratory Services by the Respondents

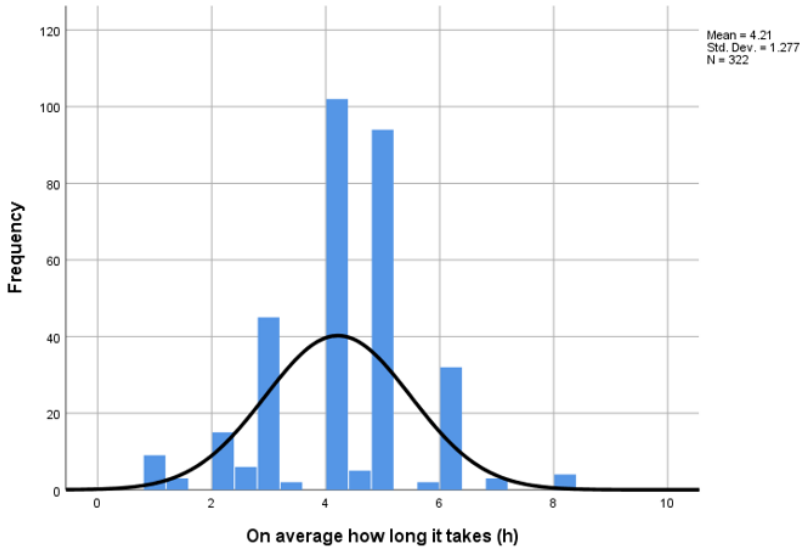
Do you have to do laboratory tests at every clinic visit	Frequency	%
No	160	49.7
Yes	162	50.3
Place of performing the laboratory test		
From NHK laboratory only	187	58.1
From a private laboratory only	46	14.3
From both	89	27.6
Total	322	100.0
What is/are the reason/s for you to perform tests from private labs (n = 135)	Frequency	%
For my convenience	90	66.6
Due to the non-performing of some tests at the hospital laboratory	42	31.1
Since the report quality is better at private laboratories	3	2.3
Total	135	100.0

Table 2.20 shows, 50.3% (N=162) of respondents attend the cardiology clinic with laboratory investigation reports on every visit. The majority (N=187, 58.1%) obtain reports only from the NHK laboratory and 14.3% (N=46) obtain reports only from private laboratories. The main reason for considering obtaining reports other than NHK is for personal convenience (n=90, 66.6%). It was interesting to see that only 3 (2.3%) patients believe that the report quality of private labs is better than NHK laboratory.

Time Spent on Obtaining Services from NHK

On average a respondent spent 4.21 ± 1.23 hours obtaining services from NHK from the time of leaving residence to collection of medicine from the hospital pharmacy in a clinic day. Some respondents spend only one hour and some spend a maximum of eight hours.

Figure 2.3 Histogram of Time Spent on Obtaining Services from NHK



Place of Obtaining Treatment for the Current Illnesses

It was found that 315 (97.8%) respondents take medicine for their current illnesses only from the cardiology clinic NHK and only 7 (2.2%) take it from another place as well. Of the 7 who take medicine in addition to NHK, 3 (42.9%) take it from a local hospital, and another 3 (42.9%) from a general practitioner.

B. Results of Patient Experience of the Services of NHK

The assessment of Patient Experience of the services of NHK has examined three locations; Cardiology clinic, Laboratory, and Pharmacy. The internal consistency of the 13 questions used to assess patient experience was tested using Cronbach's Alpha. The results are shown in Table 2.21

Table 2.21. Internal Consistency of Questions on Patient Experience in 3 Locations

Location	Cronbach's Alpha	N of Items
Cardiology Clinic NHK	0.861	13
NHK Laboratory	0.979	13
NHK Pharmacy	0.980	13

According to Table 2.21, most of the questions have shown high internal consistency of 0.861.

Table 2.22. Patient Experience at Cardiology Clinic

	Poor		Fair		Good		Excellent		Total	
Cardiology Clinic	No	%	No	%	No	%	No	%	No	%
The kindness of the clinic staff	0	0.00	0	0.00	274	85.10	48	14.90	322	100.0
Respectfulness of the clinic staff	0	0.00	3	0.90	270	83.90	49	15.20	322	100.0
The staff listens to your views	0	0.00	11	3.40	262	81.40	49	15.20	322	100.0
Staff talk in an easily understandable way	0	0.00	5	1.60	270	83.90	47	14.60	322	100.0
Competencies of clinic staff	0	0.00	5	1.60	273	84.80	44	13.70	322	100.0
Timeliness of staff in service delivery	0	0.00	4	1.20	271	84.20	47	14.60	322	100.0
About the patient appointment system	0	0.00	25	7.90	240	75.70	52	16.40	317	98.4
Arrangement of the service setting	0	0.00	3	0.90	280	87.00	39	12.10	322	100.0
Space provided for patient waiting areas	0	0.00	177	56.00	137	43.40	2	0.60	322	100.0
Seating facilities provided for patients	15	4.60	165	51.30	140	43.50	2	0.60	322	100.0
Ventilation facilities provided	0	0.00	14	4.30	306	95.00	2	0.60	322	100.0
Availability of drinking water	0	0.00	14	4.30	306	95.00	2	0.60	322	100.0
Availability of satisfactory washroom facilities for patients	5	1.70	42	13.80	255	83.9	2	0.60	304	94.5
Total (%)	20	0.48	468	11.24	3284	78.89	385	9.25	4163	99.45

As per table 2.22, most of the respondents have stated: “Good” for all the dimensions except for dimensions of space in the waiting area (N=177, 56%) and seating facilities (N=165, 51.3%) of the clinic. Further, a slightly higher percentage 13.8% (N=42) have given “Fair” in their feedback on the dimension “Availability of satisfactory washroom facilities for patients” compared to other dimensions.

Table 2.23. Patient Experience at Laboratory

	Poor		Fair		Good		Excellent		Total	
Laboratory	No	%	No	%	No	%	No	%	No	%
The kindness of the laboratory staff when	0	0.00	117	42.40	139	50.40	20	7.20	276	100.00
Respectfulness of the Laboratory staff	0	0.00	118	42.80	137	49.60	21	7.60	276	100.00
listens to your views	0	0.00	119	43.10	135	48.90	22	8.00	276	100.00
Staff talk in an easily understandable way	0	0.00	120	43.50	138	50.00	18	6.50	276	100.00
Competencies of staff	0	0.00	124	44.90	130	50.00	10	5.10	263	95.30
Timeliness of service delivery	0	0.00	117	42.40	142	51.40	17	6.20	276	100.00
Patient appointment system	0	0.00	99	37.30	145	53.30	24	9.40	268	97.10
Arrangement of service setting	0	0.00	120	43.50	142	51.40	14	5.10	276	100.00
Space provided for patient waiting areas	28	0.00	124	43.40	124	56.00	0	0.60	276	100.00
Seating facilities provided for patients	28	0.00	120	45.40	128	54.00	0	0.60	276	100.00
Ventilation facilities provided	0	0.00	121	38.30	155	61.10	2	0.60	276	100.00
Availability of drinking water	0	0.00	110	38.00	166	61.40	2	0.60	276	100.00
Availability of satisfactory washroom facilities for patients	27	0.60	135	46.10	63	52.60	2	0.60	225	81.50
Total (%)	83	2.36%	1544	43.91%	1744	49.60	152	4.32	3516	98.00

Only 276 of the 322 have obtained services from the NHK laboratory. Although a majority of respondents expressed “Good” in their feedback, a higher percentage also stated “Fair” in feedback to all dimensions. For washroom facilities, a majority (N=135, 46.1%) has expressed “Fair” (table 2.23).

Table 2.24. Patient Experience at Pharmacy

	Poor		Fair		Good		Excellent		Total	
Pharmacy	No	%	No	%	No	%	No	%	No	%
The kindness of the pharmacy staff	0	0.00	127	41.90	151	49.80	25	8.30	303	100.00
Respectfulness of the pharmacy staff	0	0.00	124	40.90	153	50.50	26	8.60	303	100.00
Listens to your views	0	0.00	119	39.30	157	51.80	27	8.90	303	100.00
Staff talk in an easily understandable way	0	0.00	118	38.90	162	53.50	23	7.60	303	100.00
Competencies of staff	0	0.00	128	42.20	156	51.50	19	6.30	303	100.00
Timeliness of service delivery	3	1.00	127	41.90	151	49.80	22	7.30	303	100.00
Patient appointment system	0	0.00	108	35.60	164	54.10	31	10.20	303	100.00

Arrangement of service setting	0	0.00	125	41.30	159	52.50	19	6.30	303	100.00
Space provided for patient waiting areas	25	0.30	140	43.80	138	55.30	0	0.60	303	100.00
Seating facilities provided for patients	24	2.20	136	45.00	141	52.20	2	0.60	303	100.00
Ventilation facilities provided	0	0.00	128	40.00	175	59.40	0	0.60	303	100.00
Availability of drinking water	0	0.00	128	40.00	173	59.40	2	0.60	303	100.00
Availability of satisfactory washroom facilities for patients	24	0.60	126	47.00	101	51.80	0	0.60	251	82.84
Total (%)	76	1.96	1634	42.04	1981	50.96	196	5.04	3887	98.68

Only 303 respondents out of 322 have obtained services from NHK pharmacy. Most respondents have expressed “Good” in their feedback. except for space in the waiting for (N=140, 43.8 %) area and washroom facilities (N=126, 47.0%) where the majority answered “Fair”. Also, a sizable percentage of respondents have answered, “Fair” to all other dimensions.

C. Results of the Basic Knowledge of NCDs of the Patients of Cardiology Clinic NHK

The results of the basic knowledge assessment of the patients about NCDs are given in table 2.25. The 8 statements used were tested for internal consistency using Cronbach’s Alpha and Cronbach’s Alpha was found to be 0.71. Therefore, all the items were retained in the questionnaire.

Table 2.25. Basic Knowledge of NCDs of the Patients of Cardiology Clinic NHK

Assessing the basic knowledge of NCDs (N=322)	No answered correctly	% answered correctly	Mean Score	Std. Deviation
Cardiovascular disease is one of the most common NCDs in Sri Lanka	322	100.00%	1.00	0.000
Diabetes is a Communicable Disease	322	100.00%	1.00	0.000
Hypertensive patients have a high risk of developing heart attacks	321	99.70%	0.99	0.073
Intake of prescribed medicine regularly is essential to control NCDs	319	99.10%	0.99	0.103
Intake of diets high in salt can lead to hypertension	315	97.80%	0.96	0.191

Adequate physical activity is not essential to control NCDs	310	96.30%	0.96	0.203
Globally, the incidence of NCDs are increasing at an alarming rate	308	95.60%	0.96	0.203
Tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol are the four most common risk factors for NCDs	305	94.70%	0.96	0.203

It was found all the patients (N=322) have given the correct answer to the first two dimensions. The majority have given the correct answer to the rest of the dimensions as well. The mean score ranged from 0.96 to 1.00 which indicates a high accuracy level (Table 2.25).

D. Perception of Patients Attending the Cardiology Clinic NHK on Managing their Disease Condition in a Shared Care Cluster

Open-ended questions were asked from the patients about what they expect to be fulfilled in PMCIs if they are to be enrolled in Shared care. PI has coded the responses and the results are presented in Table 2.26.

Table 2.26. Respondents' Perception of Getting Managed in a Shared Care Cluster

Dimensions of Respondents' Perception (N=322)	Frequency	% Responded
Availability of competent staff at the local hospital to manage cardiac diseases	301	93.5%
Availability of all prescribed medicines at the local hospital pharmacy	301	93.5%
Availability of a well define periodic review mechanism at the cardiology clinic for patients enrolled in shared care (referral/back referral system)	297	92.2%
Availability of a mechanism to perform/get down necessary laboratory investigations at the local hospital	293	91.0%
Availability of a method to contact and get an opinion from consultants at the cardiology unit NHK in managing patients (when needed)	282	87.6%

Availability of satisfactory basic facilities (water, sanitary) at local hospitals	282	87.6%
Time appointment system for clinic visits at the local hospital	242	75.2%
Availability of caring staff at your local hospital	220	68.3%
Engaging patients in making treatment decisions	85	26.4%
Easy accessibility to the local hospital by common transport method	34	10.6%

It was found that the majority of respondents (N=301, 93.5%) expect a competent staff to manage cardiac diseases at local hospitals and also the availability of all necessary drugs in disease management. 297 (92.2%) of respondents have expressed the need for a well-defined periodic review mechanism at the cardiology clinic NHK. Further, 91% (N=293) of respondents have stated the need for a mechanism to perform/get down necessary laboratory investigations at the local hospital. However, only 26.4% (N=85) have mentioned the need for patient engagement in disease management (table 2.26).

It was found that 81.2% (N=261) of the respondents were happy to be enrolled in shared care and continue to get followed up at the nearest local hospital if the mentioned requirements are satisfactorily fulfilled.

2.3.1.3. Results of Qualitative Data Analysis

The Thematic analysis was used to analyze qualitative data. The data recorded in KIIs and FGDs were transcribed and coded. During analysis, several key themes and sub-themes emerged. When developing themes attention was paid to their reasonings for service deficiencies identified in the patient survey and desk review. Further, the participants' experiences, explanations, opinions, and beliefs in implementing the shared care concept in managing NCDs, especially cardiac diseases were also focused on. The results are

presented in a thematic map (figure 2.4 on page 107). Several prominent themes were identified.

“Overcrowding and Cardiology clinic congestion” at NHK was reported by many participants. According to them, on average 500 patients attend clinics each day. Although patients are given prior time appointments (hourly basis) many of them come to the clinic early as patients from remote areas have limited public transport. This overcrowds the limited clinic space and patients have to stand outside the clinic premises till they get their turn. Due to the shortage of medical officers, only 4 attend the clinic work and sometimes they get delayed due to ward work. Some medical officers said, “We actually spend very limited time for a patient and hardly do physical examination”. In addition, they expressed “We know that sometimes we are unable to give comprehensive care for patients”. Further, some nurses said, at times “Due to work stress their patient responsiveness has been less”.

“Lack of a defined patient referral and back referral system” was another reported prominent theme. Some medical officers expressed that, “We were unable to refer patients with stable cardiac diseases to peripheral hospitals due to non-availability of a proper referral system in place”. This too had contributed to overcrowding.

Medical officers have identified the importance of sharing patients’ information among care providers for comprehensive care. However, there was no proper mechanism to share patient information. Thus, “Poor patient information sharing among care providers” has also been identified as a prominent theme.

“Health-seeking behavior of the patients” was also recorded as a prominent theme. Staff revealed that patients believe and trust the services of NHK and it is difficult to convince

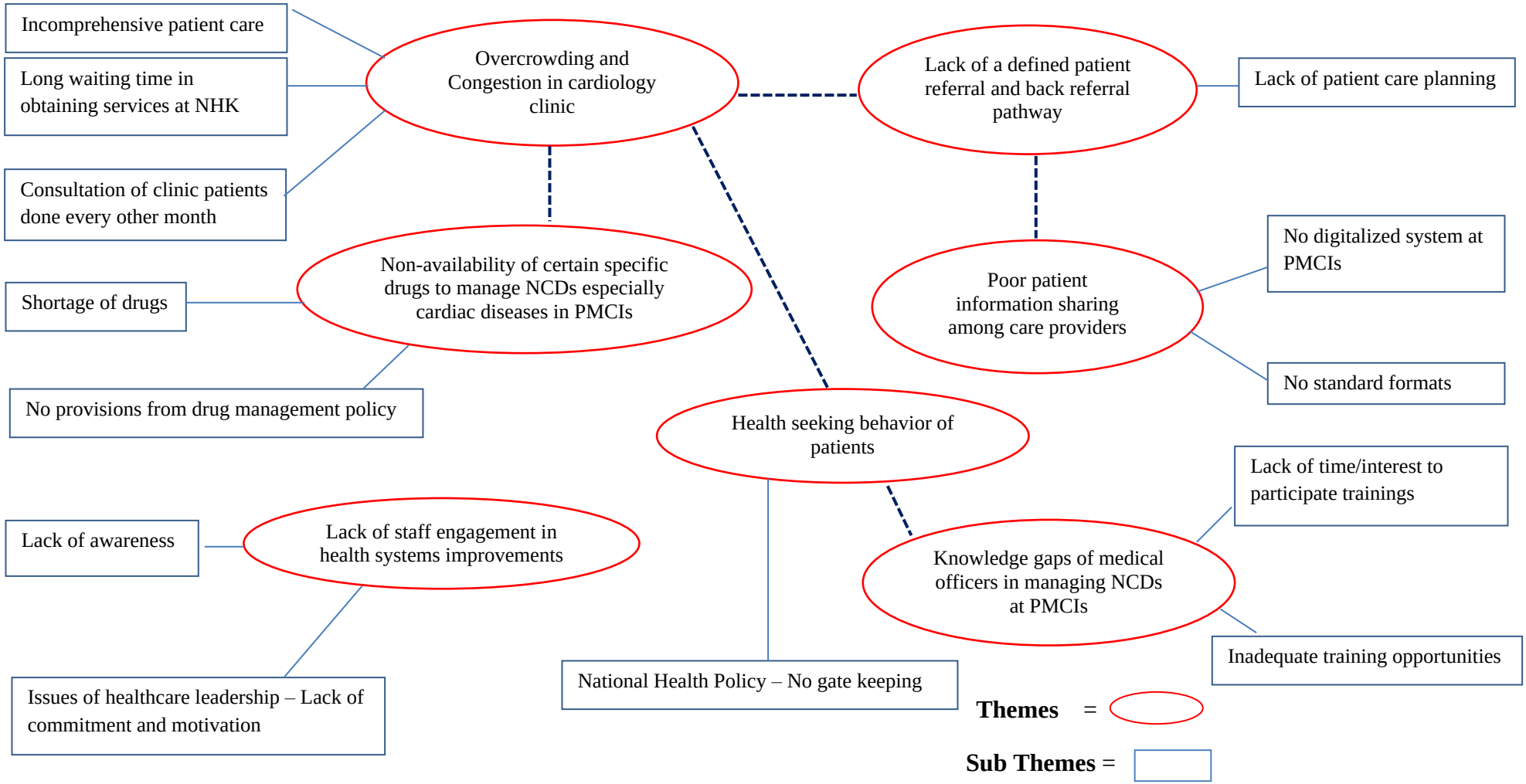
them on referring to a lower-level hospital even if their disease conditions are clinically stable which again has contributed to clinic overcrowding.

Another important theme recorded was “The non-availability of certain specific drugs to manage NCDs, especially cardiac diseases in PMCIs”. Both medical officers and health administrators have identified this issue but due to a lack of policy support in medical supplies management, a solution is yet to be discovered. However, according to some medical officers’ certain specific drugs at NHK also go out of stock regularly and patients have to buy them from outside pharmacies.

“Knowledge gaps of medical officers in managing NCDs at PMCIs” was also revealed as a key theme. Medical officers at PMCIs express that they were not formally trained in managing NCDs especially cardiac diseases in a primary care setting. In addition, the opportunities for training were also less.

“Lack of staff engagement in health system improvements” was also a prominent theme recorded. Most participants said, “We heard of the concept but not much in-depth knowledge or awareness of how patients are managed in shared care”. Further, it was revealed that commitment and healthcare leadership is important in implementing and sustaining interventions in health system improvements.

Figure 2.4 Thematic Map - Participant's Experience, Explanations, Opinions, and Beliefs



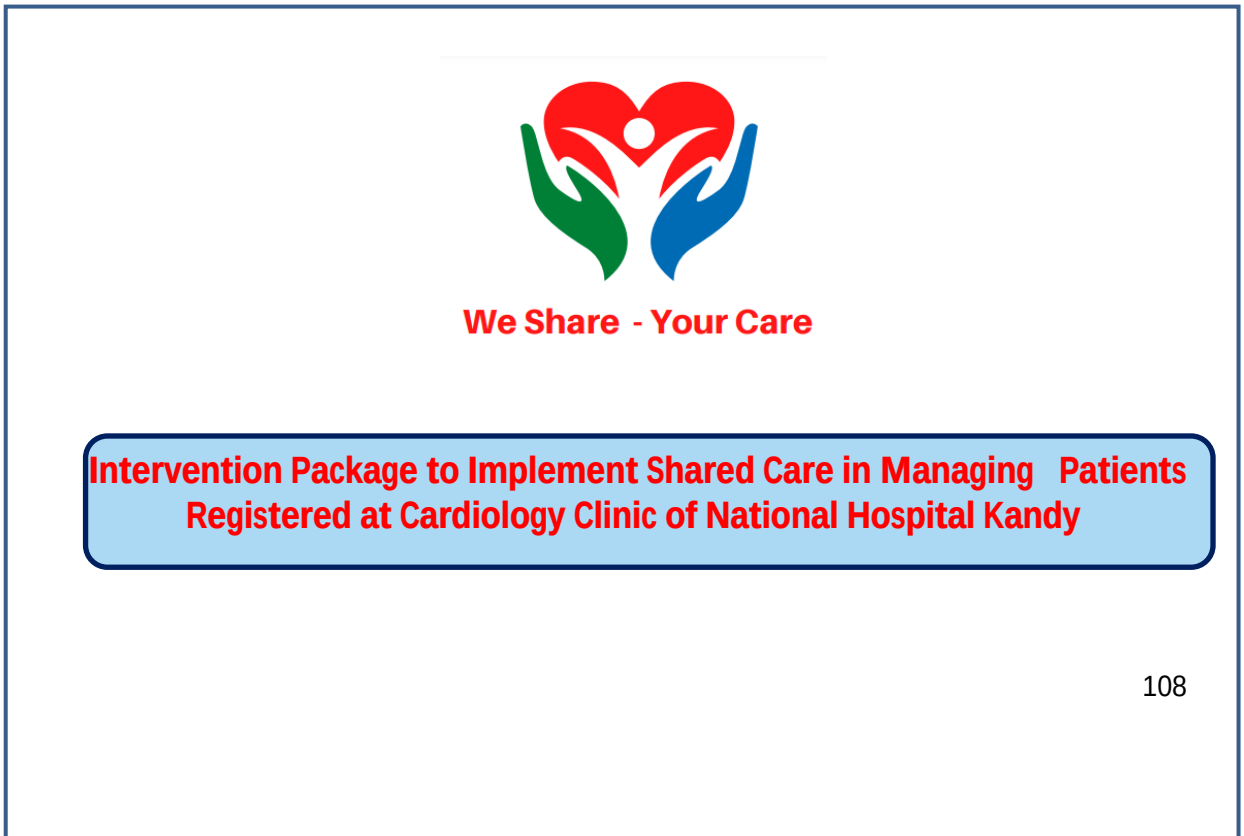
2.3.2. Results of Intervention and Post Intervention

At the end of the pre-intervention phase, PI and the stakeholders identified gaps and they are presented in a fishbone diagram. (Figure 2.5).

Figure 2.5 Gaps Identified in the Pre-Intervention Phase Presented in a Fishbone

According to the cause analysis, interventions were identified by a stakeholder analysis and, prioritized by using a priority matrix (page no 43). Then, to ensure the expected outcome of the interventions are capable of achieving the expected immediate outcomes, a Theory of Change was developed (page no 48). Since it was observed that the interventions can improve the care quality for patients with stable cardiac diseases at the cardiology clinic NHK by enrolling them in shared care, an intervention package was developed which is shown in figure 2.6.

Figure 2.6 Intervention Package to Implement Shared Care



➢ Introduction

A project to implement Shared Care for patients registered at the cardiology clinic of National Hospital Kandy with selected primary care institutions in the NHK cluster has already been planned and this intervention package was designed as a comprehensive guide to the project. The package explains the planned interventions of the project and the direction for successful implementation.

Non-communicable Diseases (NCDs) such as Cardiovascular Diseases, Diabetes Mellitus, Cancer, and, Chronic Respiratory Diseases pose a major threat to the health and development of Sri Lanka. The chronicity of this group of diseases causes long-term disability among a significant proportion of patients affected. The Directorate of Non-Communicable Diseases of the Ministry of Health, Sri Lanka is the national focal point to combat the rising burden of NCDs and is responsible for advocacy and policy-making in the area of NCDs. The implementation of activities is carried out at line ministry institutions and provincial-level institutions (under the guidance of provincial authorities).

Although NCD prevention and control activities are taking place in all levels of government healthcare institutions in the country, most patients tend to bypass the primary medical care settings and obtain NCD services from a higher-level healthcare institution even if their disease conditions are under satisfactory control. This has caused significant overcrowding in the NCD clinics of tertiary and secondary care hospitals which has compromised the comprehensiveness of care.

“Shared Care” is a globally accepted and proven concept in managing patients with chronic disorders such as NCDs to obtain better care outcomes. Shared care implies that,

- An individual's health care will be shared and form a continuum between primary care and specialized services
- Resources within the cluster are to be shared so that there is optimum availability and utilization

Non-availability of a standard functional patient referral and back referral system, resource gaps in health institutions of different levels, lack of a mechanism to provide a specialist opinion to primary medical care staff in managing NCDs, inadequate training for medical officers to update knowledge in NCDs, deficiencies in sharing health information, etc. have directly affected implementing shared care in Sri Lanka.

National Hospital Kandy (NHK) and five Divisional Hospitals (DH-Katugastota, Wattegama, Manikhinna, Thiththapajjala, and, Galagedara) of the National Hospital Kandy Cluster of Hospitals (NHKCH) were selected to implement shared care for managing patients with NCDs in cardiology clinic of NHK.

A primary survey was conducted during the pre-intervention phase using multiple data collection methods. The results revealed gaps in patient referral and back referral pathways, awareness of the shared care concept, health information sharing mechanism of patients, staff training, distant clinical support mechanism to primary care institutions, drugs supply chain to PMCIs, and, laboratory facilities at PMCIs.

➢ **The Objectives of the intervention package for shared care**

I. To serve as an explicit document to present the identified gaps in implementing shared care in managing patients with NCDs in the cardiology clinic of NHK
II. To serve as a proof document of the interventions identified to be implemented
III. To act as a tool for planning and carrying out the actions.

➢ The methodology of selecting interventions

Based on the pre-intervention study results, the National Health Strategic Master Plan 2016–2025 and the Policy on Healthcare Delivery for Universal Health Coverage of the Ministry of Health Sri Lanka, and, the literature on shared care, the principal investigator developed possible interventions to overcome the gaps in implementing shared care in the study setting.

A multi-stakeholder committee conducted several discussions to select feasible interventions. Prioritization of the interventions was done by using the nominal group technique and a priority matrix was developed. Six interventions were selected to develop a 'Shared Care Model' for implementation.

➢ Selected interventions

1. Developing a patient referral and back referral system for patients in the cardiology clinic of NHK
2. Developing Information Communication Material (IEC) to introduce shared care for patients
3. Conducting awareness programs to health staff on the shared care concept
4. Conducting training for Medical Officers in PMCIs to manage cardiac disease patients with other NCDs
5. Introducing a telephone line to provide clinical support to PMCIs from the cardiology unit NHK
6. Arranging distribution of drugs to manage cardiac disease patients to PMCIs from RMSD Kandy

➢ Approval for interventions

Administrative approval from the director of NHK and RDHS Kandy was obtained to put the intervention package "**We Share Your Care**" into action. Agreement from all other stakeholders, including Senior Consultant Cardiologist NHK and other clinical professionals, was gained.

Proposed Activities

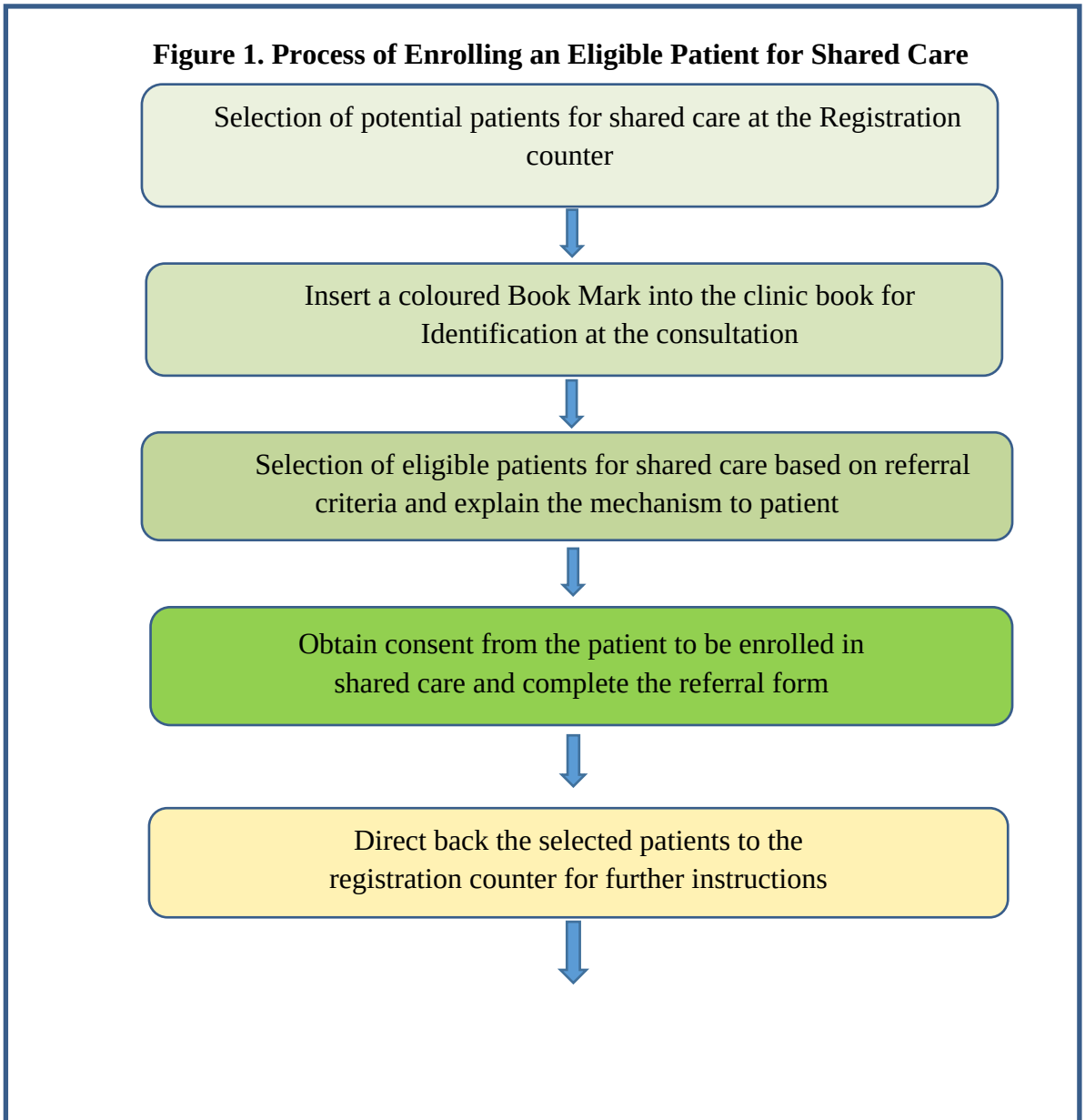
1. Developing a referral and back referral system for patients in the cardiology clinic of NHK

At present, there is no standard referral mechanism for patients with NCDs followed up at the cardiology unit NHK. A conventional method of writing a referral letter in the clinic book is practiced when referring patients with stable disease conditions to peripheral hospitals for follow-up. Thus, deficiencies in patient information sharing are inevitable leading to worsening disease conditions due to incomprehensive care. This again leads to high back-referral rates from peripheral hospitals or loss of follow-up.

A comprehensive document for referral and back-referral systems that explains the inclusion and exclusion criteria of patients with cardiac diseases and other NCDs will be developed with stakeholder concurrence. The final approved document will be made available in the cardiology clinic consultation rooms and PMCI clinics for reference. A set of referral and back-referral forms will be developed with the guidance of consultant cardiologists and senior registrars and kept available at relevant clinics.

The process of enrolling an eligible patient for shared care in the cardiology clinic of NHK is shown in a flow chart (Figure 1). Responsibility for each step is assigned and given in figure 2.

Figure 1. Process of Enrolling an Eligible Patient for Shared Care



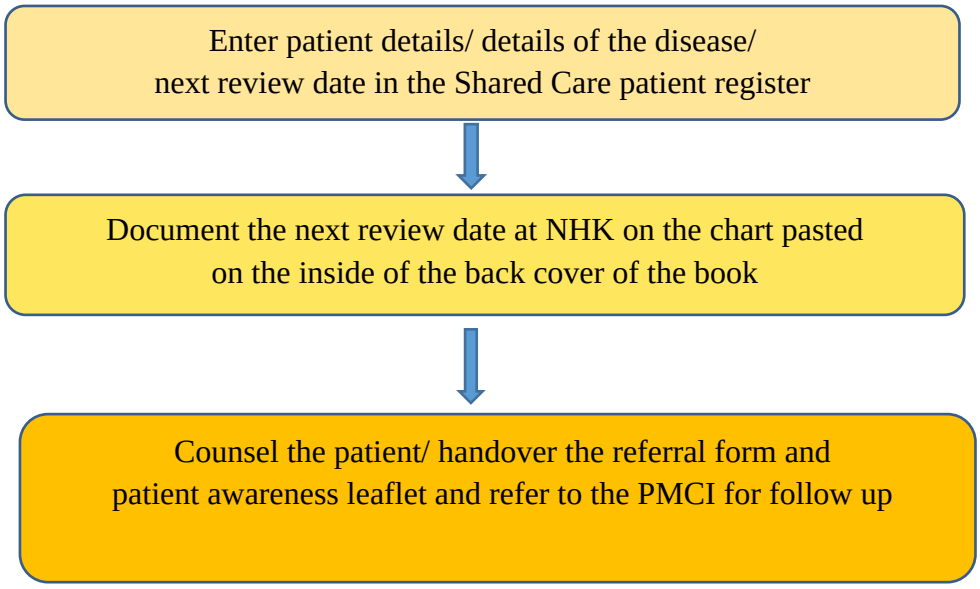


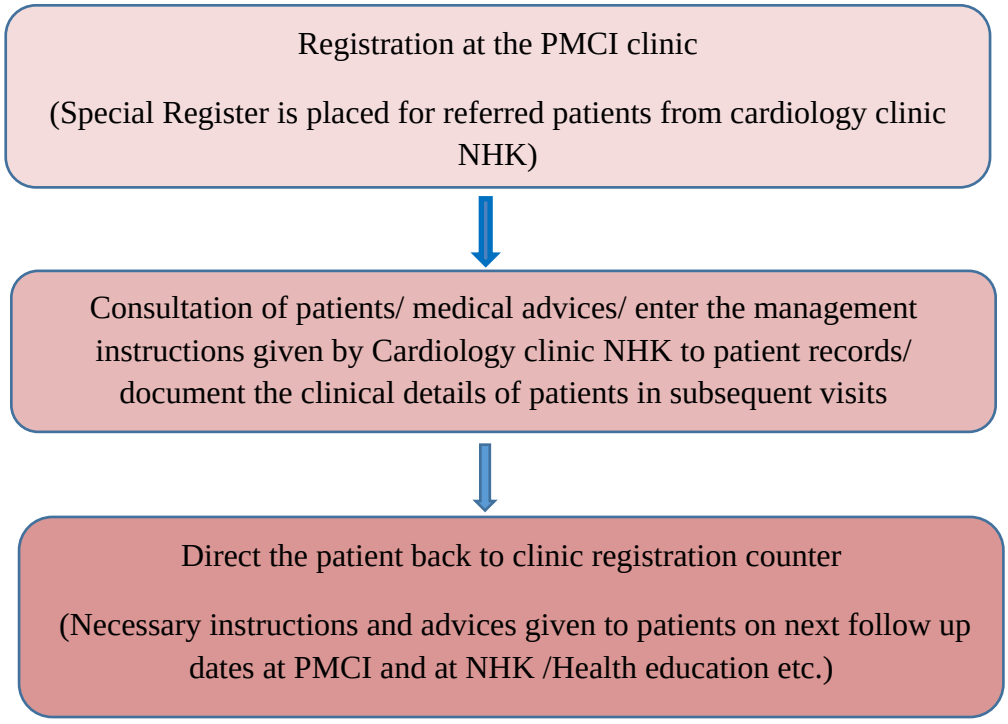
Figure 2. Responsible Health Staff for Each Step of the Process

	Step	Responsibility
1	Selection of potential patients at the Registration counter	Nursing Officer/ Healthcare Assistant (at the registration counter)
2	Insert a colored Book Mark into the clinic book for identification at the consultation	Nursing Officer/ Healthcare Assistant (at the registration counter)
3	Selection of eligible patients for shared care based on referral criteria and explain the mechanism to patient	Medical Officer
4	Obtain consent from the patient to be enrolled in shared care and complete the referral form	Medical officer
5	Direct back the selected patient to the registration counter for further instructions	Medical Officer
6	Enter patient details/ details of the disease/ next review date in the Shared care patient register	Nursing officer at the registration counter

7	Document the next review date at NHK on the chart pasted on the inside of the back cover of the book	Nursing Officer/ Healthcare Assistant (at the registration counter)
8	Counseling and handover of the referral form and patient awareness leaflet instruct the patient to be followed up in a selected PMCI till the next visit day at the NHK cardiology clinic	Nursing officer at the registration counter

The process of follow-up of a referred patient in a PMCI is given in the flow chart (Figure 3)

Figure 3. Process of follow-up of a referred patient from cardiology clinic NHK to a PMCI



Responsibility for each step is assigned and given in figure 4.

Figure 4. Responsible health staff for each step of the follow-up process

	Step	Responsibility
1	Registration at the PMCI clinic	Nursing Officer (at the registration counter)
2	Consultation of patients / medical advice and documentation of clinical details of patients	Medical Officer
3	Instructions and advice on next follow-up dates, health education	Nursing Officer (at the registration counter)

2. Developing Information Communication Material (IEC) to introduce shared care for patients

Banners with the necessary information about shared care will be displayed at the clinic premises of the cardiology clinic, NHK. A leaflet with a simple explanation of the shared care concept, the objectives, and, facts to be known by patients who will be enrolled in the shared care project will be designed and made available. This leaflet will be given to all patients with cardiac diseases enrolled in shared care by the nursing officer at the reception counter after a quick counseling session.

3. Conducting awareness programs to health staff on the shared care concept

Multiple awareness sessions for health staff of the cardiology clinic NHK and selected PMCIs to familiarize the concept of shared care and the model designed to be implemented will be conducted physically and virtually by PI at each setting.

4. Conducting training for Medical Officers in PMCIs to manage cardiac disease patients with other NCDs

Updated knowledge in managing cardiac diseases and other NCDs is essential for effective patient care. Training of medical officers in PMCIs will be conducted in physical and virtual formats by the consultant cardiologists and senior registrars in

the cardiology unit of NHK. Training material will be developed and distributed among participants. In addition, the presentations, fact sheets, and other literature on managing cardiac diseases developed by recognized local and international academic bodies will be shared by a senior registrar in cardiology under the supervision of a consultant cardiologist in the “Shared Care WhatsApp group”.

5. Introducing a telephone line to provide clinical support to PMCIs from the cardiology unit NHK

Managing patients with cardiac diseases in PMCIs will be challenging and requires support and guidance from the specialists in the cardiology unit, NHK. Discussions will be made with relevant stakeholders to secure an official communication channel by introducing a telephone number for doctors in PMCIs to contact the cardiology unit at times of need. A guideline will be developed for the effective use of this helpline. (attach the guideline)

6. Arranging distribution of drugs to manage cardiac disease patients to PMCIs from RMSD Kandy

Discussions will be made with relevant stakeholders to arrange the distribution of drugs essential in managing patients with cardiac diseases at PMCIs. Approval from the RDHS Kandy will be obtained.

<u>The following documents developed are attached</u>

- A detailed proposed plan of action with expected dates of completion of each sub-activity (Figure 5).
- Selection criteria of patients in cardiology clinic NHK for shared care (Referral /Back referral criteria (Annexure VII)
- IEC materials (Annexure XI)

Figure 5. Plan of Action of Intervention Package

Activity	Sub activity	Plan start date	Plan end date	Responsibility
1. Designing and implementing a referral/back referral pathway to manage NCD patients treated at the Cardiology clinic NHK in NHKCH	1.1. Discussions with stakeholders	05/07/2022	15/07/2022	PI
	1.2. Drafting of the referral & back referral pathway	15/07/2022	20/07/2022	PI/Senior MO cardiology
	1.3. Presenting the drafted referral & back referral pathway to stakeholders	22/07/2022	22/07/2022	PI Stakeholders
	1.4. Preparing the final draft of the referral & back referral pathway	25/07/2022	30/07/2022	Consultant Cardiologist NHK
	1.5. Obtaining consensus and approval from the relevant stakeholders to implement the designed patient referral and back referral pathway	31/07/2022	31/07/2022	Consultant Cardiologist Director NHK RDHS Kandy PI
	1.6. Printing and, distribution of the approved referral and back referral pathway to health institutions in the study setting	10/08/2022	15/08/2022	PI
2. Develop/ Print and Disseminate IEC material to patients on shared care	2. 1. Designing the IEC material (Information leaflet, Banner)	15/07/2022	25/07/2022	PI
	2.2. Obtain approval from relevant stakeholders	25/07/2022	25/07/2022	Consultant Cardiologist PI
	2.3. Printing IEC material	10/08/2022	25/08/2022	PI

	2.4. Disseminating leaflets among patients enrolled in shared care/ display of the banner on clinic premises	05/09/2022	Continuously (for patients enrolled in shared care)	PI In-charge Nursing Sister Cardiology Clinic NHK
3. Awareness programs for health staff on the shared care concept	3.1. Preparing the PowerPoint Presentation on shared care	02/07/2022	04/07/2022	PI
	3.2. Conducting presentations at cardiology clinic NHK, RDHS office Kandy and, five selected PMCIs	04/07/2022	15/08/2022	PI
4. Training of Medical officers at PMCIs on clinical management of cardiac patients	4.1. Developing training material	15/08/2022	30/08/2022	Consultant Cardiologist/ Senior Registrars in Cardiology NHK
	4.2. Arranging trainers, reservation of the training venue at NHK, and logistics	30/08/2022	15/09/2022	PI
	4.3. Conducting training Training 1 – Physical Training 2 – Virtual	15/09/2022 29/09/2022 02/10/2022	02/10/2022 29/09/2022 02/10/2022	Consultant Cardiologists Senior Registrars in Cardiology NHK
5. Developing a mechanism to distribute drugs to PMCIs from RMSD Kandy to manage cardiac patients	5.1. Conducting discussions and developing a mechanism to distribute necessary drugs (Director MSD, RDHS Kandy, Regional Pharmacist RMSD Kandy	01/08/2022	20/08/2022	PI
	5.2. Documenting the mechanism to distribute drugs	21/08/2022		PI/Regional Pharmacist Kandy

	5.3. Obtaining approval to implement the developed mechanism from RDHS Kandy	21/08/2022	31/08/2022	PI
6. Establishing a communication channel to provide clinical support to PMCIS from the cardiology unit NHK	6.1. Conducting discussions with relevant stakeholders to develop a helpline for medical officers in selected five PMCIs	05/07/2022	15/07/2022	PI
	6.2. Develop a guideline to use the helpline	15/07/2022	31/07/2022	Consultant Cardiologists/ Senior Registrars/ Senior Medical Officer Cardiology clinic NHK PI
	6.3. obtaining approval to implement the helpline	31/07/2022	07/08/2022	Consultant Cardiologist

Then to assess the success of the interventions a logical framework was developed with indicators and targets for each result area. During the post-intervention phase, the logical framework was completed by the evaluation team and the completed Logical framework is presented in Figure 2.7.

Figure 2.7 Completed Matrix of Logical Framework

Result		Indicator	Baseline	Target	Means of verification	Achievement
Outcome 1	Increased utilization of PMCIs	Number of patients with cardiac diseases treated at PMCI clinics	0	150 patients in the first quarter	Observation Checklist Monitoring framework	129 New patients in the first quarter 86%
Outcome 2	Patients satisfied with management at PMCIs	% of patients satisfied with management at PMCI	Not applicable	80%	Questionnaire on patient experience	72.9%

Outcome 3	Effective management of patients with stable cardiac disease conditions in selected PMCIs	1. Number of patients returned /back referred to cardiology clinic NHK	Not applicable	0	Observation Checklist	3 (2.3%) Only 3 patients returned
		2. Number of patients lost to follow up	Not applicable	0	Observation Checklist	3 (2.3%) Only 3 patients
Output 1	A functional patient referral/ back referral pathway in place	Number of patients referred to PMCIs for follow up	Not applicable	All stable from the covered area	Observation Checklist	129
Output 2	All Medical officers conducting clinics of selected PMCIs have updated knowledge on managing patients with cardiac diseases and other NCDs	% Medical officers conducting clinics of selected PMCIs receiving updated knowledge on managing patients with cardiac diseases and other NCDs	None	100%	Observation Checklist	100% Trained
Output 3	Availability of all necessary drugs to manage cardiac patients with or without NCDs at selected PMCIs	Availability of all necessary drugs to manage cardiac patients with or without NCDs at selected PMCIs	Not available	100%	KII Observation Checklist	Partially completed
Process 1	Designing a patient referral/back referral pathway	Documented referral/ back referral pathway available	Not available	Available	Observation Checklist Monitoring framework	100%
Process 2	Develop/ Print and Disseminate IEC material to patients on shared care	IEC material on shared care is available	Not applicable	Available	Observation Checklist	100%
Process 3	Awareness programs for health staff on the shared care concept	Number of awareness programs conducted for health staff	Not applicable	Eight programs	Observation Checklist Monitoring framework	100%

Process 4	Training of Medical officers at PMCIs on clinical management of cardiac patients	Number of training programs conducted for medical officers	Not available	Two programs	Observation Checklist Monitoring framework	100%
Process 5	Developing a mechanism to distribute drugs to PMCIs from RMSD to manage cardiac patients	Established process to distribute drugs to PMCIs	Not available	Available	KII (with Chief Pharmacist) Observation Checklist	0
Input	Establishing Shared Care Model	Availability of a documented shared care model to manage cardiology clinic patients of NHK at selected PMCIs	Not available	Available and implemented	Observation Checklist	100%

1. Process 1: Designing a patient referral/back referral pathway

A referral/back referral pathway was designed and documented with the technical support of the Cardiology team (Annexure VII)

2. Process 2: Develop/ Print and Disseminate IEC material to patients on shared care

IEC materials were developed with the assistance of a Post Graduate Trainee attached to the Health Promotion Bureau/printed in both Sinhala and Tamil languages and disseminated among patients enrolled in shared care. A unique logo was created to catch the attraction of the reader. (Annexure XI)

3. Process 3: Awareness programs for health staff on the shared care concept

Eight awareness programs were conducted (NHK-2, RDHS Kandy-1, PMCIs -5) with the support of medical administrators, Director NHK, and RDHS Kandy.

4. Process 4: Training of medical officers at PMCIs on clinical management of cardiac patients

Two training programs (One at the NHK physical and another one Online) were conducted by the cardiology team NHK for medical officers in five PMCIs.

5. Process 5: Developing a mechanism to distribute drugs to PMCIs from RMSD to manage cardiac patients

Only partially completed by preparing a list of essential drugs, requesting DDG MSD to facilitate the provision of drugs to manage cardiac diseases to the cluster hospitals. and directing RMSD Kandy to prioritize the distribution of drugs to selected 5 PMCIs through RDHS Kandy. This activity could not be achieved completely due to the shortage of drugs and policy issues in drug distribution. (Annexure XVII)

6. Output 1: A functional patient referral/ back referral pathway in place

A functional patient referral/ back referral pathway document was in place at the cardiology clinic NHK and in PMCIs. 129 patients were referred to PMCIs by using the referral/back referral pathway.

7. Output 2: All Medical officers conducting clinics of selected PMCIs have updated knowledge on managing patients with cardiac diseases and other NCDs

20 medical officers of the 5 PMCIs managing clinic patients were trained and updated on managing cardiac diseases and other NCDs in a primary care setting. The results of the post-intervention survey (Based on the responses of 59 patients enrolled in shared care who were reviewed after 3 months at the cardiology clinic NHK) on patient

experience showed 76.3% (N=45) with a Mean and SD (3.80±0.55) of patients were satisfied with the competency of the medical officers in PMCIs in treating their disease conditions (Table 2.27)

Table 2.27. Dimensions of the Patients' Experience of Shared Care

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Dimension	No	%	No	%	No	%	No	%	No	%	Mean Score	SD
1	Sufficient information on the shared care project was given to me by the staff of the cardiology clinic NHK	0	0.0%	5	8.5%	13	22.0%	35	59.3%	6	10.2%	**3.71**	**0.77**
2	My care plan was explained to me by the referring medical officer at the cardiology clinic NHK	0	0.0%	3	5.1%	13	22.0%	40	67.8%	3	5.1%	**3.73**	**0.64**
3	I was accepted by the local hospital clinic staff with kindness and respect	0	0.0%	2	3.4%	7	11.9%	43	72.9%	7	11.9%	**3.93**	**0.61**
4	I have been treated competently by the medical officers in the local hospital clinic	0	0.0%	1	1.7%	13	22.0%	42	71.2%	3	5.1%	**3.80**	**0.55**
5	The medical officer in the local hospital engaged me in making management decisions	0	0.0%	12	20.3%	29	49.2%	18	30.5%	0	0.0%	**3.10**	**0.75**

6	I had to stay only a short time in the local hospital to obtain services from the time of leaving my residence to collection of medicine from the hospital pharmacy in a clinic day	0	0.0%	9	15.3%	16	27.1%	34	57.6%	0	0.0%	**3.42**	**0.74**
7	I was given all prescribed medicines for my illness at the local hospital pharmacy	0	0.0%	29	49.2%	10	16.9%	20	33.9%	0	0.0%	**2.85**	**0.91**
8	I was able to get done the basic laboratory tests from the local hospital laboratory	0	0.0%	4	13.8%	4	13.8%	21	72.4%	0	0.0%	**3.59**	**0.73**
9	At the local hospital clinic, I had the opportunity to update my knowledge of lifestyle modification	0	0.0%	7	11.9%	14	23.7%	38	64.4%	0	0.0%	**3.53**	**0.70**
10	Sufficient basic facilities were provided by the local hospital. (spacious waiting area at clinic, adequate seating facilities, drinking water, and satisfactory washroom facilities)	0	0.0%	7	11.9%	9	15.3%	39	66.1%	4	6.8%	**3.68**	**0.78**
11	Overall, I am satisfied to be enrolled in shared care for managing my disease condition and will continue to follow up	0	0.0%	2	3.4%	14	23.7%	38	64.4%	5	8.5%	**3.78**	**0.65**

8. Output 3: Availability of all necessary drugs to manage cardiac patients with or without NCDs at selected PMCIs

A request was made to the DDG Medical Supplies Division (MSD) of the Ministry of Health through DDG/NCD to ensure an adequate and continuous supply of necessary medicines to RMSD Kandy and also from RMSD Kandy on prioritizing supply to selected PMCIs. However, was unable to establish a proper mechanism. (Annexure XVII and XX)

9. Outcome 1: Increased utilization of PMCIs

It was a target to enroll 150 eligible patients (figure 2.7) for shared care during the first quarter and, 129 patients of the cardiology clinic NHK were referred to PMCIs and followed up in shared care under the project during the first quarter (05/09/2022 – 02/12/2022) which is an 86% success in enrollment. Table 2.33 shows the distribution of the referred patients to be managed in the NHK cluster.

Table 2.28. Distribution of Patients referred to PMCIs in shared care

Distribution by	Category	Frequency	%
Gender	Male	89	69.0
	Female	40	31.0
Age	=< 40y	01	0.8
	41 - 50y	04	3.1
	51 - 60y	22	17.0
	61 - 70y	55	42.6
	> 70y	47	36.5
PMCI	DH Katugastota	50	38.8
	DH Wattegama	16	12.4

	DH Manikhinna	20	15.5
	DH Thiththapajjala	23	17.8
	DH Galagedara	20	15.5
Diagnosis	IHD with Myocardial Infarction (MI)	94	72.9
	Ischemic Heart Disease (IHD) only	31	24.0
	Cardiac Arrhythmias	03	2.3
	Cardiomyopathy	01	0.8
	Total	**129**	**100.0**
Comorbidities **(N=87)** (Other chronic NCDs)	Hypertension (HT)	66	51.1
	Dyslipidemia (DL)	38	29.5
	Diabetes Mellitus (DM)	36	27.9
	Chronic Respiratory Disease (CRD)	8	6.2
	Chronic Kidney Disease (CKD)	4	3.1
	DM, HT, and DL	17	13.2
	DM with HT	11	8.5
	HT with DL	11	8.5
	DM with DL	3	2.3
Special Procedures Undergone **(N=16)**	Percutaneous Coronary Intervention (PCI)	10	7.7
	Coronary Artery Bypass Graft (CABG)	6	4.7
	Total	**16**	**12.4**

According to table (2.28), 129 patients with 89 males (61.0%) and 40 females (31.0%) were enrolled in shared care. The majority (N=55; 42.6%) of patients were in the age group 61-70 years, and, overall, 102 (79%) patients were more than 60 years of age. Most (N=50; 38.7%) patients were referred to DH Katugastota and the lowest (N=16, 12.4%) to DH Wattegama. A majority (N=94, 72.9%) of patients were diagnosed with IHD with MI. There were 31 (24.0%) patients with IHD without MI. Out of 129 referred patients 87 (67.4%) had at least one of the other comorbidities (chronic NCDs). Hypertension (N=66, 51.1%) was the most common chronic NCD followed up by Dyslipidaemia (N=38, 29.5%) and Diabetes mellitus (N=36, 27.9%) respectively. There were 17 (13.2%) patients with HT, DM, and DL. It was found that only 16 (12.4%) had undergone special cardiac procedures and of them, 10 (7.7%) have undergone PCI, and 6 (4.7%) with CABG.

10. Outcome 2: Patients satisfied with management at PMCIs

Table 2.27 shows that 72.9% (N=43) of referred patients were satisfied with the overall performance of the PMCIs in managing their disease conditions. (refer results of statement 11(Mean 3.78±0.65).

11. Outcome 3: Effective management of patients with stable cardiac disease conditions in selected PMCIs

Table 2.28 shows that, of the total referred patients (N=129), 123 (95.4%) were registered in PMCIs and continued to follow up. Out of them (N=123), 84 (68.3%) were males, and 39 (31.7%) were females. It was found that only 6 (4.3%) of total referred patients (N=129) defaulted shared care and of them, 3 (2.3%) returned to the cardiology clinic NHK by themselves, to be followed up as earlier, and, the other 3 (2.3%) were lost to follow up (Table 2.29)

Table 2.29. Distribution of Referred Patients Continued to follow up in PMCIs and Defaulted Shared Care

	Feature		No	%
1	Number of referred patients got registered in PMCIs (N=129)		123	95.4
2	Gender distribution of registered patients in PMCIs continued to follow up (**N=123**)	Male	84	68.3
		Female	39	31.7
		Total	123	100.0
3	The number of patients defaulted to shared care (N=129)		06	4.6
4	Out of defaulted patients, the number returned to the cardiology clinic NHK to continue management (N=129)		03	2.3
5	Number of patients lost to follow-up (N=129)		03	2.3

CHAPTER THREE

EVALUATION

3.1. Project Findings

3.1. 1. Evaluation Findings of the Project

A mid-term evaluation of the Shared Care Project (We Share-Your Care) was conducted by the project evaluation team in late December 2022. The relevance,

Effectiveness, Coherence, and, Sustainability of the project were assessed by using the key evaluation questions and the indicators developed for each area that is presented in the evaluation framework (Ref. Page 55 of Chapter 1). The evaluation team collected necessary information by conducting a desk review, KIIs, and FGDs from relevant stakeholders. Also, data obtained from post-intervention assessment was used in the evaluation. The results of the evaluation are presented below.

1. Relevance

The evaluation team studied the relevant existing health policies and guidelines that include the National Health Strategic Master Plan 2016–2025, the Policy on healthcare delivery for Universal Health Coverage, the National Policy and Strategic Framework for Prevention and Control of Chronic NCDs, and, several guidelines developed by WHO on managing NCDs. Further, they conducted KIIs and FGDs with the relevant stakeholders. After analysis, the evaluators concluded that the project was relevant and it was in line with the existing health policies of the country and confirmed that the project was more aligned with the objectives of the Policy on healthcare delivery for Universal Health Coverage, which focuses on reorienting primary healthcare. Moreover, the evaluation team affirmed that the project has managed to achieve equity which is a main pillar of Universal Health Coverage (UHC)

2. Coherence

Since 2018, the government of Sri Lanka has embarked on a project to strengthen the primary health systems (PSSP) of the country. The PSSP focuses on reorienting the primary health system by introducing a shared care cluster system to provide patient-centered care. In addition, the National Program for Control of NCDs of the Ministry of Health also conducts multiple programs to combat the rising burden of NCDs. The

evaluation team studied these projects and programs and compared the interventions of the “We Share-Your Care” project with them. They confirmed that this project proved the concept of shared care in managing patients with NCDs and concluded that it coheres with the existing ongoing similar project.

3. Effectiveness

3.1. Key Evaluation Question 1: How effective was the management of stable cardiac patients in PMCI?

The evaluators' studied the completed observation checklists and confirmed that the effectiveness of the project in managing patients with stable cardiac diseases of the cardiology clinic NHK in shared care was satisfactory as 95.4% of the referred patients who have registered in PMCIs and continued follow-up. They also found that only 3 (2.3%) patients referred were lost to follow up and another 3 (2.3%) returned to the cardiology clinic NHK (due to traveling difficulties to the local hospital) by themselves to continue to be followed up as earlier.

3.2. Key Evaluation Question 2: How Satisfied were the patients referred from NHK with the services provided at PMCIs?

The effectiveness of the project was also justified by the evaluators after analyzing the results of a patient experience survey conducted on the 59 patients enrolled in shared care who were reviewed after 3 months at the cardiology clinic NHK. They revealed that all dimensions used to assess the patient experience of shared care were with positive feedback, except the dimension of the provision of all necessary drugs by PMCIs. Further, the evaluators identified the overall satisfaction of the patients who continued in shared care was 72.9%. (N=43).

4. Efficiency

Due to time and resource constraints, the efficiency of the project was not assessed.

5. Sustainability

5.1. Key Evaluation Question 1: Can referral/back referral pathways be sustained?

After conducting KIIs with relevant stakeholders, the evaluators found that all referrals were done by the medical officer of the cardiology clinic NHK based on the criteria of the developed referral and back referral pathway (Annexure VII) and by using the referral formats designed for this project.

However, after careful analysis, the evaluation team concluded that a conventional paper-based referral and back referral system have a higher possibility to fail due to the inconsistency in filling forms by care providers leading to gaps in sharing patient information and difficulties in monitoring disease progression. Thus, the trust of the enrolled patients in the shared care model may get breached. Further, they described that when focal points and existing medical officers had to leave the settings due to transfer, retirement, or resignation the sustainability of the project may get affected if the newcomers don’t perform satisfactorily.

5.2. Key Evaluation Question 2: Can continuous supply of IEC material and printed forms adequately to the cardiology clinic NHK to refer patients be sustained?

It was revealed that the IEC material and other printed materials of the project (Registers, Labels, Consent forms, etc.) were supplied to the cardiology clinic NHK and PMCIs in adequate quantities throughout the project period. The evaluators concluded that since the IEC materials used in the project are limited and low-cost, continuous provision could be possible through hospital supplies. Further, they concluded that maintaining the WhatsApp group used to obtain consultants' and senior

registrars' opinions on managing patients at PMCIs is a good initiative to maintain coverage of specialists in the project long-term.

3.2. Discussion

Maintaining limited health resources effectively to provide an equitable health service to citizens is a challenge for health administrators. Discrepancies in the utilization of different levels of healthcare institutions have been identified and studied by many countries including Sri Lanka. Most clinics at tertiary care health institutions in the country are overcrowded due to patients with chronic NCDs. According to a consultant in NHK(Senior Consultant Cardiologist, personal communication, June 15, 2021), a sizable portion with stable disease conditions could easily be referred to a lower-level health setting for follow-up. This study was conducted to address overcrowding in the cardiology clinic NHK through the utilization of primary care institutions.

The study comprised 3 phases; Pre-intervention, Intervention, and post-intervention. Based on the results of the pre-intervention phase, a shared care model was developed and implemented to manage patients with stable cardiac disease conditions of the cardiology clinic NHK in a shared care cluster.

Pre-Intervention Phase

It was found that many factors contribute to the overcrowding of the cardiology clinic NHK. They were patient factors, institutional factors, and factors related to the system. Further, patient and staff expectations on implementing shared care for cardiac patients have also been revealed. They are discussed below.

On average a patient travels 10.27 km from the place of living which takes an average time of 50.11 minutes to reach the cardiology clinic. Despite the short travel distance

and less time needed, most patients attend the clinic early morning even if they were given time appointments for consultation. The reason may be the majority (N=292, 90.7%) are using the bus as the transport mode to visit the clinic where most buses leave early morning from village areas to Kandy city. The limitation of transport frequencies of buses due to the current fuel crisis in the country may also have contributed to the early attendance of patients. Further, the income of the majority (N=217, 67.4%) was equal to or less than Rs. 25,000.00, which is a very low amount to bear the present-day expenses. Therefore, it can be assumed that patients are having less spending capacity for an alternative transport method if they missed the early morning bus service. It could be assumed that all these reasons contribute to the overcrowding of cardiology clinics. This observation was supported by another study conducted in Iran(Bahadori et al., 2017).

The cardiology clinic patients were satisfied with the services they get from the clinic, pharmacy, and laboratory of NHK. This was proven by the results of the patient experience survey where the majority of patients had a positive experience with the services provided at all three locations. In addition, results showed that among the patients (N=199) who used both NHK and private pharmacies to obtain drugs, only 3.5% (N=7) mentioned the reason as “delay in dispensing at NHK Pharmacy”. Similarly, of the patients who obtained services from both NHK and private laboratories (N=135), only 2.3% (N=3) have mentioned the “report quality of private laboratories are better”. It can be disclosed that, with the high service quality of NHK, and the cardiology unit being the center of excellence in cardiac care in the Central Province, patients are getting attracted to obtain treatment and continue their follow-ups at the cardiology clinic NHK. However, most patients had low experience with the space and seating facilities provided in the patient waiting areas. This could have been due to

the congestion of clinics in the morning when a large number of patients attend clinics seeking care at the same time. Matching the services provided at NHK at PMCI was a major challenge that was overcome with careful planning and continuous monitoring.

It was found that 47.8% (N=154) of the cardiac patients were having at least one other chronic NCD. The most common was Hypertension (N=114, 35%) followed by Dyslipidemia (N=97, 30.1%) and, Diabetes Mellitus (N=95, 30%). The majority of these patients (N= 146, 94.8%) obtained medicine for these conditions from the same cardiology clinic. This is a convenient arrangement for patients. This may have caused, their preference to continue to follow up in the cardiology clinic for a long time (The median follow-up duration was 60 months). In addition, most of the patients were referred (N=245, 76.1%) to the cardiology clinic from a ward in NHK most probably after an acute coronary event. In such instances, most patients prefer to be continued in the specialized cardiology clinic for a longer time. Thus, it can be assumed that these factors also may contribute to overcrowding.

There was a significant shortage of medical officers in the cardiology unit with only 26 Medical Officers working against an approved cadre of 34. Around 500 patients visit the clinic each day. Only 3 to 4 medical officers attend for patient consultation and patients are physically consulted by the medical officers every two months only. At present stable patients are only referred to institutes where a cardiologist or a general physician is available and not to any PMCIs. There was no established referral mechanism to refer stable patients to the PMCI level at present. With the higher patient turnover medical officers spent very limited time with a patient and they expressed they hardly do a physical examination. Also, the study revealed that they were unable to provide comprehensive care to patients. Nurses also expressed they work under stress and at times their patient responsiveness has been less. With all these facts, it could be

assumed that most of the patients may not be getting comprehensive care at the cardiology clinic NHK due to a shortage of medical officers and overcrowding.

The survey results of the five selected PMCIs showed that there was no significant shortage of staff at present in these institutes compared to the approved cadre. It was observed that physical and digital infrastructure improvements were ongoing in all PMCIs under the PSSP and another WHO-funded project at the time of the study. These improvements could be of value to ensure the service quality of PMCIs and to increase their utilization. All five PMCIs were located in an easily accessible place except for DH Wattegama where patients have to travel off-route from the main road. This adds an additional traveling cost to patients. Some of the cardiac-specific drugs were not available at PCI though all had essential drugs to manage NCDs. The non-availability of specific drugs is due to the drug distribution policy of MSD at different health institution levels. Except for DH Thiththapajjala, the others had laboratories with the capacity to perform basic investigations such as Blood sugar levels and total cholesterol. The requirement of training medical officers to update their knowledge of managing NCDs was identified as an essential need. These negative findings could be of challenge in increasing the utilization of these PMCIs.

Staff revealed that patients believe and trust the services of NHK and it is difficult to convince them on referring to a lower-level hospital even if their disease conditions are clinically stable which again would have contributed to the overcrowding of clinics. However, during the study, 81.2% (N=261) of patients expressed their willingness to be enrolled in shared care and continue to get followed up at the nearest local hospital if a suitable mechanism was developed to provide satisfactory care at the primary care level. Also, most clinic patients (N=224, 69.5%) have been educated up to Ordinary Level(O/L) or above. They also have a good basic knowledge of NCDs. These findings

would be of use to aware the patients of shared care and to get engaged in delivering patient-centered care.

Further, the non-availability of a distant clinical support mechanism to local hospitals from the cardiology unit in managing cardiac patients in local hospital clinics, Lack of a standard system to share patient information among care providers were also determined as key areas to be focused on in developing a model to implement shared care.

Based on the findings, a shared care model was developed comprised of several interventions and implemented to manage patients with stable cardiac diseases in the cardiology clinic NHK in a shared care cluster.

Intervention and Post-Intervention Phase

During the first three months of implementing the shared care model, 129 patients with stable cardiac diseases were able to refer to selected PMCIs. The target was 150 patients and this was 86% achievement. Of 129 patients, 123 (95.4%) registered in PMCIs and continued to follow up. It was found that only 6 (4.6%) referred patients defaulted to managing in shared care and of them, 3 (2.3%) returned to the cardiology clinic NHK to be followed up as earlier. The rest (N=3, 2.3%) were lost to follow-up. They have returned due to transport difficulties to the local hospital. The findings indicate the acceptance of the model by patients and healthcare staff in the study setting. This confirms the findings of other studies conducted on the acceptance of shared care in managing chronic diseases(Smith et al., 2017),(Millard J, 2005).

The high acceptance of the model could be mainly due to the way it was designed and implemented. This was a homegrown model designed to suit the study setting after analyzing the results of the pre-intervention phase that include patient-related factors,

provider-related factors, and available resources. Also, the interventions were selected with the concurrence of the stakeholders. This may be a reason for the high acceptance of the model where adherence to it by stakeholders is ensured. Considerations of these factors in designing shared care models were supported by a study conducted in 1996(Hampson et al., 1996). Further, this finding is compatible with the study conducted by Limet et al. (2014), which explains the need for innovation to design the best-fit model to manage different disease conditions in different settings.

The post-intervention patient experience survey revealed promising results of shared care. Except for the dimension "I was given all prescribed medicines for my illness at the local hospital pharmacy" (Mean=2.85±0.91) all other 10 dimensions have scored a mean of more than 3 indicating that patients had a positive experience. But it was observed that even at NHK all the drugs were not given to patients.

It was found that when patients were enrolling in shared care at the cardiology clinic NHK, the staff had given sufficient information to patients (Mean=3.71±0.77) and the medical officers explained the care plan well to the patients (Mean =3.73±0.64). further, the patients have been accepted by the PMCI clinic staff with respect and kindness (Mean=3.93± 0.61). This outcome could be due to the effectiveness of the staff awareness programs conducted giving all necessary information about the shared care concept and the project. In addition, the details of the referral and back referral pathway document kept at the consultation desk would have been useful to medical officers in developing care plans for patients enrolled in shared care(Institute for Health Care Improvement, 2023).

It was revealed that patients were satisfied with the competency of medical officers in PMCIs in treating their disease condition (Mean=3.8±0.55). In addition, patients were engaged by medical officers in PMCIs during their management decisions (Mean

=3.10±0.75). This indicated that the training conducted by the cardiology team for the medical officers in PMCIs to update their knowledge on NCDs and treating cardiac diseases in a primary care setting has been effective as also the clinical opinions obtained through the WhatsApp group created for the project.

Most patients were happy about the short waiting time at the PMCI clinics in obtaining treatment (Mean=3.42±0.74) at PMCIs. This may have been due to the effectiveness of the clinic patients' appointment system at most PMCIs.

Some of the specific cardiac drugs were unavailable at the PMCI Pharmacies. Thus, the majority of patients referred were unhappy (Mean=2.85±0.91). The existing drug distribution policy of the Ministry of Health does not support making available these special drugs at PMCIs. The initial attempts to provide a possible solution before implementing the project could not be achieved completely due to time constraints and the shortage of drug supplies in the country at the time of the study. However, at the RDHS level attempts were made to give priority to the five PMCIs in the distribution of NCD drugs. It was interesting to see, even with the deficiency of drugs at PMCIs patients adhered to the shared care management. The possible reasons could be, they were in any way purchasing the specific drug from a private pharmacy even at the time of follow-up at the cardiology clinic NHK or it must have been much more cost-effective to buy from outside than returning to be followed up at NHK. However, it is planned to implement a suitable drug distribution mechanism after discussing it with relevant authorities in the near future.

It was observed that many patients were happy with the basic laboratory services provided at PMCIs (Mean=3.59±0.73). The reason could be that most basic tests were available at PMCIs and for most cardiac patients referred the investigations were planned to be done in the NHK laboratory at the time of the first review in three months.

Patients were given health education at the PMCIs by PHNO, Nursing Officers, and, Medical Officers. Most were satisfied with the health education sessions (Mean=3.53±0.70). This reflects that at the PMCI level sufficient health education programs are been conducted for clinic patients. The reason for this achievement may be the involvement of the PHNOs in regular health education activities.

Most patients were happy with the basic facilities provided at the PMCI clinics (Mean=3.68±0.78). The reason could be the facility and digital upgrades done recently by the PSSP project and a WHO-funded project in all five PMCIs.

It was found that overall, most patients enrolled in shared care were satisfied with the management of their disease condition in a shared care cluster. Also, they expressed their willingness to continue to follow up as well (Mean=3.78±0.65). There may be multiple reasons for this observation; patients have developed trust in the intervention as patients were enrolled with consent and were allowed to discontinue shared care on their will for any reason. Also, they were assured that registration at the cardiology clinic NHK will not be canceled by enrolling in shared care. From the patients' point of view, minimal travel distance and cost and shorter duration to complete clinic visits as the PMCIs are closer to their place of residence would have contributed to the positive experience.

In all settings, the clinic in charge nurses took the lead in the implementation and continuation of the project. In addition, the focal points at the cardiology clinic NHK, RDHS office Kandy and MOICs of PMCIs contributed extensively to the success of the project. Regular supervision and monitoring of the project by PI and the teams may also have contributed to the effectiveness of this project. Thus, it can be concluded that team base approach is a successful method of project management.

Evaluation of the Project

It was found that this project is relevant, coherent, effective, and sustainable. This reflects the success of implementing shared care to manage patients with stable cardiac diseases in the cardiology clinic NHK in a shared care cluster. However, continuous supervision, monitoring, and maintaining the supply chain will be vital to the sustainability of the project.

3.3. Conclusions of the Study

Taking into consideration the specific objectives of the intervention project the conclusions are presented below.

1. There were 12,761 patients registered at the cardiology clinic NHK before the intervention and the clinics were conducted on all five weekdays from 8.00 a.m. Around 500 patients attend per clinic. Registration and record keeping were done by a Health Information Management System. All clinics were conducted under the supervision of a consultant cardiologist. In addition, two special

clinics; Senior Registrars' clinic and the Rehabilitation clinic for patients with post-cardiac events conducted twice a week. Patients who need a consultant cardiologist's opinion were referred on the same day and special cardiac tests were arranged when needed. Referrals to other sub-specialties (Endocrinology, Ophthalmology, Respiratory medicine, Nephrology, etc.) were arranged accordingly. Health education and health promotion programmes for patients were conducted regularly. The patients were satisfied with the laboratory and pharmacy services provided by NHK. Also, a majority of cardiology clinic patients were satisfied with most of the services provided at NHK.

The selected five PMCIs provide clinic services for 17,208 patients. Several clinics were conducted per week to manage patients with NCDs. Only at DH Katugastota, clinics were conducted under the supervision of a consultant family physician. The average number of patients per clinic ranged from 120 to 300 and varies depending on the PMCI. Except for DH Thiththapajjala, others had laboratory facilities capable of performing basic tests. However, certain specific drugs to manage cardiac diseases were not available at all PMCIs.

2. To ensure client-centered care through primary care reorganization, a model was designed

3. With the model in place, patients with stable cardiac diseases were shared between the cardiology clinic NHK and five selected PMCIs. The model consisted of several interventions. They were: a referral and back referral pathway for patients with stable cardiac diseases, staff awareness programs of shared care, development and distribution of IEC materials for patient education, training of medical officers in PMCIs on managing NCDs and

cardiac diseases, distant clinical support mechanism for medical officers in PMCIs and a mechanism to supply necessary drugs to manage cardiac patients at PMCIs. The designed model was implemented with the assistance of multiple stakeholders. Supervision and monitoring of the activities were done regularly by PI and monitoring team. All interventions were successfully implemented except for establishing a mechanism to supply necessary drugs to manage cardiac patients at PMCIs, which could only be completed partially.

4. The relevance, coherence, effectiveness, and sustainability of the project were evaluated by an evaluation team. It was concluded that the scope of the study was relevant to the current health policies and cohered with the existing ongoing projects to improve the health system in the country. With the model in place, patients were enrolled in shared care successfully and continued follow-up at PMCIs. The majority of patients were found to be satisfied with managing in a shared care cluster. It is noteworthy that the default percentage of patients was minimal. This justifies the effectiveness of the model. Further, it was concluded that sustainability depends on how well the stakeholders accept and adhere to the model and continuous supply of IEC materials and other printed documents to cluster hospitals. The efficiency of the project was not conducted due to time and resource constraints.

3.4. Recommendations of the Study

Based on the conclusions made, the following are recommended

1. It is recommended to implement a suitable mechanism to provide basic laboratory facilities to patients attending clinics in DH Thiththapajjala. Further,

it is recommended to establish a mechanism to provide cardiac-specific drugs to patients managed in this shared care cluster.

2. It is possible to use this model with suitable adaptations to manage patients with other chronic disease conditions who are followed up in other specialty clinics in NHK. However, it is recommended to test this model by managing cardiac patients for a considerably longer duration before implementing it for other specialties.

3. If the model is to be used to manage patients with stable cardiac diseases in a different setting, it is recommended to conduct a pre-implementation study to identify the specific gaps in existing service delivery and to adapt the model accordingly to suit the setting to improve the effectiveness and sustainability.

4. The evaluation proved the relevance, coherence, effectiveness, and, sustainability of the model in managing patients with stable cardiac diseases. However, it will be a challenge to maintain effectiveness and sustainability unless continuous supervision and monitoring are done. In addition, maintaining the supply chain is essential. Therefore, it is recommended to appoint a suitable focal person to conduct the overall coordination of the project if such a project is replicated. It is also recommended to conduct a costing study to evaluate the efficiency of the project. If the model is proven efficient, recommendations could be forwarded to policymakers to implement the model nationally to manage patients with stable cardiac diseases.

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ANNEXURES

Confidential

Annexure I a

Reference No

A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

(**Interviewer administered questionnaire**)

We are planning to assess the patient experience, knowledge of Non-Communicable diseases, and perception of the continuation of care in a shared care cluster

Please listen to the questions carefully and give the most suitable answer to the best of your knowledge.

Your information will be treated confidentially and will not be shared with any other

Section 1 – Socio-Demographic details

1. Sex

1	Male	
2	Female	

2. What is your age?

(In years to last birthday)

3. What is your marital Status?

1	Unmarried		
2	Married		
3	Other		
	1	Divorced	
	2	Separated	
	3	Widow	

4. What is your highest level of Education?

1	No formal education		
2	Up to primary education only		
3	Up to Grade 8		
3	Up to Ordinary level		
4	Up to Advance Level		
5	University Education		
	1	Undergraduate	
	2	Postgraduate diploma	
	3	Postgraduate degree	
6	Other		

If the answer is 6, specify: ……

5. Details of your employment

5.1. Are you employed at present?

(If "Yes", answer from 5.3)

1	Yes	
2	No	

5.2. Were you employed earlier?

(If "No", answer from 6)

1	Yes	
2	No	

5.3. Where are/were you employed/ed at

1	Government sector	
2	Private sector	
3	Self-employed	

5.4. What is/was your Occupation? …….

6. With whom you are living?

1	Alone	
2	With Spouse only	
3	With Spouse & Children	
4	With Children	
5	With Relatives	
6	Other	

If the answer is 6, specify: ……

7. What is the approximate distance from your present residence to National Hospital Kandy? (Km)

8. How long does it take you to reach NHK from your place of residence?

Hours	
Minutes	

9. What is the closest local hospital (Government) to your present residence?

…….....

10. What is the approximate distance from your present residence to the closest local hospital?

(Km)

11. What is your gross monthly income (Rs)?

1	No personal income	
2	≤ 25,000	
3	26,000 to 50,000	
4	51,000 to 100,000	
5	> 100,000	

12. Details of Clinic visits

12.1. According to your knowledge how long have you been diagnosed as having Heart Disease?

Years	
Months	

12.2. How long have you been attending this clinic?

Years	
Months	

12.3. Have you been diagnosed with any other chronic disease condition in addition to Heart Disease?

Yes	
No	

If the answer to 12.3. is “Yes”, (Interviewer to check the patient’s clinic Book/Notes to confirm)

12.3.1. Please mention the disease condition/s:

…….

12.3.2. Please mention from where you obtained treatment for the above-mentioned disease/s in 12.3.1.

1	From this clinic			
2	From a separate clinic in NHK			
3	From another government hospital Place: …….			
5	From Ayurveda/Traditional practitioner			
4	From private sector	1	GP	
		2	Consultant	

13. Before attending this clinic, did you take medicine for Heart Disease from anywhere else?

Yes	
No	

(If the answer is “No”, answer from question 15)

14. From where **were** you taking medicine for Heart Disease?

1	Closest local hospital (Government) ……..	
2	Family Doctor (GP)	
3	Consultant in the Private Sector	
4	Ayurveda/Traditional practitioner	
5	Any other ……..	

15. Who has referred you to this clinic at NHK?

1	Self-referral		
2	By local hospital (Government)		
2	By Family Doctor (GP)		
3	By a Consultant in the Private Sector		
4	By Ayurveda/Traditional medicine practitioner		
5	By any other unit at NHK		
	1. OPD		
	2. Another Clinic		
	3. From a ward		
6	Any other:		

16. Usually, how frequently do you attend this clinic?

1	Once a month	
2	Once in 2 months	
3	Once in 3 months	
4	Other …….	

17. Generally, with whom you are attending this clinic?

1	Alone	
2	Accompanied by spouse	
3	Accompanied by a child	
4	Accompanied by a relative	
5	Accompanied by a servant	

(If the answer to this question is other than 1, please answer from question 19

18. Even if you are attending this clinic alone, can you manage the clinic day's activities alone?

Yes	
No	

19. Does the person who accompanies you to the clinic have to forgo their income generation activities?

Yes	
No	

20. What is your mode of transport to this Clinic?

1	By Walking	
2	By Bus	
3	By Train	
4	By hired vehicle	
5	By own vehicle	
6	Other	

If the answer is 6, Specify: …….

21. According to your knowledge, approximately how much is to be spent on a day for transport including the accompanying person when attending this clinic?

Rs.

22. From where do you obtain the medicines prescribed in this clinic?

1	Only from the NHK pharmacy	
2	Only from a pharmacy in the private sector	
3	From both	
4	Other	

If the answer is 4, Please mention: …….

23. what is/are the reason/s for you to obtain medicines from other than NHK pharmacy? (You can have more than one answer)

1	For my personal convenience	
2	Due to the non-availability of some drugs at NHK pharmacy	
3	Due to a delay in dispensing at NHK pharmacy	
4	Since the quality of drugs from the private pharmacies is superior	
5	Other	

If the answer is (5); Please mention ……

24. Do you have to attend this clinic with laboratory investigation reports on every visit?

Yes	
No	

25. From where do you perform the laboratory investigations?

1	From NHK laboratory only	
2	From a Private laboratory only	
3	From both	

26. what is/are the reason/s for you to perform laboratory investigations other than from the NHK laboratory? (You can have more than one answer)

1	For my personal convenience	
2	Due to the non-performing of some tests for clinic patients at the NHK laboratory	
3	Long waiting time in the bleeding room	
4	Since the report quality is better at private laboratories	
5	Other	

If the answer is (5); Please mention ……

27. On average how long it takes you to obtain services from NHK from the time of leaving residence to the collection of medicine from the hospital pharmacy in a clinic day?

Hours	
Minutes	

28. Other than from this clinic, do you take treatment for Heart Disease **at present** from any other person/ institute?

Yes	
No	

(If the answer is "No", answer from Section 2)

29. Please mention from whom/where you take medicine for Heart Disease.

1	By local hospital (Government) ……..	
2	By General Practitioner (GP)	
3	By a Consultant in the Private Sector	
4	By Ayurveda/Traditional medicine	
5	Other ……..	

Section 2: Patient Experience of the services of NHK

The patient experience is categorized into four groups.

- **Excellent** = This means, your level of experience is at the highest
- **Good** = Means, your level of experience is high, but not the best

- **Fair** = Means, your level of experience is average
- **Poor** = Means, your level of experience is low

Please rate the statements based on your experience

			Excellent	Good	Fair	Poor
1	What is your experience of the K**indness** of the hospital staff when providing services	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
2	What is your experience of the **Respectfulness** of the hospital staff towards you during service	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
3	In your experience how well, the staff **listens to your views and value them** in delivering services	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
4	Did the staff **talk to you in a way that was easy to understand** when providing related information?	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
5	What is your view of the **Competencies** of the staff when delivering services	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
6	What is your experience on the **timeliness** of delivering services by the staff?	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
7	What is your opinion on the existing **patient appointment system**	Clinic staff				
		Laboratory staff				
		Pharmacy staff				
8	In your opinion how well, the service settings are arranged/Organized for effective delivery of care at	Clinic				
		Laboratory				
		Pharmacy				
9	**What is your experience with facilities provided to create a comfortable and safe environment for patients**					
		Clinic				

9.1		Laboratory				
		Pharmacy				
9.2	Seating facilities provided for patients at	Clinic				
		Laboratory				
		Pharmacy				
9.3	Ventilation facilities provided at	Clinic				
		Laboratory				
		Pharmacy				
9.4	Availability of drinking water at	Clinic				
		Laboratory				
		Pharmacy				
9.5	Availability of satisfactory washroom facilities for patients at	Clinic				
		Laboratory				
		Pharmacy				
9.6	Your experience on the quality of the hospital canteen facility for patients					

Section 3: Assessing the basic knowledge on NCDs

Please answer **Yes** or **No** to the following statements to the best of your knowledge

	Statement	**YES**	**NO**
1	Globally, the incidence of NCDs are increasing at an alarming rate		
2	Tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol are the four most common risk factors for NCDs		
3	Cardiovascular disease is one of the most common NCD in Sri Lanka		
4	Hypertensive patients have a high risk of developing heart attacks		
5	Diabetes is a Communicable Disease		
6	Intake of prescribed medicine regularly is essential to control NCDs		
7	Intake of diets high in salt can lead to hypertension		
8	Adequate physical activity is **not** essential to control NCDs		

Section 4:

Patients' Perception on the continuation of management in a Shared Care Cluster

Shared care can simply be defined as joint participation of primary care physicians and specialist physicians in the planned delivery of care for patients with chronic condition such as Cardiovascular Diseases. In this shared care cluster concept, the patient will be followed up in a Primary Medical Care Institute (Local Hospital) of your convenience with a collectively agreed management plan by a group of healthcare professionals and whenever necessary will be referred to specialist care at NHK.

In this section you are requested to express your views on the improvements you expect in the Local hospitals and existing health system, if you were to be agreed on continuing your management in a shared care cluster

Please express your views (Interviewer has to mark in the relevant box if the patient expresses on the area to be improved)

1.

No	Statement	Expressed	Not expressed
1	Availability of caring staff at your local hospital	1	2
2	Availability of competent staff at your local hospital	1	2
3	Availability of time appointment system for clinic patients at local hospital	1	2

4	Availability of all prescribed medicines for your illness at the local hospital pharmacy	1	2
5	Availability of a mechanism to perform/get down necessary laboratory investigations at local hospital	1	2
6	Availability of methods (Telephone/Telemedicine) to contact the consultants at NHK to obtain special opinion on managing your illness whenever necessary	1	2
7	Availability of a well define referral/back referral system for patients	1	2
8	Engaging patients in making treatment decisions	1	2
9	Availability of facilities for nutrition counseling, physical activity, and health education	1	2
10	Availability of basic facilities such as spacious waiting area at clinic, adequate seating facilities, availability of drinking water and satisfactory washroom facilities for patients at the local hospital	1	2

2. Note down any other requirement patient express

……

……

……

……

3. If the expected requirements are satisfactorily fulfilled at your local hospital, are you happy to continue to follow up at your closest local hospital?

1	YES	
2	NO	

රහසිගතයි

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Annexure I b

ෙමු අංකය

මහනුවර ජාතික රෝහල් පරිශ්‍රය තුළ හෘද රෝගීන්ට ප්‍රතිකාර කිරීමේදී හවුල් සත්කාර ක්‍රියාත්මක කිරීමේ ව්‍යාපෘතිය

(සම්මුඛ පරීක්ෂක විසින් ප්‍රශ්න ඉදිරිපත් කරනු ලැබේ)

අපි, රෝගියාගේ අත්දැකීම්, බෝ නොවන රෝග පිළිබඳ දැනුම සහ " **හවුල් සත්කාර පොකුරක්** " තුළ සත්කාර අඛණ්ඩව පවත්වාගෙන යාම පිළිබඳ ආකල්පය තක්සේරු කිරීමට සැලසුම් කරමු.

කරුණාකර ප්‍රශ්න සාවධානව අසා ඔබගේ දැනුමනේ වඩාත් සුදුසු පිළිතුර ලබා දෙන්න.

ඔබගේ තොරතුරු වල රහස්‍ය භාවය ආරක්ෂා කරනු ලබන අතර වෙනත් පාර්ශවයක් වෙත ලබා දෙනු නොලැබේ.

ප්‍රදේශය	

1 කොටස - සමාජ-ජන විකාශන තොරතුරු

1. ස්ත්‍රී පුරුෂ භාවය

1	පුරුෂ	
2	ස්ත්‍රී	

2. ඔබේ වයස කීයද?

(පසුගිය උපන් දිනයට වයස අවුරුදු)

3. ඔබගේවිවාහක තත්වය කුමක්ද?

1	අවිවාහක		
2	විවාහක		
3	වනෙත්		
	1	දික්කසාද	
	2	වනේව	
	3	වැන්දඹු	

4. ඔබගේඉහළම අධ්යාපන මට්ටම කුමක්ද?

1	විධිමත් අධ්යාපනයක් නැත		
2	ප්රාථමික අධ්යාපනය පමණයි		
3	8 ශ්රේණියදක්වා		
3	සාමාන්ය පළෙ දක්වා		
4	උසස් පළෙ දක්වා		
5	විශ්වවිද්යාල අධ්යාපනය		
	1	මූලික උපාධිය	
	2	පශ්චාත් උපාධි ඩිප්ලෝමාව	
	3	පශ්චාත් උපාධිය	
6	වනෙත්		

පිළිතුර 6 නම්, සඳහන් කරන්න:
……

5. ඔබගේරැකියාවපිළිබඳ විස්තර

5.1. ඔබ දැනට රැකියාවක නියුතුද?

1	ඔව්	
2	නැත	

("ඔව්" නම්, 5.3 සිට පිළිතුරු දනේන)

5.2. ඔබ කලින් රැකියාවක නිරත වූවාද?

1	ඔව්	
2	නැත	

("නැත" නම්, 6 සිට පිළිතුරු දනේන)

5.3. ඔබ රැකියාව කරනුයේ/
කරන ලද්දේ
කිනම් අංශයක ද?

1	රාජ්ය අංශයෙහි	
2	පුද්ගලික අංශයේ	
3	ස්වයං රැකියාවක	

5.4. ඔබගේ රැකියාව කුමක්ද?……

6. ඔබ ජීවත් වන්නේ කවුරුන්
සමඟද?

1	තනියනේ	
2	කාලත්රයා සමඟ පමණි	
3	කාලත්රයා සහ දරුවන් සමඟ	
4	දරුවන් සමඟ	
5	ඥාතීන් සමඟ	
6	වනෙත්	

පිළිතුර 6 නම්, සඳහන් කරන්න: ……

7. ඔබ දැනට පදිංචි ස්ථානයේසිට මහනුවර ජාතික රෝහලට ආසන්න දුර කොපමණද?

(කි. මී)

8. ඔබට පදිංචි ස්ථානයේසිට NHK වතෙ ළඟා වීමට කොපමණ කාලයක් ගතවේද?

පැය	
විනාඩි	

9. ඔබගේ වත්මන් පදිංචියට ආසන්නතම ප්රාදේශීය රෝහල (රජයේ) කුමක්ද?

……

10. ඔබගේ වර්තමාන පදිංචි ස්ථානයේසිට ආසන්නතම ප්රාදේශීය රෝහලට ආසන්න දුර කොපමණද?

(කි. මී)

1	පුද්ගලික ආදායමක් නොමැත	
2	≤ 25,000	

11. ඔබගේදළ මාසික ආදායම කොපමණද? (රුපියල්)

3	26,000 සිට 50,000	
4	51,000 සිට 100,000	
5	> 100,000	

12. සායන පිළිබඳ විස්තර

12.1. ඔබේදැනුමට අනුව, ඔබට හෘද රෝග ඇති බව හඳුනාගනෙ කොපමණ කාලයක් ගත වී ඇත්ද?

අවුරුදු	
මාස	

12.2. ඔබ කොපමණ කාලයක සිට මමෙ හෘද රෝග සායනයට පැමිණෙන්නේද?

අවුරුදු	
මාස	

12.3. හෘද රෝග වලට අමතරව ඔබට වනෙත් නිදන්ගත රෝග තත්ත්වයක් ඇති බව හඳුනාගනෙ තිබේද?

ඔව්	
නැත	

12.3 ට පිළිතුර "ඔව්" නම්, (තහවුරු කිරීම සඳහා රෝගියාගේසායන පරෙත/සටහන් පරීක්ෂා කිරීම)

12.3.1. කරුණාකර රෝගී තත්ත්වයන් සඳහන් කරන්න:

1	දියවැඩියාව	
2	අධිරුධිරපීඩනය	
2	ස්වසන රෝග	
3	පිළිකා	
4	වනෙත්:	

12.3.2. ඉහත සඳහන් රෝග සඳහා ඔබ ප්රතිකාර ලබා ගන්නේ කොතැනින්ද යන්න සඳහන් කරන්න.

1	මමෙ සායනයනේ	
2	මමෙ රෝහලේමවනෙම සායනයකින්	

3	වනෙත් රජයේ රෝහලකින් ස්ථානය:.....			
5	ආයුර්වේද/පාරම්පරික වෛද්‍යවරයකුගෙනේ			
4	පුද්ගලික අංශයනේ	1	සාමාන්‍ය (GP) වෛද්‍යවරයකේගනේ	
		2	විශේෂඥ වෛද්‍යවරයකේගෙන්	

13. මමෙ සායනයට පැමිණීමට පෙර ඔබ හෘද රෝග වලට වනෙත් තැනකින් ප්‍රතිකාර ගත්තේද?

ඔව්	
නැත	

(පිළිතුර "නැත" නම්, 15ප්‍රශ්නයේසිට පිළිතුරු දෙන්න)

14. එලෙස ප්‍රතිකාර ලබා ගත්තේ කාගෙන්ද /කොතනින්ද යන්න සඳහන් කරන්න

1	ආසන්නතම රජයේ ප්‍රාදේශීය රෝහලේන් ……..	
2	සාමාන්‍ය වෛද්‍යවරයකුගෙන් (GP)	
3	පුද්ගලික අංශයේ විශේෂඥවෛද්‍යවරයකුගෙන්	
4	ආයුර්වේද/පාරම්පරික වෛද්‍යවරයකුගෙන්	
5	වනෙත් ……..	

15. මහනුවර ජාතික රෝහලේ මමෙ සායනයට ඔබව යොමු කරන ලද්දේ කවුරුන් විසින්ද?

1	තමන් විසින්ම		
2	ආසන්නතම රජයේ ප්‍රාදේශීය රෝහලේන්		
2	සාමාන්‍ය වෛද්‍යවරයකු විසින්		
3	පුද්ගලික අංශයේ විශේෂඥවෛද්‍යවරයකු විසින්		
4	ආයුර්වේද/පාරම්පරික වෛද්‍යවරයකු විසින්		
5	මමෙ රෝහලේ මවනෙත් අංශයක් මගින්		
	1. බාහිර රෝගී අංශය		
	2. වනෙත් සායනයකින්		

	3. වාට්ටුව කින්		
6	වෙනත්:		

16. සාමාන්‍යයෙන් ඔබ මෙම සායනයට සහභාගී වනුයේ?

1	මසකට වරක්	
2	මාස 2 කට වරක්	
3	මාස 3 කට වරක්	
4	වෙනත්:	

17. සාමාන්‍යයෙන් ඔබ මෙම සායනයට සහභාගී වන්නේ කා සමඟද?

1	තනියම	
2	සහකරු /සහකාරිය සමඟ	
3	දරුවකේ සමඟ	
4	නෑදෑයකේ සමඟ	
5	සේවකයකුසමඟ	

(මෙම ප්‍රශ්නයට පිළිතුර 1 නොවන්නේනම්, කරුණාකර 19 වැනි ප්‍රශ්නයේ පිළිතුරු සපයන්න)

18. ඔබ තනිවම මෙම සායනයට සහභාගී වුවද, ඔබට සායන දිනයේ කටයුතු තනිවම කළ හැකිද?

ඔව්	
නැත	

19. ඔබ සමඟ සායනයට රැගෙනඑන පුද්ගලයාට තම ආදායම් උත්පාදන කටයුතු අත්හැරීමට සිදුවේද?

ඔව්	
නැත	

20. ඔබ මමෙ සායනයට පැමිණෙන ප්‍රවාහන මාධ්‍ය කුමක්ද?

1	ඇවිදීම මගිනි	
2	බස් රථයනේ	
3	දුම්රියනේ	
4	කුලී රථයකින්	
5	තමන්ගේම වාහනයකින්	
6	වෙනත්:	

21. ඔබගේදැනුමට අනුව මමෙ සායනයට පැමිණෙන විට (කැටුව එන පුද්ගලයාටද ඇතුළුව) ප්‍රවාහනය සඳහා දිනකට කොපමණ මුදලක් වැය කළ යුතුද?

රු :

22. මමෙ සායනයේනියම කරන ලද ඖෂධ ඔබ ලබා

ගන්නේකොහෙන්ද?

1	මමෙ රෝහලේම ෆාමසියනේ පමණි	
2	පෞද්ගලික ෆාමසියකින් පමණි	
3	ඉහත අංශ දකෙනේම	
4	වෙනත්:	

පිළිතුර 4 නම්, සඳහන් කරන්න: .....

23. ඔබ මමෙ රෝහලේෆාමසියනේ හැර වෙනත් ස්ථානයකින් ඖෂධ ලබා ගැනීමට හේතු සඳහන් කරන්න? (ඔබට පිළිතුරු එකකට වඩා තිබිය හැක)

1	මගේපුද්ගලික පහසුව සඳහා	
2	සමහර ඖෂධ මමෙ රෝහලේෆාමසියේනොමැතිකම නිසා	
3	ෆාමසියනේ බහෙතේ නිකුත් කිරීම ප්‍රමාද වන නිසා	
4	පෞද්ගලික ෆාමසි වල ඖෂධවල ප්‍රමිතිය උසස් නිසා	
5	වනෙත්	

පිළිතුර (5) නම්, සඳහන් කරන්න .....

24. මමෙ සායනයට පැමිණනෙ සෑම වාරයකදීම රසායනාගාර වාර්තා රැගනෙඅා යුතු වන්නේද?

ඔව්	
නැත	

25. රසායනාගාර පරීක්ෂණ සිදු කරන්නේකොතැනින්ද?

1	මමෙ රෝහලේරසායනාගාරයනේ පමණි	
2	පෞද්ගලික රසායනාගාරයකින් පමණි	
3	ඉහත අංශ දකෙනේම	

26. ඔබ මමෙ රෝහලේරසායනාගාරයනේ හැර පෞද්ගලික රසායනාගාරයකින් පරීක්ෂණ සිදු කිරීමට හේතුමනොවාද? (ඔබට පිළිතුරු එකකට වඩා තිබිය හැක)

1	මගේපුද්ගලික පහසුව සඳහා	
2	සායන රෝගීන් සඳහා සමහර පරීක්ෂණ රසායනාගාරයේ සිදු නොකිරීම හේතුවනේ	
3	පරීක්ෂණ සඳහා රුධිරය ලබාදීමට දිගු වේලාවක්රැදීමටසිදුවීම නිසා	
4	පුද්ගලික රසායනාගාරවල වාර්තාවේගුණාත්මක භාවය වඩා හොඳ නිසා	
5	වනෙත්	

පිළිතුර (5) නම්; කරුණාකර සඳහන් කරන්න……..

27. සාමාන්යයනේ සායන දිනයකදී, පදිංචි ස්ථානයනේ පිටත් වූ මොහොතේසිට රෝහල් ෆාමසියනේ ඖෂධ ලබා ගැනීම දක්වා ඔබට කොපමණ කාලයක් ගතවේද?

පැය	
විනාඩි	

28. මමෙ සායනයනේ හැර, ඔබ දැනට වනෙත් අයකුගනේ/ආයතනයකින් හෘද රෝග සඳහා ප්රතිකාර ගන්නවාද?

ඔව්	
නැත	

(පිළිතුර "නැත" නම්, 2 කොටසේසිට පිළිතුරු දනේන)

29. එලසෙ ප්රතිකාර ලබා ගන්නේකාගනේද /කොතනින්ද යන්න සඳහන් කරන්න.

1	ආසන්නතම රජයේප්රාදේශීය රෝහලේන් ……..	
2	සාමාන්ය වෛද්යවරයකුගනේ (GP)	
3	පුද්ගලික අංශයේවිශේෂඥවෛද්යවරයකුගනේ	
4	ආයුර්වේද/පාරම්පරික වෛද්යවරයකුගනේ	
5	වනෙත් ……..	

2 කොටස: මහනුවර ජාතික රෝහලේ සේවාවන් පිළිබඳ රෝගියාගේ අත්දැකීම්

රෝගියාගේ අත්දැකීම් කණ්ඩ හතරකට වර්ගීකරණය කර ඇත

- විශිෂ්ටයි = එයින් අදහස් වන්නේ ඔබේ අත්දැකීම් මට්ටම ඉහළම මට්ටමක පවතින බවයි
- **හොඳයි** = එයින් අදහස් වන්නේ, ඔබේ අත්දැකීම් මට්ටම හොඳ නමුත් ඉහළම නොවන බවයි
- සාමාන්යයි = එයින් අදහස් වන්නේ, ඔබේ අත්දැකීම් මට්ටම සාමාන්ය මට්ටමක පවතින බවයි
- **දුර්වලයි** = එයින් අදහස් වන්නේ ඔබේ අත්දැකීම් දුර්වල මට්ටමක පවතින බවයි

කරුණාකර ඔබගේ අත්දැකීම් මත පදනම්ව ප්රකාශයන් ශ්රේණිගත කරන්න

			විශිෂ්ටයි	හොඳයි	සාමාන්යයි	දුර්වලයි
1	සේවාසැපයීමේදී රෝහල් කාර්ය මණ්ඩලය දක්වන කාරුණිකත්වය පිළිබඳ ඔබේ අත්දැකීම කෙබඳුද	සායනයේ කාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
2	සේවාසැපයීමේදී රෝහල් කාර්ය මණ්ඩලය ඔබ කරෙහි දක්වන ගෞරවනීය බව පිළිබඳ ඔබේ අත්දැකීම කෙබඳුද	සායනයේ කාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
3	ඔබේ අත්දැකීම් අනුව, කාර්ය මණ්ඩලය ඔබේ අදහස්වලට සවන් දෙන අතර සේවාසැපයීමේදී ඒවා අගය කරයි	සායනයේ කාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
4	තොරතුරු ලබා දීමේදී කාර්ය මණ්ඩලය ඔබට පහසුවෙන් තේරුම් ගත හැකි ආකාරයෙන් කතා කිරීම පිළිබඳ ඔබගේ අත්දැකීම් කෙබඳුද	සායනයේ කාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
5	සේවාසැපයීමේදී කාර්ය මණ්ඩලයේ නිපුණතාවයන් පිළිබඳව ඔබේ අදහස කෙබඳුද	සායනයේ කාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				

6	කාර්ය මණ්ඩලය විසින් නියමිත වේලාවටසේවා සැපයීම පිළිබඳ ඔබේ අත්දැකීම කවෙබඳුද	සායනයේකාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
7	රෝගීන් සඳහා දැනට අංක ලබා දෙන ක්රමවේදයපිළිබඳව ඔබගේඅත්දැකීම් කබෙඳුද	සායනයේකාර්ය මණ්ඩලය				
		රසායනාගාර කාර්ය මණ්ඩලය				
		ෆාමසි කාර්ය මණ්ඩලය				
8	ඔබේමතය අනුව, එලදායි ලසෙ සත්කාර සැපයීම සඳහා සේවාඅංශ සකස් කර ඇත/සංවිධානය කර ඇත	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9	**රෝගීන් සඳහා සුවපහසු සහ ආරක්ෂිත පරිසරයක් නිර්මාණය කිරීම සඳහා ලබා දී ඇති පහසුකම් පිළිබඳ ඔබේඅත්දැකීම**					
9.1	රෝගීන් රැඳිසිටින ස්ථාන සඳහා ලබා දී ඇති ඉඩ පිළිබඳව	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9.2	රෝගීන් සඳහා සපයා ඇති ආසන පහසුකම් පිළිබඳව	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9.3	විදුලි පංකා සහ වායු සමීකරණ යන්ත්ර යොදා ගනිමින් වාතාශ්රය ලබාදීම පිළිබඳව	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9.4	පිරිසිදු පානීය ජල පහසුකම් ලබාදීම පිළිබඳව	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9.5	රෝගීන් සඳහා සතුටුදායක සේදුම් කාමර පහසුකම් තිබීම	සායනය				
		රසායනාගාරය				
		ෆාමසිය				
9.6	රෝගීන් සඳහා රෝහල් ආපනශාලා පහසුකම්වල ගුණාත්මකභාවය පිළිබඳ ඔබේඅත්දැකීම					

3 වන කොටස: බෝනොවන රෝග පිළිබඳ මූලික දැනුම තක්සේරු කිරීම

කරුණාකර ඔබගේ දැනුම අනුව පහත ප්‍රශ්න වලට **ඔව්** හෝ **නැත** යනුවෙන් පිළිතුරු දෙන්න

	ප්‍රකාශය	ඔව්	නැත
1	ලෝකය පුරාම බෝනොවන රෝගීන් සංඛ්‍යාව ඉතා සීඝ්‍රයෙන් වැඩි වමින් පවතී		
2	දුම්කොළ භාවිතය, සෞඛ්‍ය සම්පන්න නොවන ආහාර ගැනීම, ශාරීරික ක්‍රියාශීලි බව අඩුවීම සහ හානිකර මත්පැන් භාවිතය, බෝනොවන රෝග සඳහා බහුලවම ඇති අවදානම් සාධක හතරයි.		
3	හෘද රෝග ශ්‍රී ලංකාවේ බහුලව දක්නට ලැබෙන බෝනොවන රෝග වලින් එකකි		
4	අධි රුධිර පීඩනය ඇති රෝගීන්ට හෘදයාබාධ ඇතිවීමේ අවදානම වැඩිය		
5	දියවැඩියාව යනු බෝවන රෝගයක් වේ		
6	බෝනොවන රෝග පාලනය කිරීමට නියමිත ඖෂධ නිතිපතා ලබා ගැනීම අත්‍යවශ්‍ය වේ		
7	ලුණු අධික ආහාර ගැනීම අධි රුධිර පීඩනයට හේතුවිය හැක		
8	බෝනොවන රෝග පාලනය කිරීම සඳහා ප්‍රමාණවත් ශාරීරික ක්‍රියාකාරකම් අත්‍යවශ්‍ය නොවේ		

4 කොටස:

ප්‍රතිකාර කටයුතු හවුල් සත්කාර පොකුරු තුළ අඛණ්ඩව පවත්වාගනෙ යාම පිළිබඳ <u>රෝගීන්ගේ අවබෝධය</u>

“හවුල් සත්කාර” සරලව නිර්වචනය කළ හැක්කේ ප්‍රාථමික සත්කාර වෛද්‍යවරුන් සහ විශේෂඥ වෛද්‍යවරුන්ගේ ඒකාබද්ධ සහභාගිත්වය තුළින් හෘද රෝග වැනි බෝනොවන රෝගී තත්ත්වයකින් පළෙනෙ රෝගීන් සඳහා සැලසුම් සහගත ප්‍රතිකාර ලබාදීමටය. මමෙ හවුල් සත්කාර පොකුරු සංකල්පය තුළ, ඔබේ පහසුව සඳහා ප්‍රාථමික වෛද්‍ය සත්කාර ආයතනයක (ප්‍රාදේශීය රෝහලක) ඔබව පසු විපරම් කරනු ලබන අතර අවශ්‍ය විටකෙ ඔබව මහනුවර ජාතික රෝහලෙහි විශේෂඥසත්කාර වතෙ යොමු කරනු ලැබේ.

හවුල් සත්කාර සාර්ථක වීමට නම් ප්‍රාදේශීය රෝහල් රෝගීන් අතර ජනප්‍රිය නොවීමට හේතු කාරණා හඳුනාගත යුතු වේ.

1. කරුණාකර ඔබේ අදහස් ප්‍රකාශ කරන්න (රෝගියා වැඩිදියුණු කළ යුතු ප්‍රදේශය ප්‍රකාශ කරන්නේ නම් සම්මුඛ පරීක්ෂකවරයා අදාළ කොටුවේ සලකුණු කළ යුතුය)

අංකය	ප්‍රකාශය	ප්‍රකාශ කරන ලදී	ප්‍රකාශ කළේ නැත
1	ඔබේ ප්‍රාදේශීය රෝහලේ, රෝගී සත්කාර මනා ලෙස ඉටු කරන කාරුණික කාර්ය මණ්ඩලයක් සිටීම	1	2
2	ඔබේ ප්‍රාදේශීය රෝහලේ, රෝගී සත්කාර මනා ලෙස ඉටු කරන දක්ෂ කාර්ය මණ්ඩලයක් සිටීම	1	2
3	ප්‍රාදේශීය රෝහලේ සායන රෝගීන් සඳහා කාල හමුවීම් පද්ධතියක් තිබීම	1	2
4	ඔබගේ රෝගය සඳහා නිර්දේශිත සියලුම ඖෂධ ප්‍රාදේශීය රෝහල් ෆාමසියෙන් ලබා ගැනීමේ නොහැකිවීම	1	2
5	ප්‍රාදේශීය රෝහලේදී අවශ්‍ය රසායනාගාර පරීක්ෂණ සිදුකරගැනීමට යාන්ත්‍රණයක් තිබීම	1	2
6	අවශ්‍ය විටකෙ ඔබේ රෝගී තත්ත්වයට ප්‍රතිකාර තීරණය කිරීමට විශේෂඥ උපදෙස් ලබා ගැනීමට ප්‍රාදේශීය රෝහලේ සිට මහනුවර මහ රෝහලේ විශේෂඥ වෛද්‍යවරුන් සම්බන්ධ කර ගැනීමට ක්‍රමයක් තිබීම	1	2
7	ප්‍රතිකාර පිළිබඳ තීරණ ගැනීමේදී රෝගීන් ගේ අදහස් සහ පවුලේ සාමාජිකයන්ගේ අදහස් විමසී	1	2
8	පෝෂණ උපදේශනය, ශාරීරික ක්‍රියාකාරකම් සහ සෞඛ්‍ය අධ්‍යාපනය සඳහා ප්‍රාදේශීය රෝහලේදී පහසුකම් තිබීම	1	2
9	සායනයේ ඉඩකඩ සහිත පොරොත්තු ස්ථානයක්, ප්‍රමාණවත් ආසන පහසුකම්, පානීය ජලය ලබා ගැනීම සහ ප්‍රාදේශීය රෝහලක රෝගීන් සඳහා සතුටුදායක වැසිකිළි පහසුකම් වැනි මූලික පහසුකම් තිබීම.	1	2
10	ළඟම ඇති රෝහල කරා යෑමට සුදුසු ප්‍රවාහන පහසුකම් තිබීම	1	2

වෙනත් හේතු .....

2. ඔබේ ප්‍රාදේශීය රෝහලේදී අපේක්ෂිත අවශ්‍යතා සතුටුදායක ලෙස සපුරා ඇත්නම්, ඔබගේ රෝගී තත්වය සඳහා එම රෝහලෙන් දිගටම ප්‍රතිකාර ලබා ගැනීමට ඔබ සතුටුද?

1	ඔව්	
2	නැත	

Confidential Reference No

Annexure I c

A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

(Interviewer-**Administered Questionnaire)**

We are planning to assess your experience on continuation of care in a shared care cluster

Please listen to the questions carefully and state the most suitable answer to the best of your knowledge

Your information will be treated confidentially and will not be shared with anyone else

Section 1 – Socio-Demographic details

1. The Divisional Hospital you have been referred:

Katugastota	Wattegama	Manikhinna	Thiththapajjala	Galagedara

2. Sex

1	Male	
2	Female	

3. What is your age?

(In years to last birthday)

4. Diagnosis

	Disease Condition	Males	Females	Total
1	Myocardial Infarction			
2	Ischemic Heart Disease (without MI)			
3	Cardiomyopathy			
4	Arrhythmias (Wellens Syndrome)			
5	Others			

B. Patients ' Experience of Shared Care

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

No	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Sufficient information of the shared care project was given to me by staff of cardiology clinic NHK	1	2	3	4	5
2	My care plan was explained to me by the referring doctor at cardiology clinic NHK	1	2	3	4	5
3	I was accepted by the local hospital clinic staff with kindness and respect	1	2	3	4	5
4	I have been treated competently by the medical officers in the local hospital clinic	1	2	3	4	5
5	The medical officer in the local hospital engaged me in making management decisions	1	2	3	4	5
6	I had to stay a long time in the local hospital to obtain services from the time of leaving my residence to collection of medicine from the hospital pharmacy in a clinic day.	1	2	3	4	5
7	I was given all prescribed medicines for my illness at the local hospital pharmacy	1	2	3	4	5
8	I was able to perform the basic laboratory tests from the local hospital laboratory	1	2	3	4	5
9	At the local hospital clinic, I had the opportunity to update my knowledge on life style modification	1	2	3	4	5
10	Sufficient basic facilities were provided by the local hospital. (spacious waiting area at clinic, adequate seating facilities, drinking water and satisfactory washroom facilities)	1	2	3	4	5
11	As o overall, I am satisfied to be enrolled in shared care for managing my disease condition and will continue follow up	1	2	3	4	5

රහසිගතයි යොමු අංකය

Annexure I d

මහනුවර ජාතික රෝහල් පරිශ්‍රය තුළ බෝ නොවන රෝගීන්ට (NCDs) ප්‍රතික ාර කිරීමේදී හවුල් සත්කාර ක්‍රියාත්මක කිරීමේ ව්‍යාපෘතිය

(සම්මුඛ පරීක්ෂක විසින් ප්‍රශ්න ඉදිරිපත් කරනු ලැබේ)

"හවුල් සත්කාර පොකුරක්" තුළ සත්කාර අඛණ්ඩව පවත්වාගනෙ යාම පිළිබඳ අත්දැකීම් ත ක්සේරු කිරීමට සැලසුම් කරමු.

කරුණාකර ප්‍රශ්න සාවධානව අසා ඔබගේ දැනුමනේ වඩාත් සුදුසු පිළිතුර ලබා දන්න.

ඔබගේතොරතුරු වල රහස්‍ය භාවය ආරක්ෂා කරනු ලබන අතර වනෙත් පාර්ශවයක් වතෙ ලබා දනෙු නොලැබේ.

1 කොටස - සමාජ-ජන විකාශන විස්තර

1. ඔබව යොමු කර ඇති ප්‍රාදේශීය රෝහල:

කටුගස්තොට	වත්තේගම	මනික්හින්න	හිත්තපජ්ජල	ගලගදෙර

2. ස්ත්‍රී පුරු භාවය

1	පිරිමි	
2	ගැහැණු	

ෂ

3. ඔබේවයස කීයද?

(පසුගිය උපන්දිනයේ සිට වසර කිහිපයකින්)

4. රෝග විනිශ්චය

	රෝග තත්ත්වය	පිරිමි	ගැහැණු	මුළු
1	හෘදයාබාධ(MI)			
2	IHD (MI නොමැතිව)			
3	Cardiomyopathy			
4	අරිතිමියාව (වලෙනේස් සින්ඩ්‍රෝමය)			
5	අන් අය			

B. හවුල් සත්කාර පිළිබඳ රෝගීන්ගේ අත්දැකීම්

දැඩි ලෙස එකඟ නොවේ	එකඟ නොවේ	මධ්‍යස්ථ	එකඟයි	දැඩි ලෙස එකඟයි
1	**2**	**3**	**4**	**5**

නැත	ප්‍රකාශය	දැඩි ලෙස එකඟ නොවේ	එකඟ නොවේ	මධ්‍යස්ථ	එකඟයි	තරයේ එකඟයි
1	හවුල් සත්කාර ව්‍යාපෘතියේ ප්‍රමාණවත් තොරතුරු NHK හෘද රෝග සායනයේ කාර්ය මණ්ඩලය විසින් මට ලබා දෙන ලදී	**1**	**2**	**3**	**4**	**5**
2	NHK හෘද රෝග සායනයේ යොමු කරන වෛද්‍ය යවරයා විසින් මගේ සත්කාර සැලැස්ම මට පැහැදිලි කරන ලදී	**1**	**2**	**3**	**4**	**5**
3	ප්‍රාදේශීය රෝහල් සායන කාර්ය මණ්ඩලය මාව කරුණාවනේ හා ගෞරවයනේ පිළිගත්තා	**1**	**2**	**3**	**4**	**5**
4	ප්‍රාදේශීය රෝහල් සායනයහි වෛද්‍ය නිලධාරීන් විසින් මට දක්ෂ ලෙස ප්‍රතිකාර කර ඇත	**1**	**2**	**3**	**4**	**5**
5	ප්‍රාදේශීය රෝහලේ වෛද්‍ය නිලධාරියා සත්කාර තීරණ ගැනීමේදී මාව සම්බන්ධ කළා	**1**	**2**	**3**	**4**	**5**
6	සායන දිනයකදී රෝහල් ඔසුසලනේ බහෙතේ එකතු කිරීම දක්වා මගේ නිවසින් පිටව ගිය මොහොතේ සිට සේවාලබා ගැනීමට මට ප්‍රාදේශීය රෝහලේ දිගු වේලාවක් රැඳී සිටීමට සිදු විය.	**1**	**2**	**3**	**4**	**5**
7	ප්‍රාදේශීය රෝහලේ ෆාමසියනේ මගේ අස නීපයට නියම කරන ලද සියලුම ඖෂධ මට ලබා දුන්නා	**1**	**2**	**3**	**4**	**5**
8	ප්‍රාදේශීය රෝහල් රසායනාගාරයනේ මූලික රසායනාගාර පරීක්ෂණ සිදු කිරීමට මට හැකි විය	**1**	**2**	**3**	**4**	**5**
9	ප්‍රාදේශීය රෝහල් සායනයේදී පීවන රටාව වනෙස් කිරීම පිළිබඳ මගේ දැනුම යාවත්කාලීන කිරීමට මට අවස්ථාව ලැබුණි	**1**	**2**	**3**	**4**	**5**
10	ප්‍රාදේශීය රෝහලනේ ප්‍රමාණවත් මූලික පහසුකම් සපයා ඇත. (සායනයහි ඉඩකඩ සහිත පොරොත්තු ස්ථානයක්, ප්‍රමාණවත් ආසන පහසුකම්, පානීය ජලය සහ සනුටුදායක වැසිකිළි පහසුකම්)	**1**	**2**	**3**	**4**	**5**
11	පෙදුවේගත් කල, මගේ රෝගී තත්ත්වය කළමනාකරණය කිරීම සඳහා හවුල් සත්කාර සඳහා ලියාපදිංචි වීමට ලැබීම ගැන මම සෑහීමකට පත්වන අතර දිගටම පසු විපරම් කරන්නමේ	**1**	**2**	**3**	**4**	**5**

Annexure II a

Ethics Review Committee
Postgraduate Institute of Medicine
University of Colombo
Consent Form-English

A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

To be completed by the participant (Please tick the appropriate box)

	Yes	No
1. Have you read the information sheet? (Please keep a copy for yourself)	☐	☐
2. Have you had an opportunity to discuss this study and ask any questions?	☐	☐
3. Have you had satisfactory answers to all your questions?	☐	☐
4. Have you received enough information about the study?	☐	☐
5. Do you understand that you are free to withdraw from the study at any time, without having to give a reason and without affecting your future medical care?	☐	☐
6. Sections of your medical notes, including those held by the investigators relating to your participation in this study may be examined by other research assistants. All personal details will be treated as strictly Confidential. Do you give your permission for these individuals to have access to your records?	☐	☐
7. Have you had sufficient time to come to your decision?	☐	☐
8. Do you agree to take part in this study?	☐	☐

Who explained you about the study:.....

Signature of the participant:..... Date:.....

Full name:.....

To be completed by the investigator/ person obtaining consent

I have explained the study to the above participant and he/ she has indicated her willingness to take part in this study.

Signature of Investigator:..... Date:.....

Full name:.....

Annexure II b

ආචාර ධර්ම සමාලෝචන කමිටුව
පශ්චාත් වෛද්ය උපාධි ආයතනය
කොළඹ විශ්වවිද්යාලය
පර්යේෂණයටකැමැත්ත ප්රකාශ කිරීමේආකෘති පත්රය

මහනුවර ජාතික රෝහල් පරිශ්‍රය තුළ බෝ නොවන රෝගීන්ට **(NCDs)** ප්‍රතිකාර කිරීමේදීහවුල් සත්කාර ක්‍රියාත්මක කිරීමේව්‍යාපෘතිය

සහභාගිවන්නා විසින් සම්පූර්ණ කිරීමට (කරුණාකර සුදුසු කොටුව සලකුණු කරන්න)

	ඔව්	නැත
1 ?( )	☐	☐
2 ?	☐	☐
3 ?	☐	☐
4 ?	☐	☐
5 , ?	☐	☐
6 . . ?	☐	☐
7 ?	☐	☐
8 ?	☐	☐

අධ්යයනය ගැන ඔබට පැහැදිලි කළේකවුද?:.....

සහභාගිවන්නාගේඅත්සන:..... දිනය :.....

සම්පූර්ණ නම :.....

(විමර්ශකයා/ කැමැත්ත ලබා ගන්නා පුද්ගලයා සම්පූර්ණ කළ යුතුය)

මම ඉහත සහභාගිවන්නාට අධ්යයනය පැහැදිලි කර ඇති අතර ඔහු/ඇය මමෙ අධ්යයනයට සහභාගී වීමට කැමැත්ත දක්වා ඇත.

පරීක්ෂකගේඅත්සන:..... දිනය:.....

සම්පූර්ණ නම:.....

Annexure III a

Ethics Review Committee

Postgraduate Institute of Medicine
University of Colombo

Information Sheet

A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

I, [redacted] Registrar in MD Medical Administration attached to the Post Graduate Institute of Medicine, University of Colombo, would like to invite you to take part in the research project to "**Implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster**" conducted by me in the National Hospital Kandy cluster of hospitals.

1. Purpose

The study aims to design and implement a model to manage patients with Non-Communicable Diseases (NCDs) in the National Hospital Kandy Cluster, initiating shared care. This research project is conducted to fulfill my Doctor of Medicine degree in Medical Administration at Postgraduate Institute of Medicine, University of Colombo.

2. Voluntary participation

Your participation in this study is voluntary. You are free not to participate or withdraw from the study at any time despite consenting to take part earlier. There will be no loss of medical care or any other available treatment for your illness or condition to which you are otherwise entitled. If you decide not to participate or withdraw from the study, you may do so at any time.

3. Duration, procedures of the study, and participant's responsibilities

This study will be conducted for eight months. A well-trained investigator/data collector will interview you using a specially developed questionnaire for this study. You are requested to answer the questions to the best of your knowledge without any influence. You are requested to freely express your opinion, ideas, explanation, and accurate information in this interview. The interviewer will keep the completed questionnaires and the consent forms.

4. Potential benefits

The results of this study will be useful in designing and implementing a model to manage NCD patients in shared care in the National Hospital Kandy cluster. The successful implementation of the project will improve patient care, reduce the overcrowding of selected clinics at National hospital Kandy, and utilization of primary care health institutes. The results will be made available to policymakers to decide on further interventions in scaling up at the national level.

5. Risks, hazards, and discomforts

There are no risks, hazards, or discomfort caused to you due to participation in this research project.

6. Reimbursements

You will not be paid any money for participating in this research project.

7. Termination of study participation

You may stop participating in this research project at any time (with no penalty or effect on medical care or loss of benefits). Please notify the investigator as soon as you decide to withdraw your consent.

8. Confidentiality

Confidentiality of all records is guaranteed, and no information by which you can be identified will be released or published. These data will never be used in such a way that you could be identified in any way in any public presentation or publication without your express permission.

9. Clarifications

If you have any questions about the procedures or information, please feel free to ask the person listed below.

[redacted]	[redacted]	Registrar in Medical Administration PGIM	[redacted]

If you have any clarification, concerns, or complaints related to this research project, you may contact the Ethics Review Committee, Postgraduate Institute of Medicine, University of Colombo.

ERC Office Address: Ethics Review Committee, Postgraduate Institute of Medicine, University of Colombo, 160, Prof. Nandadasa Kodagoda Mawatha, Colombo 07.

Telephone: 0112-689266 (between 9 am and 4 pm on working days)

Email: erc@pgim.cmb.ac.lk

Annexure III b

ආචාර ධර්ම සමාලෝචන කමිටුව
පශ්චාත් වෛද්‍ය උපාධි ආයතනය
කොළඹ විශ්වවිද්‍යාලය

තොරතුරු පත්‍රිකාව

මහනුවර ජාතික රෝහල් පරිශ්‍රය තුළ බෝ නොවන රෝගීන්ට (NCDs) ප්‍රතිකාර කිරීමේදීහවුල් සත්කාර ක්‍රියාත්මක කිරීමේව්‍යාපෘතිය

[redacted] **වන මම කොළඹ විශ්ව විද්‍යාලයට අනුබද්ධිත වෛද්‍ය විද්‍යා පශ්චාත් උපාධි ආයතනයේවෛද්‍ය පරිපාලන ශාස්ත්‍රපති උපාධිය සඳහා පුහුණුව ලබමි. මාගේඅධ්‍යයන පරීක්ෂණය සඳහා** මහනුවර ජාතික රෝහල් පරිශ්‍රය තුළ බෝ නොවන රෝගීන්ට (**NCDs**) ප්‍රතිකාර කිරීමේදීහවුල් සත්කාර ක්‍රියාත්මක කිරීමේව්‍යාපෘතියක් තෝරාගනෙ ඇති අතර ඒ සඳහා සහභාගී වන ලෙසට ඔබට ආරාධනා කරමි.

1. පර්යේෂණව්‍යාපෘතියේඅරමුණ

මමෙ අධ්‍යයනයේඅරමුණ වන්නේමහනුවර ජාතික රෝහල තුළ බෝ නොවන රෝග (NCDs) ඇති රෝගීන්ට ප්‍රතිකාර කිරීම සඳහා හවුල් සත්කාර ක්‍රියාත්මක කිරීමට ආකෘතියක් සැලසුම් කිරීම සහ ක්‍රියාත්මක කිරීම ය. කොළඹ විශ්වවිද්‍යාලයේවෛද්‍ය පශ්චාත් උපාධි ආයතනයේවෛද්‍ය පරිපාලනය පිළිබඳ මගේවෛද්‍ය උපාධිය සම්පූර්ණ කිරීම සඳහා මමෙ පර්යේෂණව්‍යාපෘතිය පවත්වනු ලැබේ .

2. ස්වේච්ඡාසහභාගීත්වය

මමෙ අධ්‍යයනයට ඔබේසහභාගීත්වය ස්වේච්ඡාවනේසිදු වේ. කලින් සහභාගී වීමට කැමැත්ත පළ කළද ඕනෑම අවස්ථාවක අධ්‍යයනයට සහභාගී නොවීමට හෝ ඉවත් වීමට ඔබට නිදහස ඇත. එසේවුවද ප්‍රතිකාර සම්බන්ධයනේ ඔබට හිමි වරප්‍රසාද කිසිවක් අහිමි නොවේ. ඔබ අධ්‍යයනයට සහභාගී නොවීමට හෝ ඉවත් වීමට තීරණය කරන්නේනම්, ඔබට ඕනෑම අවස්ථාවක එය කළ හැක.

3. කාලසීමාව, අධ්‍යයනයේක්‍රියා පටිපාටි සහ සහභාගිවන්නාගේවගකීම්

මමෙ අධ්‍යයනය මාස අටක් පුරා සිදු කරෙේ. හොඳින් පුහුණු වූ විමර්ශකයකු/දත්ත එකතුකරන්නකු මමෙ අධ්‍යයනය සඳහා විශේෂයනේසකස් කරන ලද ප්‍රශ්නාවලියක් භාවිතයනේ ඔබව සම්මුඛ පරීක්ෂා කරනු ඇත. කිසිදු බලපෑමකින් තොරව ඔබගේදැනුම අනුව ප්‍රශ්න වලට පිළිතුරු සපයන ලසෙ ඉල්ලා සිටිමි. මමෙ සම්මුඛ සාකච්ඡාවේදී ඔබේඅදහස, අදහස්, පැහැදිලි කිරීම් සහ නිවැරදි තොරතුරු නිදහසේප්‍රකාශ කරන මනේ ඉල්ලා සිටිමි. සම්මුඛ පරීක්ෂක විසින් සම්පූර්ණ කරන ලද ප්‍රශ්නාවලිය සහ කැමැත්ත පෝරම තබා ගනු ඇත.

4. ප්‍රතිලාභ

මමෙ අධ්‍යයනයේප්‍රතිඵල මහනුවර ජාතික රෝහලේපරිෂදයේබෝ නොවන රෝගීන්ට (NCD) හවුල් ප්‍රතිකාර කිරීමේආකෘතියක් සැලසුම් කිරීම සහ ක්‍රියාත්මක කිරීම සඳහා ප්‍රයෝජනවත් වනු ඇත. ව්‍යාපෘතිය සාර්ථකව ක්‍රියාත්මක කිරීම මගින් රෝගී සත්කාර වැඩිදියුණු කිරීම, මහනුවර ජාතික රෝහලේ තෝරාගත් සායනවල තදබදය අවම කිරීම සහ ප්‍රාථමික සෞඛ්‍ය ආයතන වඩාත් ඵලදායී ලසෙ ප්‍රයෝජනයට ගැනීම සිදුවේ. ජාතික මට්ටමින් ඉහළ නැංවීම සඳහා තවදුරටත් මැදිහත්වීම් තීරණය කිරීම සඳහා ප්‍රතිපත්ති සම්පාදකයින්ට ප්‍රතිඵල ලබා දනෙු ඇත.

5. අවදානම්, උපද්‍රව සහ අපහසුතා

මමෙ පර්යේෂණ්යාපෘතියට සහභාගී වීම හේතුවනේඔබට ඇති විය හැකි අවදානම්, උපද්රව හෝ අ පහසුතාවයන් නොමැත.

6. ප්රතිපූරණ

මමෙ පර්යේෂණ්යාපෘතියට සහභාගී වීම සඳහා ඔබට කිසිදු මුදලක් ගවෙනු නොලැබේ.

7. පර්යේෂණයනේ ඉවත්වීම

ඔබට ඕනෑම වේලාවකමමෙ අධ්යයනයට සහභාගී වීම නැවැත්විය හැකිය (දණ්ඩයක් හෝ වදෛය ප් රතිකාර සඳහා බලපෑමක් නොමැතිව හෝ ප්රතිලාභ අහිමි වීමකින් තොරව). ඔබ ඔබේකැමැත්ත ඉල් ලා අස්කර ගැනීමට තීරණය කළ වහාම විමර්ශකයාට දන්වන්න

8. රහස්යභාවය

සියලුම වාර්තාවල රහස්යභාවය සහතික කරෙනෙ අතර, ඔබව හඳුනාගත හැකි කිසිදු තොරතුරක් මුදා හැරීම හෝ ප්රකාශ කිරීම සිදු නොකරෙේ. ඔබේප්රකාශිත අවසරයකින් තොරව ඕනෑම පලොදු ඉදිරිපත ් කිරීමක හෝ ප්රකාශනයකදී ඔබව කිසිදු ආකාරයකින් හඳුනා ගත හැකි ආකාරයනේ මමෙ දත්ත කි සිවිටකෙ භාවිතා නොකරෙේ.

9. පැහැදිලි කිරීම්

ඔබට ක්රියා පටිපාටි හෝ තොරතුරු පිළිබඳව කිසියම් ප්රශ්නයක් ඇත්නම්, කරුණාකර පහත ලැයිස්තු ගත කර ඇති පුද්ගලයාගනේ අසන්න

[redacted]	[redacted]	රජිස්ට්රාර්, වදෛය පරිපාලන (PGIM)	[redacted]

ඔබට මමෙ පර්යේෂණ්යාපෘතියට අදාළ කිසියම් පැහැදිලි කිරීමක්, උත්සුකතාවයක් හෝ පැමිණිලි කි බේනම්, ඔබට කොළඹ විශ්වවිද්යාලයේ වදෛය පශ්චාත් උපාධි ආයතනයේආචාර ධර්ම සමාලෝච න කම්ටුව හා සම්බන්ධ විය හැක.

ERC කාර්යාල ලිපිනය: ආචාර ධර්ම සමාලෝචන කම්ටුව, වදෛය පශ්චාත් උපාධි ආයතනය, කොළඹ විශ්වවිද්යාලය, 160, මහාචාර්ය නන්දදාස කෝදාගොඩ මාවත, කොළඹ 07.

දුරකථන: 0112-689266 (වැඩකරන දිනවල ප.ව. 9ත් ප.ව. 4ත් අතර)

විද්යුත් තැපෑල: erc@pgim.cmb.ac.lk

Annexure IV a

A project to implement Shared Care in managing patients with

Non-Communicable Diseases in National Hospital Kandy Cluster

Key Informant Interview Guide -General

Details of the Interviewee

1	Name	
2	Designation	
3	Contact No	
4	Email	
5	Date/Time	

A. Greet the Interviewee and do an introduction

First of all, let me thank you for agreeing and allowing me to conduct this important interview

I am [redacted], a postgraduate trainee in Medical Administration attached to the Post Graduate Institute of Medicine, University of Colombo. As a requirement to fulfill my MD in medical administration, I m conducting a research project to **"Implement shared care in managing patients with NCDs in the National Hospital Kandy cluster hospitals."** Sharing your experience, expertise, and opinions by answering the questions is highly appreciated.

This research project aims to design and implement a model to manage patients with Cardiovascular Diseases in a shared care cluster. The cluster comprises the National Hospital Kandy as the Apex and five divisional hospitals as primary healthcare settings in the Kandy district. Your information as a key informant is critical in developing a workable model.

The questions are formed in view of obtaining answers according to your knowledge and experience of the topic of interest. In addition, your personal opinion on some critical areas is vital to achieving this study's objective. Since there are no right or wrong answers, please freely express your ideas and suggestions. You are free to ask any question from me during this conversation, and the information's confidentiality is assured.

I request your permission to audiotape this conversation

B. General Questions

I would like to know some details related to your position and responsibilities

a. In what capacity do you perform your duties in this institute?

b. How long have you been working in this institute?

c. What are your main responsibilities in this position?

d. Is your clinics are overcrowded?

e. Do you feel that the tertiary/secondary care level clinic contains a significant percentage of patients with satisfactory control of their disease conditions that can be managed in a Primary Health Care (PHC) setting?

f. What is your opinion on implementing a mechanism to optimize the utilization of different health facility levels in managing chronic NCDs effectively? (e.g., Hypertension, Ischemic Heart Disease, Diabetes)

C. Key Questions

1. What is your opinion on shared care in managing chronic NCDs as Cardiovascular Diseases?

2. According to your knowledge, does the healthcare staff adequately aware of this concept of shared care in managing patients with chronic disorders?

3. Based on your experience, would it be practical and beneficial to implement shared care in managing patients with cardiovascular diseases in this setting?

4. What are the key factors to be focused on in designing and implementing a model to manage patients with cardiovascular diseases in the National Hospital Kandy cluster of hospitals?

- *Referral – Back referral system*
- *Sharing of health information of patients*
- *Availability of drugs in PHC settings*
- *Availability of a mechanism to make available necessary laboratory investigations at PHC settings*
- *Health promotion/ Patient engagement/ Community support*

- *Other factors – Human Resource training, Patient awareness, Improving infrastructure at PHCs, etc.*

5. In your opinion, what are the challenges in successfully implementing shared care in managing patients with cardiovascular diseases in the NHK Cluster of hospitals?

6. What are the strengths in your institute to implement the shared care concept?

7. Are there any weaknesses in your institute in implementing shared care?

D. Probing Questions

1. Can you explain further the **causes** for challenges you have mentioned in implementing shared care?

2. In considering your institute, what are the possible **causes** for the weaknesses mentioned?

E. Closing Questions

1. In your opinion, what suggestions do you recommend to overcome the critical issues in implementing shared care in managing patients with cardiovascular diseases in the NHK cluster?

2. What is your most crucial suggestion?

3. Any other comments to make?

F. Summary

Based on the information gathered from our conversation today, I would like to summarize the critical comments made before we conclude. Thank you.....

Annexure IV b

A project to implement Shared Care in managing patients with Cardiovascular diseases in National Hospital Kandy Cluster

Key Informant Interview Guide for Cardiologists/SMOs

Details of the Interviewee

1	Name	
2	Designation	
3	Contact No	
4	Email	

A. Greet the Interviewee and do an introduction

First of all, let me thank you for agreeing and allowing me to conduct this important interview

[redacted], a postgraduate trainee in Medical Administration attached to the Post Graduate Institute of Medicine, University of Colombo. As a requirement to fulfill my MD in medical administration, I m conducting a research project to **"Implement shared care in managing patients with Non-Communicable Diseases in the National Hospital Kandy cluster hospitals."** Sharing your experience, expertise, and opinions by answering the questions is highly appreciated.

This research project aims to design and implement a model to manage patients with cardiovascular diseases in a shared care cluster. The cluster comprises the National Hospital Kandy as the Apex and five divisional hospitals as primary healthcare settings in the Kandy district. Your information as a key informant is critical in developing a workable model.

The questions are formed in view of obtaining answers according to your knowledge and experience of the topic of interest. In addition, your personal opinion on some critical areas is vital to achieving this study's objective. Since there are no right or wrong answers, please freely express your ideas and suggestions. You are free to ask any question from me during this conversation, and the information's confidentiality is assured.

I request your permission to audiotape this conversation

B. General Questions

I would like to know some details related to your position and related to clinical practice in this institute

a. In what capacity do you perform your duties in this unit?

b. How long have you been working in this unit?

c. What are your main responsibilities in delivering services?

d. Is your clinic overcrowded?

e. Do you feel that the clinic contains a significant percentage of patients with satisfactory control of their disease condition that can be managed in a Primary Health Care (PHC) setting?

f. Is there a well-defined **Patient referral system** practiced in your clinic? If so, please explain?

C. Key Questions

1. What is your opinion on shared care in managing cardiovascular diseases?

2. According to your knowledge, does the healthcare staff adequately aware of this concept of shared care in managing patients with chronic disorders?

3. Based on your experience, would it be practical and beneficial to implement shared care in managing patients with cardiovascular diseases in this setting?

4. What are the key factors to be focused on in designing and implementing a model to manage patients with cardiovascular diseases in the National Hospital Kandy cluster of hospitals?

- *Referral – Back referral system*
- *Sharing of health information of patients*
- *Availability of drugs in PHC settings*
- *Availability of a mechanism to make available necessary laboratory investigations at PHC settings*
- *Health promotion/ Patient engagement/ Community support*

- *Other factors – Human Resource training, Patient awareness, Improving infrastructure at PHCs, etc.*

5. In your opinion, what are the challenges in successfully implementing shared care in managing patients with cardiovascular diseases in the NHK Cluster of hospitals?

6. What are the strengths in your unit to implement the shared care concept?

7. Are there any weaknesses in your unit in implementing shared care?

D. Probing Questions

1. Can you explain further the **causes** for challenges you have mentioned in implementing shared care?

2. In considering your unit, what are the possible **causes** for the weaknesses mentioned?

E. Closing Questions

1. In your opinion, what suggestions do you recommend to overcome the critical issues in implementing shared care in managing patients with cardiovascular diseases in the NHK cluster?

2. What is your most crucial suggestion?

3. Any other comments to make?

F. Summary

Based on the information gathered from our conversation today, I would like to summarize the critical comments made before we conclude.....Thank you

Annexure V a

A project to implement Shared Care in managing patients with

Non-Communicable Diseases in National Hospital Kandy Cluster

FOCUS GROUP DISCUSSION GUIDE
CARDIOLOGY UNIT STAFF - NHK

1	Category	
2	Location	
3	Date/Time	
4	FGD Number	

To be completed by the Moderator

Introduction and Consent

First of all, thank you all for attending this discussion of the project to implement Shared Care in managing patients with Non-Communicable Diseases in the National Hospital Kandy Cluster. This is a pilot study focusing on managing patients with Cardiovascular Diseases in a shared care cluster.

[redacted], a postgraduate trainee in Medical Administration attached to the Post Graduate Institute of Medicine, University of Colombo. I'm conducting a research project as a requirement to fulfill my MD in medical administration.

This research project aims to design and implement a model to manage patients with Cardiovascular Diseases in a shared care cluster. The cluster comprises the National Hospital Kandy as the Apex and five divisional hospitals as primary healthcare settings in the Kandy district. Sharing your experience, expertise, and opinions during the discussion will be valuable to understand the factors to be focused on in designing the interventions and effective implementation of the project.

- Participation in this discussion is free, and there is no obligation to respond. You can stop at any point.
- No personal data will be shared with others, and the information provided will be analyzed anonymously and used confidentially.

● Our group discussion will last around 45 minutes.

Do you have any questions? Are you willing to participate in the group?

Read the informed consent form to the respondents and request permission to record the FGD.

Permission Granted (Y/N)
May I begin now?

Question Guide

1. General understanding of the NCD burden

1.1 In general, what do you know about NCDs?

1.2 In your opinion, what do you think about the prevalence / Incidence of NCDs in Sri Lanka?

1.3 What reasons have led to an increase in the NCD burden?

1.4 Do you think the general population is adequately aware of and knowledgeable of NCDs?

1.5 What measures should be taken to improve patient engagement in managing NCDs?

2. About Cardiology Clinic - NHK

2.1 What is the role of the Cardiology Clinic? Please discuss

2.2 In general, do you believe that the patients are satisfied with the services provided at the Cardiology clinic?

2.3 If not, what could be the reasons, and what is your opinion to improve patient satisfaction?

2.4 Are the clinics overcrowded with patients?

2.5 If so, what could be the reasons?

2.6 In your opinion, is there a significant number of clinic patients with controlled disease conditions that can be followed up in a regional hospital?

2.7 Why do you say so?

3. About Shared Care

3.1 Are you aware of shared care in managing patients with NCDs?

3.2 If known, please share your knowledge and experience

3.3 Do you think the health staff needs to be trained on the shared care concept?

3.4 If so, what are the areas to be concerned about? (Concept/Clinical management/Health promotion etc.)

3.5 In your opinion, will shared care be beneficial to provide better care for patients with cardiovascular diseases?

3.6 If so, what areas should be focused on to promote shared care? (From health staff aspect/ patient and community aspect)

4. Strengths/ Weaknesses of implementing Shared care

4.1 In your opinion, what are the strengths in implementing shared care in the National Hospital Kandy Cluster?

4.2 In your opinion, what weaknesses to be overcome in implementing shared care in the study setting?

Please make your suggestions

Annexure V b

A project to implement Shared Care in managing patients with

Non-Communicable Diseases in National Hospital Kandy Cluster

FOCUS GROUP DISCUSSION GUIDE

DIVISIONAL HOSPITAL STAFF

1	Category	
2	Location	
3	Date/Time	
4	FGD Number	

To be completed by the Moderator

Introduction and Consent

First of all, thank you all for attending this discussion of the project to implement Shared Care in managing patients with Non-Communicable Diseases in the National Hospital Kandy Cluster. This is a pilot study focusing on managing patients with Cardiovascular Diseases in a shared care cluster.

[redacted], a postgraduate trainee in Medical Administration attached to the Post Graduate Institute of Medicine, University of Colombo. I'm conducting a research project as a requirement to fulfill my MD in medical administration.

This research project aims to design and implement a model to manage patients with Cardiovascular Diseases in a shared care cluster. The cluster comprises the National Hospital Kandy as the Apex and five divisional hospitals as primary healthcare settings in the Kandy district. Sharing your experience, expertise, and opinions during the discussion will be valuable to understand the factors to be focused on in designing the interventions and effective implementation of the project.

- Participation in this discussion is free, and there is no obligation to respond. You can stop at any point.
- No personal data will be shared with others, and the information provided will be analyzed anonymously and used confidentially.
- Our group discussion will last around 45 minutes.

Do you have any questions? Are you willing to participate in the group?

Read the informed consent form to the respondents and request permission to record the FGD.

Permission Granted (Y/N)

May I begin now?

Question Guide

5. General understanding of the NCD burden

5.1 In general, what do you know about NCDs?

5.2 In your opinion, what do you think about the prevalence / Incidence of NCDs in Sri Lanka?

5.3 What reasons have led to an increase in the NCD burden?

5.4 Do you think the general population is adequately aware of and knowledgeable of NCDs?

5.5 What measures should be taken to improve patient engagement in managing NCDs?

6. About NCD Clinics - DHs

6.1 What is the role of the NCD Clinic? Please discuss

6.2 In general, do you believe that the patients are satisfied with the services provided at the clinic?

6.3 If not, what could be the reasons, and what is your suggestions to improve patient satisfaction?

6.4 Are the clinics overcrowded with patients?

6.5 If so, what could be the reasons?

6.6 In your opinion, is there a significant number of clinic patients with controlled disease conditions that can only be visit for Refills?

6.7 Why do you say so?

7. About Shared Care

7.1 Are you aware of shared care in managing patients with NCDs?

7.2 If known, please share your knowledge and experience

7.3 Do you think the health staff needs to be trained on the shared care concept?

7.4 If so, what are the areas to be concerned about? (Concept/Clinical management/Health promotion etc.)

3.5 In your opinion, will shared care be beneficial to provide better care for patients with cardiovascular diseases?

3.6 If so, what areas should be focused on to promote shared care? (From health staff aspect/ patient and community aspect)

8. Strengths/ Weaknesses of implementing Shared care

8.1 In your opinion, what are the strengths in implementing shared care in the National Hospital Kandy Cluster?

4.2 In your opinion, what weaknesses to be overcome in implementing shared care in the study setting?

Please make your suggestions

Annexure VI a

A project to implement Shared Care in managing patients with NCDs in National Hospital Kandy Cluster

Data Collection Checklist

To collect statistics of patients with cardiovascular diseases (CVDs), service availability and readiness assessment of the study settings to manage CVDs

National Hospital Kandy (NHK)

1. Patient Statistics

1. Total number of registered clinic patients: ……

2. Male: Female patient number: M ……. F……

3. Distribution of patients in NHK clinics

No	Clinic	Number of registered patients

4. Patient statistics of Cardiology Clinic

1	Total Number of registered patients			
2	Number of Male patients			
3	Number of Female patients			
4	Distribution of Age			
	Males		**Females**	
	Age group	***Number***	***Age group***	***Number***
	< 30 y		< 30y	
	31 – 40 y		31 – 40 y	
	41 – 50 y		41 – 50 y	
	51 – 60 y		51 – 60 y	
	61 – 70 y		61 – 70 y	
	> 70 y		> 70 y	
5	Distribution of CVD patients attending cardiology clinic based on their closest local hospital			
	Local Hospital	**Total**	**Males**	**Females**
	DH - Katugastota			
	DH - Thiththapajjala			
	DH - Manikhinna			
	DH - Wattegama			
	DH - Galagedara			

2. Service Availability & Readiness Assessment – Cardiology Clinic

1. Registration at Clinic

No		Yes	No
1.1	Availability of a standard patient registration system (Electronic/Paper base)		
1.2	Availability of time appointment for clinic patients (For Consultation)		
1.3	Availability of reminder/recall system for appointments (SMS/Document in clinic books)		

2. Consultation of patients – (data collection from Senior Medical Officer-Cardiology Clinic)

No		Yes	No
2.1	Checking patients Weight and documenting		
2.2	Checking patients blood pressure and documenting		
2.3	Specialized referral for sub specialties done accordingly		
2.4	Availability of a defined system to review clinic patients periodically by the Consultant		
2.5	Availability of a defined back-referral system to local hospital for follow up		

3. Human Resources -At Cardiology Clinic (Data collection from Planning unit/Cardiologists)

No		Existing Cadre	Approved Cadre
3.1	Specialist Medical Officers		
3.2	Grade Medical Officers		

3.3	Nurses			
3.4	Health Care Assistants			
3.5	Are the health care workers formally trained on managing CVDs?	**Doctors**	**Nurses**	**Others**
a	Yes, regularly trained			
b	Yes, trained one time			
c	No, not trained on management of CVDs			

4. Equipment at cardiology clinics (Data collection form In-charge Nursing Officer)

	Equipment	Functional devices available	Devices out of order/Awaiting repair
1	Blood pressure measuring devices (BPMD)		
2	Weighing Scales		
3	Stethoscope		
4	ECG Machine		
5	**How often are blood pressure measuring devices (BPMDs) calibrated and checked for accuracy?**		
5.1	Once a year or more		
5.2	Less than once a year		
5.3	Never		
5.4	Don't know		
6	**How is equipment usually repaired and maintained?**		
6.1	Repaired by the technicians at NHK		
6.2	Sent back to manufacturer for repair		
6.3	Sent back to "Bio Medical Engineering" unit at MOH		
6.4	Other, specify:		

5. Infrastructure at Cardiology Clinic (Observation)

		Yes	No
1	Adequate waiting area in the clinic premises		
2	Adequate seating facilities for patents in the clinic – Number =		
3	Availability of a comfortable clinic environment (AC/Fans/lighting)		
4	Satisfactory wash room facilities for patients		
5	Provision of drinking water (Water Dispensers)		

6. Laboratory Investigations -For Clinic patients (Data Collection from Chief MLT)

1	What are the commonly requested laboratory investigations for CVD patients					
	1	2	3	4	5	
					Yes	No
2	Frequency of performing laboratory investigations			Mostly monthly		
				Mostly every three months		
				Whenever needed		
3	Is there an appointment system for patients to perform investigations?					
4	Do the laboratory tests are performed on the clinic date itself?					
5	Do the patients have to collect the reports from lab on clinic day?					

7. Medicines (Data collection from chief Pharmacist)

1	What are the commonly prescribed medicines for CVD patients?					
	1	2	3	4	5	
					Yes	No
2	Availability of the commonly prescribed drugs at hospital pharmacy is satisfactory?					

3	Conduct satisfactory prescription counselling for patients?		
4	Availability of a home delivery mechanism of drugs to patients during crisis situations?		

8. Health Education/Promotion/Life style modification

			Yes	No
1	Health education/promotion is done by	By doctors at clinic		
		By nurses at clinic		
		By nurses of health education unit		
2	Available methods of health education at clinic	Information leaflets		
		Health talks		
		Telecast of video clips		
3	Patients are referred to nutrition counselling when needed			
4	Patients are referred to cardiac rehabilitation			

9. Other Information.....

Annexure VI b

A project to implement Shared Care in managing patients with Non-Communicable Diseases in National Hospital Kandy Cluster

Data collection sheet

To collect statistics of patient with NCDs, service availability and readiness assessment of the study settings to manage NCDs. Please complete the list appropriately.

Selected Primary Medical Care Settings

1. Patient Statistics – *Divisional Hospitals* (By Clinic Data Base)

DH

:Katugastota/Thiththapajjala/Manikhinna/Wattegama/Galagedara

1. Total number of registered clinic patients with NCDs: ……

2. Male: Female patient number: M ……. F……

3. Distribution of patients in clinics (Indicate approximate figures)

No	Clinic	Clinic (day of week)	Number of patients

4. Distribution of NCD patients (Indicate approximate figures)

No	Disease	Number of patients	
		Males	Females
1	Hypertension		
2	Diabetes		
3	Cardiovascular diseases (CVDs)		
4	Chronic Respiratory Disorders		
5	Others (Specify)		

5. Statistics of CVD patients (Indicate approximate figures with available data)

1	Total Number of patients with CVDs	
2	Number of Male	
3	Number of Female	

4	Distribution of Age			
	Males		**Females**	
	Age group	***Number***	***Age group***	***Number***
	< 30 y		< 30y	
	31 – 40 y		31 – 40 y	
	41 – 50 y		41 – 50 y	
	51 – 60 y		51 – 60 y	
	61 – 70 y		61 – 70 y	
	> 70 y		> 70 y	

2. Service Availability & Readiness Assessment

1. Registration at Clinic

No			Yes	No
1.1	Availability of a standard patient registration system (Electronic/Paper base)			
1.2	Availability of time appointment for clinic patients (For Consultation)			
1.3	Availability of reminder/recall system for appointments (SMS/Document in clinic books)			
1.4	**Patient Record keeping/Medical information system**			
1.4.1	Does the patient keep a record (clinic book) of clinic visits?	1. Yes		
		2. No		
1.4.2	Does the facility keep a record of patients' clinic visits? *If the answer is "No" go to question section 2*	1. Yes, records kept for all visits		
		2. Yes, records kept for certain types of visit (specify: .....)		
		3. No records kept		
1.4.3	How are records kept?	1. In a duplicate book		
		2. In a patient file		
		3. Electronic data base		

1.4.4	Availability of an adequate space to keep clinic patients records/Books	1. Yes	
		2. No	

2. Consultation and referrals of patients

No		Yes	No
2.1	Checking patients' Weight and documenting		
2.2	Checking patients' blood pressure and documenting		
2.3	**Referral of patients**		
2.3.1	Can you refer patients to another facility in the event of a chronic disease emergency? (*If the answered "**Yes**", go to Question 2.3.2. If the answered "**No**", skip to Question 2.3.7a)*		
2.3.2	How many kilometers (kms) from this facility is the nearest referral institution for a medical emergency? .....km Facility …….		
2.3.3	Approximately how long does it take to transfer a patient to the nearest referral medical institution? Hours: …… Minutes: ……		
2.3.4	Does your facility have an ambulance?		
2.3.5	If the facility does not have an ambulance, can an ambulance be arranged patient transfer?		
2.3.6	What means of transport is most frequently used to transfer emergency patients at your facility (Tic only one)?		

Ambulance		Public transport		Private vehicle	
Commercial vehicle (e.g. taxi)		Other (Specify)			

2.3.7a	Can you refer patients with noncommunicable diseases (NCDs) for a second opinion/specialist consultation?	Yes	No
	If the answer is "**NO**", reason:		
2.3.7b	If the answer is "**YES**" to 2.3.7a, the patient will **usually** be	Yes	No
	1. Referred back to you for follow up		
	2. Followed up at the upper level (Referral) facility		

2.3.7c	Can you refer patients with noncommunicable diseases (NCDs) to the nearest referral medical institution for some additional test? (e.g. Laboratory tests/ Radiological Investigation) If the answer is "NO", reason:	Yes	No
2.3.7d	Can you refer patients with noncommunicable diseases (NCDs) to the nearest referral medical institution for specialized services as **Nutrition counselling, Physical activity programs?**		

3. Human Resources (At selected settings)

No			Existing Cadre	Approved Cadre
3.1	Specialist Medical Officers (Consultant Family Physician)			
3.2	Medical Officers	MBBS		
		RMO		
3.3	Nurses			
3.4	Pharmacists			
3.5	Medical Laboratory Technologists (MLTs)			
3.6	Public Health Midwifes (PHM)			
3.7	Community health worker/Health educator (PHNO)			
3.8	Dispensers			
3.9	Ambulance Drivers			
3.10	Health Care Assistants			
3.11	Are the staff formally trained on managing NCDs?	**Doctors**	**Nurses**	**Others**
	A. Yes, regularly trained			
	B. Yes, trained only one time			
	C. No, not trained on proper NCD management			

4. Equipment (Availability of basic equipment for managing NCDs at selected clinics)

	Equipment	**Functional devices available**	**Devices out of order/Awaiting repair**
1	Blood pressure measuring devices (BPMD)		
2	Weighing Scales		
3	Stethoscope		
4	ECG Machine		
5	Measuring tapes		
6	Pulse oximeter		
7	Oxygen cylinders		
8	**How often are blood pressure measuring devices (BPMDs) calibrated and checked for accuracy?**		
8.1	Once a year or more		
8.2	Less than once a year		
8.3	Never		
8.4	Don't know		
9	**How is equipment usually repaired and maintained?**		
9.1	Repaired at the facility by a Technician		
9.2	Sent back to manufacturer for repair		
9.3	Sent back to "Regional Bio Medical Store" for repair		
9.4	Other, specify:		

5. Infrastructure

								Yes	No
1	Adequate waiting area in the clinic premises								
2	Adequate seating facilities for patents in the clinic (chairs-)								
3	Availability of a comfortable clinic environment (AC/Fans/ lighting)								
4	Satisfactory wash room facilities for patients								
5	Provision of drinking water (water dispensers)								
6	Generator								
7	**Digital Infrastructure**								
7.1	Networked services - Functioning (OPD/Clinics/Pharmacy/Laboratory)								
7.2	Availability of adequate Information Communication Technology equipment at clinics (In working condition)								
	Computers		Printers		UPS		Televisions		
7.3	Availability of satisfactory Internet facility								
7.4	If "***YES***" to 7.3, Availability of Wi Fi facility								

6. Laboratory Investigations (For Clinic patients at DHs)

1	What are the commonly requested laboratory investigations for NCD patients					
	1	2	3	4	5	
					Yes	No
2	How do you perform laboratory tests of patients?		At Institute lab			

		By sending to a referral institute		
		Ask patients to do from a private lab		
3	Frequency of performing laboratory investigations	Mostly monthly		
		Mostly every three months		
		Whenever needed		
4	Is there an appointment system for patients to perform investigations?			
5	Do the laboratory tests are performed on the clinic date itself?			
6	Do the patients have to collect the reports from lab on clinic day?			
7	Can the following investigations be carried out at your lab? (if a laboratory is available)	Urine albumin/protein		
		Blood sugar		
		HbA1C		
		Blood cholesterol		
		Serum creatinine		
		Troponin I		

7. Medicines

1	What are the commonly prescribed medicines for CVD patients at DHs?					
	1	2	3	4	5	
					Yes	No
2	Availability of the commonly prescribed drugs at hospital pharmacy is satisfactory					
3	Performs satisfactory prescription counselling for patients					

4	Availability of a home delivery mechanism of drugs to patients during crisis situations			
5	Availability of medicines in the facility (tick only one box for each medicine):			
	Drug	Always Available	Sometimes Available	Not available at all
5.1	Aspirin			
5.2	Atenolol			
5.3	Enalapril			
5.4	Furosemide			
5.5	Hydrochlorothiazide (HCT)			
5.6	Captopril			
5.7	Losartan Potassium			
5.8	Calcium channel blockers (Nifedipine, Amlodipine)			
5.9	Isosorbide Dinitrate (ISDN)			
5.10	Isosorbide Mononitrate (ISMN)			
5.11	Glyceryl Trinitrate (GTN)			
5.12	Statins (Atorvastatin or Simvastatin)			
5.13	Metformin			
5.14	Insulin			
5.15	Others: 1. 2.			

8. Health Education/promotion/Life style modification

			Yes	No
1	Availability of Healthy Lifestyle Clinic			
2	Health Education is done by	By doctors at clinic		
		By nurses at clinic		
		By PHNO		
3	Available methods of health education/promotion at clinic	Information leaflets/Posters		
		Health talks		
		Telecast of video clips		

9. Community links

		Yes	No
1	Availability of an active Hospital Development Committee (HDC)/ Friends of Facility		
2	Support of the Non- Governmental Organization to improve patient care activities If "Yes", What are the NGOs ……		

ANNEXURE VI c

A project to implement Shared Care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

Data extraction sheet - 1

To collect statistics of patients with stable cardiac diseases referred from the cardiology clinic of NHK to selected PMCIs for Shared Care. Data was collected after 3 months of commencing Shared Care.

Date: .....

Shared Care Patient Statistics- Cardiology Clinic NHK

1. The total Number of Referred Patients to PMCI clinics: .....

2. Sex Distribution of Referred Patients M: ……. F: …….

3. Distribution of Referred Patients to Five PMCIs

	PMCI	Males	Females	Total
1	DH-Katugastota			
2	DH-Wattegama			
3	DH-Manikhinna			
4	DH-Thiththapajjala			
5	DH-Galagedara			

4. Age Distribution of Referred Patients

	Males		Females	
	Age group	***Number***	***Age group***	***Number***
	≤ 40 y		≤ 40y	
	41 – 50 y		41 – 50 y	
	51 – 60 y		51 – 60 y	
	61 – 70 y		61 – 70 y	
	71 – 80 y		71 – 80 y	
	> 80 y		> 80 y	

5. Primary Diagnosis of Referred Patients

	Disease Condition	Males	Females	Total
1	Myocardial Infarction			
2	Ischemic Heart Disease (without MI)			
3	Cardiomyopathy			
4	Arrhythmias (Wellens Syndrome)			
5	Others			

6. Comorbidities of Referred Patients

	Comorbidity	Males	Females	Total
1	Diabetes Mellitus			
2	Hypertension			
3	Dyslipidemia			
4	Chronic Respiratory Disease			
5	Chronic Kidney Disease			
6	Others			

7. Patients with Special Cardiac Interventions referred

	Intervention	Males	Females	Total
1	PCI			
2	CABG			
3	Others			

ANNEXURE VI d

A project to implement Shared Care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

Data extraction sheet - 2

To collect statistics of patients with stable cardiac diseases referred from the cardiology clinic of NHK registered at PMCI for shared care. Data was collected after 3 months of commencing Shared Care.

Date: .....

PMCI: DH (Katugastota/ Wattegama /Manikhinna/ Thiththapajjala/ Galagedara)

Shared Care Patient Statistics

1. The Total Number of Referred Patients Registered at PMCI Clinic.....

2. Sex Distribution of Registered Patients M: …… F: ……

3. Age Distribution of Registered Patients

	Males		**Females**	
	Age group	***Number***	***Age group***	***Number***
	< 41 y		< 41y	
	41 – 50 y		41 – 50 y	
	51 – 60 y		51 – 60 y	
	61 – 70 y		61 – 70 y	
	71 – 80 y		71 – 80 y	
	> 80 y		> 80 y	

4. Primary Diagnosis of Registered Patients

	Disease Condition	Males	Females	Total
1	Myocardial Infarction + IHD			
2	Ischemic Heart Disease (IHD)			
3	Cardiomyopathy			
4	Arrhythmias (Wellens Syndrome)			
5	Others			

5. Comorbidities of Registered Patients

	Comorbidity	Males	Females	Total
1	Diabetes Mellitus			
2	Hypertension			
3	Dyslipidemia			
4	Chronic Respiratory Disease			
5	Chronic Kidney Disease			
6	Others			

6. Patients with Special Cardiac Interventions

	Intervention	Males	Females	Total
1	PCI			
2	CABG			
3	Others			

ANNEXURE VII

Referral & Back Referral Pathway

Shared Care Project

Cardiology Clinic

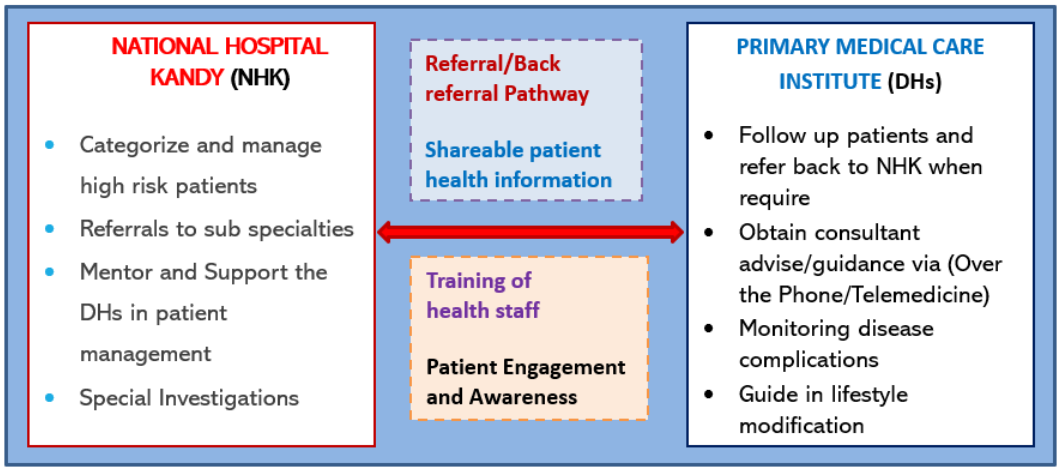
National Hospital Kandy

We Share - Your Care

Introduction

Managing patients with cardiac diseases is a challenge as many patients need to be followed up under the close supervision of a Consultant Cardiologist, especially in the initial period of the onset of the disease. However, for certain cardiac disease conditions once the patient becomes clinically stable it is possible to manage them in a primary healthcare setting under the guidance of a Consultant Cardiologist. Thus, managing patients with cardiac diseases in a shared care cluster requires careful attention to multiple factors. The conceptual framework (figure 1) displays the roles of the care providers managing patients in shared care.

Figure. 1 Conceptual Framework of "We Shared Your Care" Project



The lack of an explicit referral and back referral pathway for patients registered in the cardiology clinic of NHK was identified as a key deficiency in implementing shared care. Thus, several discussions were conducted with the consultant cardiologists and other relevant stakeholders to develop this referral and back referral pathway to manage patients with stable cardiac disease conditions under this project.

Concept of Shared Care

"**Shared Care**" is defined as "A joint participation of primary care physicians and specialty care physicians in the planned delivery of care for patients". Shared care implies that,

1. An individual's health care will be shared and form a continuum between primary care and specialized services

2. Resources within the cluster are to be shared so that there is optimum availability and utilization

"**Shared Care Cluster**" is a group of hospitals linked together to serve a demarcated population.

For this project, the National Hospital Kandy (NHK) Cluster is introduced where NHK serves as the Apex hospital and 5 selected Divisional Hospitals in Kandy district (DH Katugastota, DH Wattegama, DH Manikhinna, DH Thiththapajjala and, DH Galagedara) will be linked together.

Objective

To design and develop a referral and back referral pathway for patients with stable cardiac disease conditions following up at the cardiology clinic NHK to be managed in the National Hospital Kandy Cluster of hospitals (NHK + DHs)

Process

The project will be implemented in stages and the following activities were identified in designing the pathway

- **Categorizing the cardiac patients to be managed in a shared care cluster**
- **Defining selection criteria for patients**
- **Developing care plans for eligible patients**
- **Method of patient information sharing among care providers**
- **Record keeping**

1. Categorizing Patients

Patients with different cardiac disease conditions are categorized as follows

	Category	Disease conditions/patient status	Remarks
1	Ischemic Heart Disease (IHD)	1. Totally on medical management	The majority are on total medical management and can be managed in shared care. PCI/CABG patients with 1 y follow-up at the cardiology unit and PCI/CABG awaiting patients with stable cardiac diseases also can be managed in shared care
		2. PCI a. Awaiting PCI b. With PCI	
		3. CABG a. Awaiting CABG b. With CABG	
2	Congenital Heart Diseases	1. ASD 2. VSD 3. Others	
3	Valvular Conditions	1. Atrial Valve Replaced (AVR) 2. Mitral Valve Replaced (MVR) 3. Dual Valve Replaced (DVR) 4. Other surgeries 5. Inoperable patients 6. Patients with minimal problems of the valves (Rheumatic HD)	Mild rheumatic valvular disease patients (only on Oral penicillin) Can be managed in Shared care
4	Cardiomyopathies	1. Genetical 2. Other types	Can be managed in Shared Care
5	Other Disease Conditions	1. Cardiac tumors 2. Pericardial conditions 3. Arrhythmias	
6	Patients following up without a disease of cardiac origin	Patients with chest pain investigated without cardiac disease (Musculoskeletal pain)	Can be managed in Shared Care

2. Selection Criteria

- Only patients with a follow-up history of at least 1 year in the cardiology clinic NHK will be enrolled in Shared care (Irrespective of the disease condition)
- Patients with complex cardiac diseases will not be included
- Patients on Warfarin therapy will not be included
- Other comorbidities should be under control
- Only with the patient's consent (Even if patients fulfill the selection criteria)

Selection criteria (Disease Categories)

For stage 1

1. Patients with IHD
2. Patients with mild valvular HD (Rheumatic VD patients on Oral penicillin)
3. Patients without a specific cardiac diagnosis

For Stage 2

Patients with Valvular Heart Disease under satisfactory control

Selection of Patients Diagnosed with IHD

Selection has to be done according to the stepwise guide given in figure 2.

Patients in other categories of stage 1

Patients with mild valvular HD (Rheumatic VD patients on Oral penicillin), Patients without a specific cardiac diagnosis should be thoroughly assessed before referral.

(Consultant Cardiologists' opinions should be taken whenever necessary during the selection of patients)

3. Developing Care Plans

Care plans should be developed by the referring team for each patient selected to be enrolled in shared care

The referral form should be completed by the medical officer consulting the patient in the cardiology clinic NHK. All relevant sections of the referral form (Annexure 1) should be filled providing clear instructions to the medical officers in PMCIs on follow-up. The patients should be informed clearly about the care plan

General Care Plan

- All referred patients will be reviewed in the cardiology clinic NHK after 3 months. Then depending on the clinical condition frequency of subsequent visits will be decided
- Patients should be attended for special investigations and sub-specialty referrals arranged by the cardiology clinic NHK on due dates
- At any point in time, patients are given the choice to withdraw from the shared care and continue to follow up in the cardiology clinic NHK without any discrimination

Specific Care Plans

Some patients may need specific care plans. In such situations, it is advised to get a consultant cardiologist's opinion

4. Sharing of Patient Information

- A paper-based method will be used. It is planned to convert to digitalized mode once the PMCIs are equipped with the necessary ICT facilities.
- A distant clinical support mechanism to medical officers in PMCIs through telephone and Shared Care WhatsApp group should be entertained by the cardiology team whenever necessary in managing shared care patients
- Patient information should be treated confidentially by the care providers

Special Instructions to Medical Officers in PMCIs

- Medical Officers in the PMCI clinics should consult the cardiology team whenever necessary for proper management of referred patients and also refer them in physical to the cardiology unit at any point of management.

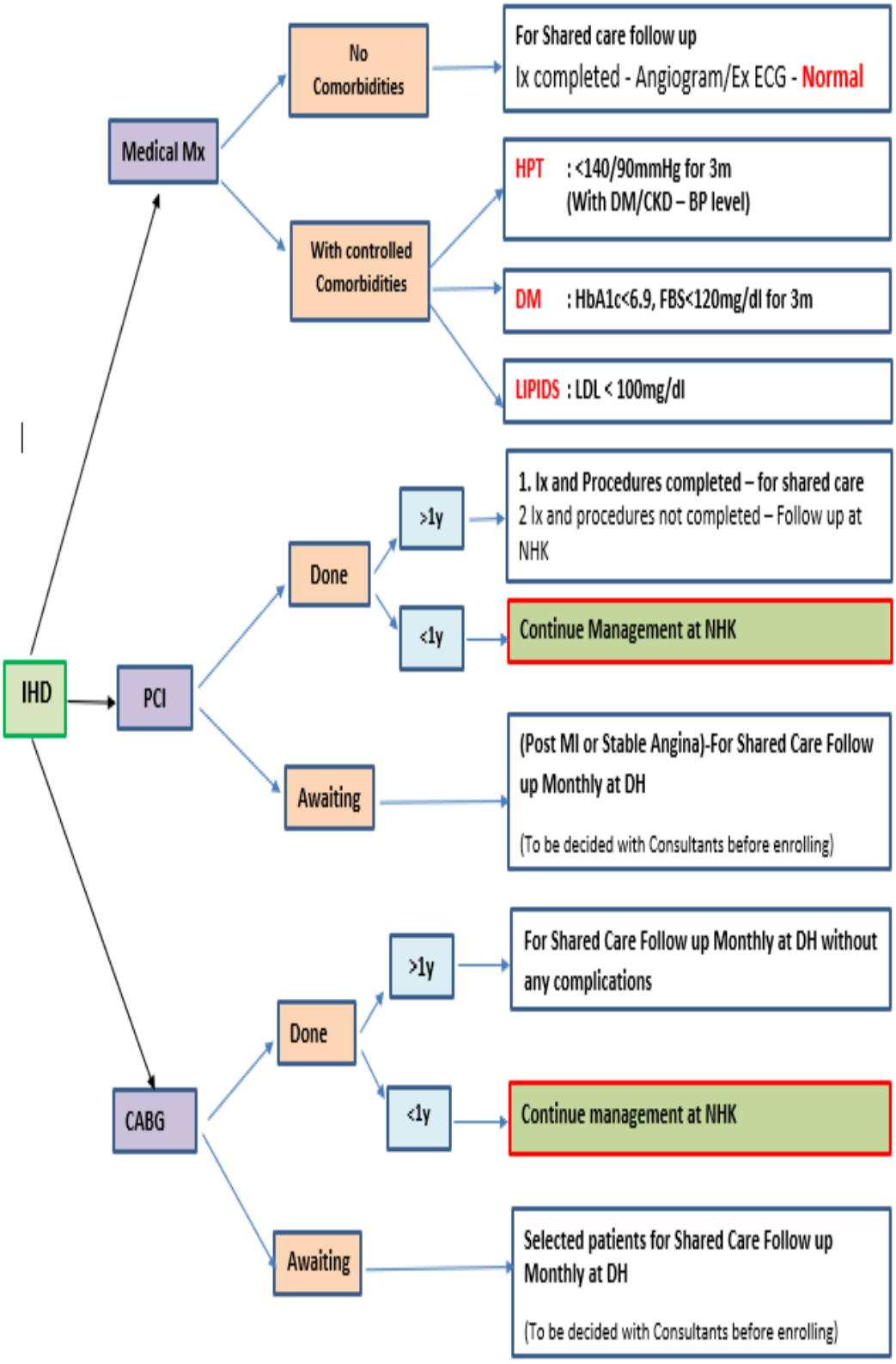
- Use the standard back referral forms provided when sending patients for review after 3 months with the necessary information requested.

5. Record Keeping

- Record keeping should be done by Nursing Officers at the registration desk of the Cardiology clinic NHK and PMCI clinics.
- It is advised to complete the special patient registers provided properly including all necessary patient information for reference.
- Should collect the referral forms/ back-referral forms of patients and be kept safely in a folder for future reference

This document of the Referral and Back Referral pathway is developed only to be used for patients enrolled in shared care under this project. This will be periodically evaluated by an expert team to make any amendments.

Guide to Selection of Patients with IHD for Shared Care (Page 237)


IHD
Medical Mx
No Comorbidities
For Shared care follow up
Ix completed - Angiogram/Ex ECG - Normal
With controlled Comorbidities
HPT : <140/90mmHg for 3m
(With DM/CKD – BP level)
DM : HbA1c<6.9, FBS<120mg/dl for 3m
LIPIDS : LDL < 100mg/dl
PCI
Done
>1y
1. Ix and Procedures completed – for shared care
2 Ix and procedures not completed – Follow up at NHK
<1y
Continue Management at NHK
Awaiting
(Post MI or Stable Angina)-For Shared Care Follow up Monthly at DH
(To be decided with Consultants before enrolling)
CABG
Done
>1y
For Shared Care Follow up Monthly at DH without any complications
<1y
Continue management at NHK
Awaiting
Selected patients for Shared Care Follow up Monthly at DH
(To be decided with Consultants before enrolling)

ANNEXURE VIII a

Cardiology Clinic - National Hospital Kandy

Clinical summary of the patient to be Referred to Divisional Hospitals (Shared Care Project)

Consultant Family Physician/ Medical officer -Divisional Hospital

Dear Doctor,

Please follow up this patient enrolled for **Shared Care** at your clinic. You may contact our team at the cardiology unit NHK for any clinical assistance in management. Please refer to NHK on the given date.

Personal details

1	Name	Rev/Mr./Mrs./Ms.			
2	Age		3	Clinic No	
4	Address				
5	Contact No		6	Divisional Hospital	

Clinical Details

7	Primary Diagnosis						
8	Comorbidities	**DM**	**HPT**	**DYSLIPID**	**CHRONIC Resp.D**	**CKD**	**Other**
9	Parameters	**BP**			**Pulse Rate**		
10	**Investigation details**						
A	**Special Investigations (If Applicable)**						
	Investigation	***Remarks***				***Next Scheduled Date***	
1	Exercise ECG						
2	2D ECHO						
3	Angiogram						
4	Other: ECG/Chest X-Ray						

B	Biochemical Investigations (If Applicable)							
	Investigation	*Last Test Value*						*Next Scheduled Date*
1	FBS							
2	HBA1c							
3	Lipid Profile	TC		LDL		TAG		
4	Serum Creatinine							
5	PT/INR							
6	Others:							
11	**Medication Details**							
A	**Drug Allergies**							
B	**Current Prescription**							
	Drug	**Dosage**						**Frequency**
1								
2								
3								
4								
5								
6								

Plan of Management

Next Cardiology clinic date at NHK in (3 months)	

Date: ..... **Medical Officer (CC)**
NHK

ANNEXURE VIII b

Follow-up Notes of Patients – Shared Care Project

Consultant Cardiologist/ Medical Officer – Cardiology Clinic, National Hospital Kandy

Dear Sir/Madam/Doctor,

Please review this patient enrolled for **Shared Care** at your clinic. The follow-up notes are attached for your reference.

Personal details **Next date of NHK Clinic:**

1	Name	Rev/Mr./Mrs./Ms.			
2	Age		3	Clinic No	
4	Address				
5	Contact No		6	Divisional Hospital	

Clinical Details

7	Primary Diagnosis						
8	Comorbidities (Please tick the relevant box)	**DM**	**HPT**	**DYSLIPID**	**CHRONIC Resp.D**	**CKD**	**Other**
9	Date of measurement	**BP** (mmHg)			**Pulse Rate** (Reading)		
1							
2							
3							

10	**Biochemical Investigations values (please indicate if done at DH clinic)**			
	Investigation	FBS	Lipid Profile	Other Tests
1	Date:		TC - LDL- TAG-	
2	Date:		TC - LDL- TAG-	
3	Date:		TC - LDL- TAG-	

11	**Patients' complaints of (Disease condition)**			
12	**Medication Details**			
	1. Changes made to prescribed drugs (Please mention If applicable)			
	2. Any medication is given for other illnesses (Please mention)			
13	**Have you obtained assistance from the Cardiology unit (Telephone/Telemedicine) in managing this patient?** **(YES / NO) – if the answer is Yes,**			
	Date		Mode	Telephone/Telemedicine
	Date		Mode	Telephone/Telemedicine

Any other remarks

Date: .....

Consultant Family Physician/ Medical Officer
Divisional Hospital

ANNEXURE IX

SHARED CARE PROJECT – KANDY REGISTER

Details of patients enrolled to Shared Care

No	Date	Referred DH	Clinic No (PIN)	Name	Age (y)	M/F	Address	Contact No	Diagnosis		Review Date
									Primary	Comorbidities	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Primary Diagnosis = (IHD/Rheumatic HD/Congenital HD/Valvular HD/Cardiomyopathy/Ix for Chest Pain/Others)
Comorbidities = (DM/HPT/DYSLIPIDEMIA/COPD/CKD/RA/others)

SHARED CARE PROJECT – DH REGISTER

Details of patients enrolled to Shared Care

No	Date	Clinic No (PIN)	Name	Age (y)	M/F	Address	Contact No	Diagnosis		Next review Date (NHK)
								Primary	Comorbidities	

Primary Diagnosis = (IHD/Rheumatic HD/Congenital HD/Valvular HD/Cardiomyopathy/Ix for Chest Pain/Others)
Comorbidities = (DM/HPT/DYSLIPIDEMIA/COPD/CKD/RA/others)

ANNEXURE X

Guide to using the Communication Facility Introduced (Telephone) in Managing Patients with Cardiac Diseases in a PMCI

We Share - Your Care

This guide is prepared for the users of the special communication facility (Telephone) introduced as a distant clinical support method to manage patients with cardiac diseases in a Primary Medical Care Institute (PMCI) under the shared care project "We Share - Your Care". All users are advised to follow the guidelines at all times when using this facility.

Directions

Key Points

1. This facility is solely provided for Medical Officers at selected 5 PMCI of the project

2. It should only be used to obtain a specialist opinion on managing patients with cardiac diseases;

- Referred from the cardiology clinic of NHK to PMCI clinics,
- Who are already followed up at PMCI clinics at present
- In managing any acute cardiac emergency at PMCI

3. Only a Consultant Cardiologist, Senior Registrar in Cardiology (SR), or Senior Medical officer (SMO) in the cardiology unit should give over-the-phone opinions and advice to medical officers at PMCIs

4. All communicating parties should maintain the confidentiality of the health information shared

Part A: Guideline for Medical Officers of PMCIs

1. Before requesting a clinical opinion, organize the patient information and clinical condition as a summary

2. Introduce yourself and mention your requirement. (A Nursing Officer or a Healthcare Assistant in the Coronary Care Unit (CCU) will be answering the phone most of the time)

3. Present the patient information to the Consultant Cardiologist/SR/SMO clearly

4. Make a note of the specialized opinion or advice given in the Clinic Book / Bed Head Ticket/ Transfer Forms and document the informant's details

5. Manage the patient accordingly as advised by the Consultant Cardiologist/ SR/ SMO

Part B: Guideline for Cardiology Team

1. Inform the non-medical staff of the CCU of the cardiology unit of the special facility given for 5 PMCIs under the Shared Care Project "We Share - Your Care"

2. Introduce yourself to the caller when answering

3. Give clear opinions and advice to the Medical Officers of the PMCIs on clinical management based on the information given. The decision-making level (SMO < SR < Consultant Cardiologist) should always be the highest based on the clinical issue to be solved.

4. Request results of ECGs, laboratory tests, specialized cardiac investigations (2D Echo, Exercise ECG, Angiogram, etc.), and, information on cardiac procedures the patient underwent (PCI, CABG, Pacemaker, Valve replacement, etc.) from the caller whenever necessary before giving opinion or advice on patient management.

5. WhatsApp/Viber platforms are allowed to share reports when required to give opinions and advice on patient management.

ANNEXURE XI a

We Share Your Care

මහනුවර ජාතික රෝහලේ හෘද රෝග ඒකකය සහ මහනුවර දිස්ත්‍රික්කය තුළ තෝරාගත් ප්‍රාදේශීය රෝහල් අතර හෘද රෝගීන්ට ප්‍රතිකාර කිරීම සඳහා වන

"හවුල් සත්කාර ව්‍යාපෘතිය"

ඔබට වඩාත් පහසු මෙන්ම ගුණාත්මක ප්‍රතිකාර සේවාවක් ලබාදීම සඳහා මෙම ව්‍යාපෘතිය ක්‍රියාත්මක කරනු ලැබේ.

මෙම නියමු ව්‍යාපෘතිය මහනුවර ජාතික රෝහල සහ කටුගස්තොට, වත්තේගම, මැණික්හින්න, තිත්තපජ්ජල සහ ගලගෙදර යන ප්‍රාදේශීය රෝහල් අතර ක්‍රියාත්මක කරනු ලැබේ.

ඔබට මේ සම්බන්ධයෙන් අවශ්‍ය වැඩිදුර තොරතුරු මහනුවර ජාතික රෝහලේ හෘද රෝග සායනයේ වෛද්‍ය හා හෙද නිලධාරීන් ගෙන් ලබාගත හැක

"We Share Your Care"

கண்டி தேசிய வைத்தியசாலை இருதயவியல் பிரிவு மற்றும் கண்டி மாவட்டத்தில் தேர்ந்தெடுக்கப்பட்ட பிராந்திய மருத்துவமனைகளில் இதய நோயாளிகளுக்கு சிகிச்சை அளிப்பதற்காக

" பகிரப்பட்ட பராமரிப்பு திட்டம் "

உங்களுக்கு மிகவும் வசதியான மற்றும் தரமான சிகிச்சையை வழங்க இந்த திட்டம் செயல்படுத்தப்பட்டு வருகிறது

இந்த முன்னோடி திட்டம் கண்டி தேசிய வைத்தியசாலை, கட்டுகஸ்தோட்டை, வத்தேகம, மெனிகின்ன, திட்டபஜ்ஜல மற்றும் கலகெதர பிரதேச வைத்தியசாலைகளுக்கிடையில் நடைமுறைப்படுத்தப்படுகின்றது.

கண்டி தேசிய வைத்தியசாலையின் இருதயநோய் மருத்துவ மனையின் மருத்துவ மற்றும் தாதியர்களிடம் இது தொடர்பில் உங்களுக்குத் தேவையான மேலதிக தகவல்களைப் பெற்றுக்கொள்ள முடியும்.

ANNEXURE XI b

We Share Your Care

මහනුවර ජාතික රෝහලේ හෘද රෝග ඒකකය සහ මහනුවර දිස්ත්‍රික්කය තුළ තෝරාගත් ප්‍රාදේශීය රෝහල් අතර හෘද රෝගීන්ට ප්‍රතිකාර කිරීම සඳහා වන

"හවුල් සත්කාර ව්‍යාපෘතිය"

ඔබට වඩාත් පහසු මෙන්ම ගුණාත්මක ප්‍රතිකාර සේවාවක් ලබාදීම සඳහා මෙම ව්‍යාපෘතිය ක්‍රියාත්මක කරනු ලැබේ.

මේ දක්වා මහනුවර ජාතික රෝහලේ හෘද රෝග සායනයෙන් ප්‍රතිකාර ලබාගන්නා ලද ඔබගේ රෝග තත්ත්වය සාර්ථක ලෙස පාලනය වී ඇති බව සතුටින් දන්වා සිටිමු.

එබැවින් මෙම සායනයේ විශේෂඥ වෛද්‍යවරුන්ගේ අධීක්ෂණය යටතේ ඔබට වඩාත් ආසන්නතම ප්‍රාදේශීය රෝහල වෙත ප්‍රතිකාර පවත්වාගෙන යෑම සඳහා යොමු කරනු ලබන අතර, මහනුවර ජාතික රෝහලේ හෘද රෝග ඒකකයේ වෛද්‍ය කණ්ඩායම්, ප්‍රාදේශීය රෝහල්වල වෛද්‍ය කණ්ඩායම් සහ අනිකුත් සෞඛ්‍ය සේවක කණ්ඩායම් එක්ව ඔබට ප්‍රතිකාර කරනු ලැබේ.

මෙම "හවුල් සත්කාර ව්‍යාපෘතිය" සඳහා ඔබගේ පූර්ණ එකඟතාවය මත පමණක් යොමු කරනු ලබන අතර, ඔබගේ කැමැත්ත පරිදි ඕනෑම අවස්ථාවක ඉන් ඉවත් වී නැවත මෙම හෘද රෝග සායනයෙන් පමණක් දිගටම ප්‍රතිකාර ලබා ගැනීමට අවස්ථාව සලසා ඇත. එසේ වුවද ඔබගේ ප්‍රතිකාර කිසිදු අඩුවකින් තොරව දිගටම සිදු කරනු ලැබේ.

භවුල් සත්කාර සඳහා යොමු කරනු ලබන ඔබ විසින් දැනගත යුතු කරුණු

- මහනුවර ජාතික රෝහලේ හෘද රෝග සායනයේ ඔබගේ ලියාපදිංචිය ඉවත් කරනු නොලැබේ
- ඔබගේ රෝගයේ ස්වභාවය අනුව සෑම තුන් මසකට හෝ සය මසකට වරක් මහනුවර ජාතික රෝහලේ හෘද රෝග සායනයේදී ඔබව පරීක්ෂාකර ප්‍රතිකාර කරනු ලැබේ
- ඔබව යොමු කරනු ලබන ප්‍රාදේශීය රෝහලින් මසකට වරක් ප්‍රතිකාර ගැනීමට කටයුතු කළ යුතුය
- විශේෂිත වූ පරීක්ෂණ සහ විශේෂඥ වෛද්‍ය සායන සඳහා ඔබට ලබා දී ඇති දිනයන්හි දී (මහනුවර ජාතික රෝහලට) නොවරදවාම සහභාගි විය යුතුයි
- ඔබට ලබා දී ඇති තොරතුරු පත්‍රිකාව සහ ඔබගේ සායනික සටහන් ද රැගෙන ඔබට වඩාත් ආසන්නතම ප්‍රාදේශීය රෝහලට ගොස් ලියාපදිංචි විය යුතුයි
- රෝග පාලනය සඳහා ලබාදෙන උපදෙස් නිසි පරිදි පිළිපැදිය යුතුයි (ඖෂධ පිළිබඳ, පෝෂණය පිළිබඳ සහ ශාරීරික ක්‍රියාකාරකම් පිළිබඳ උපදෙස්)

මෙම ව්‍යාපෘතිය යටතේ,

- හෘද රෝග සඳහා ප්‍රතිකාර කිරීමට ප්‍රාදේශීය රෝහලේ වෛද්‍යවරුන් ඇතුළු අනිකුත් සේවක කණ්ඩායම් පුහුණු කර ඇත
- ඔබට අවශ්‍ය ඖෂධ වර්ග අදාල ප්‍රාදේශීය රෝහල මගින්ම ලබා ගැනීමට පහසුකම් සලසා ඇත

- ඔබට ප්‍රතිකාර කිරීමේ දී, ප්‍රාදේශීය රෝහලේ වෛද්‍යවරුන්ටමහනුවර ජාතික රෝහලේ හෘද රෝග ඒකකයේ විශේෂඥ වෛද්‍යවරු ඇතුළු වෛද්‍ය කණ්ඩායම් මගින් වෛද්‍ය උපදෙස් ලබා ගැනීමට පහසුකම් සලසා ඇත (දුරකථන මඟින් හෝ Telemedicine මාර්ගයෙන්)
- විශේෂිත හෘද රෝග පරීක්ෂණ (2D Echo, Exercise ECG, Angiogram) සහ වෛද්‍ය රසායනාගාර පරීක්ෂණ , මහනුවර ජාතික රෝහල මගින්ම ඔබට ඉටු කරදෙනු ලැබේ
- ප්‍රාදේශීය රෝහල් තුළ ඩිජිටල් යටිතල පහසුකම් දියුණු කර වඩාත් කාර්යක්ෂම සේවාවක් ස්ථාපිත කිරීම ආරම්භ කර ඇත

ඔබට මේ සම්බන්ධයෙන් අවශ්‍ය වැඩිදුර තොරතුරු
මහනුවර ජාතික රෝහලේ
හෘද රෝග සායන සහ ප්‍රාදේශීය රෝහල්වල සායනයන් හි
වෛද්‍ය හා හෙද නිලධාරීන් ගෙන් ලබාගත හැක

ANNEXURE XI c

We Share Your Care

கண்டி தேசிய வைத்தியசாலை இருதயவியல் பிரிவு மற்றும் கண்டி மாவட்டத்தில் தேர்ந்தெடுக்கப்பட்ட பிராந்திய மருத்துவமனைகளில் இதய நோயாளிகளுக்கு சிகிச்சை அளிப்பதற்காக

" பகிரப்பட்ட பராமரிப்பு திட்டம் "

உங்களுக்கு மிகவும் வசதியான மற்றும் தரமான சிகிச்சையை வழங்க இந்த திட்டம் செயல்படுத்தப்பட்டு வருகிறது .

கண்டி தேசிய வைத்தியசாலையின் இருதய சிகிச்சைப் பிரிவில் சிகிச்சை பெற்று வந்த நீங்கள் இனி அருகிலுள்ள பிராந்திய வைத்தியசாலையிலும், கண்டி தேசிய வைத்தியசாலையின் இருதய சிகிச்சைப் பிரிவிலும் சிகிச்சைக்காக பரிந்துரைக்கப்படுவீர்கள். இதற்காக கண்டி தேசிய வைத்தியசாலையின் மருத்துவ குழுக்களும் , பிராந்திய வைத்தியசாலைகளின் மருத்துவக் குழுக்களும். மற்றும் சுகாதார பணியாளர்களின் குழுக்களும் சிகிச்சைக்காக உங்களை ஒன்றாக நடத்துவார்கள் .

இந்த "பகிரப்பட்ட பராமரிப்பு திட்டம்" உங்களின் முழு சம்மதத்துடன் மட்டுமே குறிப்பிடப்படுகிறது, மேலும் எந்த நேரத்திலும் அதிலிருந்து விலகி, இந்த இருதயவியல் மருத்துவ மனையில் மட்டுமே தொடர்ந்து சிகிச்சை பெற உங்களுக்கு வாய்ப்பு வழங்கப்படுகிறது. இருப்பினும், உங்கள் சிகிச்சை தடையின்றி தொடரும்.

பகிர்ந்த கவனிப்புக்கான பரிந்துரைகளைப் பற்றி நீங்கள் தெரிந்து கொள்ள வேண்டிய விஷயங்கள்

- கண்டி தேசிய வைத்தியசாலை இருதய நோய் சிகிச்சை நிலையத்தில் இருந்து உங்கள் பதிவு அகற்றப்படாது
- உங்கள் நோயின் தன்மையைப் பொறுத்து **மூன்று மாதங்களுக்கு** ஒருமுறை அல்லது ஆறு மாதங்களுக்கு ஒருமுறை கண்டி தேசிய வைத்தியசாலையில் இருதய சிகிச்சை கிளினிக்கில் உங்களை பரிசோதித்து சிகிச்சை அளிக்கப்படும்
- உங்களால் பரிந்துரைக்கப்படும் உள்ளூர் மருத்துவமனையில் மாதத்திற்கு ஒருமுறை சிகிச்சைக்குரிய ஏற்பாடுகள் செய்யப்படும்
- சிறப்பு சோதனைகள் மற்றும் வைத்திய நிபுணர்கள் பார்வையிடுவதற்கு உங்களுக்கு வழங்கப்பட்ட தேதிகளில் தவறாமல் (கண்டி தேசியமருத்துவமனையின்) கிளினிக்குகளில் கலந்துகொள்ள வேண்டும்.
- உங்களுக்கு கொடுக்கப்பட்ட தகவல் தாளையும் உங்கள் மருத்துவ குறிப்புகளையும் எடுத்து சென்று உங்கள் அருகிலுள்ள உள்ளூர் மருத்துவமனைக்குச் சென்று பதிவு செய்து கொள்ள வேண்டும்
- நோய் கட்டுப்பாட்டுக்கு கொடுக்கப்பட்ட வழிமுறைகளை சரியாக பின்பற்ற வேண்டும் (மருந்துகள் , போஷனை மற்றும் உடல் செயல்பாடுகள் பற்றிய வழிமுறைகள்).

இந்த திட்டத்தின் கீழ்,

- இதய நோய்க்கு சிகிச்சையளிக்க உள்ளூர் மருத்துவமனையில் மருத்துவர்கள் உட்பட ஏனைய ஊழியர்களின் குழுக்களுக்கும் பயிற்சி அளிக்கப்படுகிறது

- உங்களுக்கு தேவையான மருந்து வகைகள் அதனைப் பெறுவதற்கு சம்பந்தப்பட்ட உள்ளூர் வைத்தியசாலைளுக்கு வசதிகள் ஏற்படுத்திக் கொடுத்துள்ளது
- உங்களுக்கு சிகிச்சை அளிக்கும் உள்ளூர் மருத்துவமனையில் உள்ள மருத்துவர்களிடம் கண்டி தேசிய வைத்தியசாலையின் இருதய சிகிச்சைப் பிரிவு நிபுணர்கள் உள்ளிட்ட மருத்துவக் குழுக்களால் மருத்துவ ஆலோசனையைப் பெற வசதி (தொலைபேசி அல்லது டெலிமெடிசின் மூலம்) செய்யப்பட்டுள்ளது.
- சிறப்பு இருதய பரிசோதனைகள் (2டி எக்கோ, ஸ்ட்ரெஸ் டெஸ்ட் (stress test) ஆஞ்சியோகிராம் (Angiogram)) கண்டி தேசிய வைத்தியசாலையின் ஆய்வு கூடங்களில் பரிசோதனைகள் நிறைவேறும்
- பிராந்திய மருத்துவமனைகளுக்குள் டிஜிட்டல்(Digital) முறைமைக்குரிய உள்கட்டமைப்பு மேம்படுத்தப்பட்டு மேலும் திறமையான சேவையை நிறுவப்பட்டுள்ளது.

இது தொடர்பில் உங்களுக்கு தேவையான மேலதிக தகவல்கள் கண்டி தேசிய வைத்தியசாலையில் உள்ளன கார்டியாலஜி (Cardiology) கிளினிக்குகள் மற்றும் உள்ளூர் மருத்துவமனைகளின் கிளினிக்குகளில் உள்ள மருத்துவ மற்றும் தாதிய உத்தியோகத்தர்களிடம் இருந்து கிடைக்க பெறும்.

ANNEXURE XII

Postgraduate Institute of Medicine
University of Colombo, Sri Lanka

PGIM/AC/10/MD.MA

03 February 2022

Dr. K.M.P.D. Jayasundara,
Registrar in Medical Administration

Dear Dr. Jayasundara,

MD MEDICAL ADMINISTRATION - DETAILED RESEARCH PROPOSAL

Your project proposal titled **"An intervention to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster."** has been reviewed.

I wish to inform you that the Board of Study in Medical Administration at its meeting held on **17 December 2021** having considered the comments/ recommendations made by the reviewers, decided that your **project proposal is acceptable** for the research project prescribed for MD Medical Administration Examination.

Yours sincerely,

Dr. Pandula Siribaddana
Senior Lecturer/PGIM
For Director/PGIM

CC: 1. Chairman/Secretary, Board of Study in Medical Administration
2. PF.

General Office: 160, Prof. Nandadasa Kodagoda Mawatha, Colombo 07, Sri Lanka. Tel: +94 11 2696758/2696261 Web: www.pgim.cmb.ac.lk

Director	Academic Branch	Exam. Branch	Library	Medical Education Resource Centre
Tel :+94 11 2688649/2697758	Tel: +94 112687806/2687511	Tel: +94 11 2683467/2696258	Tel: +94 11 2671047	Tel: +94 11 2689266
Fax :+94 11 2697757	Fax: +94 11 2687050	Fax: +94 11 2687803	Fax: +94 11 2687050	Fax: +94 11 2689268
Email: director@pgim.cmb.ac.lk	academic@pgim.cmb.ac.lk	exam@pgim.cmb.ac.lk pgimint@pgim.cmb.ac.lk	library@pgim.cmb.ac.lk	merc@pgim.cmb.ac.lk

ANNEXURE XIII

ETHICS REVIEW COMMITTEE

POSTGRADUATE INSTITUTE OF MEDICINE

UNIVERSITY OF COLOMBO, SRI LANKA

ERC/PGIM/2022/020
23.05.2022

Dr. K.M.P.D Jayasundara
No. 28 Darshanapura,
Kundasale.

Dear Dr. Jayasundara,

Title: A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy cluster.

Investigator – Dr. K.M.P.D Jayasundara (MBBS, MSc)
Supervisor – Dr. (Mrs.) S.C Wickramasinghe (MBBS, MSc, MD)

Thank you for submitting the above research proposal. I am pleased to inform you that the study was approved by the ERC at its meeting held on 25.04.2022 after reviewing following documents submitted by you.

Document	Version No.	Date of Submission
Project protocol	1.0	31.03.2022
Study Instruments-English	1.0	31.03.2022
Study Instruments-Sinhala	1.0	31.03.2022
Study Instruments-Tamil	1.0	31.03.2022
Information Sheet & Consent Form-English	1.0	31.03.2022
Information Sheet & Consent Form-Sinhala	1.0	31.03.2022
Information Sheet & Consent Form-Tamil	1.0	31.03.2022

The approval is valid until one year from the meeting date stated above. You may make a written request for renewal/extension of the validity, along with the submission of a progress report.

Please note that you are required to inform the ERC about the following:

- Any unanticipated events involving potential risks to study subjects.
- Any deviations in protocols
- Any changes to the documents listed above.

You are required to submit the final report to the ERC/PGIM with the following declaration:

"The research was conducted in accordance with the proposal for which approval was granted by the ERC of PGIM" within three (03) months upon the completion of the study.

Thank you.
Yours sincerely,

Dr Pandula Siribaddana
Secretary-ERC/PGIM

Address: 160, Prof. Nandadasa Kodagoda Mawatha, Colombo 07, Sri Lanka.
Web: www.pgim.cmb.ac.lk **Email:** erc@pgim.cmb.ac.lk
Tel: +94 11 2689266 **Fax:** +94 11 2689268

ANNEXURE XIV

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தொலைபேசி) 0112698507, 0112694033
Telephone) 0112675449, 0112675280

ෆැක්ස්) 0112693866
பெக்ஸ்) 0112693869
Fax) 0112692913

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மின்னஞ்சல் முகவரி) postmaster@health.gov.lk
e-mail)

අන්තර්ජාල පිටුව) www.health.gov.lk
இணையத்தளம்) www.health.gov.lk
website)

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சுவசிரிபாய
SUWASIRIPAYA

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சுகாதார அமைச்சு
Ministry of Health

මගේ අංකය) DDG / NCD / I / 02 / 2022
எனது இல) DDG / NCD / I / 02 / 2022
My No.)

ඔබේ අංකය) Your No. :)

දිනය) 30/04/2022
திகதி) 30/04/2022
Date)

Dr. K.M.P.D Jayasundara
Registrar
Medical Administration

Administrative approval for the research project,

"A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster"

Concerning your request, herewith I am granting the administrative approval to conduct the above-mentioned research project as a requirement to fulfill the degree of Doctor of Medicine in Medical Administration, Post Graduate Institute of Medicine, University of Colombo.

ERC Approval NO : PGIM/2022/020

You are hereby to adhere to the directives given by the Board of Study in Medical Administration and the Ethics Review Committee of the PGIM in conducting all stages of the research project.

Administrative approvals from the relevant heads of institutions of the study setting should be obtained before conducting the study and should adhere to their institutional policies.

S. C. Wickramasinghe

Dr. S.C Wickramasinghe
Deputy Director General NCD

Dr. S. C. Wickramasinghe
Deputy Director General (NCD)
Ministry of Health, Nutrition & Indigenous Medicine

ANNEXURE XV

18/03/2022

Dr. Aruna Jayasekera
Deputy Director General
National Hospital Kandy

Dear Sir,

Implementing Shared Care to manage Patients with Non-Communicable Diseases in the National Hospital Kandy Cluster

I, Dr. K.M.P.D Jayasundara (Registrar in Medical Administration) is planning to conduct a research project on the above-mentioned area as a requirement to fulfil the objectives of the post graduate training in MD Medical Administration of the Post Graduate Institute of Medicine, University of Colombo.

My detailed proposal "**An intervention to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster"** has been approved by the board of study. (Letter attached)

In this study, the "National Hospital Kandy Cluster" consist of the NHK as the apex hospital and five selected Divisional Hospitals (Katugastota, Thiththapajjala, Galagedara, Wattegama and, Manikhinna) as Primary Health Care Settings.

My research project supervisor is Dr. Champika Wickramasinghe (Additional Secretary- State Ministry of Pharmaceutical Production, Supply and Regulation/Deputy Director General/NCD). I will be given technical guidance and funding support by the NCD Bureau of the Ministry of Health. (Letters attached).

The Cardiology Clinic of the National Hospital Kandy has been identified as the study setting for this research project.

I kindly request your permission to conduct this research project at NHK under the supervision of Dr. Champika Wickramasinghe (Research Supervisor) and the team of Consultant Cardiologists at NHK.

Thank you,
Yours Sincerely,

.....
Dr. K.M.P.D Jayasundara
Registrar in Medical Administration

Approved

Dr. S.A.A.N. JAYASEKARA
DIRECTOR
National Hospital
Kandy

ANNEXURE XVI

30/04/2022

Dr. Senaka Thalagala
Regional Director of Health Services
Kandy

Dear Sir,

Implementing Shared Care to manage Patients with Non-Communicable Diseases in the National Hospital Kandy Cluster

I, Dr. K.M.P.D Jayasundara (Registrar in Medical Administration) is planning to conduct a research project on the above-mentioned area as a requirement to fulfil the objectives of the post graduate training in MD Medical Administration of the Post Graduate Institute of Medicine, University of Colombo.

My research proposal " **Project to Implement Shared Care in Managing Patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster"** has been approved by the board of study and the ethical clearance was obtained from Post Graduate Institute of Medicine, University of Colombo. (Letters attached).

In this study, the "National Hospital Kandy Cluster" consist of the NHK as the apex hospital and five selected Divisional Hospitals (Katugastota, Thiththapajjala, Galagedara, Wattegama and, Manikhinna) as Primary Health Care Settings.

My research project supervisor is Dr. Champika Wickramasinghe (Additional Secretary- State Ministry of Pharmaceutical Production, Supply and Regulation/Deputy Director General/NCD).
I will be given technical guidance and funding support by the NCD Bureau of the Ministry of Health. (Letters attached).

The Cardiology Clinic of the National Hospital Kandy and the five selected Divisional Hospitals (PMCIs) have been identified as the study setting for this research project.

I kindly request your administrative clearance and permission to conduct this research project in the selected PMCIs of Kandy district.

Thank you,
Yours Sincerely,

.....
Dr. K.M.P.D Jayasundara
Registrar in Medical Administration

Approval is granted.

27/04/2022

Dr. Senaka Talagala
Regional Director of Health Services
Kandy

ANNEXURE XVII

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பெக்ஸ்) 0112693869
Fax) 0112692913

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e-mail)

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இணையத்தளம்) www.health.gov.lk
website)

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சுவசிரிபாய
SUWASIRIPAYA

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சுகாதார அமைச்சு
Ministry of Health

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My No.)

ඔබේ අංකය)
உமது இல)
Your No. :)

දිනය)
திகதி) 19 / 10 / 2022
Date)

Dr. D.R.K Herath
Deputy Director General
Medical Supplies Unit

A project to implement shared care in managing patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster

A pilot project to implement shared care in managing patients with cardiac diseases has been commenced between the Cardiology Unit, National Hospital Kandy, and five selected Divisional Hospitals in Kandy district (DH-Katugastota, DH-Thiththapajjala, DH-Galagedara, DH-Wattegama, DH-Manikhinna).

The Administrative clearance for the project is granted by the DGHS (DDG/NCD/V111/06-2021) and it is conducted under the direct supervision of the DDG/NCD with the support of RDHS Kandy. It has been identified that the availability of essential drugs to manage cardiac diseases at the divisional hospital level is vital to the success of the project. The list of required drugs is annexed.

Please make necessary arrangements to make available the essential cardiac drugs adequately at the Regional Medical Supplies Division (RMSD) Kandy to conduct this national pilot successfully.

S. C

Dr. S.C. Wickramasinghe
Deputy Director General (Non Communicable Diseases)
Ministry of Health

Dr. S. C. Wickramasinghe
Deputy Director General (NCD)
Ministry of Health, Nutrition & Indigenous Medicine

Cc: 1. Dr. Senaka Thalagala – Regional Director of Health Services (RDHS) Kandy
2. Dr. Prasad Jayasundara – Project Coordinator (Registrar Medical Administration)

List of essential drugs to manage patients with selected cardiac disorders at divisional hospitals

	Drug	Strength (mg)
1	**Anticoagulants**	
	Aspirin	75/100
	Clopidogrel	75
2	**Antihypertensives**	
	ACE Inhibitors	
	Enalapril	5
	Captopril	25/50
	Angiotensin Receptor Blockers	
	Losartan potassium	25/50
	Beta Blockers	
	Bisoprolol	5
3	**Diuretics**	
	Frusemide (Lasix)	40
	Spironolactone (Aldactone)	25
4	**Anti-Anginal**	
	GTN	0.5
	ISMN	20/30
5	**Statins**	
	Atorvastatin	20/40
6	**Hypoglycemics for DM**	
	Metformin	500/850
	Gliclazide	40/80
	Sitagliptin	50/100
	Mixtard Insulin	
	Soluble insulin	
7	**Oral penicillin**	

ANNEXURE XVIII

ප්‍රාදේශිය සෞඛ්‍ය සේවා අධ්‍යක්ෂ කාර්යාලය - මහනුවර
பிராந்திய சுகாதார சேவைகள் பணிப்பாளர் காரியாலயம் - கண்டி
Office of the Regional Director of Health Services - Kandy
තැ.පෙ.අංක 56, අහෙළේපොළ කුමාරිහාමි මාවත, බෝගම්බර, මහනුවර
த.பெ. இல. 56, எலெலேபொல குமாரிஹாமி மாவத்தை, போகம்பர, கண்டி
P.O. Box 56, Ehelepola Kumarihamy Mawatha, Bogambara, Kandy

මාගේ අංකය / எனது இல / My No: CPC/RDHS/KY/Share Care/2022

ඔබේ අංකය / உங்களது இல / Your No:

දිනය / திகதி / Date: 2022.09.23

MOIC
Divisional Hospitals
Katugastota – Galagedara – Manikhinna – Thiththapajjala - Wattegama,

Training Workshop for Medical officers on Managing Cardiac Diseases

A training workshop for all medical officers of the divisional hospitals on managing cardiac diseases has been organized by the Cardiology Unit, National Hospital Kandy, under the Shared Care Project as follows.

Date: 29/09/2022
Time: From 9.00 am to 4.00 p.m.
Venue: Cardiology Unit, National Hospital Kandy

02) It is MOST IMPORTANT for MOs to participate for this workshop to update your knowledge to manage patients with cardiac diseases enrolled to shared care.

03) Please nominate 2 medical officers from each hospital to the first workshop and send the list on or before 27/09/2022 to Dr. Prasad Jayasundara (Coordinator – Shared Care Project – Tel 0713016080).

Thank you,

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Dr. Senaka Thalagala
Regional Director of Health Services
Kandy

Cc

1. Dr. Prasad Jayasundara (Registrar Medical Adm), Coordinator – Shared Care Project, Kandy – fina
2. Dr. Neranga Samaratunge (Senior Registrar) Cardiology: Training Coordinator – Cardiology Unit, NHK - fina

කාර්යාලය / காரியாலயம் / Office: 081 2 234 238, 081 2 234 279
ෆැක්ස් / தொலைநகல் / Fax: 081 2 233 061
අධ්‍යක්ෂ / பணிப்பாளர் / Director: 070 6722177
ඊමේල් / மின்னஞ்சல் / E-mail: rdhskandynew@gmail.com, kyplanningunit@gmail.com, rdhskandy223456@gmail.com

ANNEXURE XIX

ප්‍රාදේශීය සෞඛ්‍ය සේවා අධ්‍යක්ෂ කාර්යාලය - මහනුවර
பிராந்திய சுகாதார சேவைகள் பணிப்பாளர் காரியாலயம் - கண்டி
Office of the Regional Director of Health Services - Kandy
තැ.පෙ.අංක 56, එහෙලේපොල කුමාරිහාමි මාවත, බෝගම්බර, මහනුවර
த.பெ. இல. 56, எலெலேபொல குமாரிஹாமி மாவத்தை, போகம்பர, கண்டி
P.O. Box 56, Ehelepola Kumarihamy Mawatha, Bogambara, Kandy

මගේ අංකය / எமது இல / My No: CPC/RDHS/KY/Share care/2022

ඔබේ අංකය / உங்களது இல / Your No:

දිනය / திகதி / Date: 2022.07. 01

Medical Officer
Non-Communicable Diseases
RDHS office
Kandy

"A Project to implement shared care to manage patients with Non-Communicable Diseases (NCD) in National Hospital Kandy Cluster"

The above-mentioned project is conducted by Dr. K.M.P.D Jayasundara (Registrar, Medical Administration) as a requirement to complete the MD in Medical Administration. The project will be conducted between the cardiology unit, National Hospital Kandy, and Divisional Hospital Katugastota, Wattegama, Manikhinna, Thiththapajjala, and, Galagedara.

You are appointed to coordinate the activities of this project at the RDHS office in Kandy.

Dr. Senaka Thalagala
RDHS
Kandy

Dr. Senaka Talagala
Regional Director of Health Services
Kandy

Cc:

1. MOICs – DH - Katugastota, Wattegama, Manikhinna, Thiththapajjala and, Galagedara.
2. Dr. K.M.P.D Jayasundara (Registrar, Medical Administration)

කාර්යාලය / காரியாலயம் 081 2 234 238
ෆැක්ස් / தொலைநகல் 081 2 233 061
අධ්‍යක්ෂ / பணிப்பாளர் 070 6722177
විද්‍යුත් / மின்னஞ்சல் rdhskandynew@gmail.com, kyplanningunit@gmail.com

ANNEXURE XX

ප්‍රාදේශිය සෞඛ්‍ය සේවා අධ්‍යක්ෂ කාර්යාලය - මහනුවර
பிராந்திய சுகாதார சேவைகள் பணிப்பாளர் காரியாலயம் - கண்டி
Office of the Regional Director of Health Services - Kandy
ත.පෙ.අංක 56, එහෙළෙපොළ කුමාරිහාමි මාවත, බෝගම්බර, මහනුවර
த.பெ. இல. 56, எலெலெபொல குமாரிஹாமி மாவத்தை, போகம்பர, கண்டி
P.O. Box 56, Ehelepola Kumarihamy Mawatha, Bogambara, Kandy

මගේ අංකය / எமது இல / My No: CPC/RDHS/KY/Share care/2022
ඔබේ අංකය / உங்களது இல / Your No:
දිනය / திகதி / Date: 2022.10. 22.

Regional Pharmacist
Regional Medical Supplies Division
Kandy

"A project to implement shared care to manage patients with Non-Communicable Diseases (NCD) in National Hospital Kandy Cluster"

Concerning the above-mentioned project conducted between the Cardiology unit, National Hospital Kandy, and Divisional Hospital Katugastota, Wattegama, Manikhinna, Thiththapajjala, and, Galagedara, The DDG/NCD has requested (Ref.No.DDG/NCD/111/03/2022-I) from the DDG/Medical Supplies Division to make available adequate stocks of essential drugs to manage cardiac diseases in these Divisional Hospitals. The list of drugs is attached herewith.

Please prioritize these five Divisional Hospitals in supplying the essential drugs which will be vital to the success of the project.

Dr. Senaka Thalagala
RDHS
Kandy

Dr. Senaka Talagala
Regional Director of Health Services
Kandy

Cc:

1. MOICs – DH - Katugastota, Wattegama, Manikhinna, Thiththapajjala and, Galagedara.
2. Project Coordinator - Dr. K.M.P.D Jayasundara (Registrar, Medical Administration)

කාර්යාල / அலுவலகம் / Office: 081 2 234 238, 081 2 234 279
ෆැක්ස් / தொலைநகல் / Fax: 081 2 233 061
අධ්‍යක්ෂ / பணிப்பாளர் / Director: 070 6722177
විද්‍යුත් / மின்னஞ்சல் / E-mail: rdhskandynew@gmail.com, kyplanningunit@gmail.com, rdhskandy223456@gmail.com

ANNEXURE XXI

06/02/2023

Dr. Senaka Thalagala

Regional Director of Health Services

RDHS office

Kandy

Dear Sir,

Request Certification of Completion of Research Project

"A Project to Implement Shared Care in Managing Patients with Non-Communicable Diseases (NCDs) in National Hospital Kandy Cluster"

I, Dr. K.M.P.D Jayasundara (Registrar in Medical Administration) completed the above-mentioned project as a requirement to fulfill the MD in Medical Administration in due period. The project was conducted under the supervision of Dr. S.C Wickramasinghe Deputy Director General, NCD, Ministry of Health (Research Project Supervisor).

I sincerely thank you, the RDHS office team, and the staff of Divisional Hospitals Katugastota, Wattegama, Manikhinna, Thiththapajjala, and, Galagedara for the utmost support and guidance given throughout the project period and look forward to working with you in continuation of the project.

Kindly make the necessary arrangements to certify the completion of this project.

Thank you,

Yours truly,

.....

Dr. K.M.P.D Jayasundara

Registrar Medical Administration

Successfully completed.

08/02/2023.

Dr. Senaka Talagala
Regional Director of Health Service
Kandy