

ACT-KID

2018-2025

NATIONAL ACTION PLAN FOR HEALTHY KIDNEYS

Medium Term Strategic Plan to Reduce the
Burden of Chronic Kidney Disease in Malaysia
(2018-2025)



Copyright © Ministry of Health Malaysia

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

First edition 2018

Suggested Citation:

Ministry of Health Malaysia. 2018. National Action Plan for Healthy Kidneys (ACT-KID) 2018-2025.

Editors:

Dr Feisul Idzwan Mustapha

Dr Sunita Bavanandan

Published by:

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

Tel: +603-88924409

Fax: +603-88924526

Website: www.moh.gov.my

ISBN : 978-967-2173-58-8

TABLE OF CONTENTS

Message from The Director General of Health Malaysia	i
Executive Summary	iii
1. INTRODUCTION	1
2. SITUATIONAL ANALYSIS	3
2.1. Analysis of Current Renal Services in Malaysia	3
2.2. Burden of CKD in Malaysia	6
3. SCOPE AND OBJECTIVES	9
3.1. Scope	9
3.2. Objectives	10
3.3. Specific Objectives	10
4. OPERATIONALISING THE NATIONAL ACTION PLAN	11
4.1. Primary Prevention	11
4.2. To provide an integrated service in CKD detection and management	11
4.3. To establish a sustainable multi-disciplinary collaboration and community health approach to meet the needs of CKD patients	12
4.4. To expand and enhance treatment options for patients with end-stage kidney disease	12
4.5. To develop and maintain a strong research component to guide kidney health policies and practices	14
5. MONITORING AND EVALUATION	15
5.1. Monitoring	15
5.2. Evaluation	15
6. CONCLUSION	18
GLOSSARY	19
REFERENCES	20
Technical Working Group members and Acknowledgement	22

National Action Plan for Healthy Kidneys (ACT-KID) 2018-2025



MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH MALAYSIA

Chronic kidney disease is a significant public health concern with an ever-increasing prevalence of chronic kidney disease (CKD) and end-stage kidney failure (ESKD) in Malaysia. The prevalence of CKD has increased from 9.1% in the 2011 National Health and Morbidity survey to 15.5% in 2018. The incidence and prevalence of treated ESKD have also risen markedly over the last 25 years. The Malaysian Dialysis and Transplant Registry reported that 7,967 new patients received dialysis in 2015 and by the end of 2016 there were 39,711 patients on dialysis. If the present trend continues unchecked, the number of ESKD patients is estimated to reach 51,000 in 2020 and 106,000 in 2040. This burden will cost the health care system an estimated RM1.5 billion and RM3.2 billion respectively.

The primary driver of the CKD surge is the increase in non-communicable diseases (NCDs), particularly diabetes mellitus. Malaysia has consistently remained among the top three countries in the world with the highest proportion, i.e. 65% of new ESKD patients having diabetes as the primary cause of ESKD.

CKD prevention is key, but the impact of preventive measures will take a long time to manifest. Hence, we need to start with short- and medium-term strategies, that will improve the quality of CKD care while at the same time provide cost containment. I wish to commend the Nephrology Services of the Ministry of Health Malaysia and the Public Health Department for an excellent collaborative effort to develop this national strategic action plan for the medium term from 2018 to 2025.

The focus of the plan is as follows:

- 1.Reduction in the burden of disease using a multi-agency approach to reduce NCDs, including screening, prevention and early treatment of CKDs;
- 2.Timely and appropriate preparation for renal replacement therapy, including transplant/dialysis/palliative care;
- 3.Increasing the rate of renal transplantation and
- 4.Shift to home-based dialysis therapy - increasing access to peritoneal dialysis

I sincerely hope that all health care providers will give their wholehearted commitment to working towards the success of this national strategic plan.



Datuk Dr Noor Hisham Abdullah

EXECUTIVE SUMMARY

The ACT-KID (2018-2025) is a medium term strategic plan to reduce the burden of Chronic Kidney Disease (CKD) in Malaysia. The number of Malaysians with CKD is projected to significantly increase in the future due to an aging population and the increasing prevalence of diabetes and hypertension. CKD is largely an avoidable complication of diabetes and hypertension.

The main objective of the National Action Plan for Healthy Kidneys (ACT-KID) is to prevent or delay the onset of CKD, and to improve its management.

This Action Plan has four specific objectives:

1. Primary Prevention: The Nephrology Services contribute to a planned strategy of integrated NCD primary prevention program focusing on nutrition, smoking and physical activity;
2. Early Detection and Secondary Prevention:
 - i) To provide an integrated service in CKD detection and management
 - ii) To establish a sustainable multi-disciplinary collaboration and community-health approach to meet the needs of CKD patients;
3. To expand and enhance treatment options for patients with end-stage kidney disease; and
4. To develop and maintain a strong research component to guide kidney health policies and practices.

This document is aligned to the National Strategic Plan for Non-Communicable Disease (NSP-NCD) and the NCD Global Targets.

1. INTRODUCTION

Chronic Kidney Disease (CKD) is a chronic condition influenced by lifestyle and behaviour. The risk factors for CKD are highly prevalent among the Malaysian population, and the number of Malaysians at risk is increasing.

Based on currently available data:

- CKD is a common and serious problem – from the National Health and Morbidity Survey in 2011, the prevalence in West Malaysia was 9.07% [1]. This prevalence has since increased to 15.5% in 2018 (manuscript submitted).
- An increasing number of Malaysians require dialysis or transplant for the disease's most severe form, end-stage renal disease (ESRD).
- The prevalence of diabetes mellitus (DM) continues to increase in Malaysia and is now the leading cause of ESRD, accounting for 65% of all cases in 2016 [2].
- Malaysia ranks among the highest for ESRD due to DM among countries submitting data to the USRDS [3].

CKD is marked by long term, irreversible loss of kidney function. The effect of this malfunction is changes in the body's chemical balance, the disruption of essential body processes, and the build-up of waste products in the blood that results in damage to the body's organs and systems.

There are five clinical stages of CKD:

- Stage 1: Kidney damage but without decreased glomerular filtration rate (GFR) and usually without symptoms
- Stage 2: Kidney damage with some reduction in GFR, usually no symptoms, but with high blood pressure and possible dysfunction in other organs
- Stage 3: Significant reduction in GFR, increased levels of urea and creatinine in blood, dysfunction in other organs, often symptomless
- Stage 4: Severe reduced kidney function, high levels of urea and creatinine in blood, dysfunction in other organs, mild symptoms
- Stage 5: Kidney function no longer adequate to sustain life, range of symptoms and abnormalities in range of organs

There are a number of possible clinical outcomes of CKD, including:

- In the early stages despite many patients being symptomless some patients can experience fatigue, muscle cramps, nausea, itchy skin, headaches, and loss of appetite
- In later stages, development of complications including cardiovascular disease, bone and muscle problems, sleep apnoea, and anaemia

- ESRD in which the kidney function is no longer sufficient to sustain life. In these cases, some form of kidney replacement therapy (dialysis or transplant) is necessary. Patients on dialysis have a reduced quality of life – there are severe restrictions on activity and movement due to the need for dialysis that can lead to feelings of anger, anxiety, hopelessness or depression. There is a significant financial, physical and social burden also on the families of patients.

Whilst there is no cure for CKD, the disease is preventable and treatable, and importantly the progression can be slowed or stopped.

2. SITUATIONAL ANALYSIS

2.1. ANALYSIS OF CURRENT RENAL SERVICES IN MALAYSIA

Primary Prevention

Current primary prevention activities for Non-Communicable Diseases (NCDs) include general and targeted awareness around nutrition, physical activity and smoking. Whilst there is no CKD-specific primary prevention program, a planned strategy of primary prevention efforts related to NCDs such as obesity, hypertension and diabetes is likely to be of benefit to people with CKD, given the overlap in risk factors between CKD and other NCDs.

Early Detection and Secondary Prevention

CKD is often symptom-free in its early stages, and as such is often missed. However if detected early and managed appropriately, the rate of deterioration in kidney function can be reduced by as much as 50%, and may even be reversible. The implications of investment in early detection and management are thus significant in terms of quality of life of individuals with CKD as well as overall reduction in costs of treatment for more advanced stages of CKD.

The majority of people with CKD are managed at the primary care level at MOH health clinics. Evidence-based early interventions include:

- Screening of high-risk groups
- Blood pressure control
- Glycaemic control
- Smoking cessation
- Medication management in relation to kidney disease

Barriers to greater uptake of secondary preventive activities at the primary care level include:

- Lack of awareness of disease by health care providers (HCPs) and the community.
- Historical practice of CKD being treated in hospital – often as ESRD by nephrologists.
- Lack of CKD-specific prevention/management education opportunities for HCPs.
- Lack of adequate manpower such that HCPs are multi-tasking.
- Failure to retain trained HCPs – lost to private sector or moved to other areas despite being trained and being highly knowledgeable in specific areas.
- Lack of focus on wellness/self-management support.

Specialised Nephrology Services

Presently 25 hospitals have resident consultant nephrologists and they provide coverage within the states and interstate. There are 169 nephrologists registered in Malaysia, 80 nephrologists serving in the public sector (only 56 in MOH) and the rest in other sectors.

Dialysis

Given the lack of national opportunities for transplant, dialysis currently remains the only active treatment choice for approximately 98.7% of patients with ESRD. A total of 142 government hospitals and 14 health clinics provide haemodialysis services. There are 51 peritoneal dialysis (PD) units throughout the country.

Kidney transplantation

For those who are suitable, transplantation is the preferred and most effective treatment for ESRD. Compared with dialysis, transplantation is associated with improved life expectancy, superior quality of life, and reduced health care costs.

The key constraint in the rate of transplantation is the availability of organs – both deceased and live donations. The local transplant program also faces a problem of lack of dedicated transplant surgeons and support teams. Two transplant centres under Ministry of Health (MOH) Malaysia i.e. Hospital Kuala Lumpur and Hospital Selayang, carry out renal transplantation for patients referred from all states in the country. Under the Ministry of Higher Education, there is a third major transplant centre i.e. the University Malaya Medical Centre (UMMC).

The present rate of kidney transplantation in Malaysia is 3 per million population (pmp) [2]. This is low compared with rates in other countries such as Spain (62 pmp) and Thailand at 9 pmp [3]. Hence, in Malaysia, the mean waiting time for a transplant was 2.5 years for living kidney transplantation (LKT) and 12.5 years for deceased donor kidney transplants (DKT) in adults, whereas it was 2.0 years for LKT and 5.5 years for DKT among paediatric recipients [4].

Palliative care / End-of-life-care

There is now growing recognition of the need to develop specialised palliative or end-of-life care support in nephrology. Following a shared decision-making process with the patient, family and physician in charge, if it is deemed that treatment may not be in the patients' best interests, there should be an avenue to refer these patients and their families for palliative care and support in the community. Unfortunately this aspect of nephrology service is still in its infancy, and needs to be expanded with the aid of the MOH palliative services and NGOs such as Hospis Malaysia.

Other services

Nephrologists in every major state hospital provide services for large institutions such as Sarawak General Hospital Heart Centre and National Heart Institute Kuala Lumpur, as well as district hospitals and some health clinics that provide dialysis facilities. Nephrology also covers the care of patients with chronic general nephrology diseases (such as glomerulonephritis, congenital kidney disease etc.) and acute kidney injury.

Table 2.1 SWOT Analysis of Current Renal Services in Malaysia

<p>Strengths</p> <ul style="list-style-type: none"> a) All states (excluding Perlis and the Federal territories of Labuan and Putrajaya) have a nephrologist in the main hospital b) Good network among public and private nephrologists c) Good support from higher levels of management in Ministry of Health d) Good relationship with Primary Health Services 	<p>Weaknesses</p> <ul style="list-style-type: none"> a) Unequal distribution of nephrologists in peripheral locations b) Lack of updated technology and related services e.g. Radiology, Pathology, Transplant surgeons c) Lack of funding and human resources to cope with expanding number of patients, especially those from private sector seeking acute medical care e.g. CRBSI, dialysis access issues etc. (87% of acute dialysis services in HKL is to treat new ESRD patients or patients on dialysis elsewhere) (unpublished data) d) Failure to promote or publicise our nephrology services to the public e) Lack of local research and local data - lack of time and resources to conduct research
<p>Opportunities</p> <ul style="list-style-type: none"> a) Use social media to reach a larger audience to deliver accurate information b) Collaboration with community-based services, both government agencies and NGO, to strengthen CKD care at the earlier stages c) Collaboration with both international and local professional societies 	<p>Threats</p> <ul style="list-style-type: none"> a) Drain of nephrologists to private sector or overseas b) Mis-information in public domain from sources such as direct selling companies which promote potentially dangerous, unproven practices c) Increasing costs of treating ESRD as opposed to CKD prevention – will be unsustainable in future

2.2. BURDEN OF CKD IN MALAYSIA

The number of Malaysians with CKD is projected to significantly increase in the future due to the increasing prevalence of diabetes and hypertension. As mentioned earlier, diabetes is now the leading cause of ESRF [2].

Moreover, we are also faced with an aging population and hence can expect a continued rise in new ESRD patients – from MDTR data in 2015, 58% of new dialysis patients were 55 years or older at the onset of dialysis (**Figure 2.1**) [2].

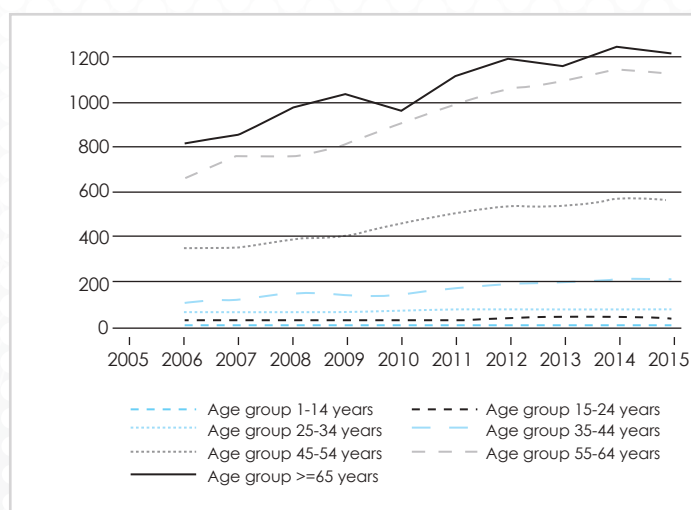


Figure 2.1 Dialysis treatment rate by age group in Malaysia 2006-2015 [2]

The prevalence of CKD is estimated based on a sub-study of the National Health and Morbidity Survey (NHMS) in 2011 that sampled the adult population in West Malaysia. Out of 1,152 adults surveyed as a part of the study cohort for the NHMS 2011, data was available for analysis on 876 patients. Based on single blood and urine samples, 15% of the surveyed population was found to have CKD from stage 1 to stage 5. If a positive proteinuria in a second urine sample is taken as the criteria for CKD diagnosis, the prevalence of CKD from stage 1 to stage 5 was 9.07% among the adult population surveyed in Peninsula Malaysia in 2011. The prevalence of CKD stage 5 was 0.36% of the adult population irrespective of whether a single positive proteinuria or double positive proteinuria was taken into consideration [1].

The risk factors for CKD that were identified in the NHMS 2011 CKD sub-study included diabetes mellitus, hypertension and age of 40 years or above (**Table 2.2**) [1].

Table 2.2 Adjusted odds ratio (OR) for factors associated with CKD in Malaysian adult population [1]

Variable	Adjusted OR (95% CI)	value
Age (years)		
40-64	1.82 (1.04-3.19)	0.036
65+	3.15 (1.51-6.55)	0.020
Diabetes	2.56 (1.63-4.01)	$P<0.001$
Hypertension	3.09 (1.92-4.97)	$P<0.001$
Hypercholesterolemia	1.29 (0.83-2.00)	0.259

Using certain modeling and projection formula, based on the growth of ESRD patients as reported by the MDTR, it is estimated that by 2020, there will be more than 51,000 patients on dialysis in this country. If no serious effective efforts are put in place to mitigate this growth, Malaysia can expect more than 106,000 patients to live on dialysis by the year 2040 [5]. The trends and forecasts of incidence and prevalence of ESRD patients in Malaysia up to year 2040 are shown in **Figure 2.2** and **Figure 2.3** respectively.

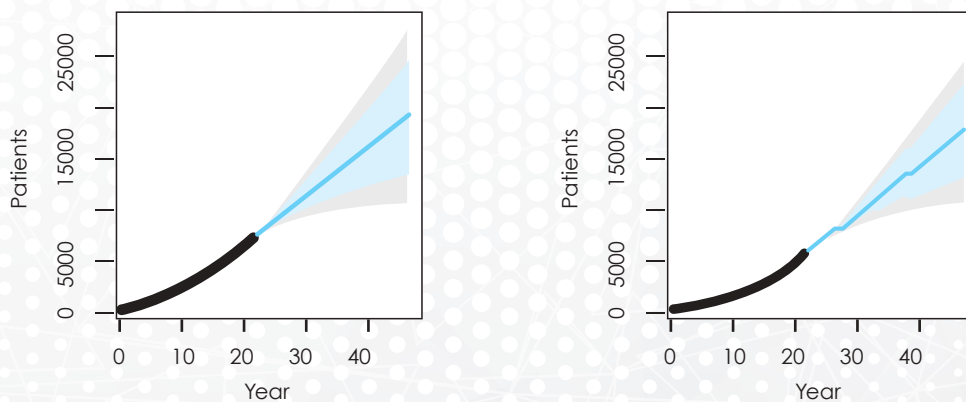


Figure 2.2 Forecasted incidence of ESRD **Figure 2.3** Forecasted prevalence of ESRD

The socioeconomic and health consequences of this expected rising prevalence of ESRD raise serious concerns among all stakeholders. The funding for various modalities of renal replacement therapy will likely be strained or rationed as dialysis and kidney transplantation are costly forms of life-long and life-sustaining treatment. Based on previous economic evaluations of dialysis and transplantation in the MOH Malaysia, an estimate of the costs of dialysis provision can be calculated (**Table 2.3**) [4, 6].

Table 2.3 Estimates of the costs of dialysis provision in Malaysia

Study	Year of data collection	HD (RM)	PD (RM)	Tx (RM)
Hooi et al, 2005 [6]	2001	33,642	31,635	-
Bavanandan et al 2015 [4]	2009	40,557*	38,138*	29,482 LKT 45,234 DKT

*Adjusted from Hooi et al, 2005 [6] using Consumer Pricing Index
LKT=living donor kidney transplant; DKT=deceased donor kidney transplant

Total cost estimates would be RM1.5 billion if extrapolated to the total of 38,000 patients on dialysis in Malaysia in 2015, and according to the forecast projections, this would increase to RM2 billion in 2020 and RM4 billion in 2040 without taking into account the inflation rate. This is a conservative estimate at best. The overall increasing or high prevalence of NCD risk factors will further add to the burden of CKD in Malaysia. **Table 2.4** shows the trend of selected NCD risk factors for Malaysian adults age 18 years and above from 2006 to 2015 [7].

Table 2.4 Prevalence of selected NCD risk factors in Malaysia for adults age 18 years and above, 2006 to 2015 [7]

NCD risk factors	2006 (%)	2011 (%)	2015 (%)
Diabetes Mellitus	11.6	15.2	17.5
Hypertension	32.2	32.7	30.3
Hypercholesterolemia	28.2	43.9	56.8
Overweight	29.1	29.4	30.0
Obesity	14.0	15.1	17.7
Physical Inactivity	56.3	64.3	66.5
Smoking*	21.5	23.1	22.8

*Note: Data for population 15 years and above

3. SCOPE AND OBJECTIVES

3.1. SCOPE

For the purpose of this National Action Plan for Healthy Kidneys (ACT-KID), "Nephrology Services" are taken to encompass all services related to the prevention, identification and treatment of CKD.

ACT-KID acknowledges that the overall NCD prevention and control in Malaysia is based on the National Strategic Plan for Non-Communicable Diseases (NSP-NCD) 2016-2025 [8]; and therefore all the strategies in ACT-KID are in-line with NSP-NCD 2016-2025. The national targets for Malaysia by year 2025 are shown in Table 3.1. This was developed based on the comprehensive global monitoring framework and a set of nine voluntary global targets for the prevention and control of NCDs [9].

Table 3.1 NCD Targets for Malaysia 2025 [8]

Indicator	Global target	Malaysia	
		Baseline (2010)	Target (2025)
1. Risk of premature mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases	25% relative reduction	20%	15%
2. Prevalence of current tobacco use in person aged 15+ years	30% relative reduction	23%	15%
3. Mean population intake of sodium	30% relative reduction	8.7 gm	6.0 gm
4. Prevalence of insufficient physical activity	10% relative reduction	35.2%	30.0%
5. Harmful use of alcohol (prevalence of heavy episodic drinking)	10% relative reduction	≤1.2%	≤1.2%
6. Prevalence of raised blood pressure	25% relative reduction	32.2%	26.0%
7. Prevalence diabetes and obesity	Halt the rise	≤15%	≤15%

The strong clinical overlap between diabetes, cardiovascular disease (CVD) and CKD requires that all programs and activities developed for CKD be established and delivered in a collaborative fashion with other NCD-related programs. Effective implementation of the ACT-KID would strongly contribute to achieving the main target of NSP-NCD, i.e. reducing the risk of premature mortality due to NCDs.

The development of ACT-KID adopted the following overarching principles:

- Patient-centered care
- Multi-disciplinary and collaborative team work
- Accessibility of services
- Safe and high-quality, evidence-based practices
- Population-health approach

3.2. OBJECTIVES

The main objective of the National Action Plan for Healthy Kidneys (ACT-KID) is to prevent or delay the onset of CKD and to improve its management. We hope to enhance the quality of life of our population, leading to longer and more productive lives.

3.3. SPECIFIC OBJECTIVES

This Action Plan has four specific objectives:

1. Primary Prevention: The Nephrology Services contribute to a planned strategy of integrated NCD primary prevention program focusing on nutrition, smoking and physical activity;
2. Early Detection and Secondary Prevention:
 - i) To provide an integrated service in CKD detection and management
 - ii) To establish a sustainable multi-disciplinary collaboration and community-health approach to meet the needs of CKD patients;
3. To expand and enhance treatment options for patients with end-stage kidney disease; and
4. To develop and maintain a strong research component to guide kidney health policies and practices.

4. OPERATIONALISING THE NATIONAL ACTION PLAN

4.1. PRIMARY PREVENTION

The Nephrology Services contribute to a planned strategy of integrated NCD primary prevention program focusing on nutrition, smoking and physical activity

Whilst currently there is no CKD-specific primary prevention program in Malaysia, a planned strategy of primary prevention efforts related to NCDs is likely to be beneficial to people with CKD, given the overlap in risk factors between CKD and other NCDs. There should be nephrology inputs in primary prevention programs to maintain healthy kidneys. These areas may include nutrition (prevention of obesity, low salt diet and adequate fluid intake), smoking and physical activity.

4.2. TO PROVIDE AN INTEGRATED SERVICE IN CKD DETECTION AND MANAGEMENT

Primary care plays a pivotal role in the care of CKD patients with respect to:

- Screening at-risk patients for timely detection of CKD
- Reduction of kidney and cardiovascular risks
- Early detection and management of CKD complications in accordance to local CKD-CPG guideline(s)
- Appropriate drug prescribing in CKD patients and avoidance of nephrotoxic drugs
- Timely referral of CKD patients to a nephrologist
- Coordinating multi-disciplinary care

Activities under this objective are:

- Increase community awareness of kidney health and CKD risk factors through partnership with NGO and CSO (civil society organisations)
- Increase targeted screening for at-risk population
- Provide education, assessment and non-pharmacological management of complications through a community-based approach
- Empower patients for self-management of chronic disease e.g. diabetes and hypertension
- Provide information, training and on-going support for health care professionals on CKD
- Establish a national CKD registry to monitor trends and outcomes of CKD (possibility of linking to Patient Registry Information System (PRIS) or submitting data to the Malaysian Health Data Warehouse (MyHDW), both of which under MOH).

4.3. TO ESTABLISH A SUSTAINABLE MULTI-DISCIPLINARY COLLABORATION AND COMMUNITY HEALTH APPROACH TO MEET THE NEEDS OF CKD PATIENTS

Currently the dominant form of management of this group of patients is via primary care referral to hospital-based nephrologists. However there is a need to bring care closer to patients, make it appear less threatening, more convenient and more holistic.

Activities under this objective are:

- Establish multi-disciplinary teams to deliver holistic services, which include primary care doctors, nephrologists, endocrinologists, renal nurses, pharmacists, dieticians and other allied health staff
- Increase trained HCPs (Medical Officers/Nurse Practitioner/Allied health professionals) for CKD management in primary care clinics and hospitals
- Establish "intermediate" community-based nephrology health services. Within this enhanced primary health care, patients with CKD traditionally managed in hospitals can be managed closer to the community (e.g. pre-dialysis preparation and counseling)
- Facilitate dissemination of information across disciplines and clinical specialty areas through the use of a common record (e.g. diabetes care green card or NCD card)
- Create a care-coordination model which would include a summary record or framework for clinical care
- Communication for patients which is integrated, coordinated and used in collaboration with other services

4.4. TO EXPAND AND ENHANCE TREATMENT OPTIONS FOR PATIENTS WITH END-STAGE KIDNEY DISEASE

Early appropriate referral to nephrologists is important but there may be considerable waiting times to see nephrologists due to the sub-optimal number of nephrologists (the current ratio of nephrologists to patients in this country is 157:31 million population = 1:197,450 as compared with the ideal ratio of 1:100,000)[10]. In addition there is an unequal distribution in access to nephrology specialist services in the different states. This may reduce the opportunity for optimal preparation for dialysis. However many patients are also not prepared psychologically for decisions regarding renal replacement therapy, work rehabilitation etc. Therefore multi-disciplinary counseling at earlier stages is important.

There is a range of treatment options for patients entering ESRD that should be discussed with patients and their families, including:

- Kidney transplant
- Dialysis – haemodialysis and peritoneal dialysis
- Conservative treatment/palliative care – for those who choose not to undertake dialysis

Activities under this objective are:

- Encourage and support national strategies to increase rate of organ donation
- Provide access to accurate and unbiased information to allow informed choice of mode for Renal Replacement Therapy (RRT) through the establishment of education tools for the patients and clinicians
- Maximise opportunities for home dialysis* by identifying and addressing current impediments to this form of treatment
- Develop role of nurse practitioners in dialysis or home therapies (under MOH Advanced Diploma training)
- Ensure the availability of continuous coordinated multi-disciplinary clinical and psychosocial care for patients on dialysis including domiciliary care
- Establish of 'End-of-Life' pathways for ESRD patients in collaboration with all service providers

***Note:**

There are number of disadvantages to hospital-based dialysis as compared to home-based dialysis. These include:

- Higher cost
- Requirement for human resources (staffing) whereas for most people, the constant medical monitoring associated with in-centre dialysis is not required
- Increased risk of hospital-acquired infection
- Reduced flexibility for patient (fixed schedules)
- Travel time/costs

The advantages of home-based dialysis, includes:

- Decreased risk of hospital infections
- Improved quality of life
- Decreased health system costs
- Enhanced opportunities for rehabilitation and return to employment
- Greater independence/flexibility
- No transport costs and more eco-friendly

4.5. RESEARCH: TO DEVELOP AND MAINTAIN A STRONG RESEARCH COMPONENT TO GUIDE KIDNEY HEALTH POLICIES AND PRACTICES

Ongoing research will continue to build an evidence base to guide best practice and shape health policies. Local data is scarce particularly with respect to the epidemiology of CKD, disability-adjusted life years (DALYs) and financial burden associated with CKD.

Activities under this objective are:

- Identify opportunities for networking and collaboration with universities and other professional societies (both local and international)
- Ensure that clinical research is an integral part of the HCPs' roles
- Develop IT infrastructure to support research

5. MONITORING AND EVALUATION

5.1. MONITORING

At the end of each year, the Nephrology Services together the Department of Public Health MOH and other key stakeholders will develop a joint yearly implementation plan for the proceeding year. This implementation plan under ACT-KID, aligned to NSP-NCD and other related MOH current policies and strategies, will detail out the timeline, responsible stakeholders, and clear process and output indicators by which the progress of ACT-KID will be measured against and reported at the end of each calendar year.

The National Secretariat for ACT-KID will coordinate and monitor the strategic planning and implementation of activities under the ACT-KID.

5.2. EVALUATION

For the evaluation of the implementation of programs and activities under ACT-KID, **Table 5.1** lists a set of indicators and targets for the year 2025.

Table 5.1 Indicators and targets for year 2025 for ACT-KID

Indicators	2 yearly interim targets (Target in 2025)	Note
1. To increase the proportion of the population who are practicing healthy lifestyles:		<ul style="list-style-type: none"> Part of Global NCD indicators and targets Target: from the baseline of 2010 for the NCDs and not renal specific ones
• Prevalence in diabetes and obesity	0 % change in growth rate	
• Prevalence of insufficient physical activity	10% reduction	
• Prevalence of current tobacco use	2% reduction/year (30% reduction by 2025)	
2. To increase the proportion of patients or persons with CKD who know they have impaired kidney function	2-3% increase above baseline of 4% / 2years (10% by 2025)	<ul style="list-style-type: none"> Only 4% of respondents with CKD were aware of their diagnosis [1]

Indicators	2 yearly interim targets (Target in 2025)	Note
		<ul style="list-style-type: none"> Several studies in United States and China where the awareness among CKD patients ranged from 9.0-10.0% [11-14]
3. To reduce the overall growth rate in incidence of new dialysis patients	0.5% reduction/year from the baseline rate (new dialysis patients pmp) of 265 in 2015 [15]	<ul style="list-style-type: none"> Incidence of ESRD has been growing rapidly from 18 pmp in 1993 to 265 pmp in 2015 US Healthy People 2020 target the reduction of ESRD rate in adults is 10% from baseline [16] NB: they have already achieved a plateau
4. To increase the proportion of nephrologists to patients on renal replacement therapy in the country	1:200 at 2 years (1: 180 by 2025) (Recommendation is 1:75 RRT pts in UK renal workforce recommendations [10])	<ul style="list-style-type: none"> Ratio in 2015 is 1:231 (163 nephrologists and 37,729 pts on RRT in 2015)[17]
5. To increase the rate of local kidney transplantation	5 pmp in 3 years (2021) (increase of 2 pmp every 3 years)	<ul style="list-style-type: none"> Current rate of local kidney transplants: 3 pmp (2014) [2]
6. To increase the rate of peritoneal dialysis uptake	20% proportion of dialysis patients by 2025	<ul style="list-style-type: none"> The number of PD patients was 3727 (10%) in 2015 [2]
7. To increase the number of research papers using Malaysian data accepted for publication /presentation at local/international scientific meetings	20 per year by 2025	<ul style="list-style-type: none"> Between 2010 to 2016, the average publications were 10 per year

Additional indicators and targets specifically on the care of patients with diabetic kidney disease in primary care (**Table 5.2**) are required because:

- Diabetes is the major cause of ESRD in Malaysia
- Diabetes patients do not do as well as compared to non-diabetic patients on dialysis or with transplantation [2]
- Diabetes patients on dialysis consume more resources than non-diabetic patients with ESRD [18]

Table 5.2 Indicators and targets for year 2025 for ACT-KID

Indicators	Target in 2025	Note
1. To increase the proportion of persons with DM and CKD who receive recommended medical evaluation in primary care		For diabetes patients in primary care [19]:
Tested for proteinuria and micro-albuminuria	95%	<ul style="list-style-type: none"> • 59.2% tested for proteinuria • 59.6% tested for micro-albuminuria • 78.4% tested for serum creatinine
Tested for creatinine	90%	
2. To increase the proportion of persons with DM and CKD who achieve treatment targets in primary care		For diabetes patients in primary care [19]:
BP control	60%	<ul style="list-style-type: none"> • 41.2% achieved target BP <130/80 mmHg • 19.8% achieved target HbA1c of <6.5% • 54.6% on ACEI/ARBs
Glycaemic control	30%	
Use of ACEI/ARBs	70%	
3. To reduce the proportion of kidney failure due to diabetes	5% reduction	<ul style="list-style-type: none"> • 61% of kidney failure were due to diabetes in 2015 [2]

6. CONCLUSION

In view of the growing number of CKD patients especially those due to diabetes, we need to be more aggressive in CKD prevention. Provision of renal replacement therapy is not economically sustainable in the long term, and hence more efforts must be directed to the early detection of CKD and institution of appropriate therapy. This is after all, the point at which treatment has the greatest capacity to make a difference.

ESRD has now become a much publicised issue and the level of awareness is high even amongst the public. All that is required now is the political will to support the cause, and to provide the necessary resources for the implementation of CKD prevention strategies.

GLOSSARY

CKD	Chronic kidney disease
ESRD	End-stage renal disease
GFR	Glomerular filtration rate
HCP	Healthcare provider
MDTR	Malaysian Dialysis and Transplant Report
NCD	Non-Communicable Disease
NDR	National Diabetes Registry
NGO	Non-governmental organisation
NHMS	National Health and Morbidity Survey
pmp	per million population
RRT	Renal replacement therapy

REFERENCES

1. Hooi, L.S., et al., A population-based study measuring the prevalence of chronic kidney disease among adults in West Malaysia. *Kidney Int*, 2013. 84(5):p.1034-40.
2. HS, Wong and B. Goh, Twenty Third Report of the Malaysian Dialysis and Transplant 2015. 2017: Kuala Lumpur.
3. US Renal Data System. 2017 USRDS annual data report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2017
4. Bavanandan, S., et al., The Cost and Utility of Renal Transplantation in Malaysia. *Transplantation Direct*, 2015. 1(10):p.e45.
5. Bujang, M.A., et al., Forecasting the Incidence and Prevalence of Patients with End-Stage Renal Disease in Malaysia up to the Year 2040. *International Journal of Nephrology*, 2017. 2017:p.5.
6. Hooi, L.S., et al., Economic evaluation of centre haemodialysis and continuous ambulatory peritoneal dialysis in Ministry of Health hospitals, Malaysia. *Nephrology (Carlton)*, 2005. 10(1):p.25-32.
7. Institute for Public Health, National Health and Morbidity Survey 2015 (NHMS 2015). Vol. II: Non-Communicable Diseases, Risk Factors & Other Health Problems. 2015, Ministry of Health: Kuala Lumpur.
8. Ministry of Health, National Strategic Plan for Non-Communicable Diseases (NSP-NCD) 2016-2025. 2016, Ministry of Health Malaysia: Putrajaya.
9. World Health Organization, Global action plan for the prevention and control of noncommunicable diseases 2013-2020. 2013: Geneva, Switzerland.
10. The Renal Team. A Multi-Professional Renal Workforce Plan For Adults and Children with Renal Disease. Recommendations of the National Renal Workforce Planning Group 2002 Accessed 5th April 2018. Available from : <http://www.wales.nhs.uk/sites3/documents/434/Workforce>
11. Coresh, J., et al., Chronic kidney disease awareness, prevalence, and trends among U.S. adults, 1999 to 2000. *J Am Soc Nephrol*, 2005. 16(1):p.180-8.

12. Tan, A.U., B. Hoffman, and S.E. Rosas, Patient perception of risk factors associated with chronic kidney disease morbidity and mortality. *Ethn Dis*, 2010. 20(2):p.106-10.
13. Wang, F., L. Zhang, and H. Wang, Awareness of CKD in China: a national cross-sectional survey. *Am J Kidney Dis*, 2014. 63(6):p.1068-70.
14. Whaley-Connell, A., et al., Diabetes mellitus and CKD awareness: the Kidney Early Evaluation Program (KEEP) and National Health and Nutrition Examination Survey (NHANES). *Am J Kidney Dis*, 2009. 53(4 Suppl 4):p.S11-21.
15. USRDS, U.S.R.D.S., Volume 2 – End-stage Renal Disease (ESRD) in the United States. 2015.
16. Healthy People 2020 [Internet]. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion [Accessed 20th July 2016]. Available from: <https://www.healthypeople.gov>.
17. HS, Wong and B. Goh, Twenty Fourth Report of the Malaysian Dialysis and Transplant 2015. 2017: Kuala Lumpur.
18. Yang, W.C., et al., The impact of diabetes on economic costs in dialysis patients: experiences in Taiwan. *Diabetes Res Clin Pract*, 2001. 54 Suppl 1:p.S47-54.
19. MI, Feisul. and A. Soraya, National Diabetes Registry Report, Volume 1, 2009-2012. 2013, Ministry of Health Malaysia: Putrajaya.

TECHNICAL WORKING GROUP MEMBERS

Advisors :

Datuk Dr Ghazali Ahmad
Senior Consultant Nephrologist

Dato' Dr Tan Chwee Choon
Senior Consultant Nephrologist

Working group :

Dr Sunita Bavanandan
Consultant Nephrologist, Hospital Kuala Lumpur

Dr Feisul Idzwan Mustapha,
Consultant in Public Health, Disease Control Division, Ministry of Health

Dr Rafidah Abdullah
Consultant Nephrologist, Hospital Sultan Haji Ahmad Shah, Temerloh

Dr Zaiha Harun
Consultant Nephrologist, Hospital Sultanah Nur Zahirah, Kuala Terengganu

Dr Mohamad Zaimi Wahab
Consultant Nephrologist, Hospital Kuala Lumpur

Dr Ching Chen Hua
Consultant Nephrologist, Hospital Sultanah Bahiyah, Alor Setar

Dr Loh Chek Long
Consultant Nephrologist, Hospital Sultanah Bainun, Ipoh

Acknowledgment

This document has been made possible with many valuable contributions from other individuals and bodies including the following:

Dato' Dr Azman Abu Bakar, Director, Medical Development Division, Ministry of Health

Datin Dr Inderjeet Kaur, Deputy-Director, Medical Development Division, Ministry of Health

Dato' Dr Zaki Morad, Chairman, National Kidney Foundation Malaysia

Mr. Chua Seng Tiong, Chief Executive Officer, National Kidney Foundation Malaysia

Dr Hooi Lai Seong, Senior Consultant Nephrologist and Head of Nephrology Services, Ministry of Health

Dr. Tahir Aris, Director, Institute for Public Health, National Institutes of Health

Dr GR Letchumanan a/l Ramanathan, Consultant Physician and Head of General Internal Medicine, Ministry of Health and President of College of Medicine Malaysia

Dr Nazrila Hairizan Nasir, Senior Family Medicine Specialist and Deputy Director, Family Health Development Division, Ministry of Health

Dr Zanariah Hussein, Senior Consultant Endocrinologist and Head of Endocrinology Services, Ministry of Health

Datin Aminah Pit Abdul Raman, Public Advocate



ISBN 978-967-2173-58-8

