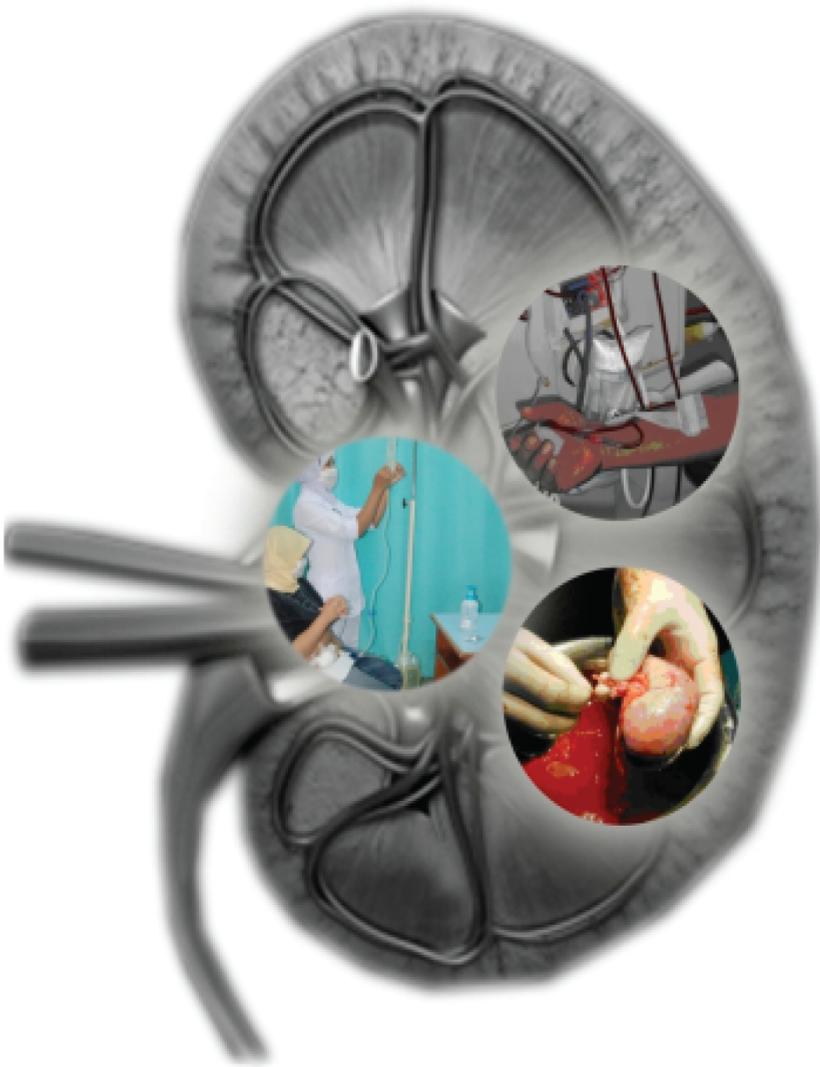


NEPHROLOGY SERVICES OPERATIONAL POLICY



Medical Development Division
Ministry Of Health Malaysia



MEDICAL DEVELOPMENT DIVISION
MINISTRY OF HEALTH MALAYSIA

**NEPHROLOGY SERVICES
OPERATIONAL POLICY**

This policy was developed by the Medical Services Unit, Medical Services Development Section of the Medical Development Division, Ministry of Health Malaysia and the Drafting Committee for the Nephrology Services Operational Policy.

Published in November 2010

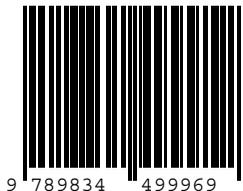
A catalogue record of this document is available from the library and Resource Unit of the Institute of Medical Research, Ministry of Health;

MOH/P/PAK/202.10 (BP)

And also available from the National Library of Malaysia;

ISBN 978-983-44999-6-9

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Acknowledgements

The Medical Development Division would like thank Dato' Dr. Rozina Ghazalli, National Advisor for Nephrology Services from 2006 to 2008, members of the Drafting Committee for the Nephrology Services Operational Policy and all those who contributed towards the development of this document. Their commitment and support made the development of this policy possible.

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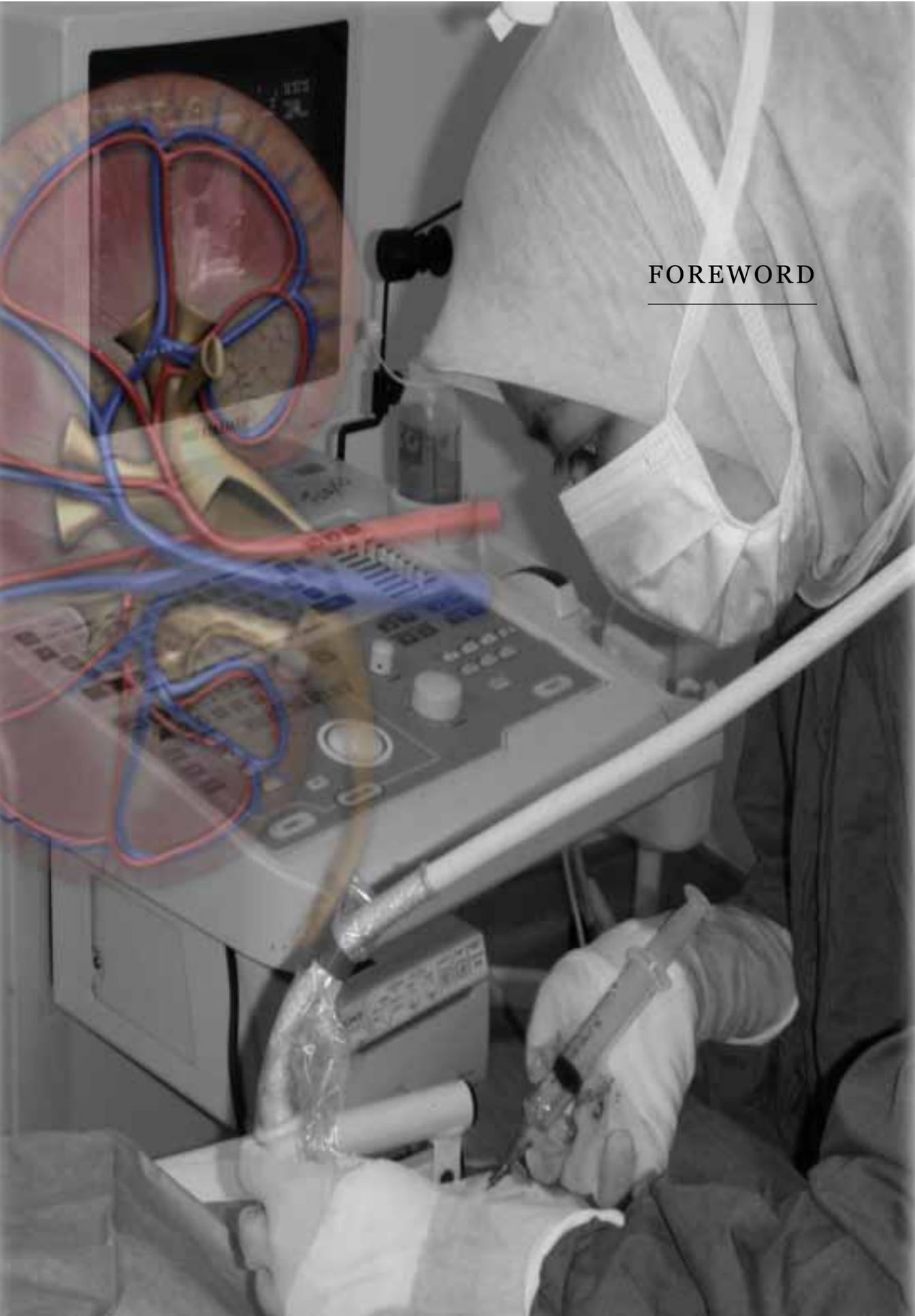
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FOREWORD

DIRECTOR GENERAL OF HEALTH

Nephrology which concerns the diagnosis and treatment of kidney diseases started as a separate clinical speciality in Malaysia in the early nineteen seventies and has progressively developed since that time.

Although nephrology involves the management of many different kidney disorders, haemodialysis clearly forms a major component of the services provided by a nephrology department. Indeed the dialysis programme in this country has developed rapidly over the last decade and the most consistent growth has been with haemodialysis treatment. The Ministry of Health facilities currently provide dialysis to about thirty one percent of patients requiring such treatment.

With the continuing development of nephrology services throughout the country, the Nephrology Services Operational Policy will serve as a guide for all those involved in the provision of nephrology services be it health care providers, hospital managers or policy makers on the requirements, operation and development of nephrology services.

I would like to congratulate the Medical Development Division and the relevant consultant nephrologists for their commitment in developing this document which sets the standard for nephrology services in the Ministry of Health.



Tan Sri Dato' Seri Dr. Hj. Mohd. Ismail Merican

DEPUTY DIRECTOR GENERAL OF HEALTH (MEDICAL)

Chronic Kidney Disease is a problem that is becoming worse due to the growing incidence of hypertension, cardiovascular conditions, and diabetes which is now the major cause of End Stage Renal Disease.

The development of nephrology services in Malaysia has led to better access to services. Improvement in nephrology services has in turn led to the improved care of patients with renal disease. Up to the mid nineteen nineties the scenario for patients with kidney failure was bleak and disheartening. Only few with End Stage Renal Disease could get dialysis treatment or renal transplants. However in the last ten to fifteen years the scene has changed quite dramatically. Now almost everyone can get access to some form of Renal Replacement Therapy. The number of dialysis patients in Malaysia has tripled in the past 10 years. Dialysis, particularly haemodialysis treatment has showed a rapid growth. Dialysis treatment rates in all states in Malaysia have now exceeded 100 per million state population.

The Nephrology Services Operational Policy will serve as a planning tool as well as a guidance for the development of a structured and coordinated service. In addition, it will also serve as an excellent reference document for new personnel reporting to the department.

I would like to congratulate the Medical Development Division for initiating and coordinating the development of this policy. This document is also the result of the commitment and dedication of the drafting committee led by Dato' Dr. Rozina Ghazalli. I thank all those who contributed to the development of this policy. I am confident the Nephrology Services Operational Policy will enhance the provision of the nephrology services.



Datuk Dr. Noor Hisham Abdullah

NATIONAL ADVISOR FOR NEPHROLOGY SERVICES

The nephrology service is part of the secondary and tertiary clinical services provided by the Ministry of Health (MOH) at its various hospitals in the country. Apart from direct services delivered by its units, the nephrology service plays an important role in supporting clinical services provided by other departments such as the Intensive Care Units, Coronary Care and Cardiothoracic Services, Oncology, Medical and Surgical Services. The nephrology service is a component of internal medicine service and the wider clinical services provided by the MOH. In this respect the service will contribute actively to the functions of the Medical Development and Medical Practice Divisions of the Ministry including in the training of medical officers and physicians, development of Clinical Practice Guidelines, development and maintenance of quality standards, patient safety and client satisfaction policies and any other activities that will enhance the efficiency and image of the Ministry of Health.

The nephrology services of the Ministry of Health has been very fortunate to have had pioneers like Tan Sri Dr Abu Bakar Suleiman and Dato' Dr Zaki Morad who laid down the foundations of a strong policy that has guided the service throughout the width and breadth of the country.

The rapid expansion of dialysis has led to the need for standards and guidelines which were developed by the pioneers in the Ministry of Health. This is used by Cawangan Kawalan Amalan Perubatan Swasta (CKAPS) and the Private Healthcare Facilities Act of 1998 to ensure that private and NGO haemodialysis units comply with the standards of patient care.

Other operational policies for peritoneal dialysis, transplantation, general nephrology as well as for training of personnel were developed gradually over time. Nevertheless there was a need to produce an updated and coordinated policy document to guide health care managers and all relevant parties involved in nephrology as a whole and renal replacement therapy in particular. We hope this comprehensive document will ensure the delivery of an improved standard of care for nephrology practice in the Ministry of Health hospitals.

We wish to thank all our nephrology colleagues for their participation in preparing this document especially the Penang contingent of Dr Ong Loke Meng, Dr Liew Yew Fong and Dr Anita B Manocha. We would also like to take this opportunity to thank our large paramedic family without whom dialysis and nephrology would not be a success story as well as our supportive colleagues in the urology, radiology, pathology, pharmacy and vascular surgery fields. The Ministry of Health divisions under the Director General of Health have always been supportive of our cause and continuously assist in the planning and development of services and procurement of equipment, dialysis consumables and drugs as well as our training activities.

Finally our gratitude goes to the pioneers whose vision, determination, perseverance and sacrifice led to the birth, expansion and the national success of the nephrology, dialysis and renal transplantation programme in Malaysia.



Dato' Dr. Rozina Ghazalli
(National Advisor for Nephrology Services 2006-2008)



Datuk Dr. Ghazali Ahmad
(National Advisor for Nephrology Services 2009 till present)

ARTICLES



1. INTRODUCTION

The nephrology service is one of the major clinical specialty services provided by the Ministry of Health (MOH) hospitals. The increase in prevalence of Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD) requires the support of a comprehensive and efficient nephrology, dialysis and transplant service. As the biggest health care provider in the country, the MOH plays a leading role in the development and provision of nephrology and dialysis services.

This policy document covers key areas of nephrology services such as organization, human resource and asset requirements as well as patient management, ethics and clinical governance. It is intended to guide health care providers, hospital managers and policy makers on the requirement, operation and development of nephrology services in the MOH hospitals. The document outlines the optimal achievable standards in accordance with best practices and guidelines. In hospitals where these standards are not fully met, necessary steps need to be taken to meet these standards.

The document shall be reviewed and updated every 3 years or earlier as the need arises.

2. OBJECTIVES OF SERVICE

- 2.1 To provide comprehensive general nephrology, dialysis and renal transplantation services in the Ministry of Health.
- 2.2 To promote the prevention, detection and treatment of early stage kidney disease through close collaboration with primary healthcare providers and other relevant organizations.
- 2.3 To provide leadership in all aspects of the development of nephrology, dialysis and transplantation services in the country.
- 2.4 To provide training of nephrologists and allied health staff in the country.
- 2.5 To collaborate and network with all parties in the MOH, academic institutions, the private sector and Non Governmental organizations (NGOs) to enhance the practice and development of nephrology in the country.
- 2.6 To collaborate with international organisations and overseas centres of excellence in the field of nephrology so as to further enhance the specialty in the country.

3. SCOPE OF SERVICE

The scope of work of the nephrology services shall include:

- 3.1 General nephrology.
- 3.2 Renal Replacement Therapy (RRT) i.e. dialysis and transplantation.
- 3.3 Health promotion, prevention and detection of kidney diseases.
- 3.4 An advisory role to the Ministry of Health on all aspects of the development and practice of nephrology including training of physicians and allied health staff in the field of nephrology.

4. COMPONENTS OF SERVICE

The range of services to be provided by the nephrology units in the Ministry of Health shall include:

4.1 Outpatient/Ambulatory Care Services

4.1.1 Clinics

- General Nephrology / Chronic Kidney Disease
- Renal Transplant
- Peritoneal Dialysis (PD)
- Haemodialysis (HD)
- Pre-dialysis
- Specialised (e.g. vascular access, diabetic nephropathy, renal bone disease, hypertension and research)

4.1.2 Ambulatory Care Services

a) Dialysis

- Haemodialysis
- Peritoneal Dialysis

b) General nephrology procedures (e.g. insertion of HD catheters)

c) Diagnostic and interventional nephrology

4.2 Inpatient Services

4.2.1 Care of patients with kidney diseases

4.2.2 Care of renal transplant recipients and donors

4.2.3 Renal biopsy

4.2.4 Insertion of HD and PD catheters

4.2.5 Acute intermittent HD and PD

4.2.6 Critical care nephrology

4.2.7 Plasmapheresis

4.2.8 Diagnostic and interventional nephrology

4.3 Training and Continuing Education

4.3.1 Medical officers / physicians in training / trainee nephrologists

4.3.2 Allied health personnel

4.3.3 Patients and family

4.3.4 Medical students

4.4 Rehabilitation and support for the well-being of patients with kidney disease.

5. ORGANISATION

5.1 The national advisor for nephrology services is appointed by the Ministry of Health from amongst the senior nephrologists. The advisor shall represent the views of all the Nephrologists in the MOH on all aspects of the practice and development of Nephrology services and will be the principal liaison officer between them and the MOH.

5.2 The national advisor for nephrology services shall convene an annual meeting of all consultant nephrologists in the MOH. The meeting shall discuss amongst others a) proposed development of the service for the ensuing year b) allocation of funds c) purchase of equipment and disposables d) posting of nephrologists e) training and CPD programs f) audit of outcomes of care. The decisions of the annual meeting shall be implemented by the various committees. The national advisor shall call for a meeting of consultant nephrologists at any time if the need arises.

5.3 Nephrology Service Committees

5.3.1 At the national level, the nephrology service shall establish the following **management** committees:

- a) Planning and Development Committee.
- b) Technical Specifications Committee.
- c) Technical Evaluation Committee.
- d) Human Resource Committee.
- e) Nephrology Training Committee.
- f) Ethics and Clinical Governance Committee.

Refer to Appendix 13 for terms of reference of the committees.

5.3.2 The nephrology service shall also establish the following **clinical** committees:

- a) Haemodialysis Programme Committee.
- b) Peritoneal Dialysis Programme Committee.
- c) Kidney Transplantation Programme Committee.
- d) General Nephrology Committee.
- e) Critical Care Nephrology Committee.
- f) Diagnostic and interventional Nephrology Committee.
- g) Research and Audit Committee.

- 5.3.3 At the state level, the functions of the above committees can be held by individuals within a single management committee.
- 5.4 The senior nephrologist in the state shall be responsible for the following:
 - 5.4.1 The overall management of the nephrology, dialysis and transplant programme in the state.
 - 5.4.2 Supervising the dialysis unit managers to ensure they meet the objectives and targets of the Ministry.
 - 5.4.3 Clinical management of dialysis patients.
 - 5.4.4 Identification of equipment, drugs and consumables for procurement.
 - 5.4.5 Audit of dialysis and outcome of treatment.
- 5.5 The organisation of the department is determined by the category of the hospital, level of patient care and the scope of services provided.
 - 5.5.1 For hospitals with resident nephrologist, the nephrology service shall be under the responsibility of the nephrologist (Appendix 1).
 - 5.5.2 For hospitals with a resident physician but without a nephrologist, haemodialysis units shall be under the administrative responsibility of the Head of Medical Department/Unit. The state nephrologist (or the nephrologist designated by the national advisor in states without nephrologists) shall be responsible for issues as listed in 5.4 (Appendix 2).
 - 5.5.3 For hospitals without a resident nephrologist or a physician, haemodialysis units shall be under the administrative responsibility of the hospital director. The state nephrologist (or the nephrologist designated by the national advisor in states without nephrologists) shall be responsible for issues as listed in 5.4 (Appendix 3).

For hospitals without resident nephrologists, the general medical care of the nephrology and dialysis patients shall be supervised by the physician/medical officer of the hospital and he shall liaise with the senior nephrologist in the state on any matter relating to the clinical care of renal patients. The state nephrologist (or the national advisor in states without nephrologists) shall arrange for a nephrologist to periodically visit the district hospitals without nephrologist to review patients. Hospital directors shall appoint a medical officer to be responsible for the day-to-day care of dialysis patients including providing emergency coverage.

5.6 The Department/Unit of Nephrology shall be headed by a consultant nephrologist who:

5.6.1 Is responsible for the management of all the components of the service.

5.6.2 Collaborates with the national advisor for nephrology in formulating strategic plans of service development, policies and procedures.

5.6.3 Works closely with the relevant stakeholders such as the hospital director, nursing managers and heads of other clinical services in areas pertaining to development, operation and other technical matters.

5.6.4 Builds a team of dedicated staff comprising nephrologists, trainees, medical officers, haemodialysis and peritoneal dialysis paramedics assisted by the dieticians, social workers and pharmacists.

5.7 Organisation Chart

5.7.1 Haemodialysis unit at hospital with resident nephrologist (Appendix 1).

5.7.2 Haemodialysis unit at specialist hospital without resident nephrologist (Appendix 2).

5.7.3 Haemodialysis unit at non-specialist hospital (Appendix 3).

- 5.7.4 Nephrology ward/clinic at hospital with resident nephrologist (Appendix 4).
- 5.7.5 Nephrology Management Committee at national level (Appendix 5).
- 5.7.6 Nephrology Clinical Committee at national level (Appendix 6).

6. OPERATIONAL POLICIES

All MOH hospitals with a resident nephrologist(s) shall establish a nephrology department/unit. The department/unit shall provide general nephrology services, Renal Replacement Therapy (RRT) for acute and end stage renal failure and consultation on renal, fluid and electrolyte and acid-base disorders to other clinical services in the hospital. The nephrology unit/department shall also undertake the training of allied health staff and doctors in the field of nephrology and RRT. The department/unit shall also play an advisory role to the director and the Medical Advisory Board of the hospital on all matters relating to the nephrology service.

RRT for ESRD shall be an integrated program consisting of haemodialysis, peritoneal dialysis and renal transplantation. Patients can and shall be transferred from one RRT treatment modality to another as and when necessary. This will ensure the care of ESRD patients shall be a seamless continuum. All ESRD patients shall be given counselling by the nephrologist and trained allied staff on the various modalities for RRT to enable him/her to make an informed decision. As a general policy the nephrology service will advocate ‘transplant first’ for all suitable ESRD patients.

In general, RRT for end stage renal failure (ESRF) in MOH facilities shall not be provided for non-Malaysian citizens. Exceptions may be considered in cases where non-citizens with ESRF request to have a kidney transplant done from a live related donor, provided the patient subsequently returns to his country for follow-up.

6.1 Haemodialysis Services

All MOH hospitals shall establish a haemodialysis unit. The unit shall provide outpatient and inpatient haemodialysis treatment.

6.1.1 Requirements for Haemodialysis Units

6.1.1.1 Location

A HD unit shall be located within the hospital or within its grounds. In the latter situation, the HD unit shall be in an

area which is easily accessible to the patients who receive the treatment on a regular ambulatory basis. At the same time, the unit may dialyse patients from the wards. As such the unit shall be connected to the main hospital by covered corridors to enable safe and easy transport of patients. Other considerations in locating a HD unit shall include:

- easy access to vehicles delivering machines consumables disposables.
- availability of adequate water pressure for the HD, Reverse Osmosis (RO) and reprocessing machines.
- security for patients, staff and equipment.

6.1.1.2 Water System

- Adequate uninterrupted water supply is a prerequisite to effective haemodialysis treatment.
- Every haemodialysis treatment shall use water treated by an RO system to ensure purity of the water; ultrapure water treatment system is preferred.
- The water quality shall meet the Association for the Advancement of Medical Instrumentation (AAMI) standards (AAMI RD62:2006).
- Regular chemical analysis of water quality shall be carried out 3 to 6 monthly.
- Monthly tests for endotoxin and bacterial colony counts shall be performed.

6.1.1.3 Equipment (Appendix 7) and consumables

- Haemodialysis Machines

The MOH Nephrology service shall provide HD machines which are modern, cost effective and with all the monitoring and other features that will ensure efficient and safe haemodialysis. Only machines approved by major regulatory authorities e.g. FDA, EMEA and Japan Ministry of Health shall be purchased. All HD machines shall be serviced regularly according to the manufacturer's recommendations.

The recommended number of haemodialysis stations depends on the category of hospitals:

- State Hospitals – 30 to 50 haemodialysis stations.
 - Hospitals with specialists - 20 to 40 haemodialysis stations.
 - Hospitals without specialists - 5 to 20 haemodialysis stations.
- Consumables
 - Synthetic membrane dialysers may be reprocessed using appropriate and safe reprocessing techniques. Dialysers with biocompatible synthetic membrane are preferred.
 - Blood lines shall be procured that can be universally used in all types of machines. Blood lines shall not be reused.
 - Dialysate shall be formulated and used according to current international recommendations. There shall be a number of different formulations to meet specific patient needs. Dialysate concentrate in the powder form is preferred.
 - Reprocessor Machines
 - Automated reprocessors with pressure check and fibre bundle volume measurement shall be used.

6.1.1.4 Continuous power supply for uninterrupted haemodialysis treatment.

6.1.1.5 Standard of care

- Haemodialysis shall be performed three times weekly for at least 4 hours. Individual patients with specific problems may require more frequent dialysis.
- Dialysis adequacy shall be estimated 3 monthly and the dialysis dose shall be adjusted to achieve a delivered KT/V of at least 1.2 or a Urea Reduction Ratio of at least 65%.
- Hepatitis seroconversion is a sentinel event and every

case shall be notified and the infection control practice in the unit shall be thoroughly reviewed.

- Death while on HD treatment or soon after shall be notified and an investigation be carried out to determine its cause.

6.1.1.6 Operational hours

- Where feasible a haemodialysis unit shall run at least three shifts of haemodialysis daily six days a week to optimise the use of resources.

6.1.1.7 Fees

- Patients shall be charged according to the Fees (Medical) Act 1982.
- The fees shall be collected by authorised personnel according to established financial procedures.

6.1.1.8 Screening

All patients for haemodialysis shall be screened for viral infections:

- Prior to being accepted for treatment, patients shall be screened for HBsAg, anti HBs, anti HCV and anti HIV.
- HBsAg and anti-HCV shall be performed every 3 months.
- Anti-HIV shall be performed every 6 months.
- Confirmed anti-HCV and HIV positive patients may not require repeated serologic tests.
- Patients who are HBsAg negative and have anti-HBs antibody titre less than 100 IU/L shall be vaccinated.

6.1.1.9 Infection Control

All haemodialysis centres must practice strict infection control:

- The haemodialysis unit shall follow the policies and practices as determined by the National Advisor of Nephrology services.
- An infection control team shall be identified to activate, regulate, monitor and report infection control activities

including staff training, case detection, documentation and audit activities.

- Strict adherence to the guidelines for universal precautions by the staff shall be practiced at all times.

Refer to Appendix 9.

6.1.1.10 Isolation and Reuse

- Patients with Hepatitis B shall be dialysed in a separate room with dedicated machines and reprocessing facilities.
- Patients with Hepatitis C shall be dialysed in a separate room with dedicated machines and reprocessing facilities.
- The decision to provide long term haemodialysis to HIV patients shall be individualised. These patients shall be dialysed separately and the dialyser shall NOT be reprocessed unless there is a dedicated HIV dialysis unit whereby dialysers of HIV patients can be reprocessed.
- The disposal of blood lines and dialyzers shall follow the MOH recommendations on disposal of clinical wastes.

6.1.2 Patient Selection For Centre Haemodialysis

Selection of patients for long term haemodialysis in the haemodialysis unit shall be under the purview of a selection committee. This committee shall consist of specialists in the Department of Nephrology and senior allied health staff from the dialysis unit. A consultant nephrologist shall chair this selection committee. The selection process and selection criteria are as follows:

a) Waiting time

The duration on the waiting list is the major criteria for acceptance.

b) Priority group

The following groups of patients will be given top priority and will be accepted into the MOH dialysis programme once vacancy is available.

- Patients who had undergone a living related or local cadaveric renal transplantation at MOH hospitals and now require dialysis because of failed graft.
 - Dialysis patients in MOH hospitals who require a change in dialysis modality.
 - Patients transferred from other MOH dialysis units.
 - Children.
- c) Government employment
Vacant dialysis slots will be distributed among government (and their dependents) and non government employees/others.
- d) Co-morbid factors and potential for rehabilitation.
- e) Distance to the haemodialysis unit.
- f) Social economic status.
- g) Number of dependents (unemployed spouse and children below 18 or children who are studying).
- h) Age of patient.
- i) Availability of dialysis opportunity, resources or assistance (Baitulmal, SOCSO, employer, JPA etc).
- j) Dialysing at subsidised/NGO units.
- k) Dependency.

The above selection criteria cannot be enforced strictly as selection of patients for RRT involves other human and clinical factors including patient's choice. Hence these criteria remain a guide and other criteria especially clinical may be considered at the discretion of the selection committee.

Chronic haemodialysis is not recommended in the following groups of patients and prior consultation with a consultant nephrologist is required before offering haemodialysis treatment:-

- Patients with terminal illnesses e.g. terminal cancers, full blown AIDS, terminal end organ failure (liver, heart, lungs etc.).
- Patients with persistent hypotension.
- Patients with very poor quality of life e.g. bed ridden, dementia, etc.
- Patients with extensive coronary artery disease and not suitable for any form of coronary intervention.
- Patients with severe vascular disease where creation of any form of vascular access is unlikely to be successful. The patient and immediate family members shall be informed of the reasons for the decision and the patient may be offered alternative treatment if indicated.

6.1.3 Manpower

6.1.3.1 The haemodialysis team shall consist of:

- Nephrologist
- Clinical specialist and/or medical officer
- Dialysis manager
- Trained allied health staff
- Attendants
- Access to the services of medical social worker, dietician, renal pharmacist as required.
- The staff to patient ratio may vary depending on the case mix and the staff experience. There shall be a minimum ratio of trained staff nurse (or equivalent) for every 6 patients on haemodialysis in the same treatment shift.

6.1.3.2 The responsibilities of the haemodialysis allied health staff shall include:

- To provide safe and adequate dialysis to all patients.

- To train patients for self-care when possible.
- To assist in counselling of new patients for haemodialysis.
- To assist in clinical audit.
- To provide data to the national renal registry annually.
- To assist in the haemodialysis clinic.
- Maintain and update the potential cadaveric renal transplant list.

6.1.4 Haemodialysis (HD) Clinic

- a) The HD clinic is dedicated for the follow up of patients that are on chronic haemodialysis in the Ministry of Health units and home units.
- b) The objective of the clinic is to review HD patients every 3 months or more frequently if indicated to ensure that the patients receive optimal care.
- c) During each clinic visit:
 - The patients shall receive a physical examination including an examination of the vascular access.
 - The patients' dialysis charts and laboratory tests shall be reviewed including an assessment of dialysis adequacy.
 - Complications of ESRD and haemodialysis such as cardiovascular disease, renal bone disease, anaemia and malnutrition shall be assessed.
 - The patients shall receive dietary advice and be referred to a dietician when necessary.
- d) Other services: specialized clinics (for example vascular access and mineral bone metabolism clinics) shall be established whenever feasible.

6.2 Peritoneal Dialysis Services

All Ministry of Health hospitals with a resident nephrologist shall establish a PD unit.

6.2.1 Requirements for PD units

6.2.1.1 Location

A PD unit shall be located close to the nephrology/medical ward where feasible to facilitate training and management.

6.2.1.2 Storage

Every PD unit shall have an adequate storage area to ensure proper storage of dialysate, consumables and equipment.

6.2.1.3 Equipment (Appendix 7) and consumables

- Automated peritoneal dialysis machines
Each PD unit shall be equipped with automated peritoneal dialysis machines.
- Consumables and peritoneal dialysis solution
Each patient is regularly supplied with consumables and PD solution.

6.2.1.4 Screening

All patients for PD must be screened for viral infections:

- HBsAg, anti-HCV and anti-HIV shall be performed before being accepted for treatment and 6 monthly.
- Confirmed anti-HCV and HIV positive patients may not require repeated serologic tests.
- Patients who are HBsAg negative and have anti-HBs antibody titre less than 100 IU/l shall be vaccinated.

6.2.1.5 Infection Control

All PD centres must practise strict infection control :

- The PD units shall follow the policies and practices on infection control as determined by the National Advisor for Nephrology services.
- An infection control team shall be identified to activate, regulate, monitor and report infection control activities including staff training, case detection, documentation and audit activities.
- Strict adherence to the guidelines for universal precautions

shall be practised at all times by the staff.

- Other guidelines for the PD unit include:
 - A clean area shall be clearly designated for preparation of patient for an exchange. This area shall also be disinfected in between patients.
 - Education on care of the exit site and catheter shall be emphasised to patient, family and staff.

6.2.2 Patient Selection of patients for PD

The criteria for selection of patients for long term PD is similar to that for HD (refer to Section 6.1.2). In addition, other factors to consider include:

- a) Vision, manual dexterity and availability of assistant
- b) Home environment
- c) Vascular access
- d) Contraindications for haemodialysis

6.2.2.1 PD is not recommended in the following groups of patients and prior consultation with a consultant is required before offering PD treatment:-

- Patients with terminal illnesses e.g. terminal cancers, full blown AIDS, terminal end organ failure (liver, heart, lungs etc).
- Patients with very poor quality of life e.g. bed ridden, dementia, etc.
- Patients with ostomies or severe diverticulitis.
- Patients with “large” hernia which is not suitable for surgical repair.
- Patients with previous extensive abdominal surgery where insertion of a PD catheter is unlikely to be successful.
- Patients who do not have treated water at home.
- Patients who are unable to perform self care PD and do not have assistants.

The patient and immediate family members shall be informed of the reasons for the decision and the patient may be offered alternative treatment if indicated.

6.2.3 Manpower

6.2.3.1 The PD team shall consist of:

- Nephrologist
- Specialist and/or medical officer
- Dialysis manager
- Allied health staff who are trained in PD
- Attendants
- Access to the services of medical social worker, dietician, renal pharmacist as required. The staff to patient ratio may vary depending on the case mix and the staff experience. There shall be a minimum ratio of 1 trained staff nurse (or equivalent) for every 25 patients for the home based CAPD program.

6.2.3.2 The responsibilities of the PD allied health staff shall include:

- Identifying prospective patients for PD treatment and decide on the suitability for such treatment or otherwise.
- Organising and maintaining schedules on the following: PD training, Tenckhoff catheter insertion, regular follow up, supply of PD consumables and solutions, changing of PD transfer set, PET (Peritoneal Equilibration Test) and adequacy test, home visits and retraining of patients.
- Providing facilities for outpatients or inpatients to carry out their regular PD exchanges.
- Providing feedback to the clinicians on the current status of the PD patients e.g. exit site status, patient's compliance.
- Assisting in the PD clinic.
- Assisting in clinical audit.
- Providing counselling to prospective, new or regular patients.
- Providing data to the national renal registry annually.
- Maintaining and updating the potential cadaveric renal transplant waiting list.

6.2.4 Peritoneal Dialysis Clinic

6.2.4.1 The PD clinic is dedicated for the follow-up of patients on peritoneal dialysis.

6.2.4.2 The objective of the clinic is to review CAPD patients every 3 months or more frequently if indicated to ensure that the patients receive optimal care.

6.2.4.3 During each visit:

- The patients shall receive a physical examination which shall include an examination of the exit site and the tunnel tract.
- The patients' dialysis charts and laboratory tests shall be reviewed including assessment of dialysis adequacy (Kt/V, PET).
- The patients shall receive education in the following aspects:
 - Hand hygiene
 - To recognise the potential complications like exit site infection, peritonitis, and ultrafiltration failure
 - Administration of erythropoietin or insulin
 - Exit-site care
 - Recording of weight, blood pressure, volume of ultrafiltrate, PD solution strengths, etc
 - Diet

6.3 General Nephrology Services

General Nephrology services shall provide both outpatient and inpatient care.

6.3.1 Outpatient Nephrology Services

6.3.1.1 The nephrology clinic will provide promotive, preventive, diagnostic and therapeutic as well as counselling services on kidney health, acute and chronic kidney disease (CKD).

6.3.1.2 The objectives of this clinic are:

- To identify and treat underlying disease.
- To delay the progression of kidney disease including optimising blood pressure control and proteinuria reduction.
- To counsel patients on care of their disease.
- To provide nutritional and dietetic counselling.
- To prevent long term complications of renal failure.
- To prepare patients for renal replacement therapy.
- To provide psycho-social support and referral for financial assistance.

6.3.1.3 Appointments for all referral cases shall be in accordance with existing guidelines as stated in the 'Garispanduan Rujukan'.

6.3.1.4 Specialised clinics dedicated for specific groups of patients may be established if necessary. These may include:

- CKD clinic
- Diabetic nephropathy clinic
- Glomerulonephritis clinic
- Hypertension clinic
- Pre-dialysis clinic

The clinic sessions shall be organised to introduce and counsel patients on the various modalities of RRT. A multi disciplinary team shall participate.

- Vascular access clinic to assess patients for vascular access e.g. Doppler Ultrasound of fistulas or venous mapping of limbs
- Research clinics

6.3.2 Day-care Nephrology Services

The following services can be provided as a day care procedure. However if the facilities for day care are not available, these services can be performed as an in patient:

- a) Insertion of cuffed and non-cuffed haemodialysis catheters.

- b) Creation of vascular access.
- c) Administration of parenteral immunosuppressive agents.
- d) Treatment of stable patients with PD peritonitis.

6.3.3 Inpatient Nephrology Services

6.3.3.1 The services provided shall include:

- Care of patients with common nephrology disorders such as glomerular diseases, infections of the urinary tract, hypertension and acid base and electrolyte disturbances.
- Management of chronic haemodialysis patients e.g. those with complications requiring admission, vascular access surgery etc.
- Management of peritoneal dialysis patients e.g. those with complications requiring admission, PD training etc.
- Management of renal transplant patients e.g. those with complications requiring admission, graft biopsy etc.
- Management of acute renal failure patients with acute intermittent haemodialysis, acute peritoneal dialysis or CRRT (e.g. haemofiltration, haemodiafiltration, SLEDD, SCUF).
- Management of acute poisoning using extra corporeal techniques such as haemoperfusion.
- Management of patients requiring extracorporeal procedures such as plasmapheresis or haemoadsorption.
- Consultation services to other clinical services departments.
- Procedures:
 - Renal biopsy
 - Insertion and removal of catheters e.g. insertion of cuffed and non cuffed HD catheters, PD catheters
 - Fistulogram
 - Fistuloplasty and stenting
 - Vascular access surgery (performed by surgical team)

In hospitals without a resident nephrologist, dialysis support shall include acute intermittent haemodialysis or acute peritoneal dialysis.

6.3.3.2 Admission to the ward

- Elective admission - as per hospital policy.
- Emergency admission - as per hospital policy.

6.3.3.3 The team shall consist of a sister-in charge, nurses, doctors, pharmacist and dietician. Their responsibilities are:

- Conduct daily ward rounds and call duties.
- Perform inpatient medical procedures (including counselling and treatment).
- Arrange for special procedures and investigations.
- Provide nephrology care for patients referred from other disciplines and refer patients to other departments for opinion if necessary:
 - Refer to Appendix 10 for the policy on referral of patients.
 - Refer to Appendix 10 for the policy on patients under shared management.
 - All referrals shall be in accordance with the existing guidelines as stated in the 'Garis Panduan Rujukan'.
- Provide discharge summary and plan on follow up treatment.
- Infection control:

A team shall be designated for infection control activity in the ward. This team shall activate, regulate, monitor and report infection control activities. This shall be in accordance with the hospital infection control guidelines.

6.4 Renal Transplantation Services

Renal Transplantation shall be the preferred RRT for suitable patients with ESRD. In providing such a service the Ministry of Health shall ensure that it abides by all the guidelines provided by international organisations like the World Health Organisation and the Transplantation Society especially on issues of ethics. Renal transplantation surgery and the immediate post-transplant care shall be performed only in designated centres. However, the subsequent management of the renal transplant patients can be done in any MOH hospital with a resident nephrologist.

6.4.1 Requirements for renal transplantation

6.4.1.1 Transplant team

The members of the transplant team shall consist of:

- Nephrologist
- Transplant surgeons (in centres performing transplant surgery)
- Clinical specialist
- Medical officers
- Transplant coordinator (Appendix 12)
- Transplant nurse
- Pharmacist
- Other supportive staff

6.4.1.2 Transplant clinic

The transplant clinic is dedicated for the follow up of renal transplant recipients and renal donors. A team including renal transplant nurses shall be present in this clinic to assist the doctors. Arrangements may be made to review transplant recipients who develop acute medical problems on non-clinic days.

6.4.1.3 Transplant isolation and intensive care facilities

6.4.1.4 Pathology & Laboratory services

Transplant centres and transplant clinics shall have access to specific laboratory services such as immunology, mycology, virology, bacteriology, therapeutic drug monitoring and renal pathology services.

6.4.1.5 Radiological services

Transplant centres and transplant clinics shall have access to specific services such as ultrasound and Doppler, nuclear scan and interventional radiology services.

6.4.1.6 Immunosuppressive drugs

Transplant centres and transplant clinics shall have access to specific immunosuppressive drugs (see Appendix 8). Current policies on the issuance of immunosuppressants to renal transplant patients apply.

6.4.2 Responsibilities of the transplant team

Members of the transplant team shall be responsible for:

- a) Work-up of potential renal donors and recipients.
- b) Maintain and update the potential cadaveric renal transplant waiting list.
- c) Provide comprehensive inpatient and outpatient services.
- d) Follow-up of renal transplant recipients and donors.
- e) Provide graft biopsy services.
- f) In transplant centres, the team shall provide preoperative and post operative care of renal transplant recipients and living donors.
- g) Provide information and data to the National Transplant & Dialysis Registry.

Centres designated to perform renal transplantation surgery shall have a donor advocate service or facilitate the potential donor to get counselling from a donor advocate. This is to ensure that the potential donor will get objective advice on the risks and benefits of organ donation from an independent person.

6.4.3 Types of live renal donor

Potential renal donors shall be assessed thoroughly to ensure suitability for transplantation. The medical criteria are listed in Appendix 11. The types of renal donors are:

6.4.3.1 Live related donor

Live related donor implies a genetically related first and second degree family member. Other members shall be

assessed by the Unrelated Transplant Approval Committee (UTAC) in the Ministry of Health.

6.4.3.2 Live emotionally related donor

The live emotionally related donor shall be the legally registered spouse of the recipient.

6.4.3.3 Live unrelated donor

Live unrelated renal donation shall not be accepted. However in exceptional cases, the case shall be referred to UTAC for approval before proceeding with the work-up.

6.4.4 Deceased Donor Renal Transplant waiting list

All suitable potential recipients shall be placed on the national deceased donor waiting list. Patients are selected based on the criteria established by the Malaysian Organ Sharing System.

7. QUALITY ASSURANCE AND AUDITS

The nephrology service will endeavour to keep within the overall standards by meeting the target of the hospital wide indicators. It shall also identify other discipline specific indicators of the services provided covering outpatient, inpatient, general nephrology, PD, haemodialysis and renal transplant related activities:

7.1. Key Performance Indicators for Nephrology.

7.2. Regular review of clinical practice guidelines and standards.

8. RESEARCH

The Nephrology service will actively conduct research activities in all areas of interest in the field of nephrology, dialysis and renal transplantation. The scope of research will include clinical epidemiology, health outcomes, clinical trials in therapeutics, health economics and the use of medical devices.

9. WHOLE HOSPITAL POLICY

The Nephrology services shall comply with the Whole Hospital Policy in the following areas:

- 9.1 Hospital admission and discharge.
- 9.2 Transportation service.
- 9.3 Infection control.
- 9.4 Sterilization service.
- 9.5 Management of waste products.
- 9.6 Supply of pharmaceuticals and consumables.
- 9.7 Acquisition of assets and equipment.
- 9.8 Catering service.
- 9.9 Laundry and linen supply.
- 9.10 Cleaning service.
- 9.11 Engineering service including preventive and maintenance services.
- 9.12 Security service.
- 9.13 Fire precaution.

- 9.14 Medical record management.
- 9.15 Communication system.
- 9.16 Quality assurance.
- 9.17 Occupational and Safety Health Act (OSHA).
- 9.18 Public relations, release of information and confidentiality.

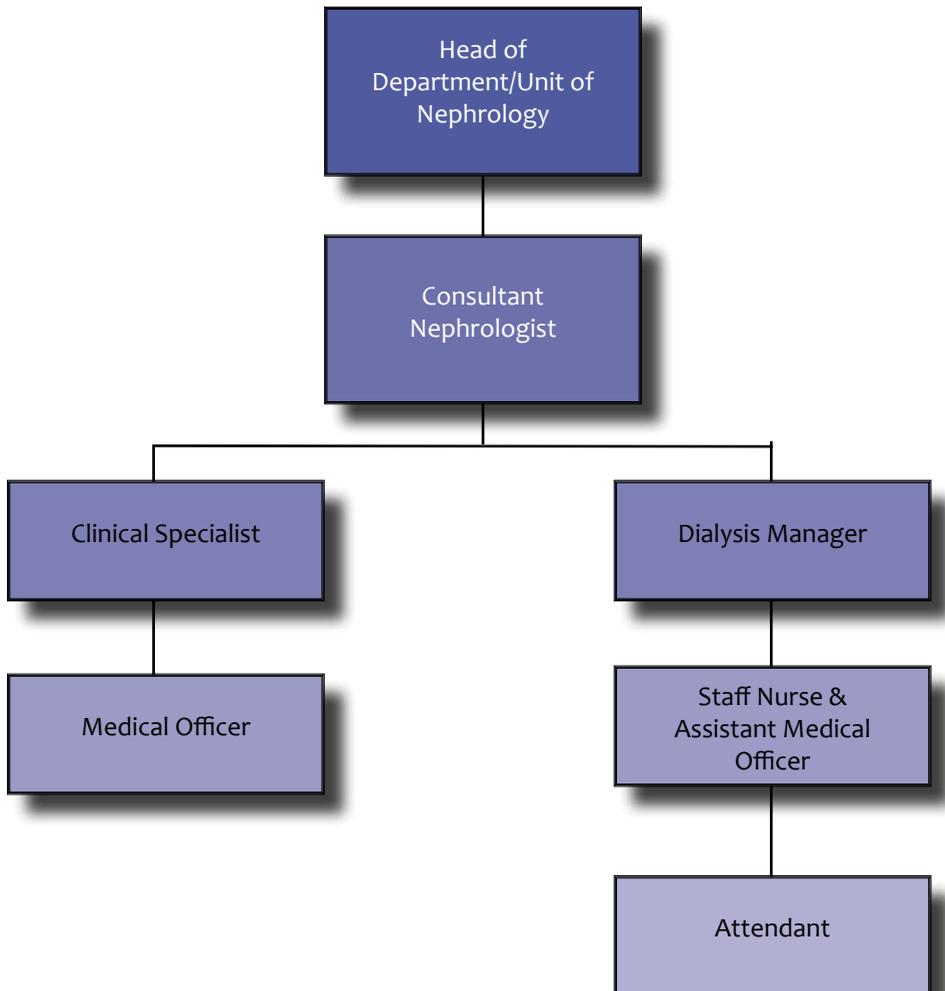
10. CLINICAL PRACTICE GUIDELINES

The practice of nephrology shall be guided by the Clinical Practice Guidelines prepared by the MOH. In the absence of any clear guideline on any particular issue or subject, the internationally recognised best practices shall be adopted. The documents 'Mutu dan Piawaian Rawatan Hemodialisis KKM' and 'Cadaveric Transplant Procedures MOH' shall be used to guide the practice of dialysis and transplant.

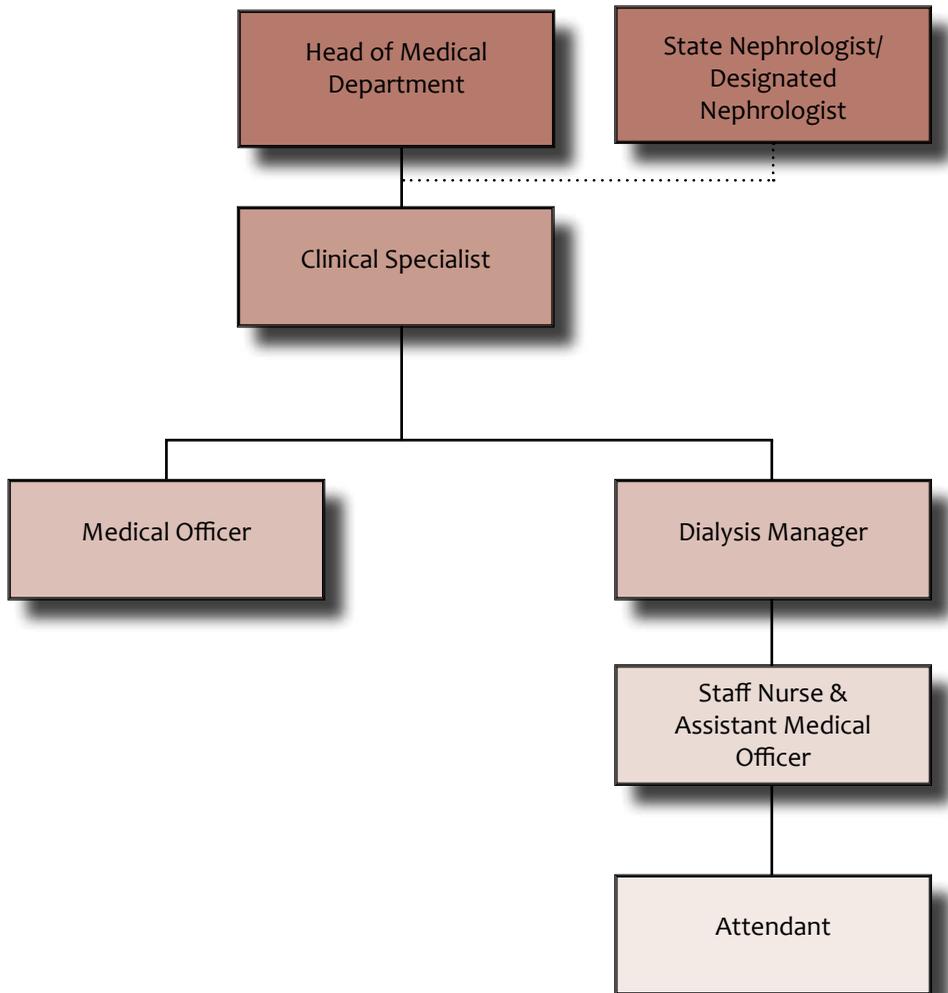
APPENDICES



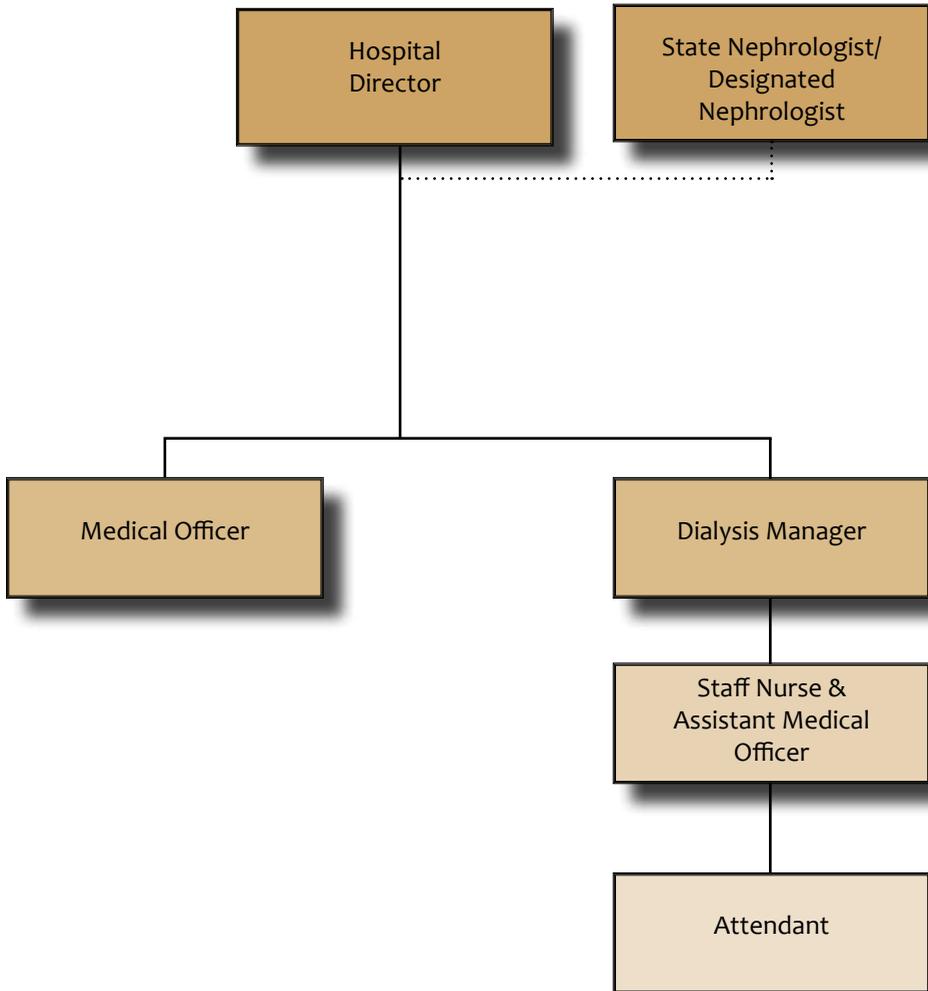
**HAEMODIALYSIS UNIT ORGANISATIONAL CHART AT HOSPITAL
WITH RESIDENT NEPHROLOGIST**



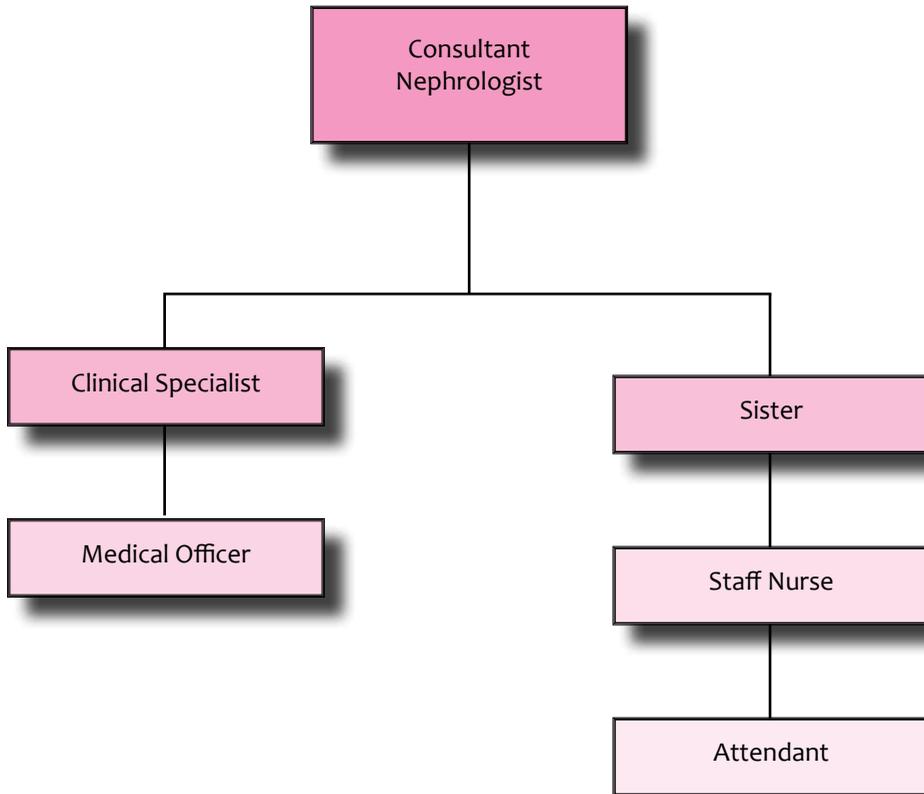
**HAEMODIALYSIS ORGANISATIONAL CHART AT SPECIALIST HOSPITAL
WITHOUT RESIDENT NEPHROLOGIST**



**HAEMODIALYSIS ORGANISATIONAL CHART AT HOSPITAL
WITHOUT SPECIALISTS**

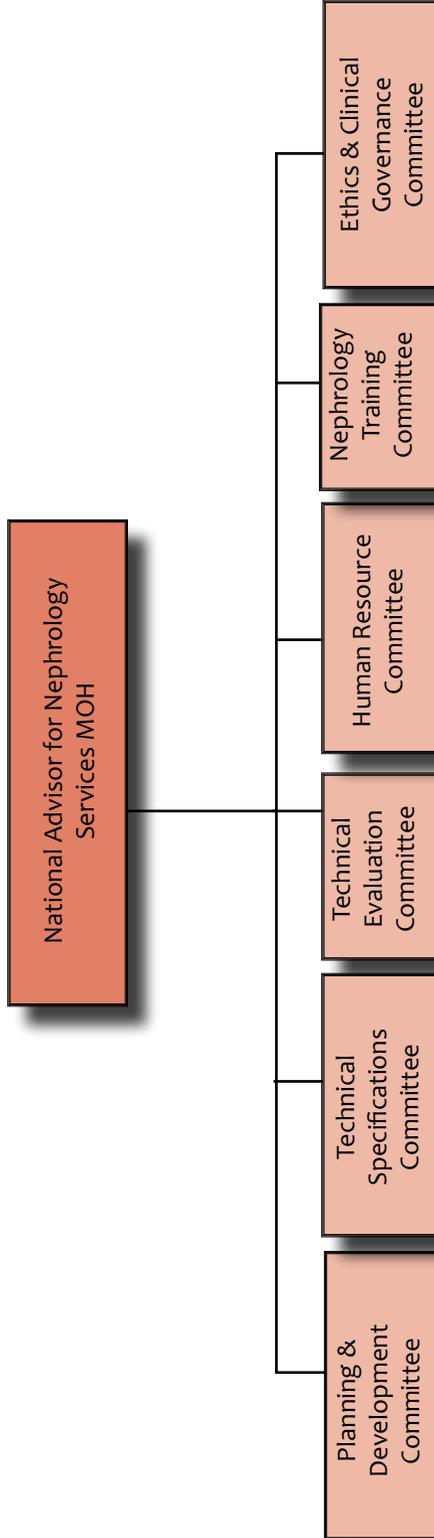


**NEPHROLOGY WARD/CLINIC ORGANISATIONAL CHART AT HOSPITAL
WITH RESIDENT NEPHROLOGIST***

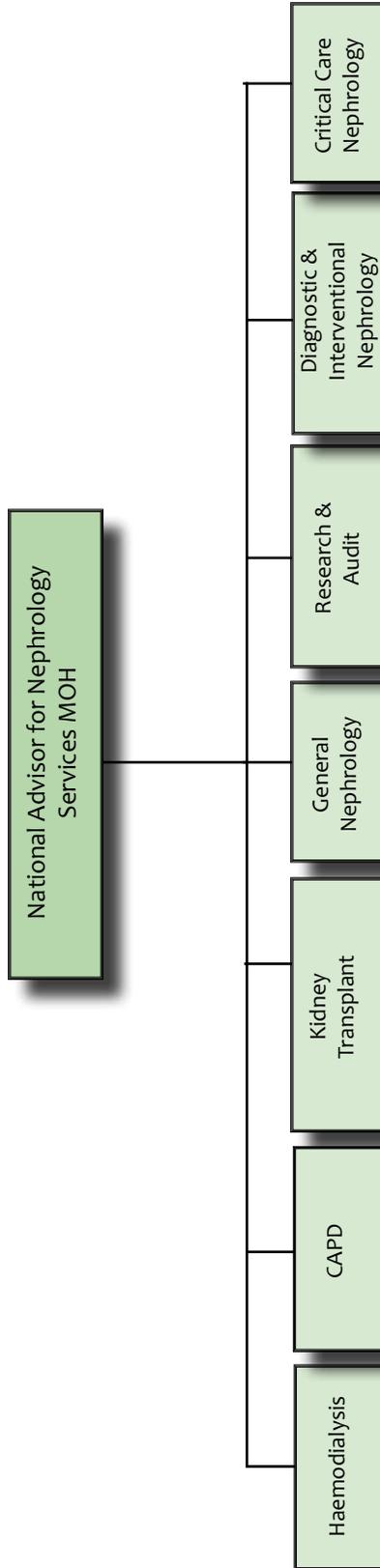


* where nephrology wards are available

**ORGANISATIONAL CHART OF THE NEPHROLOGY
MANAGEMENT COMMITTEE AT NATIONAL LEVEL**



**ORGANISATIONAL CHART OF THE NEPHROLOGY
CLINICAL COMMITTEE AT NATIONAL LEVEL**



LIST OF RECOMMENDED EQUIPMENT**Essential Medical & Non-Medical Equipment For Haemodialysis Unit**

- Haemodialysis Machines
- Dialysis Chairs
- Automated Dialyser Reprocessors
- Water Purification Systems, Reverse Osmosis
- Automated Clotting Timers (ACT)
- Sitting weighing scale
- Oxygen supply
- Dressing trolleys
- Emergency cart (trolley) with defibrillator
- Non-invasive blood pressure monitoring (NIBP) sets
- Pulse oxymeters
- Volumetric infusion pumps
- Electrocardiographs (ECG) machine
- Glucose monitoring set
- Refrigerator
- Computer with Internet connectivity

Optional items for Haemodialysis Unit

- Online Haemodiafiltration machine (HDF)
- Continuous Renal Replacement Therapy (CRRT) machine
- Portable Reverse Osmosis Water System
- Non Invasive Vascular Access Monitoring
- Slow Extended Daily Dialysis Machine (SLEDD)
- Dialyzer rinsing machines
- Bioimpedance analyser

Essential Medical & Non-Medical Items For PD Unit

- PD cyclers
- PD sets
- Hanging scale
- Sitting weighing scale
- Oxygen supply
- Dressing trolleys
- Emergency cart (trolley) with defibrillator
- Non-invasive blood pressure monitoring (NIBP) sets
- Volumetric infusion pumps
- Electrocardiograph (ECG) machine
- Glucose monitoring set
- Refrigerator
- Computer with Internet connectivity

Other Essential Medical & Non-Medical Items For Nephrology Services

- Ultrasound
- Renal biopsy equipment
- Urine phase contrast microscope
- Ambulatory blood pressure monitor

LIST OF MEDICATIONS**1. Transplant drugs**

- Cyclosporine
- Tacrolimus
- Mycophenolate Mofetil
- Mycophenolate Sodium
- Azathioprine
- Prednisolone
- Methylprednisolone
- Sirolimus
- Everolimus
- Monoclonal and polyclonal antibodies e.g. thymoglobulin, ATGAM
- IV Immunoglobulin
- Basiliximab

2. Dialysis drugs

- Erythropoietin stimulating agents (ESA) (IV and subcutaneous)
- Vitamin D and analogues (IV and oral)
- Desferioxamine (IV)
- Iron (IV and oral)
- Phosphate binders (calcium carbonate, lanthanum carbonate, sevelamer)

The list of medications may be updated as new drugs become available.

INFECTION CONTROL IN THE HAEMODIALYSIS UNIT**1. Universal Precautions**

- a) Wash hands in between patients.
 - Use soap and clean running water or an alcohol-based hand rub or foam.
 - Hands-free tap shall be provided.
- b) Wear gloves.
 - Change in between patients.
 - Wash hands after removal of gloves.
- c) Do not recap needles.
- d) Use designated sharps bin.
 - Place as close as is practical to the point of use.
 - Sealed and disposed when $\frac{3}{4}$ full.
- e) Staff attire.
 - Wear plastic gown.
 - Remove protective wear as soon as possible on completion of treatment.
 - Ensure clean work attire for every shift.

2. Clean trolley & preparation of medication

- a) A clean area shall be designated for preparation of medications and syringes.
- b) Medications and syringes used in the patient's station shall not be returned to the clean area.
- c) Single-use vials are strongly encouraged. Multiple-use vials (e.g. heparin if used, are to be prepared in a clean area and all doses to be drawn in the same session. DO NOT REUSE needles or syringes.

3. Disinfection of machines, external surfaces and equipment

- a) Clean exterior surface of machines in between patients and at the end of the day.

- b) Disinfect the chairs, beds, tables and all environmental surfaces between patients.
- c) Use external pressure transducers for each patient and do not re-use.
- d) Haemodialyser port caps, interior pathways of dialysis machine shall be disinfected at the end of the day or after dialysing a patient with unknown viral status.
- e) Scissors, clamps, stethoscopes shall be disinfected.
- f) Use dedicated blood pressure cuffs for hepatitis positive area.

4. Cleaning & Housekeeping

- a) Bins, floors and bench tops shall be cleaned with an appropriate disinfectant.
- b) All spilled blood **MUST** be removed immediately.

5. Handling of clinical wastes

- a) Waste shall be segregated and contained at source.
- b) Waste bags shall be appropriately colour-coded.
- c) Gloves must be worn when handling waste bags.

6. General rules

- a) Ensure general cleanliness of the unit.
- b) Avoid over-crowding, provide adequate space between each dialysis patient.
- c) Provide routine staff training and education on infection control practices.
- d) Provide routine training and education for patients and their families on infection control.

REFERRALS

Patients may be referred to the nephrology service either electively or on an urgent basis from either within or outside of the hospital. The referrals shall be from specialist to specialist as far as possible. Nevertheless in many hospitals this may not always be possible. Referrals will be handled as outlined below:

1. Inpatient Referrals

1.1 During office hours

a) Non-urgent

- Referrals shall be reviewed on the same day by the designated officer/specialist.

b) Urgent

- Urgent referrals shall be reviewed as soon as possible by the designated officer.
- Evaluation by the specialist or consultant shall be made as soon as possible.

1.2 After office hours

a) After office hours all referrals shall be seen by the designated on call officer.

b) Ill patients shall be reviewed by the on-call specialist or consultant as soon as possible.

c) The on-call team shall pass over the case to the designated team the following day.

2. Outpatient Referrals

a) Patients referred to the outpatient nephrology clinic will be given appointments as per hospital policy.

b) Urgent referrals will be screened by the designated doctor and will be seen on the same day if needed or admitted for further assessment.

c) Referrals for admission shall be as per hospital admission policy.

3. Shared management/Transfer to nephrology ward

a) Patients from other wards requiring haemodialysis treatment may remain in the respective ward and shall receive haemodialysis treatment in the haemodialysis unit if stable.

b) Patients requiring temporary peritoneal dialysis shall be transferred back to the initial ward upon completion of treatment unless repeat peritoneal dialysis treatment is highly likely in which case such patients shall be retained in the nephrology ward.

c) Patients shall be transferred to the nephrology/medical ward if the nephrology and primary team consider this to be in the patients' best interest for further management.

MEDICAL CRITERIA FOR POTENTIAL LIVING RELATED RENAL DONORS

1. The donor must be between the age of 18 and 65 years.
2. There must be no history of diabetes, hypertension, malignancy, heart disease, renal disease, renal calculi and gout. There must be no history of drug addiction and high risk sexual behaviour.
3. Donor's body mass index of less than 30.
4. Donor must be seronegative for HIV.
5. The donors shall have acceptable results for the following laboratory investigations:
 - Appropriate ABO compatibility.
 - Normal full blood count and coagulation profile.
 - Normal urine full examination and microscopy.
 - Normal renal profile.
 - Creatinine clearance > 80 ml/min.
 - 24 hour urine protein < 300mg.
 - Normal liver function tests.
 - Anti-nuclear factor (ANF), anti-double-stranded deoxyribonucleic acid antibody (dsDNA) – negative.

ADMINISTRATION: STAFF ROLES AND FUNCTIONS

The head of department shall be responsible for the overall administration of the department's activities and the clinical units in the department i.e. general nephrology, dialysis, transplant unit and the critical care nephrology/referral unit. Each unit head (where more than one consultant/specialist exists) shall be responsible for the administration, organisation, development, QA and CME activities, research etc in each of their units.

Ideally, a senior allied health staff in the capacity of a **supervisor** shall be identified to oversee, regulate and administer the day-to-day services and activities involving the renal replacement therapy programme i.e. HD unit, PD unit, transplant unit and the predialysis clinic. The person shall possess suitable experience and skills and have completed a post basic renal nursing course. Another senior allied health staff in the capacity of a **nursing matron** shall be identified to oversee, regulate and administer the day-to-day service and activities involving clinical services i.e. the nephrology ward (if existing), general nephrology clinic and the national renal registry.

A nursing sister shall be responsible for the administration of the nephrology ward. It is preferred that the person had undergone a post basic renal nursing course in order to be familiar with nephrology related nursing processes and provide effective guidance to the nursing staff under her supervision.

The haemodialysis unit shall be headed by a **sister or senior assistant medical officer** while the PD unit shall be headed by a **sister or a senior nurse** as the team leader. Both the haemodialysis and PD managers will be responsible to oversee, regulate and administer the day-to-day services and activities involving their respective units.

Administration of dialysis related activities e.g. quality control, QA studies, ordering stocks, stock flow tracking and trending, budgeting etc and setting up of new dialysis unit shall be under the HD manager and PD manager.

The clinicians and allied health staff providing the nephrology services shall include the following categories:-

1. Consultant

Individuals that possess either MRCP diplomas, Fellowships of Royal Colleges of Australia, UK, or Ireland, American Board certification or Masters in Internal Medicine from institutions recognized by the Malaysian Medical Council and have completed a three year post graduate training in various areas of nephrology in institutions with accredited nephrology units or departments either in Malaysia or overseas. Since 2003, it is mandatory for doctors to pass the nephrology exit examination before he/she can be credentialed as a nephrologist.

1.1 Administrative

- a) To plan, implement and monitor the unit's activities according to the policies and procedure of the unit, department, hospital and MOH.
- b) To prepare the budget of the unit and be responsible for effective use of resources.
- c) To implement and monitor QA activities and ensure remedial measures.
- d) To participate in the hospital's QA activities.
- e) To conduct regular meetings with unit personnel.
- f) To organize CME activities.
- g) To audit department activities and prepare annual report.
- h) To conduct yearly assessment of all staff in the unit.

1.2 Clinical

- a) To conduct assessment of the patient and plan treatment.
- b) To counsel patients.
- c) To provide professional clinical leadership and supervision to the specialist and medical officers.
- d) To lead the management of patients.
- e) To organize and undertake training of Fellows, masters students, medical officers and nurses.
- f) To undertake call duties as per roster.
- g) To continue CME activities and pursuit of knowledge.

2. Clinical Specialist

Individuals that had obtained a recognized post graduate qualification but had not completed the three year post graduate nephrology training. His/her duties are:

2.1 Administrative

- a) To assist the head of department in carrying out administrative duties.
- b) To carry out non-clinical duties as directed by the head of department or hospital director.
- c) To organize continuous medical education for personnel of the department.
- d) To attend talks, courses, seminars and conferences to improve and update knowledge.
- e) To participate and to implement departmental activities such as CME activities, morbidity and mortality meetings and Key Performance indicators.
- f) To participate in departmental meetings.

2.2 Clinical

- a) To conduct ward rounds in nephrology ward.
- b) To provide nephrology services for patients in the intensive care units.
- c) To supervise medical officers in the diagnosis, investigation and management of patients.
- d) To provide health education to patients regarding their disease and medications.
- e) To supervise medical officers in procedures such as peritoneal dialysis, femoral and internal jugular catheterization.
- f) To perform nephrology specialised procedures such as renal biopsies and insertion of tunnelled, cuffed catheters.
- g) To perform on-call duties.

3. Medical Officer

Individuals in possession of basic medical degrees recognised by the Malaysian Medical Council and had completed the compulsory 1 year internship (now 2 years). His/her duties are:

- a) To care for patients in the nephrology ward and to attend to all referrals.
- b) To attend the nephrology clinics under specialist supervision.
- c) To perform procedures such as peritoneal dialysis and insertion of double lumen dialysis catheters.
- d) To perform on-call duties as per roster.
- e) To participate on a regular basis in the educational and audit programme within the department.

4. Assistant Medical Officer

Individuals with suitable qualifications and had preferably completed a six month post basic renal nursing course. His duties are:

- a) To provide haemodialysis treatment to patients with acute and end stage renal disease.
- b) To perform on-call duties as per roster.
- c) To recognize acute complications of haemodialysis, take remedial measures and inform doctor.
- d) To counsel and educate patients on dietary control, medication compliance and basic functions of haemodialysis machine.
- e) To adhere to infection control policies.
- f) To comply with nephrology practice protocols and guidelines.
- g) To trace laboratory investigations, compile the haemodialysis records and document the patients' progress in the patients' case notes.
- h) To collect patients' data for National Renal Registry.
- i) To attend CME activities.

5. Staff nurse

Individuals with a diploma or degree in nursing from institutions recognized by the Malaysian Nursing Board and preferably had completed a six month post basic renal nursing course.

The nursing staff in the nephrology wards should be able to carry out the following procedures after six months of service in the nephrology department/unit.

- a) Assist the clinicians in haemodialysis catheter insertions.
- b) Assist the clinicians in performing renal biopsy.
- c) Assist the clinicians in insertion of rigid peritoneal dialysis catheter.
- d) Connect a patient with either a rigid or Tenckhoff catheter to a PD Cyclor and disconnect upon completion of treatment.

- e) Set up and operate a PD Cyclor machine.
- f) Perform nursing care in a patient with newly inserted Tenckhoff catheter.
- g) Carry out dressing and heparinisation of a Tenckhoff catheter or a haemodialysis temporary or permanent vascular catheters.

6. Transplant Coordinator

Individuals with recognised nursing qualification with experience or training in handling living or cadaveric renal transplant related activities that include: public education, counselling of the potential donor or donor families, donor screening and donor maintenance, keeping an updated potential recipient list and short listing suitable patients for transplantation as well as transplant coordination activities involving members of the different transplant teams within or outside the hospitals.

TERMS OF REFERENCE FOR MANAGEMENT COMMITTEES

The management committees are responsible for formulating, implementing and monitoring strategic plans for development of Nephrology service. Members shall be appointed by the National Advisor of the Nephrology Service.

Terms of reference

A. Planning & Development Committee

- Strategic planning for nephrology, dialysis and transplant services.
- To consolidate and upgrade existing dialysis units.
- To develop new renal replacement therapy centres and vascular access suites.
- To improve PD and renal transplant rates in treatment of ESRD.
- To initiate quality improvement programs e.g. Nutrition centre, Renal Bone centre in specified hospitals.
- To allocate budget for drugs, equipment and consumables.
- To plan CKD management and prevention programs.

B. Technical Specifications Committee

- To prepare, deliberate, describe and record the technical specifications of items to be procured.
- To plan the evaluation of the items to be procured including the quantity and centres for evaluation.
- To submit the prepared specifications of the items to be procured to the Procurement Division, Ministry of Health.
- To update and renew the specifications of the items from time to time based on needs and circumstances.

C. Technical Evaluation Committee

- To receive the tender items for evaluation from the Procurement Division MOH.
- To record the items received and plan for evaluation method and strategy.
- To conduct/performance the evaluation of the quality and performance of the tender item based on the specifications described.
- To record/summarise the findings from the evaluation using the pre specified format.
- To determine/decide on suitability, acceptability (or otherwise) of the product for recommendation to the Procurement Division Ministry of Health.
- To submit and present the findings of the technical evaluation to the Procurement Division Ministry of Health.
- To receive feedback on procured items.

D. Human Resource Committee

- To determine the human resource requirements of allied health personnel.
- To develop strategy and policy in matters relating to training, development, motivation and promotion of allied health personnel.
- To study and plan for future human resource requirements.

E. Nephrology Training Committee

- To plan, review and coordinate the nephrology subspecialty training in MOH and shall include:
 - Selection of applicants.
 - Formulating, reviewing and updating the MOH training programme.
 - Accreditation of training sites and credentialing of trainers.
 - Identify potential overseas training centres and collaborate

with established organizations for advanced nephrology training.

- Monitoring the trainees and training programme.
- Posting of trainees during and after their Nephrology training.
- Presiding on all disciplinary cases and appeals that are related to training and postings.
- To assist and coordinate the post basic renal course with the MOH Nursing Board and shall include:
 - Selection of applicants.
 - Reviewing and updating the syllabus for the post basic renal course.
 - Identifying training centres.
 - Assisting in the examinations.

F. Ethics and Clinical Governance Committee

- To promote and maintain a professional and ethical code of conduct of all staff.
- To identify, define and monitor key performance indicators.
- To advise on measures to maintain the quality and standard of nephrology services in MOH including annual audits on dialysis units.
- To review adverse clinical incidents and complaints.

REFERENCES

1. Report of the Malaysian Dialysis and Transplant Registry 2006-2009.
2. CDC Infection Guidelines (MMWR, April 27, 2001; vol. 50).
3. Private Healthcare Facilities and Services Regulations 2006.
4. Renal Replacement Therapy CPG 2009.
5. Mutu dan Piawaian Rawatan Hemodialisis KKM.

ABBREVIATIONS

| | |
|-------|--|
| AAMI | Association for the Advancement of Medical Instrumentation |
| ACT | Automated Clotting Time |
| CAPD | Continuous Ambulatory Peritoneal Dialysis |
| CCU | Coronary Care Unit |
| CDC | Centre for Disease Control |
| CKAPS | Cawangan Kawalan Amalan Perubatan Swasta |
| CKD | Chronic Kidney Disease |
| CME | Continuous Medical Education |
| CPG | Clinical Practice Guidelines |
| CRRT | Continuous Renal Replacement Therapy |
| CRW | Cardiac Rehabilitation Ward |
| ECC | Electrocardiograph |
| EMA | European Medicines Agency |
| ESRD | End Stage Renal Disease |
| FDA | Food and Drug Administration |
| GICU | General Intensive Care Unit |
| HD | Haemodialysis |
| HDF | Haemodiafiltration |
| JPA | Jabatan Perkhidmatan Awam |
| MOH | Ministry of Health |
| NGO | Non-governmental Organisations |
| NIBP | Non-invasive blood pressure monitoring |
| PD | Peritoneal Dialysis |
| PET | Peritoneal Equilibration Test |
| QA | Quality Assurance |
| RO | Reverse Osmosis |
| RRT | Renal Replacement Therapy |
| SCUF | Slow Continuous Ultrafiltration |
| SLEDD | Slow extended daily dialysis |
| UTAC | Unrelated Transplant Approval Committee |

DRAFTING COMMITTEE

Advisors

Dato Dr. Azmi Shapie

Director, Medical Development Division, Ministry of Health Malaysia

Dr. Teng Seng Chong

Senior Deputy Director, Medical Development Division, Ministry of Health Malaysia

Chairperson

Dato' Dr. Rozina Ghazalli

National Advisor for Nephrology Services (2006-2008)

Head of Department of Nephrology

Hospital Pulau Pinang

Coordinators/Secretariat

Dr. Inderjeet Kaur Gill

Senior Principal Assistant Director, Medical Development Division

Ministry of Health Malaysia

Dr. Adibah Hani Haron

Senior Principal Assistant Director, Medical Development Division

Ministry of Health Malaysia

Contributors

All Ministry of Health Consultant Nephrologists

Special thanks to:

Penang MOH Nephrologists -

Dr Ong Loke Meng, Dr Liew Yew Fong & Dr Anita B Manocha

Datuk Dr Ghazali Ahmad

(National Advisor Nephrology Services MOH 2009 - present)

Dato' Dr Zaki Morad b. Mohd Zaher

(former National Advisor Nephrology Services MOH)

Ministry of Health dialysis paramedics

Puan Wardah bt. Yaacob (IT Department Hospital Pulau Pinang)



MINISTRY OF HEALTH
MALAYSIA

MEDICAL DEVELOPMENT DIVISION

Block E1, Parcel E,
Federal Government Administrative Centre,
62590 Putrajaya, Malaysia.

Tel : 603-8883 1047 Fax : 603-8883 1427

<http://www.moh.gov.my>

ISBN 978-983-44999-6-9



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