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MINISTRY OF HEALTH MALAYSIA

# PAEDIATRIC SERVICES OPERATIONAL POLICY


MEDICAL DEVELOPMENT DIVISION


MINISTRY OF HEALTH MALAYSIA

# PAEDIATRIC SERVICES OPERATIONAL POLICY

MEDICAL DEVELOPMENT DIVISION

The Operational Policy for Paediatric Services was prepared by the Paediatricians of the Ministry of Health Malaysia, in collaboration with the Medical Services Development Section, Medical Development Division, Ministry of Health Malaysia

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# GLOSSARY

| | |
|---|---|
| **6MWT** | Six-minute walk test |
| **ACH** | Air Changes per Hour |
| **ACMV** | Air Conditioning and Mechanical Ventilation |
| **ACP** | Advance Care Plan |
| **ACTH** | Adrenocorticotropic hormone |
| **ADHD** | Attention Deficit Hyperactivity Disorder |
| **ADR** | Adverse drug reactions |
| **AFASS** | Acceptable, Feasible, Affordable, Sustainable and Safe |
| **AFM** | Arthritis Foundation Malaysia |
| **AIDS** | Acquired immunodeficiency syndrome |
| **AMO** | Assistant medical officers |
| **AMS** | Antimicrobial stewardship |
| **APC** | Annual Practicing Certificate |
| **APLS** | Advanced Paediatric Life Support |
| **AS** | Apgar Score |
| **ASA** | American Society of Anesthesiologists – classification |
| **ASD** | Autism Spectrum Disorder |
| **BFHI** | Baby Friendly Hospital Initiative |
| **BID** | Brought In Dead |
| **BiPAP** | bilevel positive airway pressure |
| **BMAT** | Bone Marrow aspiration and trephine biopsy |
| **CAUTI** | Catheter-Associated Urinary Tract Infections |
| **CCTV** | Close Circuit Television |
| **CGMS** | Continuous glucose monitoring system |
| **chILD** | childhood interstitial lung disease |
| **CLABSI** | Central-Line Associated Blood Stream Infections |
| **CME** | Continuous Medical Education |
| **CMO** | comfort measures only |
| **CPAP** | Continuous Positive Airway Pressure |

| | |
|---|---|
| **CPD** | Continuing Professional Development |
| **CPG** | Clinical Practice Guideline |
| **CPR** | Cardiopulmonary resuscitation |
| **CSSD** | Central Sterile Supply Department |
| ***CT*** | Computed tomography |
| **CVVH** | Continuous Veno-Venous Hemofiltration |
| **DCU** | Day Care Unit |
| **DEXA** | dual x-ray absorptiometry |
| **DKA** | Diabetic ketoacidosis |
| **DLCO** | diffusing capacity of the lungs for carbon monoxide |
| **DMSA scan** | dimercaptosuccinic acid scan |
| **DNI** | Do Not Intubate |
| **DOT** | Days of Therapy |
| **DTPA scan** | Diethylenetriamine pentaacetate scan |
| **EBM** | expressed breast milk |
| **ECG** | Electrocardiogram |
| **ECMO** | Extracorporeal mechanical circulatory support |
| **EEG** | Electroencephalogram |
| **EMG** | Electromyography |
| **EMLA** | eutectic mixture of localanaesthetics |
| **EMR** | Electronic Medical Record |
| **EP** | Evoked Potential |
| **ETD** | Emergency & Trauma Department |
| **FTE** | Full-Time equivalent |
| **G6PD** | Glucose-6-Phosphate Dehydrogenase |
| **GA** | General Anaesthesia |
| **GCS** | Glasgow Coma Scale |
| **GIA** | gastrointestinal assistant |
| **GPPC** | Generalist Paediatric Palliative Care |
| **HD** | Haemodialysis |
| **HEPA** | High-Efficiency Particulate Air |
| **HFNC** | High-Flow Nasal Cannula |
| **HIDA scan** | hepatobiliary iminodiacetic acid scan |

| | |
|---|---|
| **HIS** | Hospital Information System |
| **HIV** | Human Immunodeficiency Virus |
| **ICL** | Invasive Cardiac Laboratory |
| **ICU** | Intensive Care Unit |
| **IEM** | Inborn errors of metabolism |
| **IOS** | Intra-Oscillation Spirometry |
| **KK** | Klinik Kesihatan |
| **LFT** | Lung Function Testing |
| **LHRH** | Luteinizing hormone-releasing hormone |
| **LST** | life-sustaining treatment |
| **MDA** | Medical Device Authority |
| **MDT** | Multidisciplinary Team |
| **MEBM** | maternal expressed breast milk |
| **MERV** | Minimum Efficiency Reporting Value |
| **MMC** | Malaysian Medical Council |
| **MO** | Medical Officer |
| **MOH** | Ministry of Health |
| **MPLS** | Malaysian Paediatric Life Support |
| **MRI** | Magnetic Resonance Imaging |
| **MRN** | Medical Record Number |
| **MSLT** | Multiple Sleep Latency Test |
| **MWT** | Maintenance of Wakefulness Test |
| **NAI** | Non-Accidental Injury |
| **NCS** | nerve conduction study |
| **NIBP** | Non-Invasive Blood Pressure |
| **NICU** | Neonatal Intensive Care Unit |
| **NIV** | Non-Invasive Ventilation |
| **NRP** | Neonatal Resuscitation Program |
| **OPD** | Outpatient Department |
| **OT** | Operating theatre |
| **PBSC** | peripheral blood stem cell |
| **PCA** | Patient-Controlled Analgesia |
| **PCCU** | Paediatric Critical Care Units |

| | |
|---|---|
| **PD** | Peritoneal Dialysis |
| **PDBM** | Pasteurised Donor Breast Milk |
| **PHDU** | Paediatric High Dependency Unit |
| **PHDW** | Paediatric High Dependency Ward |
| **PICU** | Paediatric Intensive Care Unit |
| **PID** | Paediatric Infectious Disease |
| **PLS** | Paediatric Life Support |
| **PPM** | Paediatric Palliative Medicine |
| **PPM** | Planned Preventive Maintenance |
| **RICU** | Respiratory Intermediate Care Unit |
| **RMU** | Respiratory Monitoring Unit |
| **RO** | Reverse Osmosis |
| **RTF** | Ready-To-Feed |
| **SCAN** | Suspected Child Abuse or Neglect |
| **SCN** | Special Care Nursery |
| **SCT** | Stem Cell Transplant |
| **SIRIM** | Standards and Industrial Research Institute of Malaysia |
| **SISPAA** | Sistem Pengurusan Aduan Awam |
| **SKU** | Sasaran Kerja Utama |
| **SLE** | Systemic lupus erythematosus |
| **SN** | Staff nurse |
| **SOP** | Standard Operating Procedure |
| **SSEP** | Somatosensory Evoked Potentials |
| **TPHA** | Treponema Pallidum Haemagglutination |
| **TPN** | Total parenteral nutrition |
| **UNHCR** | United Nations High Commissioner for Refugees |
| **UPS** | Uninterrupted Power Supply |
| **URTI** | Upper Respiratory Tract Infection |
| **UTAC** | Unrelated Transplant Approval Committee |
| **UVGI** | Ultraviolet germicidal irradiation |
| **VAP** | Ventilator-Associated Pneumonia |
| **VDRL** | Venereal Disease Research Laboratory |
| **VEP** | Visual Evoked Potential |

# FOREWORD

## DIRECTOR OF MEDICAL DEVELOPMENT DIVISION, MINISTRY OF HEALTH MALAYSIA

The Ministry of Health is committed to providing timely, safe and top-notch healthcare that is easily accessible to all and at the same time strikes a balance between meeting patients' expectations and needs with optimum resource allocation. The organization of patient care is very complex, and it needs concerted efforts and a common understanding of all providers for the goals to be achieved.

The paediatric services cater to a particularly vulnerable subset of the population where there is limited room for error. Parents of ill children expect healthcare workers to be competent and compassionate, and facilities are adequate to meet the needs of the children and their families during these trying times.

Additionally, the general public is beginning to demand complete disclosure before procedures and verification of the competence of the individuals performing such procedures. A well-documented policy with distinct sections addressing family rights, infection control, staff qualification and monitoring of medication usage would significantly contribute to the development of a safe and efficient healthcare delivery system.

A departmental operating policy that applies to all levels of hospitalization care will help to reduce the discrepancies between departments and hospitals ensuring equitable access to good health care for the population.

Over the years, Malaysia has improved its child health indices to an enviable degree. The remaining gaps in improving child health indicators will now need to be filled by advances in secondary and tertiary care as we work towards becoming a developed nation. I'm hoping that putting this revised operational policy into effect will contribute to achieving this objective.

**DATO' DR MOHD AZMAN BIN YACOB**
**DIRECTOR OF MEDICAL DEVELOPMENT DIVISION**
**MINISTRY OF HEALTH MALAYSIA**

# VISION

All children be able to enjoy the highest attainable standard of health through access to facilities for the promotion of wellness; prevention and treatment of illness; and rehabilitation of health.

# MISSION

The Paediatric Medical Department shall:

- Provide quality healthcare that is effective, appropriate, timely and responsive to the needs of patients, families, and communities by a team of trained, committed, caring and innovative personnel.
- Work with parents and the community as partners in caring for children and promoting wellness.

# OBJECTIVES

To provide quality care incorporating aspects of promotive, preventive, diagnostic, curative and rehabilitative care which is child and family-friendly to all children up to 18 years of age.

# SCOPE OF SERVICES

1. To provide health and medical services to children from birth to 18 years of age which include:

    a. Inpatient paediatric medical services
    b. Specialist outpatient paediatric medical services
    c. Paediatric medical ambulatory care
    d. Community and outreach paediatric medical services
    e. Immunisation for missed opportunities

2. Training of doctors, nurses, and allied health personnel in general paediatric and paediatric sub-specialties.
3. Advocacy role for issues related to child and adolescent health.
4. Quality improvement activities, health systems and clinical research.

*The depth and breadth of the services provided by each Paediatric Department depends on whether it is in a national, regional, state or district hospital.*

# COMPONENTS

1. Wards
2. Clinics
3. Ambulatory Care Centre
4. Intensive care units
5. Subspecialty units

# ORGANISATION

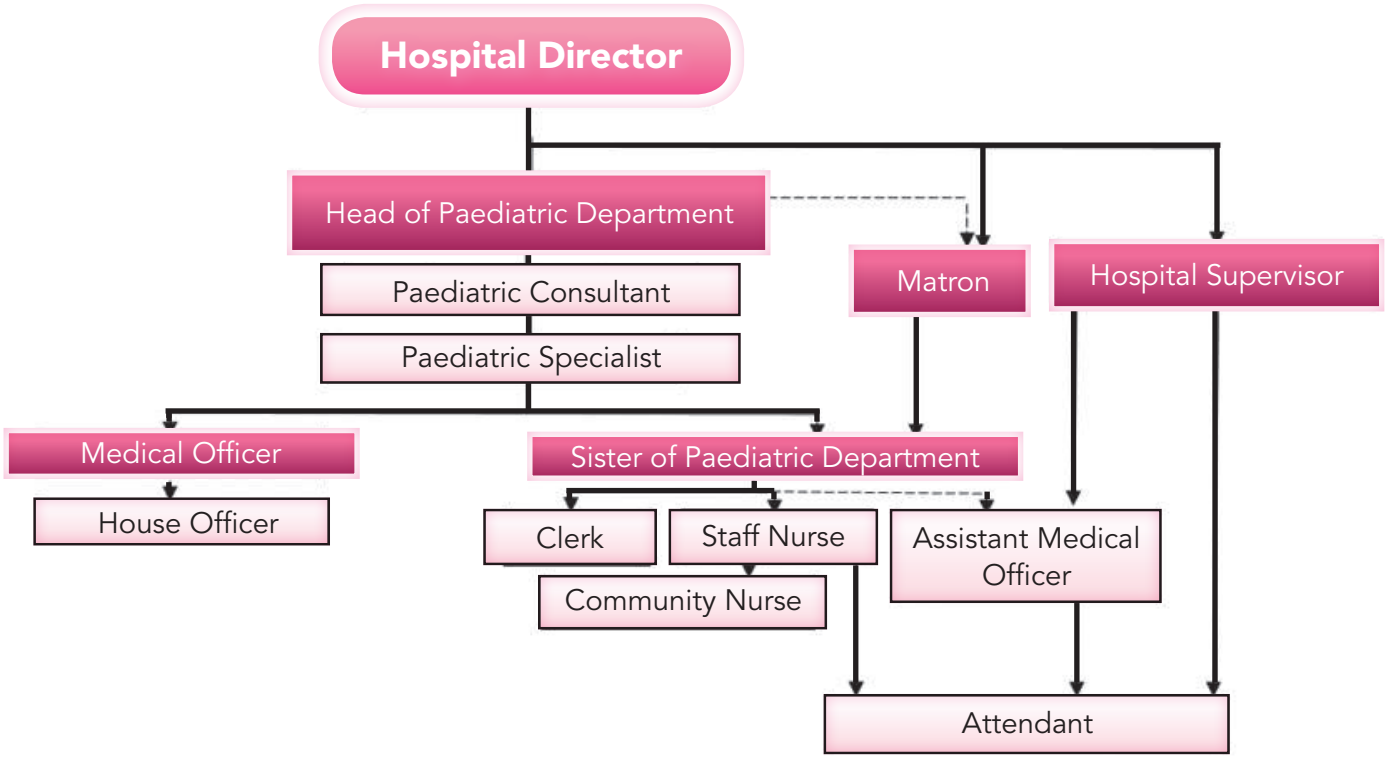
The organization will depend on the level of care provided by the paediatric department.

- The national centre shall be headed by a senior consultant paediatrician appointed by the MOH and assisted by the various heads of the Medical Paediatric subspecialty units.
- Paediatric departments in regional, state and district hospitals shall be headed by a Paediatrician.

The number of committees shall depend on the complexity of the department. There shall be personnel appointed to investigate infection control, quality improvement activities, continuous professional development, lactation management, and house officer and junior medical officer training.

The organisational chart of the Paediatric Department is as follows:

**Organisational chart for the Department of Paediatric (not strictly hierarchical)**



# OPERATIONAL POLICIES

# OPERATIONAL POLICIES

The operational policies that follow were prepared in accordance to the *Joint Commission International (JCI) Accreditation Standards for Hospitals* which came into effect in January 2008.

The main purpose of a healthcare organization is patient care.

Children and adolescents are admitted to receive inpatient care or registered to receive outpatient services depending on their health care needs and the organisation's mission and resources.

## 1. PATIENT SAFETY GOALS

### 1.1 PATIENT IDENTIFICATION

a. Patients shall be given only one medical record number (MRN) for personal identification. For non-Hospital Information System (HIS) hospitals, patients are registered based on their identification numbers (NRIC), passports (for foreigners), or armed forces/police identification cards. The registration numbers shall be used in all forms/documents pertaining to patient care.

b. Patients shall be identified by two identifiers.

c. For inpatients, an identification tag with the patient's name and registration number shall be affixed to the patient's limb.

d. For outpatients, identification is by the patient's name and Identity Card number of the patient (My kid) or mother. For foreigners, other valid documents e.g. passport/United Nations High Commissioner for Refugees (UNHCR) registration shall be used.

e. Unknown patients will be temporarily registered by using a designated encounter number. The registration process shall be updated, within 24 hours. If information about an unknown patient is not available after 24 hours, a police report shall be made.

## 1.2 EFFECTIVE COMMUNICATION AMONG CAREGIVERS

a. Verbal and telephone communication including laboratory results and orders shall be written down by the receiver in the patient's case notes, read back by the receiver, and confirmed to be accurate by the informer.

## 1.3 REDUCING RISK OF HOSPITAL-ASSOCIATED INFECTIONS

For infection control, please refer to the following:

a. Policies and Procedures of Infection Prevention and Antibiotic Control, MOH 2019, 3rd Edition.
b. Guidelines on the Handling and Management of Clinical Wastes in Malaysia, Ministry of Natural Resources & Environment 2009.

## 1.4 REDUCING PATIENT FALLS

a. Patients who are admitted to the hospital should have a fall risk assessment. The assessment should be done upon admission and following any significant change of neurological status or conscious level and following a fall.

b. All patients should receive standard precautions for the prevention of falls. Patients who are deemed high risk should receive closer monitoring and extra precautions for the prevention of falls. (R*efer to Guideline on Implementation of Patient Falls Prevention & Intervention Programme, Medical Development Division, MOH, 2024*)

c. Caregivers should supervise children at all times. Caregivers must inform the nurse on duty if he or she is leaving the patient alone, even for brief periods.

d. Ambulating children should preferably use non-skid footwear and wear appropriate-sized clothing to reduce the risk of tripping.

e. All patient beds/cots shall have side rails on both sides. Excessively large gaps that may allow an extremity of the patient to slip through or be entrapped would require to use additional safety measures. (*For medical cot specifications, please refer to FDA guideline for Paediatric Medical Crib (21CFR880.5140), FDA 19 December 2016*)

f. Parents and caregivers shall be orientated on the need to keep the side rails up when the patient is in bed.

g. Floors shall be kept dry, and warning signs shall be placed for wet floors.

h. All falls within the health care facility shall be notified through incident reporting protocols within 24 hours of the incident.

i. The patient who had fallen shall be thoroughly assessed and managed accordingly by the attending doctor.

j. All parents should be advised on safe breastfeeding practices and potential situations with increased risk of falls.

k. Advice should be provided on the risks of falling asleep while breastfeeding in a sitting position, leading to infant falls.

# 2. ACCESS TO CARE AND CONTINUITY OF CARE

## 2.1 ADMISSION POLICIES FOR INPATIENTS AND OUTPATIENTS

### 2.1.1 Inpatients

a. The paediatric medical officer/specialist in charge of the ward shall be informed of all patients before their admission to the ward.

b. Admission to the paediatric ward can be from:

i. The Accident and Emergency Department
ii. The paediatric clinic and ambulatory care centre
iii. Other wards within the hospital
iv. Direct admission from other MOH health facilities and private health facilities shall be admitted after consultation with the paediatrician
v. Selected groups of patients under the care of paediatricians with standing instructions for direct admission to the paediatric wards. E.g. oncology patients with febrile neutropenia, transplant recipients, patients with inborn errors of metabolism

c. Admissions shall be categorized as emergency and non-emergency by the receiving doctor.

   i. Emergency: Immediate threat to the patient's life or well-being exists. This situation warrants the highest admitting priority. All reasonable measures are taken to ensure this patient's immediate admission, including the transfer or discharge of another less ill patient.
   ii. Non-Emergency: All other patients requiring admission without any immediate threat to life should be admitted within 4 hours following stabilization after emergency treatment.

d. In the event of an access block; when no bed space is available to admit patients or to admit patients to the appropriate unit, the best joint care shall be provided by the Emergency Department, Paediatrics, and any other relevant unit, with continuously coordinated efforts being made to find available beds.

   Should the access block persist, efforts shall be made to transfer the patient to another available facility as soon as possible.

   i. There shall be networking within a designated geographical area on the availability of intensive care/ subspecialty beds.
   ii. In hospitals without specialists, it is the responsibility of the receiving institution/hospital with specialists to find the relevant bed space.

e. Registration of admissions shall be done at the Registration Counter of the hospital. However, ill patients from other health care facilities may be transferred directly to the ward, and the admission formalities attended to subsequently.

f. For other issues related to patient admissions, please refer to the general admission policies of the hospital.

g. The parent/guardian of the patient shall be orientated on the facilities available in the ward. They shall be briefed about safety precautions, particularly bedside rails. They shall be made aware of the rules and regulations of the hospital e.g. no smoking within the hospital premises and visiting hours.

h. Admission or transfer to and from units providing intensive or specialized care is determined by the policies set up by the various units. (Refer to documents of NICU, PICU, and other subspecialty services).

   i. The decision to transfer is made after consultation with the appropriate specialist in charge.
   ii. The criteria for these patients to be transferred to and from these units shall be documented in their case notes.

### 2.1.2 Outpatients

a. The Paediatric Specialist Outpatient Clinic shall operate during office hours according to the clinic schedule.

b. Patients shall be seen at the Paediatric Specialist Clinic by appointment.

c. Referrals to the clinic shall be from medical practitioners except for urgent cases from MOH health centres without medical officers.

d. Patients' weight, height, heart rate, blood pressure and oxygen saturation shall be taken before consultation.

e. Patient blood samples shall only be taken by doctors or privileged paediatric staff health care personnel.

## 2.2 CONTINUITY OF CARE

a. The responsible specialist in charge shall be identified during the patient's care. Handover of care should be done at the beginning of the workday from the on-call or night staff to the incoming staff, and the end of the workday by the day team to the on-call team. Patients requiring acute care or close monitoring are to be prioritized during handovers. All inpatients should be reviewed daily by a medical officer, and at least once by a specialist during the hospital stay.

b. When a patient attends the Hospital for a test or procedure that involves material risk with or without sedation, there shall be an identified responsible specialist during the peri-procedure period. Thus, any physician, surgeon, radiologist, anaesthesiologist, etc., who undertakes a procedure involving material risk, becomes the responsible specialist and will remain so during the perioperative period. This perioperative time includes the time when the patient enters the treatment area until he/she leaves the recovery area.

c. If the patient is referred for a procedure to a different hospital, a formal transfer procedure must take place to a new responsible specialist. The receiving responsible specialist (or delegate) must be willing to deal with issues of assessment, follow up and post-procedure complications. This responsible specialist must also facilitate hospital admission should it be necessary.

d. Patients 16-18 years of age who require continuing medical care shall be prepared for transfer of care to adult services. A transition clinic shall be operational and shall be staffed jointly by an adolescent physician or paediatrician and an adult physician.

e. Children admitted for child protection (suspected child abuse or neglect/SCAN) shall be reviewed by a specialist and managed according to the hospital SCAN protocol. If a medical report is required for patients with protection issues or potential medico legal implications, such report should be written by a specialist directly involved in the patient's care and be verified by the Head of Department before released. (General Hospital Operational Policy, KKM 2013).

## 2.3 CHAPERONE

a. A chaperone must be physically present during the examination of a child, with aural and visual contact throughout the proceedings.

b. The chaperone should be preferably a female medical staff.

c. At all times, the doctor should be aware of the need for propriety, taking into consideration of the cultural and religious sensitivities of the patient and his/her family. (MMC Good Medical Practice 2019).

## 2.4 DISCHARGE, REFERRAL AND FOLLOW-UP

a. The patient's discharge criteria shall be based on the patient's health status and the social aspects of the family.

b. The decision for discharge shall be made by the medical officer/ specialist.

c. Decisions for discharge shall be made early so that arrangements for transport and the continuing health needs of the patient can be made.

d. A discharge summary shall be written containing the following particulars:

i. reason for admission,
ii. significant physical findings,
iii. diagnoses (according to ICD10) and co-morbidities,
iv. diagnostic and therapeutic procedures,
v. medications given during ward stay,
vi. patient's condition at the time of discharge,
vii. discharge medications and
viii. Follow-up instructions.

e. Copies of the discharge summary shall be:-

i. kept in the patient's case notes,
ii. given to the referring practitioner and
iii. Given to the practitioner responsible for the continuing care of the patient.

f. Discharge care plan

i. Ensure that intravenous lines are removed before discharge.
ii. Ensure the prescription for medication is ready and answer queries regarding medication.
iii. Instructions as to the need for follow-up care, the date, time and location of the follow-up and where urgent care can be obtained shall be given.
iv. For patients who have missed immunisations, arrangements shall be made for the relevant catch-up immunisation to be given upon discharge or to receive it at the specified Maternal and Child Health Clinic.

v. The discharge forms shall be duly signed by parents and the discharge slip given to them. The identity of the parent/ guardian claiming the child on discharge shall be checked and recorded.

g. At Own Risk Discharge for patients below the age of 18 years is not allowed under the circular *Surat Pekeliling KPK 24/2021*, as per the Child Act 2001.

All children whose parents or guardians request premature discharge (against medical advice) should be thoroughly assessed and reviewed by a specialist, and the parents/guardians appropriately counselled. If the refusal of care persists, the consultant or head of the department should be involved in the counselling.

All discussions shall be documented in the case notes.

i. If the child is medically fit for discharge, arrange for appropriate early review, and provide any necessary outpatient treatment.
ii. If the child is not medically fit for discharge, but clinically stable; offer to facilitate a transfer to an alternative healthcare facility and other forms of support or assistance - accommodation or social support, financial assistance through the Medical Social Worker.
iii. If the child is not medically fit for discharge with a high risk of morbidity or mortality should treatment be discontinued- the specialist in charge should involve the Child Protector to invoke the provisions of the Child Act 2001.

h. The parents/guardian shall be informed immediately of a patient's death by the medical officer/specialist. If the parents/guardians are not in the hospital and are not contactable by telephone, the police shall be enlisted to locate them.

i. The deceased shall be sent to the mortuary at the end of an hour in designated trolleys or bassinets by the mortuary staff.

j. The police shall be informed of any patients found missing after all efforts to trace the patient in the ward and the hospital grounds have failed. The patient shall be considered to have absconded if he/she has not returned to the ward within 24 hours.

k. Referral to other Departments/ Hospitals shall be following existing guidelines in each hospital. In hospitals with specialists, the decision to refer to another department or institution/hospital shall be made by the specialist-in-charge.

   i. The agreement of the patient/guardian to transfer shall be documented. If the carer present in the ward is not the parent/legal guardian, all attempts should be made to contact the parent or legal guardian and such consent for transfer is documented in the notes.
   ii. If the parents or legal guardian is uncontactable, the Child Protector shall be consulted for legal advice and the usual process of obtaining emergency consent applies.
   iii. Prior consultation with the receiving responsible doctor shall be made.
   iv. The receiving responsible doctor must agree to accept the patient before the patient is transferred.
   v. The referral letter shall contain the reason for admission, significant physical findings, diagnoses (according to ICD-11) and co-morbidities, diagnostic and therapeutic procedures, medications, and the patient's condition at the time of transfer.
   vi. All relevant diagnostic images shall be made available to the receiving hospital.
   vii. The patient may be referred back to the referring doctor for follow-up. A reply to the referring doctor shall be provided, with the necessary information and management plan to enable the doctor to continue subsequent management of the patient.

l. Transportation

   i. The responsible referring specialist shall determine the mode of transportation of the patient.
   ii. The responsible referring specialist shall determine the appropriate qualification of the staff member and equipment during transfer according to the condition and status of the patient.
   iii. The following shall be documented in the patient's records:-

      - names of the referring and accepting doctor.
      - reason for transfer.
      - patient's condition during transfer and arrival including resuscitation and medication given.
      - vital signs during transport shall be duly recorded in the relevant form.

## 3. PATIENT AND FAMILY RIGHTS

3.1 Parents/legal guardians and patients shall be given appropriate information to encourage and permit them to participate in the care given. They shall receive updates regularly and whenever the condition of their child changes. All information shall be given in a language they can understand. Interpreter shall be offered when needed.

3.2 The Baby-Friendly Policy and Child-Friendly guidelines shall be in practice.

3.3 A single carer shall be with the child at all times. A female carer is preferable to be with the child overnight. Beds shall be provided for the night stay.

3.4 All patients shall be admitted to designated cubicles in the ward. Patients requiring isolation shall be nursed in an isolation room.

3.5 Home leave is not allowed under the Ministry of Health's policy. Should the parents request to take the child home, the child shall be discharged and readmitted later if the need arises.

3.6 The hospital shall respect the patients' rights inclusive of the cultural, spiritual, and religious beliefs of the patients and families.

3.7 No patient shall be discriminated against based on race, gender, sex, religious belief, social and economic status or any other factors.

3.8 The hospital shall be responsible for the safety of the patient during the hospital stay.

3.9 Treatment shall be given based on the patient's clinical condition. Treatments provided to patients are individualized in respect to the disease and given in a safe manner adhering to accepted standards of care.

3.10 The hospital shall communicate with the patient and parent/legal guardian on the disease condition and the treatment options available. The patient and parent/legal guardian will be involved in the decision-making process.

3.11 Patient's need for privacy shall be respected during clinical interviews, examinations, procedures/treatments and transportation. A chaperone shall be made available during clinical examinations. The parent/legal guardian may be allowed to accompany the child during a procedure at the discretion of the doctor.

3.12 Parents shall be requested to send their non-essential valuables home. The hospital shall provide a storage area for essential valuables.

3.13 Patients shall receive appropriate protection while in the hospital. Refer to Policy on Infant Safety (*Pekeliling KPK Bil 1/2007-Garispanduan Sistem Kawalan Keselamatan Bayi di Hospital-hospital KKM*) and General Hospital Operational Policy.

3.14 Visitors under 12 years of age are not allowed to visit patients in all paediatric wards unless under special circumstances. Only parents/legal guardians are allowed to enter Special Care Nursery, Intensive care areas and High Dependency wards.

3.15 Consent

*Refer to Malaysian Medical Council Guideline (MMC): Consent for Treatment of Patients by Registered Medical Practitioners 2016, first revision: 19 September 2017.*

a. Consent refers to the provision of approval or assent, particularly and especially after thoughtful consideration. Generally, no procedure, examination, surgery, or treatment may be undertaken on a patient without consent.
b. Patients who are below 18 years of age do not have the capacity to give valid consent to any medical procedure or surgery. The consent shall be obtained from the parents/legal guardian.
c. If a patient presents with an adult other than a parent, the attending medical practitioner should attempt to ascertain the adult's relationship to the child and whether the adult is the patient's guardian. In instances where the attending medical practitioner is unable to adopt the above attempts in ascertaining the relationship of the accompanying adult to the patient, he or she should defer the treatment unless it is an emergency life-threatening situation or follow the procedures for a medical emergency.
d. If the legal guardianship cannot be ascertained, the child protector shall be notified.

e. The type of consent is to be referred to the Malaysian Medical Council Guideline (MMC).
f. Patient informed consent shall be obtained and carried out by a fully registered medical practitioner and shall be in writing.
g. The consent shall be taken by a fully registered medical practitioner using the correct/appropriate forms. The information provided is to be referred to the Malaysian Medical Council Guideline (MMC): Consent for Treatment of Patients by Registered Medical Practitioners 2016 on Standard Consent Form.
h. Consent is not required where immediate treatment is necessary to save a patient's life or to prevent serious injury to a patient's immediate and long-term health when there is no relative or any legal guardian available or contactable during the critical period to give consent. The patient's parents/ legal guardians shall be informed of what has been done and the indication as soon as possible.
i. In such circumstances, a consensus between the primary surgeon/physician (who is managing the patient) and a second registered practitioner is obtained and the primary surgeon/physician signs a statement with the consent form stating that the delay is likely to endanger the life of the patient. The second registered medical practitioner must co-sign the consent form.
j. Consent of the patient may not be required for any treatment that may be ordered by a court of law, for example, an order for the specific treatment of a minor, or a patient on life-support.
k. If the medical officer has certified in writing that there is an immediate risk to the health of a child and treatment is necessary, a child protector may authorize without obtaining consent from the parents/legal guardian. Refer to Child Act 2001 and Child Act (amendment) 2016.
l. The refusal of treatment should be recorded in detail and in writing in the medical record and shall be signed and dated.

3.16 Research.

Refer to circular on research – NIH Guideline for Conducting Research in the MOH Institutions & facilities 19 March 2021.

3.17 Organ donation.

Refer to National Organ, Tissue and Cell Transplantation Policy MOH/P/ PAK/131.07 (BP) published in June 2007 by the Medical Development Division.

# 4. ASSESSMENT OF PATIENTS

4.1 All patients cared for by the organization shall be categorized into emergency and non-emergency.

a. Emergency cases admitted to the ward shall be assessed by the Medical Officer immediately.
b. Non-emergency cases admitted shall be assessed by the medical officer within one hour of admission to the ward.

4.2 The assessment of patients shall be documented in the designated clerking forms comprising a full medical history including family history, social history, developmental history and immunization status, physical examination and evaluation of growth, nutritional, psychological, socio-economic and emotional status.

4.3 All patients admitted to the non-critical area shall be seen by the specialist within 24 hours of their hospitalization in a facility with at least 2 paediatricians.

4.4 After assessment of the patient, the treating medical officer/specialist shall decide on the most appropriate setting and level of care for the patient.

4.5 Inpatients shall be reviewed at least once a day. Ill patients shall be reviewed as required by the severity of the condition

4.6 All monitoring, re-assessment, management and progress shall be recorded in the patient's case notes.

4.7 Nursing assessment shall be documented in the patient's case notes.

4.8 Victims of abuse and neglect shall be managed according to the standard operating procedure for SCAN. Refer to *Guidelines for The Hospital Management of Child Abuse and Neglect MOH/P/PAK/130.07 (GU) published in June 2009 by the Medical Development Division.*

# 5. CARE OF PATIENTS

5.1 All paediatric patients shall have access to appropriate care at all times.

5.2 There shall be provision of 24-hour inpatient care by a medical officer on-site with specialist cover.

5.3 There shall be a provision of 24-hour inpatient nursing care on a shift basis.

5.4 There shall be a process to integrate and coordinate care.

a. There shall be a responsible treating medical doctor for each patient who will plan, coordinate, and integrate the care of the patient.
b. All plans, discussions, results, and conclusions with other departments relating to the care of the patient shall be documented in the patient's case notes.
c. There shall be a single integrated medical record for each patient.

5.5 Medical records

a. The following healthcare personnel who have direct care of the patient shall document in writing in the patient's case notes:

i. medical practitioners
ii. nurses
iii. allied health staff
iv. medical social worker
v. child protector

b. The notes shall be organised as per hospital policy and shall include:

i. Patient identification data
ii. Date and time
iii. Clinical history and examination
iv. Investigations and results
v. Treatment given
vi. Procedures undertaken and indications
vii. Follow-up notes and consultation
viii. Communication with the patient, his relatives, other doctors, other authorities, etc.
ix. Signature, full name in block letters, registration number or signature with a rubber stamp.

c. All written amendments made must be cancelled and initialled by the respective hospital personnel. Entries shall not be deleted by corrective tape/pen. For electronic medical records, amendments must be made accordingly.
d. All patient medical records shall be sent to the Medical Records Department within 72 hours after discharge.
e. Patients' medical records and prior investigation results shall be made available at the time of consultation in the paediatric specialist clinic and during readmission.
f. Medical reports shall be prepared and dispatched to the Medical Records Department within 14 days. In cases where the primary medical officer is not available, another medical officer in the department shall be assigned to prepare the report.
g. Management of Patient Medical Records shall be in accordance with *Pekeliling Ketua Pengarah Kesihatan 17/2010 Garis Panduan Pengendalian dan Pengurusan Rekod Pesakit di Hospital-hospital dan Institusi Perubatan* dated 4 June 2010.

5.6 Care of high-risk patients and provision of high-risk services. Refer to:

a. Guidelines for the Rational Use of Blood and Blood Products 2007, National Blood Centre, MOH
b. Standard Operating Procedure For Potential Infectious Disease1· Edition, 2004, MOH/K/EPI/41.04(HB), ISBN 983-41870-0-9, published by Communicable Disease Surveillance Section, Disease Control Division MOH
c. Guidelines for the Hospital Management of Child Abuse and Neglect MOH/P/PAK/130.07 (GU) published in June 2009 by the Medical Development Division.

5.7 Food and Nutrition

a. All patients shall be supplied with at least four meals a day. The provided meals shall comply with Dietary guidelines produced by the Ministry of Health.
b. Specific attention shall be paid to the timing of delivery and quality of food, with special emphasis on the type of food, nutritional value, and cultural and religious preferences which are age-appropriate.
c. The Code of Ethics for Marketing of Infant Foods and Related Products shall be adhered to.
d. Food shall be supplied for the mother/carer accompanying the child.
e. Patients with special nutritional requirements shall be co-managed with the dietician for planning, delivery, and monitoring of the nutritional therapy.

5.8 Management of Pain

Reference shall be made to the document on:

a. Pain as the 5th Vital Sign. Guideline for Doctors and Paramedic: Management of Pain in Paediatric Patients, 3rd edition. September 2018.
b. Pain Management Handbook - MOH/P/PAK/257.12 (HB). October 2013
c. *Pekeliling KPK Bil. 9 Tahun 2008, Pelaksanaan Tahap Kesakitan Sebagai Tanda Vital Kelima (Pain As Fifth Vital Sign) di Hospital-hospital KKM*
d. Pain Management prepared by the Malaysian Society of Anaesthesiologists and Malaysian Association for the Study of Pain 2004.

5.9 Management of 'End of Life Care'

Reference shall be made to the documents on:

a. Handbook of Children's Palliative Care Malaysia, 2021.
b. Paediatric Protocols for Malaysian Hospital, 4th Edition, Chapter 8: End of Life Care in Children. 2019.
c. Clinical Practice Guidelines on Withholding and Withdrawing of Life Support in Children 2005.

# 6. SEDATION

The Healthcare facility shall take steps to minimise physical and emotional pain, trauma and distress to children undergoing procedures.

6.1 Pain control plans shall be individualised to the child and his/her family and prepared in collaboration with them. Cultural issues concerning the meaning and treatment of pain shall be known and respected. Non-pharmacological strategies for pain control shall supplement the use of analgesic and sedative drugs.

6.2 Invasive procedures shall be undertaken only when clinically necessary in the best interest of the child, and, except in an emergency, only with the prior consent of the parent or legal guardian. Every effort shall be made to ensure that children are accompanied and supported by a parent.

6.3 All healthcare staff involved in providing sedation should be adequately trained in the assessment, administration of sedatives, and monitoring of patients undergoing sedation.

6.4 A standardised protocol for the assessment, treatment and monitoring of patients undergoing sedation should be made available.

Refer to:

i. Recommendations for sedation and analgesia by non-anaesthesiologists, College of Anaesthesiologists Academy of Medicine Malaysia, December 2012.
ii. Paediatric Protocols for Malaysian Hospitals 4th Edition, Ministry of Health, August 2019.

# 7. MEDICATION MANAGEMENT AND USE

7.1 All paediatric wards should have a dedicated Clinical Pharmacist to supervise and assist in the acquisition, supply, monitoring and safety of medications.

7.2 Usage of Medication:

a. The hospital drug formulary shall be maintained and used as a guide for drug prescriptions with reference to the blue book and the latest edition of the paediatric protocol.
b. Prescription and supply of drugs not listed in the hospital drug formulary but available in the Ministry drug formulary (Blue Book) and shall require the respective specialist or head of department's approval.
c. Prescription and supply of drugs not listed in the Ministry drug formulary (Blue Book) shall require the Ministry's approval. The respective heads of departments shall be responsible for justifications for drug usage and cost implications. Requests for approval shall be made using a specified format and submitted through the director's office.

7.3 All prescriptions shall be written by medical practitioners in their generic names and block letters. The prescription shall contain the name, registration number/NRIC, age/weight and diagnosis of the patient, the dose, route and frequency of the medication and the signature, date, and name of the prescriber with the official rubber stamp.

7.4 All medications ordered shall be recorded by the medical practitioner in the treatment chart (either manually or electronically), and the patient's case notes. There shall be no transcription of any prescription.

7.5 The right medications shall be administered by qualified individuals in the right dose to the right patient at the right time by the right route. Only medical practitioners, assistant medical officers and registered nurses shall administer medications.

7.6 The right patient shall be identified by 2 identifiers – name and registration number or NRIC in compliance with the *Pekeliling KPK Bil. 3/2005 Garis Panduan Rekod Perubatan Bagi Hospital-hospital KKM.*

7.7 All medications served shall be signed in the medication chart after serving by the staff concerned.

7.8 Dangerous drugs prescribed and administered shall be in accordance with the Dangerous Drugs Act 1969. These drugs shall be checked by two qualified staff before serving to patients. The balance of any unused dangerous drugs shall be labelled and returned to the pharmacist.

7.9 The patient shall be monitored for response and adverse events. Adverse events (ADR) and lack of expected response shall be documented and reported to the National Pharmaceutical Control Bureau (*Biro Pengawalan Farmaseutikal Kebangsaan*).

7.10 Allergies to medications shall be documented clearly in the space provided in the patient's records. Allergy cards shall be provided to the patients. In hospitals with electronic medical record-keeping, an allergy alert should be recorded in the electronic file.

7.11 Medication errors shall be reported using the critical incident monitoring form within 24 hours and an analysis of the error and remedial measures will be taken as soon as possible.

7.12 Medications brought into the hospital by the patient shall be made known to the medical staff and the medication, time, route, and dose taken are documented in the patient's records. These medications shall be served by the nursing staff during the patient's stay in the ward.

7.13 Medications stored in the emergency trolley shall be: -

a. Standardised throughout the paediatric units of MOH hospitals for the neonatal unit, Paediatric Intensive Care Unit and general paediatric wards.
b. Checked at least once daily and replenished after use by the staff nurse in charge. Expired or damaged medications shall be replaced.

7.14 Total parenteral nutrition shall be available regardless of the day of the week or public holidays.

7.15 For the usage of off-label medications, please refer to the following circulars.

a. *Pengemaskinian senarai ubat-ubatan untuk indikasi off-label dengan pengecualian penggunaan borang keizinan pesakit, 9 Oktober 2020.*
b. *Pengecualian permohonan kelulusan khas Ketua Pengarah Kesihatan/ Pengarah Kanan Perkhidmatan Farmasi (KPK/PKPF) dan penggunaan borang keizinan pesakit bagi rawatan dengan indikasi off-label bagi ubat-ubatan tersenarai dalam Paediatric Protocols for Malaysian Hospitals, 10 April 2019.*
c. *Senarai Ubat-Ubatan untuk penggunaan indikasi off-label bagi pengecuaian penggunaan borang keizinan pesakit, 19 Ogos 2019.*

7.16 The usage of antibiotics should adhere to the national antimicrobial stewardship protocols. Antimicrobial stewardship rounds should be done regularly.

*Refer to Policies and Procedures on Infection Prevention and Control, Medical Care Quality Section, Medical Development Division, Ministry of Health Malaysia 2019 (3rd ed.).*

7.17 For other policies on medication management including purchasing, storage, thefts, and losses, etc., refer to policies set by pharmacy services.

## 8. PATIENT AND FAMILY EDUCATION

8.1 The educational needs of the patient and family shall be assessed by the primary and co-morbid condition.

8.2 Information on common specific conditions shall be made available to patients and families in the form of written materials, audiovisual aids and patient/parent support groups by staff with the relevant knowledge and communication skills.

8.3 The patient and family shall be educated by the pharmacist, medical practitioner and nursing staff on the correct use of medications including the dilution and administration of drugs, potential interactions with other drugs and food, and side effects.

8.4 The patient and family shall be educated by the pharmacist, medical practitioner and nursing staff on the correct use, maintenance, and troubleshooting of the medical device.

8.5 The patient and family shall be educated by the medical practitioner, dietician, and nursing staff on the nutritional needs of the patient.

8.6 The family of patients who need rehabilitation shall be educated on the availability of both institution-based and community-based rehabilitation, as well as rehabilitation techniques that can be carried out at home.

# 9. QUALITY IMPROVEMENT, SAFETY AND RISK MANAGEMENT

9.1 A systematic framework of quality, safety and risk management activities to support and drive the provision of safe and effective services shall be established by the hospital and department. The activities shall include but not be limited to the following:

a. Monitoring and trending of performance indicators
b. Incidence reporting
c. Mortality and morbidity reviews
d. Clinical audit
e. Hospital accreditation certification

9.2 A Quality Unit and committee shall be formed at each hospital to coordinate quality, safety, and risk management activities.

9.3 A coordinator or committee will be appointed to manage Quality Improvement (QI) activities for the department.

9.4 Clinical indicators will be used to measure performance. There is tracking and trending of specific performance indicators which are determined by the Medical Care Quality Section, Ministry of Health. Additional performance indicators at the department level may be established based on local needs.

9.5 Patient safety incidents including near-miss events should be reported to the head of department and hospital incidence reporting officer within 24 hours from the time of the incident. Incidents causing serious harm or death must be informed urgently as senior staff need to be involved early in managing the situation. Further action and investigation including root cause analysis shall be guided by the Ministry of Health Incident Reporting Guideline. An action plan to reduce or eliminate the risk of recurrence should be formulated, implemented, and evaluated.

9.6 There will be regular mortality and morbidity reviews in the department.

a. Mortality meetings should have a strong educational emphasis, using a team approach in identifying problems and opportunities for improvements (Duke T, Irimu G, Were W 2019)
b. For under 5 deaths, the format outlined in the Guideline on Classification of under 5 deaths into Preventable and Non-Preventable Deaths (2017) shall be used for analysis and classification. Any remedial action planned will be documented and evaluated.
c. Brought in Dead (BID) children will be managed according to the Emergency Department and Forensic SOP. A guideline for the management of under-five children brought in dead (MOH 2021) should be followed. The paediatric medical officer/ paediatrician should be informed to assist in determining the possible/ probable cause of death. If Non-Accidental Injury (NAI) is suspected, a police report should be made, and the SCAN team informed.
d. A morbidity review will be conducted for specific cases as decided by the head of the department. Problems suitable for morbidity review may include misdiagnosis or delayed diagnosis, treatment or monitoring issues and other issues which cause avoidable complications.

9.7 Clinical practice guidelines and clinical pathways shall be developed and applied so that standardization of care is provided. For those conditions without clinical practice guidelines, the latest edition of the Paediatric Protocols for Malaysian Hospitals, Ministry of Health shall be used.

9.8 There will be regular training on quality, safety, and risk management activities.

9.9 The organization shall analyse all quality, safety, and risk management activities. Results and feedback on these activities will be regularly communicated to staff.

9.10 Complaints may be received from various sources including verbal (in person or by telephone), written (letter or email), reported in mass media, via SMS or social media, and SISPAA (*Sistem Pengurusan Aduan Awam*). Complaints shall be categorized and managed according to *Garis Panduan Pengurusan Aduan Awam KKM* (2018) and local hospital policy. For complaints that have potential medico-legal complications, the investigation shall be guided by Guidelines on the Management of Medico-legal Complaints (2nd edition 2019).

## References:


1. Technical specification for key performance indicators (KPI) clinical services, medical programme Ministry of Health Malaysia 2022
2. Guidelines on Implementation - Incident Reporting and Learning System 2.0 for Ministry of Health Hospitals, Patient Safety Unit, Medical Care Quality Section, Ministry of Health Malaysia 2017
3. Guideline on the classification of under 5 deaths into preventable and non-preventable deaths. Family Development Division, Ministry of Health Malaysia 2017
4. New WHO guidelines on paediatric mortality and morbidity auditing. Duke T, Irimu G, Were W. Arch Dis Child 2019; 104:831-832
5. Guideline for management of under-five children brought in dead (BID), Medical Development Division, Ministry of Health Malaysia 2021
6. Garis Panduan Pengurusan Aduan Awam KKM 2018
7. Guidelines on the Management of Medico legal Complaints, Medical Practice Division, Ministry of Health Malaysia 2nd edition 2019

# 10. PREVENTION AND CONTROL OF INFECTION

10.1 There shall be an infection control sub-committee in paediatric departments with ICUs.

10.2 The hospital director shall ensure that the infection control unit has adequate staffing, IT equipment and other resources needed to support the infection control activities.

10.3 The hospital infection control committee shall monitor the implementation of infection control procedures, carry out surveillance activities, monitor antibiotic resistance patterns and conduct training of hospital staff.

a. Staff shall be orientated to the policies, procedures and practices of the infection, prevention and control program including new policies and procedures from time to time.
b. Staff shall be trained in the management of patients with infectious diseases including barrier nursing, wearing and removal of personal protective equipment and hand hygiene.
c. The infection control unit shall track the prevalence of multi-resistant organisms (refer to Consensus Guidelines For The Management Of Infections By ESBL-Producing Bacteria, 2001).

10.4 Patients with suspected contagious disease shall be isolated per Policy and Procedure of Infection and Antibiotic Control, MOH 2002 including the use of a negative pressure room with High Efficiency Particulate Air (HEPA) filter(s).

10.5 Infectious patients shall be placed and nursed in single rooms wherever possible. The use of multi-bedded rooms for the same type of infection is acceptable.

10.6 All notifiable diseases shall be notified to the Health Office through the Medical Records Department within the time frame stipulated. (refer to Case Definitions for Infectious Diseases in Malaysia, MOH. 3rd Edition January 2017) Urgent notification for certain notifiable diseases shall be notified by telephone to the Health Office.

10.7 Immunisation shall be offered to paediatric staff not immune to chickenpox, hepatitis B, Influenza and Covid-19.

10.8 Needle stick injuries shall be reported and managed according to MOH guidelines. Use of needle-free devices shall be encouraged (refer to *Pekeliling KPK Bil. 3/2007 Pelaksanaan Program Survelan Kecederaan Oleh Alatan Tajam*).

10.9 The infection control programme shall be carried out by the following guidelines and policies. These programmes aim to reduce the risk of healthcare-associated infections in patients, staff and other workers and visitors in all areas in the paediatric department.

a. Policies and Procedures on Infection Prevention and Control, Medical Care Quality Section, Medical Development Division, Ministry of Health Malaysia 2019 (3rd Ed.).

10.10 Negative pressure and isolation facilities in the general paediatric wards shall be used to isolate patients requiring negative pressure isolation.

10.11 Positive pressure isolation facilities should be made available for Oncology and Transplant Units.

# 11. FACILITY AND EQUIPMENT MANAGEMENT AND SAFETY

11.1 Adequate facilities and equipment are required to deliver safe and effective care with proper utilization of space to meet the needs of staff and patients. These include:

a. A play area with toys and educational materials appropriate to various age groups should be provided.
b. The practice of the Baby-Friendly Policy with Breastfeeding facilities is made available for mothers in wards and outpatient facilities.
c. A nappy change room and toilets with child toilet adaptor seats and high and low-sited sinks shall be provided in all areas of paediatric services.
d. Amenities for parents/caretakers are available such as a pantry, provision of boiled water, area for cleaning feeding utensils including sterilizers. Refer to the infant and child feeding policy for the preparation of formula in the paediatric ward.
e. A disabled-friendly environment should be strived for with facilities to cater for children with special needs.
f. Paediatric clinics with adequate space to ensure privacy and comfort for consultation. If possible, a separate waiting area for adolescents should be available.
g. Paediatric specialist clinics with the following features: appointment and queuing system; accessible by non-ambulant patients and easily identified through adequate signage; record keeping area if applicable; equipped with patient monitoring device; displayed floor plan; flow chart on work process and list of services provided.
h. On-call rooms with toilet and shower facilities for doctors on-call
i. Prayer rooms for staff and patients.

11.2 Adequate facilities and equipment shall be available in patient care areas for safe and effective care:

a. Availability of emergency and non-emergency equipment such as a defibrillator, emergency trolley, functioning patient call bell, suction machine, electrocardiogram (ECG) machine, infusion and syringe pump, and vital sign monitor.

b. Infection control facilities include hand washing facilities, soap dispensers and isolation rooms or areas for isolation of certain categories of patients with infectious diseases.
c. Signage board with easy access and clear exit routes.
d. Adequate facilities to ensure patient privacy and confidentiality.
e. Appropriate telecommunication modalities are available for daily operation and during emergencies.

11.3 Security and Fire Safety:

a. Staff shall receive training on fire safety, evacuation procedures and use of firefighting equipment. Fire drills shall be conducted regularly following the hospital fire safety policy.
b. The floor plan, exit routes and assembly point are accessible and clearly displayed.
c. A system for rapid communication for hospital staff during emergencies is available. This may include activation of codes such as code blue (medical emergencies), code grey (aggressive/ combative person) and code pink (infant/ child abduction).
d. Components of code pink include:

   i. A quick search of the immediate area to verify infant/ child is missing
   ii. A system to alert all relevant staff
   iii. Support and information to the parents
   iv. Control of all exit points, car parks and access routes
   v. Systematic search of the hospital by security staff including review of CCTV recording if available
   vi. An example of "code pink" is included in the appendix

e. Security of the neonatal ward should be guided by *Garis Panduan Sistem Keselamatan Bayi di Hospital-hospital KKM bil 1/2007*. The use of CCTV and electronic/ digital doors is encouraged.

## 11.4 Medical Equipment

a. Appropriate types of equipment shall be available to match the complexity of services based on available resources
b. Equipment shall be certified by recognized authorities such as the Medical Device Authority (MDA) and Standards and Industrial Research Institute of Malaysia (SIRIM) as evidence of compliance with the relevant standards and Acts.
c. Testing, commissioning, and calibration records (certificates or stickers) shall be maintained to ensure that equipment complies with relevant national and/or international standards and current statutory requirements.
d. A comprehensive maintenance program including planned preventive maintenance (PPM) and calibration activities of all equipment shall be carried out. Planned preventive maintenance records such as schedules, stickers, etc. shall be in place.
e. Equipment are being replaced and upgraded to meet current standard of care and advancement in technology in a planned and systematic manner. Where applicable, a planned replacement program shall be in place.
f. Staff who are trained and authorized or privileged shall operate specialized equipment. Record of user training, competency assessment, letter of authorization or privileging, and list of trained staff is maintained.

# 12. STAFF QUALIFICATIONS AND EDUCATION

12.1 The MOH shall define the desired education, skills, knowledge, and other requirements of all staff members.

a. Each staff member's responsibilities are defined in a current job description.
b. The knowledge and skills of each staff member shall be consistent with patient needs.
c. Each staff category shall present his/her credentials for joining the department.
d. The hospital/department shall then privilege the staff to practice appropriate to his credentials and the available facilities.
e. Annual evaluation of the individual staff skills, knowledge and attitude shall be carried out in accordance with the evaluation exercise established by the Public Services Department.
f. Continuing Professional Development (CPD) activities are compulsory in all categories of staff. Each staff shall keep a record of his/her CPD activities for the year.
g. Personnel information shall be kept for each staff member. This shall include:

    i. personal details
    ii. copies of their qualifications
    iii. Annual practising certificates for doctors and nursing and allied health staff.
    iv. work experience
    v. Continuous Professional Development (CPD) activities
    vi. Results of Evaluations (*Sasaran Kerja Utama*) – SKU and MyKPI

h. The staffing plan for the department shall be reviewed and updated based on workload, areas of need and new medical advances and technology.
i. All clinical and non-clinical staff shall be oriented to the organization, department, and unit to which they are assigned and to specific job responsibilities.

    i. A general orientation shall be provided to the staff at the hospital level.
    ii. A specific orientation as to the job responsibility of his/her position shall be provided at the department/unit level.

iii. Students and Volunteers shall be oriented to the organization, particularly in terms of patient safety and infection prevention and control
iv. Documentation of this orientation exercise shall be kept.

j. Doctors, nurses, and other paramedics involved in providing patient care shall be trained in resuscitation techniques – Advanced Paediatric Life Support (APLS), Paediatric Life Support (PLS) or Paediatric Advanced Life Support (PALS), Malaysian Paediatric Life Support (MPLS) and Neonatal Resuscitation Program (NRP).
k. Staff health and safety shall be under the purview of the Occupational Staff Health and Safety Unit, OSH (Unit Keselamatan dan Kesihatan Pekerjaan).

12.2 Medical Staff

a. Each doctor shall present his/her credentials on joining the department. This shall include:

i. Personal details, including photograph
ii. Certified copies of their qualifications
iii. Full Malaysian Medical Council registration (except house officers)
iv. Latest Annual Practicing Certificate (except house officers)
v. Work experience

b. The clinical privileges given to each specialist by the hospital privileging committee to practice independently shall be consistent with the credentials, training and experience and performance of the specialist and facilities available in the hospital.
c. Clinical privileges given to medical officers shall depend on previous training, experience, and performance in paediatrics and this shall be spelt out in the job description.

i. All medical officers shall undergo a probationary period during which they shall receive the required level of supervision and evaluation of necessary skills, knowledge, and desired work behaviours.
ii. A logbook shall be maintained of the medical officers' training, and experience and the performance evaluated by the supervisor.
iii. The logbook shall be used as a guide for granting further clinical privileges.

12.3 Nursing Staff

a. Each nurse shall present her credentials on joining the department. This shall include:

   i. Personal details, including photograph
   ii. Certified copies of their qualifications
   iii. Full nursing board registration
   iv. Latest Annual Practicing Certificate
   v. Work experience

b. The clinical privileges given to each nurse by the hospital privileging committee shall be consistent with the credentials, training, experience and performance of the nurses and facilities available to the hospital.
c. The nursing staff of the paediatrics and neonatal wards should achieve a good ratio of nurses with and without post-basic qualifications while fulfilling the criteria for credentialing in the respective units.
d. The general paediatrics and neonatal ward should consist of at least 40% nursing staff with qualifications of post-basic in Paediatric Nursing.

   i. Nurses with post-basic qualification: Clinical privileges shall be given to nurses after completion of post-basic training and have satisfied the nursing credentialing criteria.
   ii. Nurses without post-basic qualification: Nurses shall be supervised for at least 2 years and clinical privileging shall then be given on the satisfactory completion of training as per requirement of the nursing credentialing criteria.

e. All nurses shall obtain at least 20 credit points for renewal of their Annual Practicing Certificate.
f. All nurses posted to paediatric or neonatal wards shall undergo inpatient training in resuscitation techniques/ resuscitation skills with Basic Life Support as the minimum requirement, basic paediatric training such as serving medications and administering intravenous fluids as well as breastfeeding education.

## 13. MANAGEMENT OF COMMUNICATION AND INFORMATION

13.1 Communication between staff members in the department shall be effective and timely through regular meetings, virtual meetings, emails, memos, group messaging and personal telephone calls or contact.

13.2 Confidentiality shall be maintained at all times when communicating about patients and their families.

13.3 There is an increase in the usage of social media platforms for consultation and information dissemination. All staff members shall comply with the guidelines for the use of social media among healthcare providers.

13.4 For other policies, please refer to the hospital's general policies.

## 14. INFANT & PAEDIATRIC DIETETIC SERVICES

The vision of the policy is to ensure optimal nutritional status, growth, development and health of infants & children by protecting and supporting safe and nutritious feeding practice.

All facilities providing maternity, newborn and paediatric services should have well-written infant & paediatric feeding policies that are routinely communicated to staff and parents/caregivers.

14.1 Breastfeeding and breast milk are encouraged for all infants. Exclusive breastfeeding is recommended for the first 6 months of life and continued breastfeeding with complementary feeding up to 2 years of age.

a. Statement 14.1 is in line with the Ministry of Health (MOH) Baby Friendly Hospital Initiative (BFHI) policy.
b. A suitable environment is conducive to supporting breastfeeding in wards or outpatient clinics shall be made available based on local facility resources.

14.2 Ready-to-feed or powdered formula milk are alternative for substitution of breast milk.

a. Code of Ethics for Marketing of Infant Foods and Related Products (2008) should be adhered to by all facilities.

b. Acceptable specific exceptional circumstances for breast milk substitution are as follows: (as stated in Malaysian Dietary Guidelines for Children and Adolescents)

14.3 Infants who should not receive breast milk or other milk except specialised formula:

a. Infants with metabolic diseases require a specialised formula. Discussion with a metabolic paediatrician is required to decide on the specific formula feeding.

14.4 Infants for whom breast milk remains the best feeding option but who may need other formula in addition to breast milk for a limited period:

a. Preterm babies have very low birth weight.
b. Newborn infants who are at risk of hypoglycaemia due to impaired metabolic adaptation or increased glucose demand (such as those who are preterm, small for gestational age or those who are ill and those whose mothers are diabetic) if their blood sugar fails to respond to optimal breastfeeding or breast milk feeding.
c. Infants younger than 6 months who, despite frequent and effective suckling and in the absence of illness, show persistent growth faltering.
d. Infants with severe malnutrition require specific therapeutic feeding. Protocols for the management of severe malnutrition should be adhered to.
e. Infants who need ideal and optimum nutrition within a fluid restriction.

14.5 Infants born to mothers who may need to avoid breastfeeding:

a. Mother with HIV infection: if replacement feeding is acceptable, feasible, affordable, sustainable, and safe (AFASS).

14.6 Infants born to mothers who may need to avoid breastfeeding temporarily:

a. Mothers who are medically, physically, mentally and psychologically unstable (e.g. mother with severe sepsis)
b. Mother on cytotoxic medications

14.7 Adherence to strict protocol or guidelines to prepare, handle and store powdered milk formula, ready-to-feed formula and mother's milk are crucial and need to be implemented and regularly monitored at all health centres.

14.8 Milk kitchen policy to be adhered to, routinely distributed and communicated to all staff involved in preparing the infant feeding.

14.9 Facilities without milk kitchens to implement facility-level guidelines and protocols that are in line with BFHI standards. Consideration to provide ready-to-feed formula at these facilities without proper milk kitchens is the safest choice.

14.10 For infants more than 6 months of age, complementary feeding shall be started (except for those with specific contraindications). All patients shall be supplied with at least four meals a day.

a. Children admitted to the paediatric ward will be provided with a balanced and nutritious diet supplied by the Dietetic and Food Service Department (*Jabatan Dietetik dan Sajian*). Dietary guidelines produced by the Ministry of Health shall be complied with.
b. Breastfeeding shall receive continuous support throughout admission in the paediatric ward. For privacy purposes during breastfeeding, screen or bed curtain shall be provided. For infant on formula milk feeding, milk preparation can be prepared by the caretaker in the patient's or caretaker's pantry equipped with milk preparation equipment. Facility-level protocol in line with BFHI milk preparation guidelines shall be adhered to.
c. Patients with special nutritional requirements shall be co-managed with respective sub-specialities and the hospital dietician for planning, delivery and monitoring of the nutritional therapy.

## References:

1. Implementation Guidance Baby Friendly Hospital Initiative. UNICEF WHO 2018
2. The International Code of Marketing of Breast milk Substitutes. WHO 2017
3. Malaysian Dietary Guidelines for Children and Adolescents, National Coordinating Committee on Food and Nutrition, MOH, 2013
4. Guidelines for the Feeding of Infants and Young Children, Technical Working Group On Infants and Young Child Feeding. Nutrition Division, Ministry of Health Malaysia 2009

# OPERATIONAL POLICIES SPECIFIC FOR SUB-SPECIALTIES

# NEONATOLOGY UNIT POLICIES

## 1. OBJECTIVES

1.1 To provide a comprehensive neonatal service, inclusive of promotive, preventive, diagnostic, curative and rehabilitative care for newborn infants, in a safe, effective, and timely manner.

1.2 To optimize outcomes and reduce mortality in newborn infants of high-risk pregnancies and complications of childbirth.

1.3 To involve parents in the health care of their newborn infants.

1.4 To promote audit, research, and quality improvement initiatives in neonatal care.

1.5 To promote and provide continuous professional development to healthcare providers.

## 2. SCOPE OF SERVICE

2.1 Participating in the antenatal care of high- risk pregnancies.

2.2 Providing neonatal care to newborn infants, up to 44 weeks post-conceptional age or older on a case-by-case basis.

2.3 Providing 24-hour inpatient neonatal service in the neonatal and postnatal wards.

2.4 Screening of newborn infants and reviewing referred infants in the postnatal wards.

2.5 Providing outpatient neonatal services for referred cases and follow-up care for neonatal unit 'graduates'.

2.6 Providing combined care to newborn infants by working together with other disciplines as a multidisciplinary team.

2.7 Providing palliative care to newborn infants unlikely to survive and those with life-limiting conditions.

2.8 Training of healthcare personnel in neonatal resuscitation and neonatal care.

## 3. OPERATIONAL POLICIES

3.1 Admissions

a. Admission to NICU or special care nursery (SCN) can be from:

i. Emergency and Trauma Department
ii. Paediatric specialist clinic and paediatric daycare
iii. Outpatient clinics (OPD/ KK)
iv. Labour Room, operating theatre, postnatal wards
v. Other departments within the hospital
vi. Direct referrals from other public hospitals or private health facilities (after prior arrangements)

b. Direct referrals from other public hospitals or private health facilities (after prior arrangements)

i. Infants with birth weight <1.8kg or < 35 weeks gestational age
ii. Infants with birth weight >4.5kg
iii. Infants of diabetic mother on insulin
iv. Infants of drug-dependent/ other substance abuse mother
v. Infants with a risk of sepsis
vi. Infants with low Apgar Score (AS < 6 at 5 minutes)
vii. Infants with respiratory distress
viii. Infants with major congenital anomalies
ix. Infants with jaundice noted at birth
x. Infant of a mother with significant medical illness (if in doubt, consult neonatologist/ paediatrician).
xi. Infants with known metabolic disease in their sibling
xii. Infants with birth trauma
xiii. Infants with meconium aspiration

*# The above criteria may vary according to local settings*

c. Guidelines for admissions from other healthcare facilities:

i. Referrals to the neonatal ward shall be discussed with the Paediatrician of the receiving hospital.
ii. Referrals to neonatal wards shall be accepted if there are beds available. The referring district hospital shall transfer the ill infant to the regional hospital for stabilisation while waiting for the availability of a NICU bed.
iii. Infants from the referring health facility may be directly admitted to the neonatal ward (rather than through ETD), after prior discussion with the Paediatrician of the receiving hospital.
iv. Infants shall be adequately stabilised before transfer and consult the paediatrician in charge if the stabilisation is difficult.
v. The ward staff and the medical officer of the receiving hospital shall be informed of the transfer.
vi. Upon arrival, the team from the referring hospital shall hand over the infant to the receiving team for continuity of care.
vii. Reservation or booking of NICU beds, including for elective neonatal procedures/surgeries, shall be discussed with the Paediatrician in charge.

3.2 Referrals

a. Criteria for referrals from obstetric or postnatal wards

i. G6PD deficiency/Rh-negative mother
ii. Infant of diabetic mother – not initially admitted to SCN at birth.
iii. Minor congenital anomalies
iv. Neonatal jaundice
v. Problems with feeding, respiration, passage of urine/ stool.
vi. Mothers with potential vertically transmitted diseases e.g. those who are VDRL/TPHA positive, HBsAg positive, HIV positive, Covid positive

b. Paediatric standby for neonatal resuscitation

A doctor trained in neonatal resuscitation should be present at all high-risk deliveries. It is recommended that the following situations warrant a paediatric doctor on standby for resuscitation: -

i. Preterm infants < 35 weeks
ii. Moderate or thick meconium- stained liquor
iii. Foetal distress
iv. Cord prolapse
v. Antepartum haemorrhage
vi. Multiple births
vii. Instrumental delivery
viii. Emergency caesarean section
ix. Infants with significant congenital malformations diagnosed antenatally
x. Bad obstetric history
xi. Any other deliveries deemed as very high risk after discussions between the obstetrics and neonatal teams

The O&G registrar/medical officer shall inform his paediatric counterpart when standby is required and give an appropriate time for the paediatric doctor to arrive for standby before delivery.

3.3 Infant feeding

a. Breastfeeding or feeding with the mother's expressed breastmilk shall be encouraged for all infants in the ward.

b. Under special circumstances, supplementation with infant formula milk products shall be allowed in the ward e.g. preterm infants whose mother's expressed breast milk is insufficient, infants at risk of hypoglycaemia and in situations where breastmilk is contraindicated.

c. Special infant formula shall be provided for infants when indicated, e.g. inborn errors of metabolism, malabsorptive disorders, and allergies.

d. In hospitals with no centralised milk kitchen, infants shall preferably be provided with ready-to-feed (RTF) infant milk formula.

3.4 Neonatal screening

a. Newborn infants shall be screened for congenital hypothyroidism and G6PD deficiency at birth. Physical examination to look for congenital abnormalities and pulse oximetry screening shall be done before discharge.

b. Newborn hearing screening shall be performed on all infants.

c. Screening for retinopathy of prematurity and serial cranial ultrasound shall be done for preterm infants who fulfil the criteria.

3.5 Discharge

a. Preterm infants shall be discharged after achieving a weight gain of up to 1.8 kg and a post-conceptional age of at least 35 weeks.

b. Earlier discharge at a lower weight or post-conceptional age is at the paediatrician's discretion.

c. Infants shall be discharged once they are deemed medically stable.

d. Infants at risk of long-term neurodevelopmental and other problems shall be followed up in the paediatric clinic.

e. Appropriate immunization shall be given before discharge.

3.6 Care of Infants in Postnatal Wards

a. Newborn infants transferred to the postnatal wards shall have their vital signs (temperature, respiratory rate and heart rate) taken and recorded on admission.

b. Well, term newborn infants in the postnatal wards shall be regularly monitored (at least once per shift) for their activity, colour, respiratory rate, heart rate, temperature and feeding.

c. Monitoring and management of newborn infants under the care of the paediatric team (e.g. infant of diabetic mother, infant with risk of sepsis, late preterm infant) shall be according to the local neonatal protocol.

d. All infants in the postnatal wards shall be monitored for neonatal jaundice.

e. Referrals to the paediatric team shall follow the criteria in the section on "Referrals".

f. Infants with the following 'red flags' or signs of serious illness shall be referred to the paediatric team immediately:

i. Lethargy
ii. Seizures
iii. Respiratory distress
iv. Cyanosis
v. Poor feeding
vi. Recurrent vomiting
vii. Bilious vomiting
viii. Diarrhoea
ix. Temperature instability

3.7 Early initiation of breast feeding shall be encouraged, and lactation consultation shall be made readily available.

3.8 Full physical examination of the newborn, including pulse oximetry screening, shall be performed within 24 to 48 hours after birth, or prior to discharge.

3.9 Parents shall be given education and guidance regarding safe sleep practices and shaken baby syndrome.

# Neonatal Levels of Care

## Level I (Neonatal care in the postnatal wards)

Provide care for the following infants placed together with their mothers and regarded as inpatients:

a. Stable term newborn infants
b. Infants born 35-37 weeks' gestation who remain physiologically stable
c. Infants receiving phototherapy for mild neonatal jaundice, on glucose monitoring, for completion of antibiotics

## Level II (Special care nursery)

Provide care for the following infants:

a. Born at $\geq$ 32 weeks' gestation and weight $\geq$ 1500g who have physiologic immaturity.
b. Moderately ill infants with problems that are expected to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis.
c. Infants with mild to moderate respiratory illness on non-invasive ventilation (CPAP or HFNC). Conventional ventilation may be provided for a brief duration until transfer to a NICU.
d. Infants with management of common neonatal conditions e.g. neonatal jaundice, Infants with risk of sepsis.
e. Post intensive care convalescing infants
f. Infants with chronic NIV or oxygen dependency.
g. Infants needing surgical nursing.

***Level II facilities and capabilities should take into consideration geographical constraints.***

## Level III (NICU)

Provide sustained life support for the following infants:

a. Born before 32 weeks gestation and weight less than 1500g
b. Infants born at all gestational ages and birth weights with critical illness requiring sustained life support, such as:

    i. Respiratory support including invasive ventilation (conventional and high-frequency ventilation), non-invasive ventilation (CPAP, HFNC), inhaled nitric oxide
    ii. Therapeutic hypothermia for neonatal encephalopathy

c. Infants require access to paediatric medical subspecialists, paediatric surgeons, paediatric anaesthesiologists, paediatric ophthalmologists, etc.

## Level IV (Regional NICU)

Level III capabilities plus:

a. Located within an institution with the capability to provide on-site surgical repair of complex congenital or acquired conditions.
b. Has a range of paediatric medical subspecialists, paediatric surgical subspecialists, and paediatric anaesthesiologists at the site.

*Modified from American Academy of Pediatrics Committee on Fetus And Newborn. Levels of neonatal care. Pediatrics. 2012 Sep;130(3):587-97. doi: 10.1542/peds.2012-1999. Epub 2012 Aug 27. PMID: 22926177.*

# Recommended staffing norms for neonatal wards

| Medical personnel | Norm |
|---|---|
| Neonatologists | 1 per 3000 births per year |
| Paediatricians | 2 per 3000 births per year |
| Medical officers | 8 per 5000 births per year |

All level IV NICUs shall have neonatologists

| Nursing personnel | Norm |
|---|---|
| Matron | 1 per neonatal unit |
| Ward sister | 2 per neonatal ward |
| Staff nurse (SN) | 1 SN : 1 Level III/IV bed<br><br>1 SN : 4 Level II bed |

| Allied health personnel | Norm |
|---|---|
| Assistant medical officers (AMO) | 1 per 3000 live births |
| Physiotherapist | 1 per unit |
| Occupational therapist | 1 per unit |
| Speech & language pathologist | 1 per unit |
| Infection control nurse | 1 per neonatal ward |
| Pharmacist | 1 per unit |
| Lactation nurse | 1 per neonatal ward |
| Hearing and ROP screening nurse | 1 per neonatal ward |
| Nutritionist/Dietitian | 1 per unit |
| Medical social worker | 1 per unit |
| Ward clerk | 1 per neonatal ward |

# Recommended bed norms for neonatal wards

(Recommendation by the American Academy of Paediatrics and the American College of Obstetricians and Gynaecologists 2004 depending on the level of care).

Hospitals providing subspecialty care:

| Level of care | Norm |
|---|---|
| Level III and IV | 4 beds per 1000 births per year |
| Level II | 8 beds per 1000 births per year |

Hospitals without subspecialty care other than neonatology:

| Level of care | Norm |
|---|---|
| Level III | 3 beds per 1000 births per year |
| Level II | 8 beds per 1000 births per year |

# Physical facilities and Equipment norms for neonatal wards and other areas

The following recommendations are intended as general guidelines and should be interpreted with consideration given to local needs. Individual limitations of physical facilities for neonatal care may impede strict adherence to these recommendations.

| Resuscitation and stabilization area<br><br>Area size/floor space:<br>Within individual labour/delivery room: at least 3.7 $m^2$<br>Within operative delivery room: at least 7.5 $m^2$ | |
|---|---|
| 1 | Infant resuscitaire with servo controlled temperature system and resuscitation unit |
| 1 | Wall clock with second hand or digital clock |
| 1 | Flat working surface for medical records |

| | |
|---|---|
| 1 | Table or flat surface for trays and equipment |
| 4 | Dry, warmed linens |
| 1 | Stethoscope with neonatal head |
| 1 | Oxygen blender with flow meter and tubing |
| 1 | Pulse oximeter and oximeter probe |
| 1 | Cardiorespiratory monitor |
| | Resuscitation equipment, including<br><br>- Suction catheters<br>- Laryngoscope with blades and extra bulbs and batteries<br>- Endotracheal tubes and tape<br>- Meconium aspirator<br>- Ventilation device (self-inflating or T-piece resuscitator)<br>- Laryngeal mask airway & oropharyngeal airways<br>- Masks of different sizes for term and preterm infants<br>- Umbilical vessel catheterization supplies<br>- Syringes, medications, volume expanders |
| | Equipment for examination, immediate care, and identification of the newborn infant |
| | Special equipment for special circumstances (e.g. plastic wrap/bag for very preterm infants) |
| 1 | Oxygen outlet |
| 1 | Compressed air outlet |
| 1 | Vacuum (suction) outlet |
| 6 | Electrical outlets |
| Per obstetric unit | |
| 1 per 3000 live births | Transport incubator – for transfer to NICU post resuscitation |

| Per Level III/IV bed | |
|---|---|
| Area size/floor space:<br>- at least 11.2 $m^2$ for each infant<br>- at least 2.4 m between each incubator/warmer/bassinet/crib<br>- aisles should be at least 1.2 m wide<br>- consider added space for other purposes (e.g. desks, counters, cabinets and nurses' stations) | |
| 1 | Infant resuscitaire with servo controlled temperature system and resuscitation unit |
| 1 | Intensive care incubator |
| 1 | Pulse oximeter per 4 beds |
| 1 | 6 channel cardiorespiratory monitor |
| 1 | High end neonatal ventilator (with triggered ventilation, volume-targeting, high frequency and non-invasive modes) |
| 1 | CPAP delivery system |
| 1 | Humidifier |
| 1 | High flow meter for oxygen (0-15L/min) |
| 1 | High flow meter for air |
| 1 | Low flow meter for oxygen (0-5L/min) |
| 1 | Resuscitation bag/T-piece resuscitator and mask |
| 1 | Laryngoscope with blades and extra bulbs and batteries |
| 1 | Intensive phototherapy light |
| 1 | Fluid management system for 8 pumps |
| 6 | Syringe pumps |
| 1 | Volumetric infusion pump |
| 1 | Stethoscope with neonatal head |
| 1 | Thermometer |
| 1 | Recliner chair |
| 20 | Electrical outlets |
| 3 | Oxygen outlet |
| 3 | Compressed air outlet |
| 3 | Vacuum (suction) outlet |

| Per Level II bed | |
|---|---|
| (i) Per level II bed | |
| 1 | Bassinet with mattress and storage space |
| 1 | 4-channel cardiorespiratory monitor |
| 1 | Stethoscope with neonatal head |
| 1 | Digital thermometer with 10% spare |
| 1 | Intensive phototherapy light |
| 2 | Syringe pumps |
| 1 | Vacuum (suction) outlet |
| (ii) Per every 2 level II beds | |
| 1 | Radiant warmer |
| 1 | Incubator |
| 1 | Low flow meter with probe for air (0-5L/min) |
| 1 | Low flow meter with probe for oxygen (0-5L/min) |
| 1 | Humidifier |
| 1 | Oxygen blender |
| 1 | Oxygen outlet |
| 1 | Compressed air outlet |
| (iii) Per every 4 level II beds | |
| 1 | Volumetric pump and drip stand |
| 1 | Low flow meter with probe for oxygen (0-1L/min) |
| 1 | Pulse oximeter with oximeter probe |

| Per Neonatal Intensive Care Unit | |
|---|---|
| 2 | Nitric oxide delivery system |
| 2 | Transport incubator |
| 2 | MRI compatible transport ventilator |
| 1 | Blood gas analyser with Hb, electrolytes, glucose, lactate, bilirubin, metHb |
| 2 | Ultrasound machine with cardiac ECHO and colour Doppler |
| 5 | Free standing radiant warmer |
| 2 | Transilluminator |
| 1 | Bedside glucose analyser per 10 beds |
| 1 | Trending oximetry $SpO_2$ monitor |
| 2 | Phototherapy irradiance meter |
| 2 | Transcutaneous bilirubinometer |
| 2 | Automated Acoustic Brainstem Evoke Response machine |
| 2 | Cerebral function monitor |
| 2 | Hypothermia therapy machine with servo control |
| 2 | Portable suction for chest drains with regulator |
| 2 | Portable suction machines |
| 3 | Infant weighing scale with length measurement |
| 1 | Defibrillator |
| 1 | ECG machine |
| 3 | Emergency trolley |
| 2 | Breast pumps |
| 1 | Refrigerator for medications |
| 1 | Cabinet for hot air drying of tubings |
| 1 | Ultrasonic tank washer |
| 4 | Medication cart |

| Milk and Formula Preparation Area |
|---|
| Hands-free handwashing station |
| Counter workspace |
| Refrigerator for formula milk |
| Refrigerator and freezer for expressed human milk |
| Storage area for supplies |

## Scrub Areas

There should be a scrub area at the entrance to each neonatal care area that can accommodate all personnel and families entering the area.

It should have a sink large enough to prevent splashing with faucets operated by hands-free controls.

A backsplash should be provided to prevent standing or retained water.

Soap and towel dispensers and appropriate trash receptacles should be available.

Minimum ratio – 1 hands-free sink for at least every 8 patient stations.

In the Level II-IV areas – every bed should be within 6.1m of a hands-free washing station.

In addition, one scrub sink is needed in the resuscitation and stabilization area.

Alcohol-based hand hygiene solutions should be available at all entry points and at each bed space.

## Nursing Areas

Space should be provided at the bedside for instructional and medical record activities – including space for computer terminals if electronic documentation is utilised.

Policies should be in place to ensure cleaning of keyboards.

## Lactation room

*Private space for lactation consultation and milk expression should be available*

Hand-washing sink

Hospital-grade breast pump

Comfortable seating

# PAEDIATRIC INTENSIVE CARE UNIT POLICY

## Introduction

The Paediatric Intensive Care Unit (PICU) is a dedicated unit for the critically ill children who require invasive life support, high levels of medical/ nursing care and complex treatment. It is a multidisciplinary unit covering all paediatric specialties in the hospital and accepts patients up to age 12 years from the emergency department, general wards, and operating theatres from within or other hospitals and from within or outside of the state/ region. Under certain circumstances, children up to 18 years of age may be treated in the Paediatric Intensive Care Unit if this is deemed to be the most appropriate location for care based on individual needs.

The unit provides intensive care and support of vital systems in infants and children who have acute, often reversible, life-threatening diseases. Most children have a potentially reversible life-threatening illness or injury that if successfully treated, will restore the child to a normal and healthy life.

The Paediatric Intensive Care Unit provides special expertise and facilities for the support of vital functions and utilizes the skills of medical, nursing and allied health personnel experienced in the management of critically ill children. The management of the Paediatric Intensive Care Unit is the responsibility of the Paediatric Intensivist or Paediatrician under the Department of Paediatrics.

Paediatric Intensive Care services shall be available 24 hours per day and 365 days per year.

The proposed standard for Paediatric Intensive care unit bed capacity shall be 3.3 to 5 PICU beds per 100,000 children.

**The Paediatric Critical Care Units (PCCU) are divided into 3 levels of care as below:**

| Paediatric Critical Care (PCCU) Level | Other name | Location |
|---|---|---|
| PCCU<br><br>Level 1 | Acute Bay | Located in all hospitals providing inpatient care to children, to be managed by paediatricians |
| PCCU<br><br>Level 2 | Paediatric High Dependency Ward<br><br>(PHDW) | Located in hospitals with a minimum number of 3 paediatricians. PHDW will deliver level 1 & 2 care. This unit will be managed by a paediatrician or paediatric intensivist (who is managing the level 3 PCCU) in the same hospital depending on the individual hospital setting. |
| PCCU<br><br>Level 3 | Paediatric Intensive Care Unit<br><br>(PICU) | Located usually in tertiary centres or large state hospitals which provide all 3 levels of critical care (Level 1 to 3 care). PICU will be managed by a paediatric intensivist or privileged paediatrician or general paediatrician. |

Children admitted to these Paediatric Critical Care Units will either exit from this level once their physiological condition stabilizes to the point where they can be cared for in a general ward or if their condition deteriorates, they will be escalated to the next level of care within the same hospital or to another hospital.

Hospitals with level 3 PICU shall be part of a network which is responsible for the care pathway with other hospital's Level 1 and 2 PICU within its catchment area facilitating the appropriate referral and consultation for the children at these PICU.

**PICU level 3 care is also delivered at 3 different hospitals set up within a network model:**

| Network of PICU care | |
|---|---|
| PICU | Existing level 3 PICU providing care |
| Adult ICU | General hospitals with large adult intensive care units providing care to significant volume of ill paediatric patients |
| Highly specialized PICU | Level 3 PICU at designated hospitals supporting specific specialties i.e. cardiac, neurosurgery, endocrine, infectious disease etc. |

**Level of complexity for Level 1 to 3 Paediatric Critical Care Unit (PCCU) are as follows**

| PCCU | Patients | Staff : patient ratio |
|---|---|---|
| Level 1<br><br>(Acute Bay) | Basic critical care<br><br>Children requiring closer monitoring or interventions as defined in section 4.1.3 | **Nurse**<br>• 1 nurse to 4 patients<br>• 5 nurses every 4 beds<br><br>**Medical Officer (MO)**<br>• 1 MO to 6 beds |
| Level 2<br><br>(PHDW) | Intermediate critical care<br><br>Children requiring monitoring or interventions as define in section 4.1.4 | **Nurse**<br>• 1 nurse to 1 or 2 patients<br>• 5 nurses every 2 beds<br><br>**Medical Officer**<br>• 1 to 4 beds<br><br>**Paediatrician**<br>• 1 to 8 beds |
| Level 3<br><br>(PICU) | Advanced critical care<br><br>Children requiring monitoring or interventions as in defined in section 4.1.5 | **Nurse**<br>• 1 nurse to 1 patient (5 nurses per bed)<br>• 2 nurses to 1 patient (10 nurses per bed) for patients undergoing CRRT, Plasmapheresis and ECMO.<br><br>**Medical Officer (MO)**<br>• 1 MO to 2 patients<br><br>**Paediatrician/Paediatric Intensivist**<br>• One Paediatrician/paediatric intensivist to 4 patients |

**Minimum equipment for each level of Paediatric Critical Care Unit**

| PCCU | Patients | Minimum equipment requirement |
|---|---|---|
| Level 1<br><br>(Acute Bay) | Basic critical care<br><br>Children requiring closer monitoring or interventions as defined in section 4.1.3 | • 4 channel Cardiorespiratory monitor for every 1 bed<br>• High flow nasal oxygen for every 2 beds<br>• Basic Non-invasive ventilator for every 2 beds<br>• 1 infusion pump every 1 bed<br>• 2 Syringe pumps every 1 bed<br>• 1 Adjustable hospital Cot/ Bed every bed area<br>• Bed sore prevention mattress for every bed.<br>• 1 Open incubator for every 2 beds<br>• Transport ventilator x 1<br>• Transport cardiorespiratory monitor x1<br>• Transport incubator x 1<br>• Child transport stretcher trolley x1<br>• 1 Blood gas analyser per unit<br>• 1 moderate range ultrasound machine with 4 probes include hockey stick.<br>• 1 set of defibrillator with pacing capability per unit<br>• One Electrocardiogram machine |
| Level 2<br><br>(PHDW) | Intermediate critical care<br><br>Children requiring monitoring or interventions as define in section 4.1.4 | • One 6 channel modular cardiorespiratory monitor with invasive BP in every bed space.<br>• 1 EEG module for monitor for every 3 bed spaces<br>• 1 High flow nasal oxygen for every 1 bed<br>• 1 Non-invasive ventilator for every 1 bed<br>• 1 Invasive ventilator for every 2 beds<br>• Fluid management system for every bed that consist of:<br><br>o 1 Infusion pump<br>o 4 Syringe pumps<br><br>• Blood gas and electrolyte analyser machine x 1<br>• Intracranial pressure monitoring device x 1<br>• Automated peritoneal dialysis machine x 1<br>• Renal replacement machine x1<br>• 1 unit of Portable haemodialysis machine per PHDW or one unit haemodialysis every 10-bed space<br>• 1 unit of Portable reverse osmosis machine for haemodialysis or one unit haemodialysis every 10-bed space |

| PCCU | Patients | Minimum equipment requirement |
|---|---|---|
| | | • 1 moderate range ultrasound machine with 4 probes including one hockey stick probe or 1 unit every 10 bed spaces<br>• 2 Mobile lead radiation protection shields barrier<br>• Transport ventilator x1<br>• MRI compatible portable ventilator machine X 1 per unit<br>• Transport cardiorespiratory monitor x1<br>• Transport incubator x 1<br>• Child transport stretcher trolley x1<br>• 1 ICU hospital cot/ bed every bed area.<br>• Bed sore prevention mattress every bed space.<br>• 1 Open incubator every 2 bed<br>• 1 set of defibrillator machine with pacing capability machine per every unit or one in every 10 beds.<br>• 2 electrocardiogram machines |
| Level 3<br><br>(PICU) | Advanced critical care<br><br>Children requiring monitoring or interventions as in defined in section 4.1.5 | • 8 channel modular cardiorespiratory monitor with invasive BP and EEG module for every 1 bed<br>• High flow nasal oxygen for every 2 beds<br>• Non-invasive ventilator for every 1 bed<br>• High end Invasive ventilator for every 1 bed<br>• Fluid management system with<br><br>- 2 Infusion pump every 1 bed<br>- 8 Syringe pumps every 1 bed<br><br>• 2 moderate range ultrasound machine with 4 probes and including one hockey stick probe per set of machine.<br>• One Automated peritoneal dialysis machine every 4 beds<br>• One Renal replacement machine every 5 beds<br>• One Portable haemodialysis machine every 5 beds<br>• One-unit portable reverse osmosis machine every 5 beds<br>• One Intracranial pressure monitoring device every 5 beds<br>• Blood gas and electrolyte analyser machine x 2 per unit |

| PCCU | Patients | Minimum equipment requirement |
|---|---|---|
| | | • 2 unit of Video laryngoscope every unit<br>• 1 unit of Inhaled nitric oxide machine in each general PICU and 2 units of inhaled nitric oxide machine in PICU if provide cardiac critical care<br>• 2 unit of mobile lead radiation protection shield barrier per unit<br>• 1 MRI compatible transport ventilator for every unit<br>• 1 MRI compatible Pulse Oximeter for every unit<br>• 1 Transport cardiorespiratory monitor for every 5 beds<br>• 1 portable ventilator for neonate, paediatric and adult for every 5 beds<br>• 1 Transport incubator for every 5 beds<br>• 1 Child transport stretcher trolley for every 5 beds<br>• 1 Transport fluid management system for every 5 beds<br>• 1 ICU hospital Cot/ Bed every bed area<br>• Bed sore prevention mattress for every ICU bed.<br>• 1 Open incubator every 2 bed<br>• 2 sets of Hypothermia Therapy Machine per PICU or 2 sets every 10 beds.<br>• 1 portable video electroencephalography machine per unit or one set every 10 beds.<br>• 1 Warming Machine/mattress every 2 beds<br>• 1 feeding pump every 2 beds<br>• 1 unit of heart lung machine for every 5 beds if the unit provide cardiothoracic surgery.<br>• One unit of Endoscopy system with 3 scopes in unit that provide paediatric otorhinolaryngology, gastro-enterology and respiratory service<br>• 2 sets of defibrillator machines with pacing capability<br>• 2 electrocardiogram machines |

**Minimum Consumable allocation for the Paediatric Critical Care Unit**

| Paediatric Critical Care Unit | Consumable allocation |
|---|---|
| Level 1 (Acute Bay) | RM 20,000 per bed per year |
| Level 2 (Paediatric High Dependency Ward) | RM 40,000 per bed per year |
| Level 3 (Paediatric Intensive Care Unit) | RM 80,000 per bed per year |

## Design of PICU and PHDW (Should be similar to enable the upgrading of PHDW to PICU if needed in mass disaster or pandemic situation)

1. The PICU environment should be congenial for sick children and family, with adequate natural lighting, pleasant decor and colours to lessen stress.

2. Floor space should be **25 square meters per bed** with adequate head access. Distance between 2 beds should be at least 3 meters

3. **Mobile Pendant system** should be installed to allow all round access to patients.

4. Each bed should have **4 outlets for oxygen, 4 for compressed air and 4 for vacuum with 16 electrical sockets with at least 8 being Uninterrupted Power Supply (UPS)**.

5. A code blue **alarm system, nurse call** and **intercom** are necessary in each cubicle and isolation room.

6. **Central control counter** equipped with Central Monitoring, computers with internet access, printers, fax machine and 3 telephone with at least 2 telephone with direct dialling to local and national calls and x ray viewing area.

7. The environment is controlled by **air conditioning with central ducting system and HEPA filter. Isolation rooms should be equipped with UVGI**.

8. One isolation room per every 3 PICU beds should be provided for reverse patient isolation with **positive or negative pressure system**. The **ante room** shall have a sliding door mechanism from outer chamber to ante room and from ante room to isolation room. The outer and inner sliding doors will be automated and with interlocking mechanism. There shall be handwashing and gowning facility available in the ante room.

9. **Hand washing facilities** shall be available at every patient bed space. It should be a sensor-operated tap with deep wash basins to prevent splashing, and a foot operated soap dispenser.

10. Lighting will be bright and controlled by a dimmer. An **overhead examination lamp** will be provided for each bed.

11. **Curtains and curtain railings** are provided around each bed to ensure privacy.

12. Entrance to the PICU must be secure. Ideally, access should be secured with a variety of **locking devices** (e.g. keys, codes, swipe card), and non-staff access should be permitted via a video intercom. The entrance to the PICU should be monitored by video surveillance i.e. **CCTV**

13. The PICU should have direct access to operation theatre, emergency department and general wards. It should be near the imaging department and have a discrete access to the mortuary.

14. A different passage and entrance which is near to the lift and away from entrance for visitors should be available for transport of patients and access of staffs.

15. Inlet and outlet points for haemodialysis and reverse osmosis water shall be provided for every bed in PICU and every alternate bed in PHDW.

16. Facilities for parents i.e. parent waiting room equipped with television, bathroom, dining and sleeping area should be made available.

**PICU should also include:**

1. General Store room
2. Store room for equipment and beds
3. Respiratory lab for washing of respiratory equipment
4. Sterile Room
5. Clean Utility Room
6. Dirty Utility Room
7. Linen room
8. Milk Preparation Room
9. Medication room with Refrigerators
10. Stat Lab

11. Conference and Seminar Room
12. Counselling room
13. Specialist Room which is equipped with computer and internet access
14. Doctors' Room which is equipped with computer and internet access
15. Sister's Room which is equipped with computer and internet access
16. AMO Room is equipped with computer and internet access
17. Paediatrician on-call room with en suite bathroom and equipped with central monitoring system, computer, and internet access
18. Two Medical Officer on-call rooms with en suite bathroom and equipped with central monitoring system, computer, and internet access
19. Staff Pantry with rest area
20. Female Staff toilet and changing room with lockers
21. Male Staff toilet and changing room with lockers
22. Prayer room

# 1. OBJECTIVES

1.1 To provide lifesaving, resuscitative, diagnostic, curative and stabilization of critically ill children including those recovering from elective surgery.

1.2 To provide highly specialized and skilled medical care for ill children to optimize their survival and recovery.

1.3 To coordinate multidisciplinary management and maintain good communication between patient, families, staff and other medical/surgical disciplines.

1.4 To encourage participation of family members in care and recovery of their sick child by maintaining communication and understanding with the immediate carer.

1.5 The level of care is divided into 3 as below:

| Level of care for Paediatric Critical Care Unit (PCCU) | |
|---|---|
| Level 1 PCCU | Basic Critical Care |
| Level 2 PCCU | Intermediate Critical Care |
| Level 3 PCCU | Advanced Critical Care |

1.6 These 3 levels of PCCU will operate as part of the PCCU network with the aim to:

a. Rapidly repatriate to a network of PCCU facilities appropriate to the level of care required for the child without compromising on the safety and health of the child.

b. Avoid unnecessary transfer of children to PCCU in another hospital when appropriate care can be delivered locally.

c. Reducing disruption and costs to parents due to travel and expenses.

d. Enabling improved capacity at regional centres, therefore improving access for other critically ill children requiring tertiary multidisciplinary care / advanced critical care.

## 2. SCOPE OF SERVICES

2.1 Paediatric Intensive Care Unit provides close observation, monitoring and therapies to ill children who are, or have a significant potential to be physiologically unstable. These children's care is beyond the capability of that which is available in the general paediatric ward.

2.2 Provides multidiscipline intensive care observation and monitoring including respiratory, cardiovascular support and also procedural/ postoperative care monitoring.

2.3 PICU training of paediatric, anaesthetic, emergency, various paediatric surgical discipline doctors and nurses as part of ongoing training in the unit or as attachment training.

2.4 Training of paediatric specialist as paediatric intensivist, paediatric emergency physician, paediatric anaesthetic, various paediatric surgical discipline, palliative care and family medicine specialist for Ministry of Health Malaysia and other Health Care Organisation.

2.5 Provision of educational programmes in resuscitation and paediatric intensive care such as Malaysian Paediatric Life Support (MPLS), Advanced Paediatric Life Support (APLS), Paediatric BASIC courses and Point of Care Ultrasound courses on regular basis to staffs within and outside the department.

2.6 Organize safe and timely retrieval services for critically ill children when the need arises.

2.7 Implementation of audit, registry, research for the department and continuous professional development for staff on regular basis.

## 3. ORGANIZATION

3.1 PCCU Level 2 and 3 PCCU (PHDW and PICU) shall be headed by a paediatric Intensivist working together with other paediatric intensivists, clinical specialists and paediatric nursing staff. If there is no paediatric intensivist available, the unit will be headed by a paediatrician with special interest in intensive care. PCCU Level 1 (Acute Bay) will be headed by paediatrician.

3.2 The number of consultant paediatric intensivists for a unit will depend on the workload and availability of personnel.

3.3 The medical officers working in the unit will be deployed from the common pool in the Paediatric department of the same hospital or rotated from other hospitals for further paediatric intensive training and exposure.

3.4 Doctors working in the unit may also be rotated from Anaesthesia, Emergency, Surgical and other specialities/ subspecialities.

3.5 There should be 24 hours coverage by at least one in-house medical officer on call for the PICU.

3.6 The paediatric intensivists and paediatricians are responsible for the management of the patients. Supporting specialists from other specialties/ subspecialities should be available for consultation.

3.7 All patients referred to Level 2 and Level 3 PCCU shall be treated promptly, and life supporting therapy instituted as soon as possible.

3.8 Nursing matron/sisters, preferably with post-basic qualification in intensive care will head the nursing staff in PICU.

3.9 Nurse to patient ratio should follow the norm as outline above for Level 1 to Level 3 PCCU.

3.10 Nurses working in the PICU are required to have post- basic qualification in paediatric and critical care nursing although it is acceptable that they may acquire it during the duration of their working in PICU. In the interim period, these nurses working in the above units will be supervised, credentialed and privileged according to set standards of PICU nursing log book.

3.11 Other allied health and support staff such as pharmacists, physiotherapists, radiographers, dietitians, technicians including biomedical engineering and scientific officers, cleaning staff, social workers, occupational therapists, counsellors, interpreters, secretarial, hospital attendant and clerical staff shall be assigned to the unit by the respective departments.

3.12 Assistant Medical Officers will be in-charge of maintaining and setting up of equipment, haemodynamics, and respiratory laboratory services and shall be on call for 24 hours for the unit. They may also be assisting in transfer/ transport of patients and certain procedures that they are credentialed such as echocardiography.

3.13 Ward clerk should be allocated to the PICU to facilitate the clerical management for the patients and ward.

# 4. OPERATIONAL POLICIES

## 4.1 Admission

a. All referrals to the Paediatric Critical Care Unit will be discussed between specialist of referring unit /hospital to the Paediatric Intensivist or Paediatrician in charge of PCCU

b. Source of admission

i. Inpatient children's services within the same hospital including transfer between different PCCU levels within the same hospital
ii. Operating theatres within the hospital
iii. Emergency department within the hospital
iv. Other hospitals

c. Admission criteria to PCCU Level 1/Acute Bay (Basic Critical Care)

i. Mild / non progressive upper airway obstruction
ii. Oxygen therapy plus continuous pulse oximetry plus ECG monitoring
iii. Nasal high flow oxygen therapy
iv. Non-invasive ventilation
v. Moderately severe asthma
vi. Dengue with warning signs for monitoring
vii. GCS < 12 for hourly GCS monitoring
viii. Post-operative monitoring
ix. Acutely ill children requiring close haemodynamic monitoring
x. Step down care from PICU Level 2 and 3

d. Admission criteria to Level 2 PCCU (PHDW, Intermediate critical care)

i. Nasopharyngeal airway
ii. Recurrent apnoea
iii. Tracheostomy care (First 2 weeks of tracheostomy)
iv. Upper airway obstruction
v. Lower airway obstruction
vi. Non-invasive ventilation
vii. Nasal high flow oxygen therapy
viii. Invasive ventilation if level 3 care is not available or patient is too ill to move.
ix. Acutely ill children requiring close haemodynamic monitoring
x. Vasoactive drug infusion (inotropes and prostaglandin)
xi. Diabetic ketoacidosis
xii. Dengue with warning signs for monitoring
xiii. Cardiopulmonary resuscitation in last 24 hours
xiv. Invasive arterial monitoring
xv. Central venous pressure monitoring
xvi. Acute neuromuscular disorders
xvii. Intracranial pressure monitoring
xviii. External ventricular drain
xix. Renal replacement therapy
xx. Peritoneal dialysis
xxi. Exchange transfusion
xxii. Step down care from PICU Level 3

e. Admission criteria to Level 3 PCCU (PICU, Advanced critical care)

i. Ventilation -invasive and non-invasive
ii. Tracheostomy procedure and care
iii. Vasoactive drug infusion (inotropes and prostaglandin)
iv. Diabetic ketoacidosis
v. Dengue with shock or severe disease
vi. Cardiopulmonary resuscitation in last 24 hours
vii. Invasive arterial monitoring
viii. Central venous pressure monitoring
ix. Renal replacement therapy- CVVH, peritoneal dialysis
x. Plasmapheresis
xi. Exchange transfusion
xii. External ventricular drain
xiii. Intracranial pressure monitoring
xiv. Initiation of thrombolytic therapy
xv. Respiratory failure
xvi. Upper airway obstruction

xvii. Lower airway obstruction
xviii. Acute encephalopathy and GCS <10
xix. Severe polytrauma
xx. Risk of life-threatening event; apnoea and arrhythmia
xxi. Severe metabolic, fluid and electrolyte derangement
xxii. Sepsis and shock
xxiii. Post- operative care for high-risk patients
xxiv. Acute neuro-muscular disorders
xxv. Malignancies with acute illness
xxvi. Post complex monitoring and/or therapeutic procedures, including emergency and elective surgery
xxvii. Transfer from another Level 3 PICU for further sub speciality management
xxviii. Post solid organ transplantation

f. The paediatric medical officer must clerk the case and discuss with the specialist. Good documentation is recommended in the clinical notes.

g. All critically ill patients must be immediately notified and discussed with the paediatric Intensivist/ paediatrician in charge.

## 4.2 Continuity of Care

a. The care of the patient in PCCU is the primary responsibility of the Paediatric Department.

b. In the event where another unit is involved in the care of the patient, PCCU team will coordinate the care.

c. Consultations shall be sought from relevant subspeciality when deemed necessary with or without prior consultation with the primary team. However, discussion between paediatric intensivists/paediatricians with the other team is encouraged for better patient management.

d. A handover round in the morning and evening will be carried out by the PICU team to the on-call specialist/ paediatric medical officer on call and vice versa at the end of each on call. This includes weekends and public holidays.

e. During handover, patient issues are highlighted including contingency plans. This may include anticipated overnight problems, hemodynamic status, recent investigations, medications and ventilator settings.

f. The paediatric Intensivist/ paediatrician will do regular rounds with the paediatric medical officers. They will be responsible for treatment plan, investigations and subsequent management including continuous monitoring of fundamental variables for every ill child.

g. All invasive procedures will be performed by paediatric medical officers who will be supervised or have been credentialed and privileged or by the paediatric intensivists and paediatricians.

h. Parents/caretakers will be updated and informed regularly of the child's condition and progress. They will also be encouraged to be involved in the care of the child when possible.

## 4.3 Discharge

a. Discharge criteria from PICU

   i. Patients are discharged when their need for intensive care monitoring or treatment is no longer present.
   ii. There is no longer immediate risk of deterioration, or any active interventions required.

b. The patients may be discharged to other level of care in PICU or general ward depending on the condition of the patient and the bed situation.

c. The decision to discharge patient will be done by the paediatric intensivist/paediatrician in charge.

d. The discharge summary must be completed prior to patient transfer out of PCCU Level 2 and 3.

e. At the time of discharge, there must be complete handover of the patient to the ward doctors and nurses by the PCCU doctors and nurses respectively.

## 4.4 Policy regarding Death in the PICU

a. The confirmation of death shall be done by the PICU Medical Officer or Specialist.

b. The parents or carers of the deceased child, Paediatric Intensivist / Paediatrician and the primary unit doctor on duty shall be informed of the death as soon as possible.

c. Death certificate and burial permit shall be signed by the primary unit doctor. In selected cases, this may be done by the PICU Medical Officer or Specialist, with input and consensus from the primary team. Death certificate and burial permit for medicolegal cases requiring post-mortem will be issued by the forensic doctor in charge. All medico legal cases should be notified to the police by the PICU team.

d. Consent for post-mortem should be obtained from the parents as soon as possible except in medico legal cases, in which the decision for post-mortem will be made by the police, regardless of parental preference.

e. Post-mortem should be done for the following types of deaths: -

   i. Trauma deaths (including Motor Vehicle Accidents)
   ii. Homicide / suicide
   iii. Suspected Non-accidental injury
   iv. Death from unnatural cause
   v. Where cause of death is unknown

f. Brain death:

   i. Confirmation of brain death should be done by two specialists who are experienced in the diagnosis of brain death and are not involved in organ transplantation.
   ii. Certification of brain death should be done in accordance with the Ministry of Health Consensus Statement on Brain Death 2003, and the Malaysian Medical Council Brain Death Guidelines 2006.
   iii. Time of death is at the time of confirmation of brain death (when the second test is completed). Should the patient's heart stop prior to the repeat test, that will be taken as the time of death.

iv. The patient's parents shall be informed of the brain death and the possibility of organ donation should be discussed when appropriate.
v. If the patient's family is keen for organ donation, this should be arranged in accordance with the Malaysian Medical Council Organ Donation Guideline 2006.
vi. Life-sustaining treatment such as mechanical ventilation shall be stopped after confirmation of brain death if the child is not planned for organ donation. This is done after joint discussion between the relevant disciplines involved with care, and thorough explanation of the rationale to the parents and relatives, in accordance with the Ministry of Health Clinical Practice Guideline: Withholding and Withdrawing of Life Support in Children 2005.

## 4.5 Referral and Transfer

a. Inter-Hospital Transfer

i. Patients who are referred to a PICU where a bed is not available, shall then be referred to another PICU in the region.
ii. The coordinator responsible for sourcing a PICU bed shall be the local PICU team. If the patient is in a public or private Specialist Hospital, the managing specialist team may also play a role in referral, stabilization, and transfer.
iii. Ideally all paediatric critical care inter-hospital transfers will be conducted by a specialized regional paediatric retrieval service. If such services are not available, the referring team will be responsible for the transfer, with specialist guidance from the accepting PICU.

b. Intra-Hospital Transfer.

i. If there is no paediatric critical care bed available within the hospital facility, the patient may be supported in an Adult ICU, Neonatal ICU, or Paediatric High Dependency Unit (HDU), depending on bed availability.

## 4.6 Withdrawal or withholding of life-sustaining treatment

a. When the patient has failed to respond after a period of intense treatment and further treatment is deemed futile, causing prolonged and undue suffering, serious consideration should be given to withdrawal of life-sustaining treatment (LST).

b. This is done after a joint discussion between the relevant disciplines involved with care, and a thorough explanation of the rationale to the parents and relatives, in accordance with the Ministry of Health Clinical Practice Guideline: Withholding and Withdrawing of Life Support in Children 2005.

c. Once a decision has been made for withdrawal, all therapies that do not contribute to patient comfort should be discontinued or withheld, including:

   i. CPR
   ii. Dialysis
   iii. Inotropic support
   iv. Antibiotic therapy
   v. Parenteral nutrition
   vi. Mechanical ventilation

d. The withdrawal of LST should not be regarded as an abandonment of the patient by the healthcare team. A dying patient should receive the same standard of care as other patients, and be treated with dignity, respect, and compassion at all times.

# 5. INFECTION CONTROL

The unit should adopt infection control guidelines as outlined in the Ministry of Health Policies and Procedures on Infection Prevention and Control 3rd edition, 2019.

## 5.1 Antimicrobial Stewardship

In the last 40 years, the prevalence of multidrug-resistant micro-organisms has risen alarmingly. Antimicrobial stewardship (AMS) should be practiced in PICU, in accordance with the Ministry of Health Protocol on Antimicrobial Stewardship Program in Healthcare Facilities 2014.

AMS activities such as AMS rounds, surveillance and feedback on antimicrobial use, education, audit, and formulary restrictions should be implemented in PICU with input from Paediatric Infectious Disease physicians, Clinical Microbiologists, Pharmacists and Infection Control Nurses.

The use of pharmacy-based Antibiotic Audits, measuring total Days of Therapy (DOT) in PICU can help to measure trends of antibiotic use over multi-year periods.

## 5.2 Isolation Rooms in PICU

Ideally, a patient with an airborne disease should be placed in an Airborne Infection Isolation Room.

As a minimum, PICUs should have 2 negative pressure isolation rooms to provide care for patients with airborne infections, such as tuberculosis and COVID-19. Ideally, the room should be equipped with an en suite bathroom for parent.

The airflow in the room must be designed so that the number of airborne infectious particles is reduced to a level that ensures cross-infection of other people within a healthcare facility is highly unlikely. The rooms have high rates of air exchange relative to other patient areas. This applies to both ventilation air supply and exhaust flow rates.

If an Anteroom is required, it must be provided with self-closing doors and be of adequate area to allow for the donning or removal of personal protective equipment or clothing.

## 5.3 Prevention of Healthcare-Associated Infections (HCAI)

The formulation and implementation of evidence-based care bundles in PICU have been associated with a significant reduction in hospital-acquired infection rates.

Implementation of care bundles should be considered for the prevention of Catheter-Associated Urinary Tract Infections (CAUTI), Central-Line Associated Blood Stream Infections (CLABSI) and Ventilator Associated Pneumonia (VAP) in PICU.

## 5.4 Environmental Cleaning and Disinfection

The ward shall be always kept tidy and neat, as per the current MOH guidelines:

a. The cleaning schedule shall be followed, with adequate daily cleaning of all work areas. Cleaning tasks shall follow in the order from 'clean' to 'dirty'. Floors shall be cleaned according to cleaning schedule or as necessary.
b. Use dust-retaining mops, which are specially treated or manufactured to attract and retain dust particles. Clean and disinfect high touch areas (work areas, bedrails, drip stands, bedside nursing tables, keyboards, light switches, doorknobs) with medium-level disinfectant at least daily or when visibly dirty.
c. Sinks, hand basins and surrounding floor and wall areas shall be cleaned at least daily, or more frequently as required. Hand basins shall ideally be equipped with non-touch taps with anti-splash devices.
d. Antiseptic hand wash in non-refillable dispensers and disposable paper towels shall be readily available. Clean wall, blinds or window in patient-care areas when visibly dusty or soiled and when patients are discharged. Curtains in patient-care areas shall be changed weekly and when patients are discharged. Use plastic curtain that can be decontaminated regularly (e.g. daily) if feasible.
e. Protect mattresses and pillows with water impermeable material. Clean and disinfect between patients.
f. Standard precautions apply in spills management. Confine and contain the spill by using paper towels or disposable absorbent material to absorb the bulk of the blood or body substances. Spills shall be cleaned up before the area is disinfected. Avoid aerosolisation of spilled material.

g. Terminal disinfection must be done when a patient is discharged. The bed, all reusable items and equipment in the room/area are to be cleaned and then disinfected. The bed can be used for the next patient only when it is completely dry. If possible, open the windows to air the room. The room can be used for the next admission only when it is completely dry.

## 5.5 Medical equipment

All PICU medical equipment, instruments and respiratory equipment should be cleaned and disinfected in accordance with the General Intensive Care Unit guidance specified in the Ministry of Health Policies and Procedures on Infection Prevention and Control 3rd edition, 2019.

## 5.6 Ward Airflow and Ventilation

a. PICU ventilation and airflow should be designed in accordance with the MOH Guidelines on Ventilation in the Healthcare Setting to reduce the Transmission of Respiratory Pathogens, 1st edition, July 2021.
b. Ventilation is the intentional introduction of clean air into a space while the stale air is removed. Adequate ventilation in patient care areas can play a key role in preventing and reducing infections.
c. PICU airflow ventilation rate should be at least 6 air changes per hour (ACH), or 12 ACH in places where Aerosol Generating Procedures are performed.
d. Fresh airflow should be from clean areas to less clean areas, and air should be exhausted directly to the outside, away from air intake vents.
e. Recirculating systems where no or too little fresh air is added are not recommended.
f. In recirculating central ventilation systems, the most efficient filters should be installed and upgraded, rated at a Minimum Efficiency Reporting Value (MERV)-14 level or higher, or High Efficiency Particulate Air (HEPA), taking the capabilities of the Air Conditioning and Mechanical Ventilation (ACMV) system into consideration.
g. The higher the MERV number, the greater the load on the ACMV system. An ACMV specialist may be consulted to determine the most appropriate filter compatible with the system.
h. Maintenance and changing of filters should be performed according to the manufacturer's instructions.

# 6. CLINICAL GOVERNANCE AND AUDIT

a. Audit describes the systematic evaluation of clinical outcomes against specific standards. Audit is a key component of clinical governance, to monitor and assure the quality of care delivered.
b. Audit in PICU should include monthly morbidity and mortality reviews.
c. A National Paediatric ICU Registry should be implemented, collecting details of all critically ill children in PICU, including non-identifiable patient demographics, disease categories, treatment, complications and PICU clinical outcomes (such as risk-adjusted mortality) in a national database. An example of a similar registry would be the UK PICANet. This would facilitate research activities and enable objective quality monitoring, assurance and improvement.
d. Research activities should be encouraged, including case reports, observational and experimental studies, and participation in well-designed national and international multi-centre clinical trials.
e. Clinical research in PICU should be carefully planned and designed to ensure high quality and adherence to Ministry of Health ethical and regulatory standards.
f. The following Key Performance Indicators should be measured in PICU, as detailed in the table below:

| No. | Key Performance Indicator | Numerator | Denominator | Target | Collection Frequency |
|---|---|---|---|---|---|
| 1 | Emergency readmissions to PICU within 48 hours of discharge / transfer from PICU. | Number of emergency readmissions to PICU within 48 hours of discharge / transfer from PICU. | Total number of discharges / transfer out from the PICU in period (excludes direct PICU to PICU transfers) | < 5% | Monthly |
| 2 | Rate of accidental extubation of patients | Number of unplanned extubation events | Per 100 Invasively Ventilated days | < 2 per 100 invasive ventilation days | Monthly |
| 3 | Rate of Central Line Associated Blood Stream Infections (CLABSI) | Number of Central Line Associated Blood Stream Infections (CLABSI) | Per 1000 Central Line days | < 5/1000 catheter days | Monthly |

# 7. CONTINUING PROFESSIONAL DEVELOPMENT (TRAINING AND EDUCATION)

7.1 Continuing professional development (CPD) is an essential part of PICU services. This is to ensure that PICU staff can keep abreast of rapid advancements and new developments in the field and provide high-quality care to patients under their care.

7.2 PICU CPD activities should encompass formal structured teaching as well as informal and self-directed reflective learning activities.

7.3 Paediatric Intensive Care Subspecialty training will be carried out according to the relevant Ministry of Health and Malaysian Medical Council PICU Subspecialty Training guidance.

7.4 Paediatricians should undergo mandatory PICU training for at least 3 months during their gazettement period, to gain experience and skills related to paediatric critical care.

7.5 Basic PICU training for Paediatric Medical Officers. This will be in the form of active clinical work in paediatric intensive care, case discussions and bedside teaching during rounds.

a. Training for PICU Nurses. This will be done via on-the-job training. Ideally all PICU nurses should have undergone post-basic training in paediatric and critical care nursing. Continuous nursing education is encouraged. A post-basic Paediatric Critical Care nursing program should be set up, and the ideal duration is 1 year of training at PICUs with intensivists.

b. Nurses with Paediatric Critical Care post basic qualifications should be retained in PICU as certified PICU Nurse Specialists, with opportunities for career development and promotion within PICU. This is crucial to allow retention of skilled and experienced nurse practitioners within PICU, which would directly improve quality of care, clinical outcomes, and training of junior PICU nurses.

c. PICU doctors and nurses should acquire knowledge and skills related to paediatric critical care by attending structured PICU and Life Support courses. Completion of the **Paediatric Life Support (PLS) or Malaysian Paediatric Life Support (MPLS)** course is a **minimum requirement** for PICU doctors and nurses, and completion of more advanced courses such as the Paediatric BASIC Course and Advanced Paediatric Life Support (APLS) should be encouraged over time.

## 8. ADVOCACY

8.1 PICU practitioners are privileged to have a unique insight into patterns of childhood illness and injury, some of which may be preventable through advocacy and public health measures. This could significantly reduce the number of children requiring PICU care.

8.2 PICU professionals should support and advocate for strategies to reduce preventable disease and injury among children. This may be done by directly counselling patients and families regarding issues such as smoking cessation, road safety and drowning prevention, as well as public campaigns and health education activities.

8.3 Publicly visible child advocacy activities by the PICU community could improve public awareness of child health-related issues and contribute towards the overall improvement of child health and safety.

## 9. OTHER OPERATIONAL POLICIES

1. Medical Development Division, Ministry of Health. Paediatric Services Operational Policy, January 2012.
2. Ministry of Health Consensus Statement on Brain Death 2003.
3. Malaysian Medical Council Brain Death Guidelines 2006.
4. Malaysian Medical Council Organ Donation Guideline 2006.
5. National Organ, Tissue and Cell Transplantation Policy
6. Ministry of Health Clinical Practice Guideline: Withholding and Withdrawing of Life Support in Children 2005.
7. ICU Management Protocols, Malaysian Society of Intensive Care.
8. Ministry of Health Policies and Procedures on Infection Prevention and Control 3rd edition, 2019.
9. Ministry of Health and UMMC "Guidelines on Ventilation in the Healthcare Setting to reduce the Transmission of Respiratory Pathogens", 1st edition, July 2021.
10. Ministry of Health Guidance Note on Ventilation and Indoor Air Quality for Healthcare Facilities setting during Covid-19 Pandemic, July 2021.
11. Ministry of Health Protocol on Antimicrobial Stewardship Program in Healthcare Facilities 2014.

# PAEDIATRIC NEPHROLOGY UNIT POLICIES

## 1. OBJECTIVES

To provide preventive, diagnostic, curative and rehabilitative services that are appropriate, effective, and efficient to all children with kidney diseases.

## 2. SCOPE OF SERVICES

2.1 Tertiary care for existing children with kidney-related disease already under paediatric nephrology care is offered up to 18 years of age.

**Note:** *New referrals for children above 12 years old with kidney disease will be under adult nephrology care, unless discussed otherwise, on a case to case basis*

2.2 Advocacy role for issues related to kidney health and kidney disease in children.

2.3 Training of paediatricians, medical officers and nurses/ paramedics in basic aspects of paediatric nephrology.

2.4 Research.

## 3. COMPONENTS

The service components in paediatric nephrology comprise the following: -

3.1 Inpatient ward/beds

3.2 Clinics

3.3 Day Care Unit

3.4 Peritoneal dialysis unit

3.5 Haemodialysis unit

3.6 Transplant unit

3.7 Referral: Consultations by telephone, fax and virtual & Regional coverage

## 4. ORGANISATION

4.1 The unit shall be headed by a Paediatric Nephrologist.

4.2 The number of paediatric nephrologists will depend on the scope of service provided by the unit.

a. Level 3: Minimum 3 paediatric nephrologists
b. Level 2: Minimum 1 paediatric nephrologist
c. Level 1: At least 1 general paediatrician acting as Liaison

4.3 The number of medical officers in the unit will depend on the availability of medical officers as well as norm set by Ministry of Health. Proposed number of medical officer ratio to number of gazetted paediatric nephrology inpatient beds:

a. Level 3: 1 medical officer to every 2 beds
b. Level 2: 1 medical officer to every 4 beds
c. Level 1: 1 medical officer to every 8 beds

4.4 The nursing, paramedic staff and assistant medical officer, medical attendants requirements: refer to Appendix

4.5 Support Staff requirement:

Physiotherapist, Pharmacist (Renal), Social Worker, Play Therapist, Occupational therapist, Psychologist, Counsellor, Teacher, Rehabilitation service & Renal dietician.

# 5. OPERATIONAL POLICIES

## 5.1 Admission and discharge policies

a. Admission to paediatric nephrology unit can be from:

   i. Elective procedures or surgeries
   ii. Paediatric Nephrology Clinic
   iii. Emergency and Trauma Department
   iv. Direct referrals from other hospitals
   v. Transfer in from other wards

b. On admission, all cases shall be seen by the medical officer within 1-2 hour and by the specialist within 24 hours. Ill cases shall be seen immediately.
c. Ill but stable cases shall be placed in the acute cubicle for closed monitoring. Unstable cases shall be admitted to Paediatric High Dependency Unit or Paediatric Intensive Care Unit after consultation with the respective specialists/consultants involved.

**Discharges**

i. Decision for discharge shall be made by the specialist.
ii. Cases requiring follow up shall be given appointments upon discharge.

## 5.2 Outpatient Clinics

a. Patients shall be seen in Paediatric Nephrology Clinic by appointment basis.
b. Patients shall be seen by specialists or medical officers supervised by specialists
c. Dialysis patients and transplant recipients who develop acute medical problem shall be advised to contact the clinic staff to arrange for a review.
d. Emergency cases should be directed to emergency department.

## 5.3 Day Care Unit

a. At facilities with day care services, patients who require treatment or short procedure under local anaesthesia may be seen as day care outpatients.

## 5.4 Dialysis unit (PD Unit and HD Unit)

a. This unit shall provide peritoneal dialysis/ haemodialysis treatment to patients with end stage kidney failure as well as short term dialysis treatment to children with acute kidney injury.
b. Ideally children should be dialysed in paediatric dialysis units. However, in many paediatric nephrology units, the small number of children on chronic dialysis is unable to sustain a separate paediatric peritoneal dialysis unit/paediatric haemodialysis unit. These children should be cared for by staff in an adult unit who are familiar with the special considerations in paediatric dialysis.
c. There are documented policy at PD unit /HD unit that cover essential aspects of PD and HD treatment including: physical facilities, equipment, consumables, human resource, training and monitoring of pd patients, infection control measures, quality measures and disaster management.

## 5.5 Kidney Transplantation

a. Kidney transplantation should be carried out using a kidney from a suitable deceased donor or a live-related kidney donor. The practice and ethics of transplantation shall be guided by the latest national policies on organ, tissue and cell transplantation.

## 5.6 Referrals

Outpatient referral to Paediatric Nephrology Unit:

a. All new referrals for non-urgent cases shall be made via the clinic appointment counter with referral letters.
b. All new referrals for urgent cases shall be discussed with specialist for earlier clinic appointment date.

Inpatient referral to Paediatric Nephrology Unit:

a. All inpatient referrals shall be discussed with medical officer or specialist and be seen within 24 hours.
b. Urgent cases shall be seen as soon as possible.

Outgoing referrals to other units/hospitals:

a. Department policies and procedures apply.

Outgoing referrals to adult nephrology units (Transition) :

For those who have reached 16-18 years old, and to ease transition of care from the child unit to the adult unit, the transition process if possible is initiated 6-12 months before this period, whereby the patient is introduced to the adult nephrologist and then transferred to the adult unit.

a. Should dialyser be reused, a separate area for the re-processing of dialysers shall be provided with automated re-processors with pressure check and total cell volume measurement.
b. Stringent measures should be taken by HD centres to prevent outbreaks of respiratory tract pathogens.
c. HD centres should control the flow of patients to the centre.
d. Education of patients with instruction about hand hygiene, respiratory hygiene, cough etiquette and disposal of contaminated items.
e. Health care worker should be trained in infection control and prevention including appropriate use of personal protective equipment.

## 5.7 Call duties

a. In smaller units, the medical officer / specialist on-call for general paediatrics is also responsible for the care of paediatric nephrology patients during on-call hours.
b. The Level 3 paediatric nephrology unit may have a medical officer and specialist on call every day to care for all paediatric nephrology inpatients as well as referrals.

## 5.8 Documentation

a. Department policies and procedures apply.
b. Data of patients who underwent renal biopsy will be submitted to the National Registry.
c. Data of patient on chronic dialysis will be submitted to the National Registry.
d. Ensure dialysis patients are counselled and placed on the transplant waiting list.

## 5.9 Training

Paediatric nephrology training

a. Standards and curriculum on training of paediatric nephrologist apply.

Medical officers (MO)

a. This will be in the form of active clinical work in all areas of paediatric nephrology and case discussions, weekly tutorials and teaching Rounds

Nurses

a. This will be on-the-job training. Ideally all nurses in paediatric nephrology unit should have undergone post-basic paediatric and/or renal nursing course.
b. Continued nursing education is encouraged.

## Appendix

Paediatric Nephrology Units Norms for staff, equipment and medications
There are 3 stages for the Level of Care in the Paediatric Nephrology services.
Definition of Level of Care:

| | |
|---|---|
| Level 1 | Provides in and out paediatric nephrology services, with or without provision of dialysis support. This is usually performed with the guidance from the visiting paediatric nephrologist. |
| Level 2 | Provides paediatric acute and chronic kidney replacement therapy in addition to the scope mentioned for Level 1 care. The service is provided at state/regional hospitals by resident paediatric nephrologists. |
| Level 3 | Provides full range of services as mentioned for Level 2 care with additional services to include perioperative care of paediatric kidney transplant recipients, diagnostic, surgical/urological and invasive interventional procedures. The service is provided in a fully equipped centre with multidisciplinary teams not limited to paediatric nephrologist, paediatric surgeon, general/paediatric urologist, transplant surgeon, anaesthesiologist, paediatric intensivist and interventional radiologist. |

# Recommended staffing Norms

## Level 2 or Level 3 Paediatric Nephrology Care

| | Norm | Example for unit covering<br><br>1 million children population |
|---|---|---|
| **Medical Personnel** | | |
| Transplant surgeon (Level 3) | 2 surgeons per unit | 2 FTE* |
| Paediatric Nephrologist | 1 per 200 000 children population | 5 FTE |
| Medical Officers | 1 per 2 beds | 3-6 FTE (6-12 beds) |
| **Nursing Personnel** | | |
| Matron | 1 per unit | 1 FTE |
| Sister | 1 in PD unit<br>1 in HD unit<br>1 Nephrology Ward | 3 FTE |
| Staff Nurse | PD: 1 FTE for every 10 patients<br><br>HD:<br>Less than 5 years old, the nurse-to-patient ratio is 1:1<br><br>Older than 5 years old the nurse-to-patient ratio is 1:2<br><br>Acute dialysis therapy Nurse-to-patient ratio is 1:1 | 3 FTE (30 patients)<br><br>2 FTE (2 patients)<br><br>4 FTE (8 patients)<br><br>5 FTE |

| Allied Health Personnel | | |
|---|---|---|
| Assistant Medical Officer | Chronic dialysis<br>1 per 5 children on dialysis<br><br>Acute dialysis | 6 FTE (30 patients)<br><br>5 FTE |
| Medical attendants | 1 per 5 children on dialysis | 6 FTE (30 patients) |
| Renal Pharmacist | 1 in Nephrology Ward,<br>1 in Dialysis unit, Clinic | 2 FTE |
| Renal dietician | 1 in Nephrology Ward<br>1 in Dialysis unit, Clinic | 2 FTE |
| Social worker | 1 per unit | 1 FTE |
| Counsellor | 1 in Nephrology Ward,<br>1 in Dialysis unit, Clinic | 2 FTE |
| Clerk | 1 in Nephrology Ward<br>1 in Dialysis unit | 2 FTE |

FTE* Full-Time equivalent

## Level 1 Paediatric Nephrology Care

| | | |
|---|---|---|
| | Norm | |
| **Medical Personnel** | | |
| Trained Paediatrician | 1 – 2 per hospital | 1 – 2 FTE |
| Medical officers | Shared with General Paediatrics | |
| **Nursing Personnel** | | |
| Sister & Staff nurse | Shared with General Paediatrics | |
| **Allied Health Personnel** | | |
| Assistant Medical Officer | Shared with Paediatric Ward | |
| Medical attendants | Shared with General Paediatrics | |

FTE* Full-Time equivalent

# Fittings and Equipment

## Perioperative Kidney Transplant Services

| Fittings | |
|---|---|
| Negative Pressure room<br>Positive Pressure room | 2<br>2 |
| **Water distribution loop**<br><br>In built Water Inlet port and Drainage port, piping | |
| **Medical gases for Each bed:**<br><br>Oxygen, Suction outlet, Air outlet | 1 each |
| **Electrical points for Each bed:**<br><br>Normal points, Emergency points | 6, 4 |
| **UPS** | 1 every 1 workstation |
| **Beds and Cots for Each room:**<br><br>Intensive Care Bed | 1 |

| Equipment | |
|---|---|
| Haemodialysis machine | 1 every 1 room |
| Portable Reverse Osmosis (RO) system machine (Unit without inbuilt water treatment system) | 1 every 1 room |
| Automated Peritoneal Dialysis machine | 1 every 1 room |
| Portable HEPA filter (UV air purifier) | 1 every 1 room |
| Double Filtration Plasmapheresis machine | 1 every 1 centre |
| Fluid management docking system<br>Infusion pressure 500ml<br>Syringe pump<br>Infusion pump<br>Warmer patient air/blanket<br>Warmer blood | 1 every 1 bed<br>1 every 1 bed<br>6 every 1 bed<br>2 every 1 bed<br>2 every 1 bed<br>1 every 1 centre |

| | |
|---|---|
| 8-channel Cardiorespiratory monitor (ECG, Resp, $O_2$ Sat, NIBP, Temp, Invasive BP monitoring), 2 module IBP | 1 set every 1 bed |
| Trolleys (Patient transfer) with $O_2$ tank stand and Drip stand | 1 every 1 centre |
| Transport Cardiorespiratory monitor | 1 every 1 centre |
| Ultrasound Machine with Doppler and Paediatric transducer (For cardiac, abdominal, head and vascular imaging) | 1 every 1 centre |

## Acute Dialysis Services

| Fitting | |
|---|---|
| **Water distribution loop**<br><br>In built Water Inlet port and Drainage port, Piping<br>▪ Nephrology/Dialysis Cubicle<br>▪ Level 3 Paediatric Intensive Care Unit<br>▪ Level 2 Paediatric High Dependency Ward | <br><br>Every bed<br>Every bed<br>Minimum 50% of the beds |
| **Medical gases for Each bed:**<br><br>Oxygen, Suction outlet: 1 each | 1 Panel every 1 bed |
| **Electrical points for Each bed:**<br><br>Normal points:6, Emergency points: 4 | 1 Panel every 1 bed |
| **UPS** | 1 every 1 workstation |
| **Beds and Cots**<br><br>Bed 4 section height adjust 1 each | Every bed |

| Equipment | |
|---|---|
| Haemodialysis machine<br><br>▪ Nephrology/Dialysis cubicle<br>▪ Level 3 Paediatric Intensive Care Unit<br>▪ Level 2 Paediatric High Dependency Ward | <br><br>1 every 4 beds<br>1 every 5 beds<br>1 every 10 beds |
| Portable Reverse Osmosis (RO) system<br>(In unit without inbuilt water treatment system)<br><br>▪ Nephrology/Dialysis cubicle<br>▪ Level 3 Paediatric Intensive Care Unit<br>▪ Level 2 Paediatric High Dependency Ward | <br><br>1 every 4 beds<br>1 every 5 beds<br>1 every 10 beds |
| Continuous Renal Replacement Therapy Machine<br><br>▪ Level 3 Paediatric Intensive Care Unit | <br><br>1 every 5 beds |
| Automated Peritoneal dialysis machine<br><br>▪ Nephrology/Dialysis cubicle<br>▪ Level 3 Paediatric Intensive Care Unit<br>▪ Level 2 Paediatric High Dependency Ward | <br><br>1 every 3 beds<br>1 every 4 beds<br>1 every 10 beds |
| Haemodiafiltration machine | 1 every 1 centre |
| Syringe pump<br>Infusion pump | 4 every 1 bed<br>1 every 1 bed |
| 6-channel cardiorespiratory monitor (ECG, Resp, $O_2$ Sat, NIBP, Temp, Invasive BP monitoring), 2 module IBP | 1 set every 1 bed |
| Ultrasound Machine with Doppler and Paediatric transducer (For cardiac, abdominal, head and vascular imaging) | 1 every 1 centre |

## Paediatric Nephrology Ward

| Fitting | |
|---|---|
| Negative Pressure room | 2 every 1 ward |
| **Medical gases for Each bed:** | |
| Acute bay: Oxygen 1, Suction outlet 1, Air outlet 1 | 1 Panel every 1 bed |
| Non acute bay: Oxygen 1, Suction outlet 1 | 1 Panel every 1 bed |
| **Electrical points for Each bed:** | |
| Acute bay: Normal points 6, Emergency points 4 | 1 Panel every 1 bed |
| Non acute bay: Normal points 4, Emergency points 2 | 1 Panel every 1 bed |
| **UPS** | 1 every 1 workstation |
| **Beds and Cots**<br>▪ Acute Bay: Bed 4 section height adjust<br>▪ Non Acute Bay areas: Bed / Standard size children's cot/ adult cots | Every bed |

| Equipment | |
|---|---|
| Syringe pump | 2 every bed |
| Infusion pump | 1 every bed |
| **Equipped Resuscitation cart** | **1 every 1 ward** |
| Defibrillator with child and adult pad Cardiorespiratory monitor | 1 every centre |
| ▪ Acute bay and isolation room:4-channel cardiorespiratory monitor | 1 every 1 bed |
| ▪ Non-acute bay: Electronic BP Monitors with different size cuffs | 1 every 4 beds |
| Aneroid BP sets with different size cuffs on mobile stand and basket | 4 every 1 ward<br>1 every 1 ward<br>1 every 5 beds |
| ECG machine (ECG 3 channel 12 lead) | 1 every 1 ward |
| Pump enteral feeding | |
| Refrigerator for Medication | |

| | |
|---|---|
| **PC workstation (ICT system)** | **3 every 1 workstation** |
| Laptop/notebook | 3 every 1 workstation |
| Printer | 3 every 1 ward |
| Transport Cardiorespiratory monitor | 1 every 1 ward |
| **Procedure room** | |
| Ceiling Mounted Light procedure / Examination | 1 every 1 room |
| Portable light exam | 2 every 1 room |
| Biopsy Gun | 1 every 1 ward |
| Microscope phase contrast (Compound microscope with polarising filter), connect to camera and computer | 1 every 1 ward |
| Infrared vein finder (Vein illumination) | 1 every 1 room |
| Digital Weighing scales: 1 infant, 1 sitting and 1 standing scales | 1 each |
| Digital Stadiometer: 1 for height, and 1 for length measurements | 1 each |
| Ultrasound Machine with Doppler and Paediatric transducer (For cardiac, abdominal, head and vascular imaging) | 1 every 1 center |
| Ambulatory blood pressure monitoring machine | 1 every 1 center |
| Bio impedance spectroscopy device | 1 every 1 center |

## Hemodialysis Centre

| Fitting | |
|---|---|
| Haemodialysis station Serology Negative room | 1 |
| Reprocessing room (unit that practice reprocessing) | 1 |
| Janitor room | 1 |
| Wash Basin with elbow tap | 1 |
| **Water treatment Plant** | |
| Water distribution loop and water treatment system | |
| Reverse osmosis (RO) water tank for reprocessing loop | |
| In-built Water Inlet port and Drainage port for each HD station | |
| Appropriate capacity for number of HD station in dialysis unit | |

| | |
|---|---|
| Medical gases for Each bed: Oxygen, Suction outlet: 1 each | 1 Panel every bed |
| Electrical points for Each bed :Normal points 6, Emergency points 4 | 1 Panel every bed |
| UPS | 1 every 1 workstation |
| **Beds and Cots**<br><br>Chair haemodialysis / Bed: 1 to every HD station<br>Table overbed mobile, Locker bedside, Chair for visitor/ caretaker: 1 each | <br><br>1 every 1 HD station<br><br>1 set every 1 HD station |
| Haemodialysis machine Serology Negative room<br>Haemodiafiltration machine Serology Negative room | 1 every 1 HD station<br>1 every 3 dialysis station |
| Dialyser reprocessing system automatic:<br>Seronegative HD reprocessing room | 1 reprocessing machine for every 3 HD stations |
| Autodilutor for each reprocessing loop | 1 every room |
| Dialysis Filter Rack (1 rack for 30 slots) | 1 |
| Equipped Emergency Cart<br>Defibrillator with child and adult pad | 1 every 1 centre<br>1 every 1 centre |
| 4-channel cardiorespiratory monitor (ECG, Resp, $O_2$ Sat, NIBP, Temp, Invasive BP monitoring)<br>Electronic BP Monitors with different size cuffs | 2 every 1 centre<br><br>1 every 2 HD stations |
| Digital Weighing scales: Platform scales / sitting scales<br>Digital Stadiometer: 1 for height, and 1 for length measurements | 1 every 1 HD centre<br><br>1 every 1 HD centre |
| Bioimpedance spectroscopy device ( body composition monitor) | 1every 1 centre |
| Transonic flowmeter machine | 1 every1 centre |
| Activated clotting time machine | 1 every 1 centre |
| Portable HEPA filter (UV air purifier) | 2 every 1 centre |
| Syringe pump<br>Pump infusion volumetric | 1 every 1 HD station<br>1 every 1 HD station |

## Peritoneal Dialysis Centre

| Fitting | |
|---|---|
| Consultation Room | 2 |
| Wash basin with elbow tap | 1 |
| **Toilet** (Facilities for disposal of dialysate) | 1 |
| **Medical gases for Each couch:** Oxygen, Suction outlet: 1 each | 1 Panel every couch |
| **Electrical points for Each couch:** Normal points 4, Emergency points 2 | 1 Panel every couch |
| **UPS** | 1 every 1 workstation |
| **Beds and Cots**<br><br>Couch height adjust<br>Cabinet filling with drawer | <br><br>1 every 1 room<br>2 every 1 room |

| Equipment | |
|---|---|
| **PD exchange station**<br><br>Table for PD exchange (Suitable height for children and young people)<br>PD exchange chair<br>Drip stand with drainage bag hook<br>Hanging scale | <br><br>1 set every 1 PD station |
| Automated Peritoneal Dialysis Machine | 2 every 1 room |
| 4-channel cardiorespiratory monitor (ECG, Resp, $O_2$ Sat, NIBP, Temp, Invasive BP monitoring)<br>Electronic BP Monitors with different size cuffs on mobile stand and basket, or mounted | 1 every 1 PD centre<br><br>1 every 1 room |
| Digital Weighing scales: Sitting scales<br>Digital Stadiometer: 1 for height, and 1 for length measurements | 1 every 1 PD centre<br><br>1 every 1 PD centre |
| Electrical points for Each couch: Normal points 4, Emergency points 2 | 1 Panel every couch |
| Bioimpedance spectroscopy device (Body composition monitor) | 1 every 1 centre |
| Syringe pump<br>Pump infusion volumetri | 1 every 1 PD centre<br>1 every 1 PD centre |

## Dialysis Unit Store

| Fitting | |
|---|---|
| Dialysate store (Fluid store) | 1 room |
| Chemical store | 1 room |
| Equipment store | 1 room |
| General store | 1 room |

| Equipment | |
|---|---|
| **Rack with platform** | |
| Racking pallet (Rack with platform 4-5 level) | 5 every 1 store |
| Pallet 4 x 4 per level plus additional 10% | 1 pallet every 1 level plus additional 10% |
| Kickstep on spring castors | 1 every 1 store |
| Ladder | 1 every dialysis centre |
| Truck pallet hand 2000kg with lifting height | 1 every dialysis centre |
| Trolley platform (up to 200kg) | 1 every 1 store |
| Shopping trolley/ cart | 1 every 1 store |

## References:


1. The National Haemodialysis Quality Standards 2018 MOH/P/PAK/395.18 (QAP)
2. National Peritoneal Dialysis Quality Standards 2020 MOH/P/PAK/436.20 (GU)
3. Nephrology Services Operational policy 2nd Edition 2017 MOH/P/PAK/348.17 (BP)
4. Unrelated living organ donation Policy and Procedures 2011 MOH/P/PQK/221/11(BP)
5. American Board of Pediatrics, Pediatric Physicians Workforce Data Book, 2020-2021, Chapel Hill, NC: American Board of Pediatrics, 2021
6. ESRD Network #14 Medical Review Board Standards of Care for ESRD Patients in the outpatient peritoneal dialysis setting. 2006
7. Renal Association Clinical Practice Guideline on peritoneal dialysis in adults and children. BMV Nephrology 2017;18:333 Graham Woodrow, Stanley L Fan, Christopher Reid et al.
8. Executive summary of the Korean Society of Nephrology 2021 Clinical Practice Guideline for optimal Haemodialysis treatment. Kidney Research and Clinical Practice 2021;40(4):578-595 Ji Yong Jung, Kyung Don Yoo, Eunjeong Kang et al

# PAEDIATRIC NEUROLOGY UNIT POLICIES

## 1. OBJECTIVES

### General Objective:-

To provide holistic and optimum care for children with neurological disorders including neuro-rehabilitation services through a team of trained, caring, dedicated personnel with appropriate equipment, adequate treatment facilities and an excellent organizational system and network.

### Specific Objectives:-

1.1 To provide diagnostic, therapeutic and rehabilitative services that are appropriate, effective, and efficient in a timely manner to children with neurological disorders.

1.2 To introduce new services while consolidating currently available ones and to further expand and develop the subspecialty of Paediatric Neurology.

1.3 To ensure that the level of knowledge and skill of its personnel continue to expand and improve by being actively involved in continuing medical education and professional development.

1.4 To become an advocacy centre for children with neurological disorders and neurodisability, and to offer related health education to patients, parents, care-givers and the public.

1.5 To promote and develop a culture of excellence in learning, training and teaching, and conducting research in paediatric neurology.

## 2. SCOPE OF SERVICES

The Paediatric Neurology unit shall provide the following services:

2.1 Secondary and tertiary outpatient and inpatient care for children with neurological disorders.

2.2 A full range of paediatric neurophysiological services such as routine and long term / inpatient video EEG, EMG, nerve conduction study, VEP and SSEP.

2.3 Day Care treatment for patients who do not warrant admission such as intramuscular botulinum toxin injection.

2.4 Specific Paediatric Neurology services (some available in regional centres):

a. Full spectrum of acute and chronic paediatric neurological disorders
b. Comprehensive epilepsy evaluation and treatment including:
    i. Epilepsy surgery
    ii. Ketogenic diet
    iii. Vagal nerve stimulation
c. Neuromuscular disorders
d. Movement disorders
e. Childhood Stroke
f. Neurogenetic disorders
g. Cerebral Palsy / Neurodisability (in collaboration with rehabilitation and other related disciplines)
h. Neuro-oncology (in collaboration with neurosurgery and oncology)
i. Neuro-palliative care (in collaboration with palliative care paediatrician)

2.5 Consultation services for paediatric neurology subspecialty care.

2.6 Training of doctors, nursing staff and other allied health professionals in paediatric neurology, neurophysiology and neurodisability.

2.7 To play an advocacy role for issues related to paediatric neurology and neurodisabilities.

2.8 To conduct research in paediatric neurology and neurodisabilities.

2.9 To be part of a multidisciplinary team managing children with Developmental disorders in Child Developmental Centres

# 3. COMPONENTS

The following are the components of Paediatric Neurology services.

## 3.1 Ward

The Paediatric Neurology inpatient services may be provided in a dedicated paediatric neurology ward or within a designated general paediatric ward or part of a paediatric neuroscience ward together with other related disciplines.

## 3.2 Clinics

The Paediatric Neurology outpatient services are conducted at the general paediatric specialist clinic complex. Some of the combined clinic sessions such as the combined neuro-nephrology clinic and combined cerebral palsy multidisciplinary clinic may be conducted in a suitable clinic space elsewhere in the hospital. In hospitals with a Child Developmental Centre, Neurodisability-related outpatient services (such as spina bifida, tuberous sclerosis, movement disorder, neuromuscular, cerebral palsy and neuropalliative clinics) may be conducted at these centres.

## 3.3 Ambulatory / Day Care Centre

Day care treatment or procedures may be conducted at the day care centre.

## 3.4 Paediatric Neurophysiology Laboratory

Ideally, paediatric neurophysiology services should be under the paediatric neurology unit. However, if there are any constraints, this service is provided in a shared facility with the adult neurophysiology laboratory.

a. This facility will provide a full range of paediatric neurophysiological services such as routine and video EEG, EMG, nerve conduction study, VEP and SSEP.

b. Inpatient Neurophysiology services encompassing long term video telemetry monitoring for further detailed evaluation of patients with refractory epilepsy.

## 4. ORGANIZATION

The unit shall be headed by a consultant paediatric neurologist appointed by the Ministry of Health. Ideally, there should be 2-4 paediatric neurologists at each of the six regional paediatric neurology centres (Hospital Tunku Azizah, Hospital Pulau Pinang, Hospital Sultan Ismail Johor Bahru, Hospital Raja Perempuan Zainab II, Hospital Wanita dan Kanak-Kanak Sabah and Hospital Umum Sarawak), and at least 1 paediatric neurologist in all level 3-4 state hospitals).The other members of the team would be designated general paediatricians, paediatric neurology fellows, medical officers, sisters, staff nurses and medical assistants.

All the services will be provided during office hours. Inpatient after-office-hour services will be provided by the on-call team of medical officers and specialists. Tele-consultation services will be provided by the consultant paediatric neurologist as and when required. (Or on a rotation basis if there is more than one consultant paediatric neurologist).

Paediatric Neurophysiology Services:

a. Outpatient/inpatient services: EEG/ NCS/ EMG / EP
b. EEG /video-telemetry /EP procedures are carried out by trained Medical
c. Assistants (Penolong Pegawai Perubatan).
d. NCS/EMG procedures are carried out by paediatric neurologists, assisted by trained Medical Assistants (Penolong Pegawai Perubatan).

# 5. OPERATIONAL POLICIES

**a. General – As for General Paediatric Services**
**b. Specific: Paediatric Neurology**

## Component 1: Ward

### 5.1 Admission Policies

Admission to the Paediatric Neurology ward can be from:-

a. general paediatric outpatient clinic at the hospital
b. paediatric neurology clinic
c. other subspecialties / wards within the hospital
d. accident and emergency department
e. direct referrals from other hospitals MOH health facility and private health facilities (after consultation with the paediatric neurologist)

The Paediatric Neurology ward shall receive admission every day during the office hours. If after office hours, admission will be to the designated general paediatric ward.

### 5.2 Referrals

Referral to the Paediatric Neurology unit:

a. Referrals can come from any medical practitioners.
b. For non-urgent cases, the unit specialist and doctors will arrange to see the patients in the Paediatric Neurology clinic on a scheduled appointment.
c. Inpatient referral from other wards will be seen by the designated team of specialists and medical officers in the referring ward.
d. Emergency cases shall be seen at the Emergency Department and admitted to the paediatric ward if necessary. Direct admission to neurology unit can be arranged directly with the unit specialist.
e. The patient, after treatment, either as an outpatient or inpatient, may be referred back to the referring doctor for follow-up. A reply letter and / or a small note book (to be kept by the parents) to the referring doctor should be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent management of the patient.

f. For children with epilepsy, an epilepsy diary should be given to the parent.
g. A daily neurology specialist on-call roster should be made available on monthly basis if there are more than one resident neurologists.

## 5.3 Documentation of clinical notes

a. The Paediatric Neurology unit's specialist should ensure that all doctors in the unit make accurate, comprehensive, and legible documentation of clinical notes.

   Documentation shall include:

   i. Patient identification data
   ii. Clinical history and examination
   iii. Investigations and results
   iv. Treatment given
   v. Procedures undertaken and reasons
   vi. Follow-up notes and consultation

b. Communication with the patient and family, other doctors, related authorities, should also be properly documented.
c. Case summaries shall be completed, and case notes despatched to the Medical Records Department within 3 working days from the day of discharge.
d. Medical reports shall be prepared and despatched to the Medical Records Department within 30 days from the date of request. For cases where the medical officer treating the patient is not available, another medical officer in the department shall be assigned to prepare the report.

## 5.4 Discharge Plan

Discharge summary of clinical progress and treatment plan, especially for chronic patients, particularly patients referred from other hospitals, are encouraged to be provided. The parent / guardian will make the necessary payment at the '*Kaunter Hasil*' in the hospital. A receipt will be given and this would be returned to the ward clerk / staff who would then enter the receipt number into the admission form. The nurse will then give the medication prescription slip and appointment card to the parent / guardian before the patient is allowed to go home.

## Component 2 and 3: Clinics and Day Care Treatment

Upon receiving referrals from private clinics / hospital, health care centre or other hospitals, an appointment at the Paediatric Neurology clinic will be scheduled. On the day of appointment, patients will be advised to register themselves at the registration counter of the Paediatric Specialist Clinic. An outpatient card will be given and a waiting number to the appropriate room will be provided.

Selected follow up patients can be reviewed by tele-consultation in virtual clinic at periodic intervals. Some patients are also given scheduled close phone call reviews to monitor their progress or response to change in anti-seizure medication.

a. All patients are to be seen only on appointment basis.
b. Unscheduled walk-in patients are not encouraged, but if there are walk in patients, the patient would be managed according to the urgency and nature of the problem after consult with neurology team.
c. All internal and external referral cases shall be accompanied by a referral letter, which shall be presented to the clinic reception counter.
d. Referral via telephone call is to be backed by a referral detailing the case at the time of appointment.
e. Non-urgent referrals can be sent via a designated email.
f. Upon receiving referral from private clinics, health care centres or other hospitals, an appointment at the Paediatric Neurology clinic will be scheduled within 3 months for non-urgent /elective cases.
g. The specialist in charge of the clinic shall decide the appointment date according to the urgency of individual case based on the information given in the referral letter.
h. All patients attending the neurology clinic shall be seen by a neurology medical officer, paediatric neurology clinical fellow or paediatric neurologist.
i. All major decision on management and treatment shall be made by or discussed with the paediatric neurologist in charge.
j. Patients shall be seen within 90 minutes from the time of registration. To facilitate this, patients shall be given staggered appointments.
k. The neurology clinic staff shall handle any rescheduling appointment (e.g. unexpected public holiday) and the changes shall be informed to the patient or next of kin by phone.

## Appendix:

### STAFFING NORMS:

- Paediatric Neurologist: 1:100 000 children population.
- Paediatric Neurologists: 2-4 in the six regional paediatric neurology centres and at least 1 at level 3-4 state hospitals.
- Paediatric Neurology Fellow: 1-2 per trainer at designated training hospitals
- Medical officers: 2-4 by rotation basis for 3 months.
- Medical Assistants: 2-3 paediatric neurology trained MAs to perform neurophysiology tests in every state hospital. In regional centres, with pre-surgical monitoring services, at least 4-6 MAs are required.
- Staff Nurses: according to set general paediatric norms; at least 2 staff nurses in the paediatric neurology team (ideally trained in neurology / epilepsy).

## EQUIPMENT:

- Standard Equipment in clinic and ward.

### Paediatric Neurophysiology Lab:

- Two or more EEG recording machines (including1 portable EEG), with adequate memory to perform prolonged recordings.
- Dedicated inpatient video-telemetry room to perform overnight and long hours / days of recording.
- At least 1 NCS / EMG / EP machine (preferably with portable function).

## References:

1. Paediatric Services Operational Policy
2. Garis Panduan Pelaksanaan Klinik Virtual di Hospital (BPPKKM 2020)

# PAEDIATRIC CARDIOLOGY UNIT POLICIES

## 1. OBJECTIVES

To provide comprehensive care for patients with congenital heart disease and children with acquired heart disease.

## 2. SCOPE OF SERVICES

2.1 Diagnosis and treatment of patients with congenital heart disease at any stage of their lives (from Foetal, neonatal, childhood to adult lives)

2.2 Diagnosis and management of children with acquired heart diseases (rheumatic heart disease, cardiomyopathies, arrhythmias, pulmonary hypertension, endocarditis etc.)

2.3 Providing family-centred holistic care which include counselling, psychological and social support to the patients and families suffering from the above cardiac disorders.

2.4 Communicate and coordinate patient care with cardiac surgical and other paediatric subspecialty services as required and work within multidisciplinary teams for optimal health outcomes.

2.5 Transition care from paediatric to adult cardiology service

2.6 Advocacy role for issues related to congenital heart disease

2.7 Training of paediatric cardiologists, medical officers, nurses and paramedics on paediatric cardiology.

2.8 Clinical and basic scientific research in the field of congenital and paediatric acquired heart disease.

## 3. COMPONENTS

3.1 Outpatient clinics: Paediatric Cardiology clinics, Adult Congenital Heart Disease clinics

3.2 Inpatient wards:

a. Paediatric Cardiology Ward
b. Adult Cardiology Ward
c. Cardiothoracic Surgery Ward

3.3 Intensive care units:

a. Paediatric Intensive Care Unit
b. Neonatal Intensive Care Unit
c. Cardiothoracic Intensive Care Unit
d. Paediatric High Dependency Ward

3.4 Non-invasive cardiac laboratory:

a. Transthoracic echocardiography
b. Transoesophageal echocardiography
c. Foetal echocardiography
d. Holter test
e. Ambulatory blood pressure monitoring
f. Exercise test

3.5 Invasive cardiac catheterization laboratory:

a. Diagnostic cardiac catheterization service
b. Catheter interventions service
c. Electrophysiology and pacing services

3.6 Radiology departments:

a. Cardiac computer tomography imaging
b. Cardiac magnetic resonance imaging

3.7 Cardiac surgical operating theatres:

a. Intraoperative transoesophageal/epicardial echocardiography
b. Hybrid procedures

# 4. ORGANIZATION

4.1 The unit shall be headed by a senior consultant paediatric cardiologist

4.2 The number of consultant paediatric cardiologists will depend on the scope of service provided by the unit.

a. Level 3: At least 3 to 4 consultant paediatric cardiologists which may include paediatric cardiologists subspecializing in special areas such as cardiac imaging, catheter interventions, electrophysiology and arrhythmias, adult congenital heart and pulmonary hypertension, cardiac intensive care, Foetal cardiology etc
b. Level 2: At least 1 to 2 consultant paediatric cardiologists
c. Level 1: At least 1 paediatrician trained in special areas (cardiology)

4.3 The number of medical officers in the unit will depend on the availability of medical officers as well as the norm set by the Ministry of Health on specialist to medical officer ratio.

4.4 The nursing and paramedic staff requirements: refer to Appendix

# 5. OPERATIONAL POLICIES

## 5.1 Admissions and Discharges

a. Admission to the Paediatric Cardiology Ward can be from

i. Home for elective procedures or surgeries
ii. Paediatric Cardiology Clinic or General Paediatric Clinic
iii. Emergency and Trauma Department
iv. Transfer-in from other wards
v. Direct referrals from other hospitals

b. For adult congenital heart disease patients above the age of 18 years, cases shall be admitted to Adult Cardiology or Adult Cardiothoracic Surgery wards after discussion with the respective specialists.
c. On admission, all cases shall be seen by the medical officer within an hour and by the specialist within 24 hours. Ill cases shall be seen immediately.
d. Ill but stable cases shall be placed in the acute cubicle for closed monitoring. Unstable cases shall be admitted to Paediatric High Dependency Unit or Paediatric Intensive Care Unit after consultation with the respective specialists/consultants involved.

e. Discharge

   i. Decision for discharge shall be made by the specialist
   ii. Cases requiring follow up shall be given appointments for Paediatric Cardiology or Adult Congenital Heart clinics upon discharge

## 5.2 Outpatient Clinics

a. Patients shall be seen in Paediatric Cardiology Clinic by appointment basis.
b. Patient shall be seen within 90 minutes from the time of appointment or registration (whichever is later). To facilitate this, patients shall be given staggered appointments.
c. Patients shall be seen by specialists or medical officers supervised by specialists.
d. Echocardiographic examination shall be performed by paediatric cardiologists or trained assistant medical officers in the clinic whenever indicated before or during the clinic consultation. Oral or intranasal sedation shall be administered whenever required with appropriate monitoring after the examination (refer Sedation Protocol).
e. For patients above 18 years old who require further follow up, appropriate transition to the Adult Congenital Heart Clinic or Adult Cardiology Clinic shall be arranged.

## 5.3 Referrals

a. Outpatient referral to Paediatric Cardiology Unit:

   i. All new referrals for non-urgent cases shall be made via the clinic appointment counter with referral letters.
   ii. All new referrals for urgent cases shall be discussed with medical officer or specialist in charge for earlier clinic appointment date.

b. Inpatient referral to Paediatric Cardiology Unit:

   i. All inpatient referrals shall be discussed with medical officer or specialist in charge and be seen within 24 hours.
   ii. Urgent cases shall be seen as soon as possible.

c. Referrals to Institut Jantung Negara:

   i. All referrals to Institut Jantung Negara for outpatient review/admission/surgeries/invasive procedures shall be accompanied by official referral letter signed and stamped by gazetted specialists together with relevant investigation reports.

## 5.4 Procedures

*Cardiac Catheterization and Catheter Interventions:*

a. Elective cases shall be admitted 1 day before the procedure.
b. All cases shall be seen by medical officers or specialists after admission.
c. Non urgent procedures who have intercurrent viral infection on admission shall be postponed and rescheduled to a later date.
d. Pre-procedural blood tests, chest X-ray, ECG, echocardiogram and blood cross-matching shall be performed as per unit's policy.
e. Consent for the procedure shall be taken by medical officers (low risk cases) or specialists (high risk cases). Examples:

    i. Low risk: Diagnostic catheterization, PDA closure, ASD closure
    ii. High risk: All neonatal interventions, stenting, percutaneous valve implantation

f. All cases requiring general anaesthesia shall be reviewed by the anaesthetists.
g. Fasting time shall be clearly instructed to the caretakers.
h. Following return of the cases to the ward after the procedures, cases shall be nursed at acute cubicle for close observation and monitoring.
i. High risk cases shall be monitored at Paediatric ICU or High Dependency Unit after the procedures. Ensure beds are booked a day before the procedure
j. Puncture sites and distal pulses shall be checked prior to discharge.
k. Echocardiogram shall be performed for all catheter intervention cases prior to discharge.

## 5.5 Training

a. Paediatric Cardiology Trainees

    i. Refer latest MMC Paediatric Cardiology Curriculum.

b. Medical Officers

    i. All medical officers rotated to Paediatric Cardiology posting shall participate actively in all clinical areas of Paediatric Cardiology such as outpatient clinic, ward work and in-patient care, invasive cardiac laboratory, multidisciplinary case discussion and on call duties.
    ii. All medical officers shall participate actively in all unit's CME activities such as tutorials and teaching rounds.

## Appendix:

### Paediatric Cardiology Units Norms for staff, equipment and medications

### Definition of Level of Care

| | |
|---|---|
| Level 1 | Provides basic paediatric cardiology services such as diagnostic echocardiography. The service is provided in hospitals by 1 or 2 paediatricians trained in special area in cardiology |
| Level 2 | Provides paediatric non-invasive cardiac services including assessment of new referrals and ongoing inpatient and outpatient medical care of children with heart diseases. The service is provided in state and major hospitals by 1 or 2 paediatric cardiologists |
| Level 3 | Provides full range of services including diagnostic, cardiac surgical and invasive interventional procedures for congenital heart disease and various paediatric cardiac conditions. The service is provided in fully equipped cardiac centres by multidisciplinary teams including paediatric cardiologists, paediatric cardiac surgeons, anaesthesiologists, intensivists etc |

# Recommended staffing Norms

### *Level 3 Care*

| | Norm | Example for unit covering 5 million population |
|---|---|---|
| **Medical Personnel** | | |
| Congenital Cardiac Surgeon | 2 surgeons per unit | 2 FTE |
| Paediatric Cardiologist | 1 per 500 000 population<br>Minimum 1 congenital interventionalist<br>Minimum 1 paediatric electrophysiologist<br>Minimum 1 congenital cardiac imaging specialist<br>Minimum 1 congenital echocardiography specialist<br>Minimum 1 Foetal cardiologist | 10 FTE |
| Paediatric Cardiac Anaesthesiologist | Minimum 2 anaesthesiologists per surgeon | 4 FTE |
| Paediatric Intensivist | Minimum 1 per 4 Paediatric Cardiac ICU beds | 2 FTE (8 beds) |
| Medical Officers | Paediatric Cardiac Ward: 1 per 8 beds<br>Paediatric Cardiac ICU: 1 per 2 beds | 3 FTE (24 beds)<br>4 FTE (8 beds) |

| Nursing Personnel | | |
|---|---|---|
| Matron | Minimum 1 per unit | 1 FTE |
| Sister | 1 in Paediatric Cardiac Ward<br>1 in Paediatric Cardiac ICU<br>1 in Paediatric ICL<br>1 in Paediatric Cardiac Clinic | 4FTE |
| Staff Nurse | Paediatric Cardiac Ward: 1 per 8 beds per shift | 15 FTE (24 beds) |
| | Paediatric Cardiac ICU: 1 per 1 bed per shift | 40 FTE (8 beds) |
| | Paediatric Cardiac ICL: 3 per unit | 3 FTE |
| | Paediatric Cardiac Clinic: 4 per clinic | 4 FTE |
| | Paediatric Cardiac OT: Follow Cardiothoracic Surgery and Anaesthesiology policy | |

| Allied Health Personnel | | |
|---|---|---|
| Cardiac Perfusionist | Follow Cardiac Anaesthesiology and Perfusion policy | |
| Assistant Medical Officer | Paediatric ICU: Minimum 4<br>Paediatric ICL & Cardiac Clinic: Minimum 4 | 8 FTE |
| Radiographer | Minimum 2 per unit | 2 FTE |
| Pharmacist | 1 in Paediatric Cardiac ICU<br>1 in Paediatric Cardiac Ward/Clinic | 2 FTE |
| Physiotherapist | Minimum 1 per unit | 1 FTE |
| Social worker | Minimum 2 per unit | 2 FTE |
| Attendant | 7 in Paediatric Cardiac Ward<br>4 in Paediatric Cardiac ICU<br>2 in Paediatric Cardiac ICL<br>2 in Paediatric Cardiac Clinic | 15 FTE |
| Clerk | 1 in Paediatric Cardiac Ward<br>1 in Paediatric Cardiac ICU<br>2 in Paediatric Cardiac Clinic | 4 FTE |

## *Level 2 Care*

| | Norm | Example for unit covering 1 million population |
|---|---|---|
| **Medical Personnel** | | |
| Paediatric Cardiologist | 1 per 500 000 population | 2 FTE |
| Medical Officers | Shared with General Paediatrics | |
| **Nursing Personnel** | | |
| Matron | Shared with General Paediatrics | |
| Sister | 1 in Paediatric Cardiac Ward<br>1 in Paediatric Cardiac Clinic | 2 FTE |
| Staff Nurse | Paediatric Cardiac Ward: 1 per 8 beds per shift | 5 FTE (8 beds) |
| | Paediatric Cardiac Clinic: 4 per clinic | 4 FTE |
| **Allied Health Personnel** | | |
| Assistant Medical Officer | Minimum 2 per unit | 2 FTE |
| Pharmacist | Shared with General Paediatrics | |
| Physiotherapist | Shared with General Paediatrics | |
| Social worker | Shared with General Paediatrics | |
| Attendant | 4 in Paediatric Cardiac Ward<br>1 in Paediatric Cardiac Clinic | 5 FTE |
| Clerk | 1 in Paediatric Cardiac Ward<br>1 in Paediatric Cardiac Clinic | 2 FTE |

### *Level 1 Care*

| | Norm | Example for unit covering 500,000 population |
|---|---|---|
| **Medical Personnel** | | |
| Paediatrician with special interest | 1 per hospital | 1 FTE |
| Medical Officers | Shared with General Paediatrics | |
| **Nursing & Allied Health Personnel** | | |
| Sister & Staff Nurse | Shared with General Paediatrics | |

## Equipment

### *Level 3 Care*

### Paediatric Cardiac Intensive Care Unit

| | |
|---|---|
| To follow Paediatric Intensive Care Policy with the addition of the following: | |
| Mid-range echocardiography with transoesophageal echo probes | 1 |
| Extracorporeal mechanical circulatory support (ECMO) system | 1 per 5 beds |
| Nitric oxide delivery system | 1 per 5 beds |

## Paediatric Invasive Cardiac Laboratory (ICL)

| | |
|---|---|
| Bi-plane angiography system capable of rotational angiography and full haemodynamic measurement | 1 |
| Paediatric and adult general anaesthesia machine | 1 |
| High end echocardiography machine with 3D transoesophageal echocardiography function | 1 |
| Oximetry machine for haemodynamic calculation | 1 |
| Portable radiant warmer | 1 |
| Bed mattress warmer | 1 |
| Resuscitation trolley with full resuscitation equipment | 1 |
| Defibrillator | 1 |
| Portable 4-channel monitor | 1 |
| Syringe pump | 5 |

## Paediatric Cardiac Ward

| | |
|---|---|
| To follow General Paediatric Ward Policy with the addition of the following: | |
| Multichannel 12-lead ECG machine | 1 |
| Telemetry system for 24 hours recording of ECG | 1 |
| Portable pulse oximetry machine | 1 per bed |
| High end echocardiography machine | 1 |

## Paediatric Cardiac Clinic

| | |
|---|---|
| To follow General Paediatric Clinic Policy with the addition of the following: | |
| High end echocardiography machine | 1 per cardiologist |
| Multichannel 12-lead ECG machine | 1 |
| Portable pulse oximetry & BP machine | 2 |
| 24 hours Holter machine | 2 |
| 24 hours BP machine | 2 |

## *Level 2 Care*

### Paediatric Cardiac Ward

| | |
|---|---|
| To follow General Paediatric Ward Policy with the addition of the following: | |
| Multichannel 12-lead ECG machine | 1 |
| Telemetry system for 24 hours recording of ECG | 1 |
| Portable pulse oximetry machine | 1 per bed |
| High end echocardiography machine | 1 |

### Paediatric Cardiac Clinic

| | |
|---|---|
| To follow General Paediatric Clinic Policy with the addition of following: | |
| High end echocardiography machine | 1 per cardiologist |
| Multichannel 12-lead ECG machine | 1 |
| Portable pulse oximetry & BP machine | 2 |
| 24 hours Holter machine | 1 |
| 24 hours BP machine | 1 |

## *Level 1 Care*

### Paediatric Ward

| | |
|---|---|
| To follow General Paediatric Ward Policy with the addition of the following: | |
| Multichannel 12-lead ECG machine | 1 |
| Portable pulse oximetry machine | 1 per bed |

### Paediatric Cardiac Clinic

| | |
|---|---|
| To follow General Paediatric Clinic Policy with the addition of the following: | |
| High end echocardiography machine | 1 per paediatrician |
| Multichannel 12-lead ECG machine | 1 |
| Portable pulse oximetry & BP machine | 1 |

# PAEDIATRIC HAEMATOLOGY ONCOLOGY UNIT POLICIES

## 1. OBJECTIVES

To provide comprehensive care for children with malignancy, non-malignant haematology diseases and bleeding disorders.

## 2. SCOPE OF SERVICES

2.1 Provision of facilities for the assessment, diagnosis, treatment, nursing and palliation of children with malignancies and serious blood disorders.

2.2 Providing family-centred holistic care which include counselling, psychological and social support to patients and family.

2.3 Transition care from paediatric patients with haematology and bleeding disorders to adult haematologist.

2.4 Communicate and coordinate patient care with surgical services, radiation oncology services and other subspecialty services as required and work with multidisciplinary teams for optimal patients' outcomes.

2.5 Advocacy role for issues related to malignancy, non-malignant haematology diseases and bleeding disorders.

2.6 Provision of facilities for training of paediatric haematologist oncologist, medical officers, nurses and paramedics on malignancy, non-malignant haematology diseases and bleeding disorders.

2.7 Clinical and basic scientific research in the field of childhood malignancy, haematology diseases and bleeding disorders.

## 3. COMPONENTS

3.1 Outpatient clinics: Paediatric Thalassaemia/haematology clinics, Oncology clinics and Haemophilia/Bleeding disorders clinic.

3.2 Inpatient wards

3.3 Paediatric Oncology ward for oncology patients

3.4 General ward for Haematology and Bleeding disorders patients

3.5 Day care wards

## 4. ORGANISATION

A Consultant Paediatric Haematologist-Oncologist shall be in charge of the unit at any one time and shall be assisted by the other Paediatric Haematologist-Oncologists, Specialists, Medical Officers, the ward Sister and staff nurses. The Sister in charge shall be responsible for the day-to-day management of the ward, day care or clinic.

## 5. OPERATIONAL POLICIES

### 5.1 Admissions and Discharges

a. Admission to the Paediatric Oncology Ward

i. Inpatients from other wards may be transferred to the oncology ward upon discussion and approval from the Paediatric oncologist.
ii. Elective admissions from clinic or referrals from other hospital are planned by the consultant in charge taking into consideration the specific chemotherapeutic schedule and ward capacity.
iii. Admission from Emergency department for cases under oncology care
iv. All chemotherapy drugs shall only be prescribed by the specialist.
v. A master chemotherapy schedule record for every individual patient shall be drawn up in a special A3 blue chemotherapy card. This card shall be made available for confirmation of the chemotherapy plan, dose of drugs to be given and summary of the patient's initial presentation and progress.
vi. For multidisciplinary care, the referral between units in paediatric department shall be made by medical officers and inter-departmental referral should be made by specialist.

b. Admission to general ward for haematology and bleeding disorders

   i. Referral from other hospital upon discussion with Paediatric Haematologist Oncologist
   ii. From thalassaemia/haematology clinic
   iii. From Haemophilia/bleeding disorders clinic

c. On admission, all cases shall be seen by the medical officer within an hour and by the specialist within 24 hours. Ill cases shall be seen immediately.
d. Ill but stable cases shall be placed in the acute cubicle for closed monitoring. Unstable cases shall be admitted to Paediatric High Dependency Unit or Paediatric Intensive Care Unit after consultation with the respective specialists/consultants involved.
e. Discharge

   i. Decision for discharge shall be made by the specialist
   ii. Cases requiring follow up shall be given appointments in Daycare or clinics

## 5.2 Outpatient Clinics

a. Patients shall be seen in clinic by appointment basis
b. Patient shall be seen within 90 minutes from the time of appointment or registration (whichever is later). To facilitate this, patients shall be given staggered appointments
c. Patients shall be seen by specialists or medical officers supervised by specialists
d. For Haematology or bleeding disorders patients above 18 years old who require further follow-up, appropriate transition to the Adult Haematology Clinic shall be arranged.

## 5.3 Procedures

a. Bone marrow aspirate and trephine (BMAT)

   i. An appointment needs to be made with the Haematology Lab
   ii. Done as an elective either in daycare, oncology ward, or general ward under sedation
   iii. It will be done under general anaesthesia if a central venous catheter or biopsy is planned in the same sitting.
   iv. Consent for the procedures shall be taken by the medical officer or the specialist.

v. The procedure shall be done by a senior medical officer under the supervision of a specialist.
vi. For the cases that we anticipate difficulty in getting the marrow sample e.g. very young patients, preferably, should be done by a specialist.

b. Lumbar puncture and intrathecal chemotherapy

i. Lumbar puncture at diagnosis for oncology cases should be carried out by a specialist or senior medical officer
ii. Fasting time shall be clearly instructed to the caretaker.
iii. Done in an oncology ward or a daycare
iv. For intrathecal, chemotherapy should be planned before the procedure and should be checked by 2 medical personnel.
v. Intrathecal chemotherapy should not be done on the same day as IV vincristine.

c. Intravenous chemotherapy

i. For infusion, chemotherapy will be given by senior staff nurses
ii. For bolus, chemotherapy will be given by a medical officer

d. Intramuscular chemotherapy

i. Should be given by a medical officer

## 5.4 Training

a. Paediatric Haematology Oncology trainees

i. Refer to the latest MMC Paediatric Haematology Oncology Curriculum.

b. Medical officer.

i. All medical officers rotated to Paediatric Haematology Oncology posting shall participate actively in all the clinical areas of Paediatric Haematology Oncology such as outpatient clinic, ward work and inpatient care, multidisciplinary case discussion and on call duties.
ii. All medical officers shall participate actively in all unit's CME activities such as tutorials and teaching rounds.

# Appendix

## Paediatric Haematology oncology unit Norms for staff

| | Norm | |
|---|---|---|
| **Medical Personnel** | | |
| Paediatric Haematologist Oncologist | 2-3 for centre less than 100 new haematology oncology cases/year<br>3-6 for oncology centre with 100-200 new haematology-oncology cases/year<br>6-9 for oncology centre with >200 new haematology oncology cases /year | |
| Medical Officers | Paediatric Oncology Ward: 1 per 4 beds | |
| **Nursing Personnel** | | |
| Matron | Minimum 1 per unit | |
| Sister | Minimum 1 per unit<br>2 in Paediatric Oncology Ward<br>1 in Paediatric Oncology Clinic<br>1 in Paediatric Oncology Day Care | |
| Staff Nurse | Ratio of 1:2-1: 4 for acute and isolation bed | |
| | Ratio of 1:6 for normal bed | |
| | Ratio of 1:8 for day care | |
| **Allied Health Personnel** | | |
| Pharmacist | 1 in Paediatric Oncology ward<br>2 in CDR lab | |
| Attendant | 7 in Paediatric Oncology Ward<br>2 in Paediatric Oncology Clinic | |
| | 3 in Paediatric Oncology Day Care | |
| Clerk | 1 in Paediatric Oncology Ward<br>2 in Paediatric Oncology Clinic<br>2 in Paediatric Oncology Day Care | |

# PAEDIATRIC STEM CELL TRANSPLANT UNIT POLICY

## 1. OBJECTIVES

To provide comprehensive care for children requiring allogeneic stem cell transplantation for malignant and non-malignant conditions.

## 2. SCOPE OF SERVICES

a. Provision of facilities for the assessment, diagnosis, treatment, nursing, and rehabilitation of children requiring stem cell transplantation.
b. Provision of counselling and health education to children, parents, and guardians in a child friendly atmosphere.
c. Provision of 24 hours service for inpatient care.
d. Provision of stem cell collection services for paediatric donors (in- patients).
e. Provision of stem cell collection services for paediatric donors referred by other (adult) centres.
f. Provision of peripheral blood stem cell (PBSC) collection service for unrelated transplant coordinated by Malaysian Stem Cell Registry.
g. Provision of paediatric stem cell transplant day care services.
h. Advocacy role for issues related to paediatric stem cell transplantation.
i. Training of paediatric oncologists, medical officers and nurses in the field of paediatric stem cell transplantation.

## 3. ORGANIZATION

a. A Consultant Paediatric Haemato-Oncologist trained and experienced in Stem Cell Transplant (SCT) shall be in charge of the unit at any time
b. He shall be assisted by other Paediatric Haemato-Oncologist, Specialists, Medical Officers, Ward sister and other nurses.
c. The Ward Sister is responsible for the day-to-day management of the ward.

# 4. OPERATIONAL POLICY

## 4.1 Admissions and Discharges:

a. Admission to the SCT Ward can be from:

   i. Home for elective cases
   ii. SCT Clinic
   iii. Direct referral from other hospitals
   iv. Emergency Department
   v. Transfer-in from other wards

b. Patients shall be admitted to the ward via the admission counter for elective cases and via the Emergency Department for emergency cases.
c. Elective admissions are planned by the consultant in charge of the ward.
d. Patients shall be assessed by a staff nurse on arrival to the ward and reviewed by a doctor as soon as possible.
e. All new patients shall be seen by a specialist within 24 hours of admission
f. Decision for discharge shall only be made by a specialist.

## 4.2 Outpatient Clinic:

a. All new cases for pre-transplant counselling/assessment must be seen by a consultant or by a specialist supervised by the Consultant.
b. Parents of new cases will be given ward orientation by the SCT ward nurses to enable them to prepare themselves prior to admission for transplant.
c. All other cases can be seen by the Consultant/ Specialist or by a medical officer supervised by a Specialist.
d. All blood taking for clinic patients will be done at the procedure room by the nurses on duty.

## 4.3 Paediatric Stem Cell Transplant Day Care Service

a. SCT day care services provide on-going care to patients recently discharged post-transplant who need close follow up.
b. These includes:

   i. Patients requiring intravenous medication (anti-viral / Immunoglobulin / electrolyte correction).
   ii. Other procedures e.g. central venous line removal, bone marrow / lumbar puncture.
   iii. Patients with other complications requiring close monitoring e.g. graft versus host disease.

c. All patients will be seen by the Medical Officer and management plan discussed with Specialist/Consultant of the unit.
d. All day care patients shall be discharged the same day.

## Referrals

a. The HTA SCT Unit receives referrals from within the hospital as well as from all other hospitals in Malaysia including Sabah and Sarawak.
b. All referrals must be discussed with Paediatric SCT Specialist/Consultant.
c. A complete referral has to be sent to the transplant team prior to clinic consultation.
d. A reply letter to the referring doctor/team will be provided, with the necessary information and management plan for the referring team to continue management of the patient (where relevant).

## Procedures

a. Bone Marrow Harvesting :

   i. Bone marrow donors will be admitted to the SCT ward.
   ii. Bone marrow harvesting will be done under general anaesthesia in the operating theatre.
   iii. Bone marrow harvesting will be led by a trained and privileged Paediatric Haemato-Oncologist / Trainee and assisted by a medical officer.

b. Peripheral Blood Stem Cell Collection (PBSC) :

   i. Sources of patient for PBSC:

      - Family donors for Hospital Tunku Azizah patients.
      - Matched unrelated donors referred by Malaysian Stem Cell Registry.
      - Paediatric Donors referred from other transplant centres.

   ii. The procedure shall be led by a Paediatric Haemato-Oncologist privileged in stem cell apheresis.
   iii. Choice of vascular access is determined by the clinician doing the apheresis.
   iv. Clinician will be assisted by a trained Staff Nurse privileged to perform PBSC.
   v. Donors can be discharged on the same day after completion of procedure.

## Training

Paediatric Haemato-Oncology Trainees

a. Refer latest MMC Paediatric Haemato-Oncology Curriculum Medical Officers
b. All medical officers rotated to SCT Unit posting shall participate actively in all clinical areas such as outpatient clinic, ward work and inpatient care, operation theatre, multidisciplinary case discussion and on call duties.
c. All medical officers shall participate actively in all unit's CME activities such as tutorials and teaching rounds.

## Staffing Norms

| Position | Norm |
|---|---|
| Paediatric Haematologist Oncologist trained in Paediatric Stem Cell Transplantation | 1 Transplant Consultant : 4 transplant beds |
| Medical Officers | 1 Medical officer per 8 beds |
| Matron | Minimum 1 per unit |
| Sister | 1 Nursing Sister in charge of Ward and Day-care Services |
| Staff Nurse | Overall 1 nurse: 2 patients per shift. (Ranges from 1 nurse :1 patient to 1 nurse: 3 patients depending on severity of the case) |
| Pharmacist | 1 oncology pharmacy in charge of the ward and day-care services |
| Attendant | As per hospital norms |
| Clerk | As per hospital norms |

# PAEDIATRIC RESPIRATORY SERVICE POLICY

## 1. INTRODUCTION

The Paediatric Respiratory service is the branch of paediatrics concerning the diagnosis and management of children (infants, young children, and adolescents) with respiratory diseases and is managed by Paediatric Respiratory Physicians who have detailed knowledge and understanding of the respiratory system and illnesses of children.

Paediatric Respiratory Physicians manage challenging problems of diagnosis and complications of respiratory illnesses as well as their therapeutic complexity. They have significant roles in patient care in the hospital, clinic, and community in a variety of settings, including multi-disciplinary and clinical care networks in other states or institutions. In addition, the services provided include palliative care, ambulatory, home care respiratory support and coordinating the long-term care of chronic patients.

## 2. OBJECTIVES OF SERVICE

2.1 To provide a **high standard** clinical care based on evidence-based medicine in keeping with other centres worldwide and available resources in Malaysia.

2.2 To provide an **individualised** and **comprehensive care** for patient and his/her family.

2.3 To provide **holistic** clinical care of children with a broad range of respiratory illnesses including congenital, aero-digestive, sleep breathing and ventilation, allergy and asthma, rare lung diseases, infection, neonatal related and other systems disease and treatment complications.

2.4 To become the **referral centre** for paediatric respiratory cases requiring further evaluation, and management.

2.5 To conduct **continuous medical education** programmes and **research** for professional development in paediatric respiratory medicine.

2.6 To organize and create **an effective and conducive training** environment for learning in paediatric respiratory medicine for medical officers and paediatricians undergoing sub-specialization.

2.7 To create a **healing environment** for children and families through the Child-Friendly Hospital concept.

2.8 To be an advocate on **public health issues** at the individual, local, national and international level to promote healthy lung health.

## 3. SCOPES OF SERVICE

There are **three major components** in the of scope of services provided:

3.1 Diagnostic and therapeutic **procedures** for patients with acute or chronic respiratory illnesses.

3.2 **Management** of acute and chronic respiratory illnesses which are complex and needing long term monitoring and treatment.

3.3 **Home respiratory support care** for chronic obstructive or restrictive respiratory failure

## 4. COMPONENTS OF SERVICE

### 4.1 INPATIENT

a. Assessment, diagnosis, treatment, nursing and rehabilitation of children with respiratory illnesses
b. Counseling and health education to children, parents and guardians in an atmosphere which is child and family- friendly.
c. Provision of 24 hours service.

## 4.2 OUTPATIENT

a. Paediatric respiratory clinics
b. Paediatric sleep clinic

## 4.3 PAEDIATRIC DAY CARE SERVICES

a. Paediatric Home ventilation
b. Paediatric Home oxygen
c. Scheduled regular IVIG infusion
d. Scheduled Biologic treatment
e. Scheduled IV Methyl prednisolone

## 4.4 PROCEDURES

a. Flexible Bronchoscopy

    i. With broncho-alveolar lavage
    ii. With brushing
    iii. With biopsy
    iv. With removal of foreign body

b. Lung Function Testing (LFT)

    i. Plethysmography/body box
    ii. Measure lung volumes

        - Measure DLCO

    iii. Spirometry (+/- IOS Intra-Oscillation Spirometry)

        - Pre and post bronchodilator LFT
        - Exercise challenge LFT
        - Methacholine challenge LFT

c. Polysomnogram

Preferable to provide level I or II sleep study procedure

i. Diagnostic polysomnogram
ii. Titration polysomnography (CPAP/BiPAP)
iii. A daytime nap study Multiple Sleep Latency Test (MSLT) or Maintenance of Wakefulness Test (MWT)
iv. Level III/IV partial sleep study (hospital/home) for selected patients

d. 24 hours Oesophageal pH monitoring and impedance
e. Trending pulse oximetry monitoring
f. Six-minute walk test (6MWT)
g. NIOX measurements (nasal and oral)
h. Fit to fly test

## 4.5 COMMUNITY SERVICES

a. Home visit

i. Suitability for home oxygen therapy
ii. Suitability for home ventilation therapy
iii. As part of severe asthma management especially before providing biologic treatment

b. Home Oxygen service
c. Home ventilation service (invasive and non-invasive)

i. Short and intermediate duration ventilation
ii. Long term duration ventilation (e.g., neuromuscular disorders, spinal injury, central hypoventilation and chronic obstructive and restrictive respiratory failure)
iii. Nocturnal non-invasive ventilation for Obstructive sleep apnoea and obesity hypoventilation syndrome

## 4.6 TRAINING

a. Provision of facilities for practical training of paramedics, medical students and post-graduates as well as in-service training for staff.
b. To introduce new services while consolidating currently available services and to further expand and develop the specialty of paediatric respiratory medicine.
c. To ensure the level of knowledge and skill of paediatric respiratory personnel continues that to expand and improve by setting up the goals of training at the unit level.
d. To encourage full attendance of all doctors in all CME programs run by the unit.
e. To ensure parents/patients are given the education and training on the diseases, management required and knowledge to maintain the equipment received prior to discharge for the following :

    i. Asthma education
    ii. Home ventilation (CPAP/BiPAP): invasive or non-invasive therapy
    iii. Home oxygen therapy
    iv. Tracheostomy care
    v. Proper suctioning via tracheostomy tube
    vi. Secretion clearance technique (conventional physiotherapy, using acapella/flutter or cough assist)
    vii. Breathing exercise
    viii. Pulmonary rehabilitation
    ix. Nebulisation (normal saline, hypertonic saline, salbutamol, pulmozyme and antibiotic)
    x. Basic life support
    xi. Ryle's tube feeding
    xii. Gastrostomy feeding
    xiii. Perfusor feeding

# 5. COMPONENTS OF UNIT

## 5.1 INPATIENT SERVICE WARD

The Paediatric Respiratory Service all have a dedicated Paediatric Respiratory Ward where possible. In a 24-bedded ward, there shall be at least a 4-bedded Respiratory Intermediate Care Unit (RICU)/level III nursing care and a 4-bedded Respiratory Monitoring Unit/Level II nursing care. Such a ward should be run by a devoted, specialised paediatric respiratory physician and staffed with nurses and assistant medical officers specifically assigned to the unit.

Alternatively, there shall be a Paediatric Respiratory Unit i the general ward. The unit shall share its personnel with the ward in which it is located.

**a. Respiratory Intermediate Care Unit (RICU)/Level III**

To cater for:

i. Patients who are admitted for mild to moderate exacerbation of chronic lung disease requiring non-invasive ventilation (CPAP/BiPAP) including High Flow Nasal Cannula (HFNC)
ii. Patients who have stable chronic lung disease on invasive or non-invasive ventilation

The advantages of having RICU:

iii. Lower nursing staff requirements compared to PICU
iv. Better utilisation of the PICU reserved for patients who really need intensive treatment
v. Chronic respiratory patients who have recovered from the acute phase of critical illness but still require close monitoring, physiotherapy and NIV can be transferred from PICU to RICU
vi. Parents or caretakers may share the care f the the patients in RICU and this may contribute to the "healing" process and help facilitate the discharge from hospital, especially for those patients who require long-term oxygen therapy and/or home ventilatory support

**b. Respiratory Monitoring Unit (RMU)/Level II**

To cater for:

i. Patients who are admitted for mild to moderate exacerbation of chronic lung disease requiring oxygen therapy
ii. Patients who have stable chronic lung disease but needing frequent monitoring

The advantages of having RMU:

iii. Lower nursing staff requirements compared to PHDU
iv. Better utilization of the PHDU reserved for patients who really need continuous monitoring

## 5.2 SPECIALISED PAEDIATRIC RESPIRATORY CLINICS

## 5.3 SPECIALISED PAEDIATRIC RESPIRATORY DAYCARE

## 5.4 OPERATING THEATRE/BRONCHOSCOPY SUITE

a. To perform emergency and routine scheduled flexible bronchoscopy, with facilities for therapeutic intervention, including brushing, biopsy, lavage and more.
b. High risk patients who may have issues in maintaining the airway patency and adequate ventilation during bronchoscopy should undergo bronchoscopy in the operating theatre.

## 5.5 BIOPHYSIOLOGY LABORATORY OR ROOM

a. To perform lung function tests including peak expiratory flow, spirometry, IOS, plethysmography, DLCO, bronchial provocation test, lung clearance index, impulse oscillometer, cardiopulmonary exercise test (using bicycle or treadmill), 6 Minute walk test, fit-to-fly test etc.
b. Near to emergency trolley

## 5.6 SLEEP STUDY ROOM

a. To perform polysomnogram +/- MSLT/MWT and titration polysomnogram.
b. A sleep study room, at least 2-bedded, fulfilling the MOH Sleep Study Room Guidelines.
c. Level I Polysomnogram set up

## 5.7 SPACE TO PERFORM SIX-MINUTE WALK TEST

a. Quiet space with no disturbance
b. Near to emergency trolley

## 5.8 MINI GYMNASIUM

a. A mini gymnasium is to provide pulmonary rehabilitation service

## 5.9 RESPIRATORY STORAGE ROOM

a. Adequate storage area for **medical assets** routinely used for respiratory patients in **hospital** (bronchoscopy storage cupboard, portable ventilators, portable spirometry etc.)
b. Adequate storage area for **medical consumables** used for respiratory patients in **hospital** (tubing, interfaces, filters etc.)
c. Adequate storage area for **medical assets and consumables** required for **respiratory home care services** (portable oxygen concentrators, oxygen cylinders, portable ventilators, tubing, interfaces, filters etc.)

## 5.10 RESPIRATORY WORKSTATION ROOM

a. Designated room to manage medical records and equipment for respiratory homecare
b. An area to service, calibrate and maintain the medical equipment

## 5.11 CLEANING ROOM

a. There shall be a designated cleaning area for respiratory medical assets and equipment.
b. The room shall have adequate ventilation

## 5.12 COUNSELLING ROOM

a. Designated counselling room for parents, patients and their families

## 5.13 TRAINING ROOM

a. Training room (includes manikin and devices) for purpose of training of parents and healthcare providers on respiratory home care and resuscitation

## 5.14 ISOLATION ROOMS

a. Negative pressure isolation room(s) are required for infectious diseases e.g. pulmonary tuberculosis
b. Positive pressure isolation room for immunocompromised patients either primary or secondary.

# 6. ORGANISATION

A Paediatric Respiratory Physician shall oversee the unit and, depending on the workload in the unit, shall be assisted by another Paediatric Respiratory Physician or Clinical Specialists, Paediatricians undergoing clinical respiratory training, Medical Officers, house officers, the ward Sister, staff nurses and assistant medical officers. The ward Sister in charge shall be responsible for the day-to-day management of the ward.

# 7. POLICY DESCRIPTION

## 7.1 REFERRAL AND ADMISSION

Admission to paediatric respiratory unit can be done after consultation with the Paediatric Respiratory Physician / paediatrician in charge through:

a. Direct referrals from other hospitals
b. Transfers from other wards
c. The paediatric specialist clinic
d. The Accident and Emergency department

## 7.2 RESPIRATORY INPATIENTS

a. On admission all cases shall be seen by the medical officer within an hour and by the specialist within 24 hours. However, ill cases shall be seen immediately.
b. Ill but stable respiratory patients will be placed in the acute cubicle/ Respiratory Intermediate Care Unit for close observations and management. Unstable patients will be managed in Paediatric High Dependency Unit or Paediatric Intensive Care Unit.
c. Drugs prescribed to hospital patients shall be in accordance with the approved list of drugs of Ministry of Health. Drugs outside the Ministry of Health 'Blue Book" formulary shall be used on the discretion of the Consultant Paediatric Respiratory Physician and approval From the Director General of Health Malaysia.
d. Decision of discharge shall be made by the Paediatric Respiratory Physician or specialist after consultation with the Paediatric Respiratory Physician

e. All cases for discharge will be given a book specifying the diagnosis, treatment given and clinic appointment
f. Parents or Caregivers will be informed of the diagnosis and plan of management. They would also be taught how to recognize early symptoms and signs of the disease deterioration and the initial steps that must be undertaken before bringing them to the hospital
g. Parents will be taught about overall care of the patients.

## 7.3 RESPIRATORY OUTPATIENTS

a. All clinic cases shall be seen in the respiratory clinic at the Specialist Clinic according to the appointments given.
b. Patients requiring home oxygen therapy, or home ventilation requiring follow-up within 2-4 weeks of discharge shall be seen at the day care facility or designated clinic.
c. Patients requiring Home Oxygen Therapy shall be prepared according to the 'Home Oxygen guidelines'.
d. Patients requiring home ventilation shall be prepared according to the Home Ventilation guidelines.

## 7.4 PAEDIATRIC RESPIRATORY DAY CARE

a. The paediatric respiratory day care services shall be provided for cases which do not require admission. These include cases on home oxygen and ventilation programme for review, administration of continuous infusion of IVIG, patient on tracheostomy, having bronchiectasis (e.g., cystic fibrosis and primary ciliary dyskinesia) and needing minor procedures.
b. Appointments will be given in the day care appointment book or appointment system.
c. The management of the paediatric respiratory day care patients shall be by the Paediatric Respiratory Physician/paediatrician in-charge of Paediatric Respiratory patients.
d. The administration of the day care unit shall be under the responsibility of the sister in-charge supported by day care staffs.
e. The receptionist in the day care shall be responsible to inform the paediatric respiratory doctor in-charge when the patient arrived.
f. Paediatric respiratory specialist or paediatrician in-charge or trainee shall review and decide on further management
g. A discharge summary shall be prepared prior to discharge from day care.
h. If the case is not fit for discharge, the patient shall be admitted to the ward for further treatment.

## 7.5 RESPITE SERVICE

Respite services like halfway homes for families of children on home respiratory support shall be made available where possible.

## 7.6 SCHOOL-IN- HOSPITAL

School-in-hospital services , where available, shall provide education to chronic respiratory patients in the hospital.

## 7.7 REGIONAL SWEAT TEST SERVICE

To have six (6) Regional sweat test centres in Malaysia in the future to aid in diagnosis of Cystic Fibrosis.

a. Central Region: Hospital Tunku Azizah, Kuala Lumpur & UMMC (existing centres)
b. Northern Region: proposed Hospital Pulau Pinang, Penang
c. Southern Region: proposed Hospital Sultanah Aminah, Johor Bahru, Johor
d. East Coast: proposed Hospital Sultanah Nur Zahirah, Kuala Terengganu
e. Sabah (3 Regional Centres): proposed Queen Elizabeth Hospital
f. Sarawak (3 Regional Centres): proposed Hospital Umum Sarawak

## 7.8 CENTRALISED ELECTRON MICROSCOPY FOR CILIARY STUDY

To train selected laboratory personnel to in study of the structure and function of the cilia, utilizing available electron Microscopy at the Institute for Medical Research. al.

## 7.9 CENTRALISED GENETIC STUDIES

Centralised genetic studies should be made available for paediatric respiratory illnesses which can be diagnosed by using genetic studies, e.g. cystic fibrosis, primary cilia dyskinesia, surfactant deficiency and childhood interstitial lung disease (chILD). This will help with the long-term management, counselling and prognostication of the diseases.

# 8. PROCEDURES

## 8.1 BRONCHOSCOPY

a. Elective cases for bronchoscopy shall be done in the Paediatric Operation Theatre or Paediatric / Neonatal Intensive Care Unit. Patients shall be admitted to the ward the day before. Appointments will be given through the appointment book. A list of cases shall be sent to the OT and the Anaesthesia department one day prior to the bronchoscope day. The list shall be prepared and signed by the Paediatric Respiratory Physician in charge.
b. Consent for bronchoscopy shall be obtained from the parents by the Specialist and adequate information regarding the procedure explained.
c. Emergency bronchoscopy shall be done at any time necessary when the OT is available. The scope will be performed by the Paediatric Respiratory Physician. For care of the upper airway, an ENT surgeon will be present if a rigid scope is required.

## 8.2 POLYSOMNOGRAPHY

a. Sleep study appointments shall be made through the Paediatric Respiratory Physician in the sleep appointment book or appointment system. Patient shall be admitted during office hours and the study done overnight. The patient may be discharged the next day.
b. The sleep study shall be reported within three days for urgent cases and within two to four weeks for non-urgent cases after the sleep study.
c. A clinic appointment shall be given 4 weeks after the sleep study or parents are being contacted and informed the results and the further management. The cases must be discussed with Paediatric Respiratory Physician.

## 8.3 TRENDING PULSE OXIMETER MONITORING

a. All appointments are given after discussion with the Paediatric Respiratory Physician is made.
b. Patients will be admitted during office hours and will spend a night in the ward.

c. The technician/nurse will connect the probe to the patient and will be monitored till the next morning. Minimum recording time of 6 hours. The data will be unloaded and printed. It will be reported by the Paediatric Respiratory Physician or the trainee/paediatrician in-charge.
d. Patient will be discharged after reviewed by the paediatrician.

### 8.4 LUNG FUNCTION TESTS

a. Lung function tests are needed for all patients with chronic lung disease who can perform the test.
b. Lung function tests can be performed on an ad hoc basis or by appointment after discussion with the Paediatric Respiratory Physician during office hours and on clinic days.
c. The lung function tests will be performed by the technician /medical assistant.
d. The result will be reported by the Paediatric Respiratory Physician/trainee within 24 hours.

### 8.5 24-HOUR PH AND IMPEDANCE MONITORING

a. This requires an appointment to be made with the technician/medical assistant in-charge through the Paediatric Respiratory Physician or Paediatric Gastroenterologist.
b. The patient shall be admitted in the morning of the procedure if they are outpatients.
c. They may be discharged the next day.
d. The monitoring will be uploaded onto the computer after the completion of the study.
e. The report will be made available within 24 hours. It will be reported by a Paediatric Respiratory Physician or Paediatric Gastroenterologist.

## 9. COMMUNITY SERVICE

Home visits will be done by trained personnel to review and evaluate home suitability prior to starting the home oxygen programme or home ventilation programme.

## 10. EQUIPMENT REQUIRED WHEN INITIATING THE PAEDIATRIC RESPIRATORY SERVICE

| Item. No | Equipment | Number | Comments |
|---|---|---|---|
| 1. | Flexible video bronchoscopy (complete set including accessories for biopsy, brushing and rat forceps with software and printer) with scope size 2.8 and 4.2 | 1 | To be used in OT or for complex procedures under GA. With the cupboard to hang it dry. |
| 2. | Portable flexible bronchoscopy size 2.4 and 3.5 a set | 1 | Bedside bronchoscopy. To avoid damaging the main scope when transporting to different places. |
| 3. | Full Sleep Study/ Polysomnography (PSG) Device with software, printer and including transcutaneous $CO_2$ | 2 | For two bedded sleep study rooms |
| 4. | Full bodybox / plethysmography | 1 | Just need one unit for the whole of hospital. Shared usage with the adult patients |
| 5. | Full spirometry with IOS system with calibration syringe, printer and software | 1 | Can be used in patient as young as two years old. |
| 6. | Portable spirometry | 1 | Bedside lung function test |
| 7. | Bicycle / treadmill | 1 | For cardiopulmonary exercise test |
| 8. | Cough Assist machine | 1 | To be used for patients with ineffective cough especially when admitted with pneumonia |
| 9. | Trending Pulse oximetry with software | 2 | For diagnostic |
| 10. | Pulse Oximetry | 2 | For monitoring |

| Item. No | Equipment | Number | Comments |
|---|---|---|---|
| 11. | Vital signs monitor with parameter or ECG, heart rate, $SpO_2$, respiratory, non-invasive blood pressure, perfusion index and temperature. Comes with neonatal, child and adult accessories | 2 | For monitoring |
| 12. | Portable life-support ventilator | 4 | TO BE USED FOR 4 bedded RICU<br>– 4 panels (similar to PHDU)<br>– The ventilators can be upgraded to higher setting when needed |
| 13. | High Flow Nasal Cannula | 2 | |
| 14. | 6 channel monitors | 4 | |
| 15. | Portable BiPAP with internal battery and humidifier | 2 | Can be used for inpatients and home ventilation usage |
| 16. | Auto CPAP machine | 2 | |
| 17. | Fixed CPAP machine with external battery | 3 | |
| 18. | Low flow portable oxygen concentrator (5L/min) with oxygen cylinder | 3 | For home oxygen usage and suction |
| 19. | Portable oxygen concentrator | 1 | |
| 20. | Portable suction machine with internal battery | 2 | |

## 11. CONSUMABLES BUDGET

a. Level III care / RICU are estimated at RM15000/bed/year of consumables budget. Therefore, for 4 bedded RICU, it will require about RM60, 000/year of consumables budget.
b. Level II care / RMU is estimated at RM10, 000/bed/year. Therefore, for 4 bedded RMU, it will require about RM40, 000/year of consumables budget.
c. On average a patient on home non-invasive ventilation requiring 16-20 hours of ventilation per day will use up RM3000/year of consumables budget. If the unit have 20 patients on home ventilation, it will require at least RM60, 000/ year of consumables budget.
d. Consumables budget to run procedures e.g. bronchoscopy, lung function test, sleep study, SpO2 monitoring , are estimated at RM50, 000-RM100, 000 depending on the number of procedures carried out.

## 12. KPI PAEDIATRIC RESPIRATORY

a. Percentage spirometry report turn-around time < 2 weeks. It should be > 80%.
b. Percentage turn-around time for teaching parents of patients on CPAP/BiPAP with/without oxygen concentrator within 72 hours prior to discharge. It should be > 80%.

**References:**

1. Standards of sleep facility in Ministry of Health, Malaysia (MOH/P/PAK/210.10 (BP) 2011.
2. Respiratory Intermediate Care Units: a European Survey by ERS Task Force. Eur Respir J 2002;20:1343-1350.
3. Paediatric Services Operational Policy 2012.
4. Consensus guidelines on long term home oxygen therapy 2016.
5. Consensus guidelines on paediatric home ventilation 2015.

# PAEDIATRIC DERMATOLOGY UNIT POLICIES

## 1. OBJECTIVES

a. To provide holistic, appropriate and optimal care for children and adolescents with skin diseases by fully qualified and competent paediatric dermatologists.
b. To provide training in basic and advanced paediatric dermatology to all levels of staff including house officers, medical officers, specialists and paramedics.
c. To encourage research and quality assurance programs.
d. To promote a culture of excellence and teamwork amongst its personnel.
e. To disseminate knowledge of skin diseases to parents.

## 2. SCOPE OF SERVICES

The Paediatric Dermatology Unit shall provide the following:-

a. To provide diagnostic, curative and rehabilitative services that are appropriate, effective, efficient and in a timely manner to children with skin diseases. This includes the following

   i. Outpatient and inpatient care
   ii. Day care centre facilities for patient who do not warrant admission such as procedures under sedation, procedures that require monitoring and biologics treatment.
   iii. Provision of specialised procedures

      - Pulse dye laser for children with vascular birthmarks
      - Skin biopsy for diagnostic purpose
      - Electrocautery, cryosurgery, intralesional steroid injection, potassium hydroxide application and prick for molluscum
      - Wound dressing services
      - Food and drug challenge tests
      - Allergy tests including skin prick tests and patch tests

iv. Eczema education service
v. Visiting specialist clinics to other state hospitals and district hospitals without paediatric dermatology services to provide professional input and care.
vi. Advocacy role for issues related to paediatric dermatology.
vii. To provide professional input or participate in support groups for chronic paediatric dermatology diseases.
viii. Additional services if dermatology laboaratory and necessary equipment are available e.g. microscopic examination of skin scrapings, Tzanck smears, gram staining.

## 3. COMPONENTS OF THE UNIT

The service components in paediatric dermatology comprise the following:-

a. Outpatients/Clinics
b. Inpatients/wards
c. Day care for skin patients
d. Pulse dye Laser therapy unit
e. Phototherapy unit/Dermatology lab (if available)

## 4. ORGANIZATION

a. The unit shall be headed by a consultant paediatric dermatologist .
b. The number of paediatric dermatologist shall depend on the need and availability of personnel with minimum of 2 paediatric dermatologists.
c. The medical officers in the unit shall be from the general paediatric department who comes on a scheduled rotation for minimum of 3 months. The number of medical officers shall depend on the availability of medical officers with minimum of one at any given time.
d. There should be a minimum of 2 trained specialised paediatric dermatology nurses at any one time.
e. The unit shall be organized into various sub-subspecialties: general dermatology, genodermatoses, allergy, pulse dye laser therapy and each unit headed by a paediatric dermatologist.
f. The Sister in-charge shall be responsible for the day-to-day management of the ward and clinic with a dedicated paediatric dermatology nurse.

g. All the services shall be provided during office hours. Inpatient services after office hours hall be provided by the on-call team of general paediatrics. Teleconsultation service is provided by the paediatric dermatologist on an ad hoc basis (or on a rotation basis if there are more than one paediatric dermatologist available in the unit)

# 5. OPERATIONAL POLICIES

## 5.1 Admission and discharge policies

a. Admission to the paediatric dermatology unit can be from:

   i. the paediatric dermatology clinic
   ii. direct referrals from other hospitals, wards or clinics
   iii. General Paediatric Clinics
   iv. The Accident and Emergency department

b. Admission to the paediatric dermatology unit ,during and after office hours, shall be to the general paediatric ward.
c. After office hours, emergency cases shall be reviewed in the Emergency Department and admitted to the Paediatric Ward if necessary.
d. Direct admissions shall be arranged with the specialist from paediatric dermatology unit.
e. For policies on admissions and discharge - refer to departmental operational policies.

## 5.2 Outpatient Care Policies

a. All patients shall register themselves at the Registration counter (K*linik Pakar Pediatrik*) and will be given a call number and directed to the waiting area.
b. All paediatric dermatology patients shall be seen by the specialist with an assisting medical officer.
c. All patients with atopic dermatitis shall have a skin care plan written clearly before leaving the clinic.
d. All patients with atopic dermatitis should be counselled by specialists/ medical officers/specialised paediatric dermatology nurses on the natural history of the disease and methods of topical application at the first encounter in paediatric dermatology clinic.
e. Paediatric dermatology patients on immunosuppressive agents should have blood investigations available on the day of appointment as ordered by the specialist.
f. All investigations results should be reviewed after clinic and any abnormalities should be addressed. This may include recalling the patients earlier for review or for repeat blood tests.
g. Adequate amounts of topical medications, emollients and barrier preparations should be available on repeat prescription with clear prescribing instructions including amounts required between secondary and primary care.
h. Some simple dermatological procedures e.g. cryosurgery, intralesional steroid injection, potassium hydroxide application and prick for molluscum will be performed during clinic. The specialised paediatric dermatology nurse will be in charge of preparing the equipment required and assisting the specialist performing.
i. The medical officer will be in charge of documenting the procedure in the case notes

## 5.3 Day care Policies

a. Day care services shall be provided for cases which do not require admission. These include procedures like skin biopsy, electrocautery, allergy test like skin prick tests, food or drug challenge test and phototherapy.
b. Day care service will be in the day care ward if available.
c. The administration of the day care unit shall be under the responsibility of the sister in-charge supported by day care staff.
d. The receptionist in the day care shall be responsible to inform the paediatric dermatology team when the patient arrives.
e. Paediatric dermatology team shall review and discharge patient after review. Discharge summary shall be done prior to discharge from day care.
f. If the patient is not fit for discharge, the patient shall be admitted to the ward for further management and plan of care will be passed over to the on call paediatric team.

## 5.4 Inpatient Care Policies

a. Paediatric dermatology patients shall be admitted to the general paediatric ward. Objectives of admission are to

    i. To optimize skin nursing to ensure rapid recovery
    ii. To assist in prompt investigations and management
    iii. To provide multidisciplinary care where necessary
    iv. To educate the patient and their care givers about the illness and empower self-management at home

b. Paediatric dermatology medical officer/specialist in charge of the ward shall be informed of all patients prior to their admission to the ward, preferably medical officer/paediatrician in charge of the general paediatrics ward should be informed also.
c. All new admissions shall be reviewed at least once by the specialist in charge. The patients shall be reviewed daily by the medical officer.
d. To enhance compliance and effective treatment, education sessions by appropriately trained individuals should be available for all parents/ patients when applying topical preparations particularly dressings.
e. All patients shall have a discharge care plan and this should be informed to the patients and/or his/her family members.
f. For other inpatient policies on admission and discharge - refer to departmental operational policies.

## 5.5 Referrals

a. Referrals to the Paediatric Dermatology Unit are accepted from the government or private health care centres or hospitals.
b. Referrals (outpatient and inpatient) of children with skin disorders should be directed to the general paediatric clinic or paediatrician on duty. The child shall be referred to paediatric dermatology unit if the need arises.
c. Children with complex skin disorders can be referred directly to the paediatric dermatology unit.
d. Written referral letters are required for the specialist or the medical officer to arrange on a scheduled appointment in the paediatric dermatology clinic, to be seen within 6 weeks of referral.
e. The Paediatric dermatologist will preferably be stationed at the paediatric clinic.
f. Referrals from paediatricians from district hospitals should be accompanied by detailed referral letter using the template provided by the paediatric dermatology unit. This should be emailed to the paediatric dermatology unit in advance to facilitate planning of care prior to the appointment.
g. For urgent referrals, the referring doctor should call the specialist or medical officer from paediatric dermatology unit to arrange an urgent outpatient appointment.
h. Emergency cases shall be seen by the Emergency Department and admitted to the Paediatric Ward if necessary after consultation with the paediatric dermatologist/ paediatric dermatology trainee or medical officer during office hours or the on call paediatrician or medical officer after office hours.
i. Direct admissions shall be arranged with the specialist.
j. Following treatment as an outpatient or inpatient, patients may be referred back for follow-up to the referring doctor. A written reply shall be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent care of the patient.
k. Transitioning to adult care: Referrals to adult dermatology care for patients who have attained 18 years of age is done through letters of referral attached with relevant copies of laboratory results and imaging. Appointments at the adult dermatology clinic will be made after discussions between specialists from the paediatric dermatology unit and adult dermatologists.

## 5.6 Documentation of clinical notes

a. The specialist should ensure that all doctors in the unit make accurate, comprehensive and legible documentation of clinical notes.
b. Documentation shall include:

   i. Patient identification data
   ii. Clinical history and examination
   iii. Investigations and results (in a summary table)
   iv. Treatment given
   v. Procedures undertaken and reasons
   vi. Follow-up notes and consultation
   vii. Communication with the patient, his relatives, other doctors, other authorities, etc.

c. Case summaries shall be completed, and case notes dispatched to the Medical Records Department within 3 working days from the day of discharge.
d. Medical reports shall be prepared and dispatched to the Medical Records Department within 30 days from the date of request. For cases where the medical officer treating the patient is not available, another medical officer in the department shall be assigned to prepare the report.

## 6. TRAINING

a. The unit shall conduct regular CME activities for all medical personnel to continually improve clinical skills and knowledge.
b. Department CME activities which includes journal read, topic discussion, dermatology-histopathological conference and slide review with adult dermatology unit.
c. Training for paediatric dermatologist for duration of 3 years in accordance with the guidelines adopted by the Medical Development Division, Ministry of Health Malaysia and the National Specialist Register/Malaysian Medical Council.
d. Training for the medical officers on a 3-monthly rotation basis.
e. There should be opportunities to go for courses and conferences.
f. Training for the nurses by sending them for short day attachment in adult dermatology clinic and wards, courses, conferences, and through clinical supervision at work.
g. Adequate training and up to date competencies in dermatological prescribing is mandatory for all specialists and medical officers attached to dermatology.

## 7. UNIT MEETINGS

a. Unit meetings shall be held regularly, to discuss problems and solutions to the problems.
b. Problems that cannot be solved at the unit level, shall be brought up to the department level.

## 8. WHOLE HOSPITAL & DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department General Policies and Whole Hospital Policies shall be complied with.

## Appendix:

1. Norms for staff

| Medical Personnel | Number | Remarks |
|---|---|---|
| Paediatric dermatologist | National norm: At least 2 per state hospital | FTE<br>Ref 1-3 |
| Medical officer | At least 1 per state hospital<br>(usually on a rotational basis from general paediatrics pool) | FTE |
| House officer | At least 1 per state hospital<br>(usually on a rotational basis from general paediatrics pool) | FTE |
| Nursing staff (specialised paediatric dermatology nurse) | At least 2 per state hospital | FTE |
| Dietitian | At least 1 paediatric dietitian with special interest in nutrition per state hospital | PTE |
| Pharmacist | At least 1 pharmacist (proficient in topical medications) per state hospital | FTE |
| Clinical psychologist | At least 1 per state hospital (with special interest in itch disorders) | PTE |
| Physiotherapist | At least 1 in hospitals with phototherapy units | PTE |
| Social worker | At least 1 per state hospital | PTE |
| Play therapist | As per general paediatrics norm | PTE |

FTE: Full time equivalent PTE: Part time equivalent

2. Norms for equipment:

| Equipment | Number | Remarks |
|---|---|---|
| 1. Pulse dye laser | At least 1 set per state hospital with paediatric dermatologist | |
| 2. Phototherapy (cabin or localised) | At least 1 set per state hospital with paediatric dermatologist | |
| 3. Iontophoresis | At least 1 set per state hospital with paediatric dermatologist | |
| 4. Electrocautery | At least 1 set in each hospital with paediatric dermatologist | |
| 5. Dermatoscope | At least 1 set in each hospital with paediatric dermatologist | |
| 6. Cryogun | At least 1 set in each hospital with paediatric dermatologist | |
| 7. Woods lamp | At least 1 set in each hospital with paediatric dermatologist | |
| 8. Table microscope | At least 1 set in each hospital with paediatric dermatologist | |
| 9. Clinical photograph | At least 1 set in each hospital with paediatric dermatologist | |

## References:

1. Jabatan Perdana Menteri Jabatan Perangkaan Malaysia Kenyataan Media Statistik Kanak-kanak, Malaysia 2021
2. Malaysia facing shortage of dermatologists - Dermatology Times, 2012
3. Update on the Paediatric Dermatology Workforce Shortage, Cutis 2021

# PAEDIATRIC INFECTIOUS DISEASES UNIT POLICIES

## 1. OBJECTIVES

1.1 To provide diagnostic, curative and preventive services that are appropriate, effective, adequate and comfortable to children requiring hospital care so as to ensure proper development and general well-being of the patient.

1.2 To provide continuous medical education (CME) activities at all levels of medical care (allied health or postgraduate) to ensure adequate professional attainment at preventive, curative and research aspects or purposes.

## 2. SCOPE OF SERVICES

2.1 Provision of facilities for the assessment, diagnosis, treatment, nursing and rehabilitation of children requiring inpatient as well as outpatient medical care.

2.2 Provision of counselling (including HIV/AIDS, other infectious diseases and travel medicine) and health education to children, parents and guardians.

2.3 Provision of immunization services for patients with incomplete immunization (missed opportunities).

2.4 Provision of facilities for practical training of paramedics, medical students, and postgraduates as well as in-service training for staff.

2.5 Provision of 24 hours service.

## 3. ORGANISATION

3.1 A Paediatric Infectious Diseases (PID) Specialist shall be in charge of the unit and shall be assisted by other specialists, fellows, medical officers, ward sister, staff nurses and specialised/trained nurses (where available).

3.2 The PID Specialist, other specialists and fellows shall be responsible for the medical management of patients and all education, training and continuous professional development activities within the unit.

3.3 The ward sister in charge shall be responsible for the day-to-day management of the ward.

3.4 The PID nurse/HIV nurse counsellor shall be responsible to assist in the running of the PID clinics (including HIV clinic). His/her roles shall include:

a. Providing treatment and psychosocial counselling to HIV-infected/affected children and adolescents and their caregivers.
b. Assists in maintaining a database.
c. Responding to patient's queries via phone.

3.5 The infection control nurse shall be responsible for all activities related to infection control and prevention in the department including surveillance of nosocomial infection, audit on hand hygiene and education of staff on infection control policy and procedures.

3.6 The medical officers in the unit shall be from the common pool in the paediatric department who are deployed to the unit on a rotational basis.

3.7 The number of personnel needed shall depend on the needs of the unit and the availability of personnel.

# 4. POLICY DESCRIPTION

## 4.1 Admissions and discharges

a. Patients shall be admitted through the admission registration counter whenever possible.
b. All newborns of HIV positive or 'high risk' mothers shall be admitted to Special Care Nursery (SCN) for initiation of prophylaxis antiretroviral therapy as per latest guidelines. They shall not be breast-fed (substituted with bottle feeding) unless in special circumstances. After discharge, they shall be followed up in the HIV clinic for a review of their well-being and their bloods taken for HIV testing (HIV antibody and PCR).
c. Critically ill patients from the Emergency Department or other hospitals may be transferred directly to the ward, and the admission formalities attended to subsequently. In such circumstances, the Emergency Department and the other hospitals shall inform the ward staff and the Medical Officer/Specialist respectively, prior to sending the case.
d. Patients requiring isolation, shall be nursed in single/isolation rooms wherever possible. HIV patients with desirable CD4 counts will be placed in general wards.
e. Advanced HIV/AIDS and other immunocompromised patients will be nursed in isolation rooms for reverse barrier nursing procedures.
f. All ill cases shall be placed near the nurse station.
g. Infection control and prevention measures shall be implemented in the unit and strictly adhered to by all staff.
h. Antimicrobial Stewardship policy shall be carried out to combat antimicrobial resistance by promoting rational use of antimicrobials among prescribers.etter to the referring doctor shall be provided if further care is required.
i. All notifiable infectious diseases under CDC Act 342 shall be notified to the relevant authority within the stipulated time.
j. Inter-ward transfers and discharges including deaths of patients shall be updated in the computerized hospital medical record system such as *Sistem Pengurusan Pesakit* (SPP).
k. Security measures for babies and children shall be observed at all times by ward staff.
l. A reply letter to the referring doctor shall be provided if further care is required.

## 4.2 Clinics

a. The PID Clinic is a specialist clinic and all patients shall be reviewed or discussed with a specialist.
b. All new referrals to the clinic shall be by appointment only according to the nature and urgency of referral and details of the appointment documented into the appointment book or system.
c. All investigation results shall be reviewed as soon as possible (no later than a week) after receipt of the results and action taken if necessary. This may include recall of the patients for clinical review or repeat of laboratory tests.
d. Patient's privacy and confidentiality during consultation shall be strictly observed.
e. For HIV-infected children, adherence to medications shall be assessed and treatment adherence counselling shall be given as needed.
f. Infection control and prevention measures shall be implemented to prevent potential transmission of infections in the clinic. This shall include provision of good ventilation system in the clinic's rooms and wearing of appropriate PPEs by attending personnel.

## 4.3 Day care

a. Day care services may be provided for services that do not require overnight stay or monitoring.
b. Relevant aspects of the general day care policy of the department shall be complied with.

## 4.4 Referrals

a. Referrals to the unit can be made to the consultant/specialist/ fellows or medical officers.
b. Referrals received by fellows or medical officers shall be discussed with the consultant/specialist regarding the urgency of appointment.
c. The unit specialist and doctors shall arrange to see non-urgent patients in the PID clinic on a scheduled appointment. Urgent cases shall be reviewed in the ward if they are inpatients or seen early in the clinic on non-clinic days at a scheduled appointment.
d. The patient, after treatment either as an outpatient or inpatient, may be referred back to the referring doctor for follow-up. A reply letter to the referring doctor shall be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent management of the patient.
e. Referrals to other units/ hospitals shall follow the general Operational Policy for Paediatric Services.
f. HIV-infected adolescents shall be transitioned to adult Infectious Diseases clinics or Family Medicine Specialist clinics. The usual age for transition process is 16-18 years. However, age of transition/transfer shall be individualized based on the patient's needs and circumstances. Patients will be provided with a comprehensive letter and copies of relevant investigations.

## 4.5 Procedures

a. All procedures in the unit shall be carried out according to the general Operational Policy for Paediatric Services.

## 4.6 Training

a. The unit shall conduct regular CME activities for all medical personnel to continually improve clinical skills and knowledge.
b. A 3-year subspeciality training in Paediatric Infectious Diseases shall be conducted in accordance with the standards adopted by MOH and National Specialist Register (NSR).
c. Medical officers on regular rotation shall be trained through active participation in clinical work and through bedside teaching and clinic consultation.

d. Nurses shall be encouraged to undergo training relevant to the needs of the unit including post basic training in HIV counselling and post basic training in Infection Control.
e. All staff shall be encouraged to attend courses and conferences to improve on their knowledge and skills.

### 4.7 Other related Operational Policies

a. All the Quality Assurance Initiatives of MOH shall be carried out accordingly.
b. The following latest guidelines and policies shall be put in practice:-

   i. Policies and Procedures on Infection Prevention and Control (2018)
   ii. Garis Panduan Pengukuhan Program Pencegahan Jangkitan HIV dan Sifilis dari Ibu-ke-anak (2021)

## 5. WHOLE HOSPITAL & DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department General Policies and Whole Hospital Policies shall be complied with.

## Appendix:

Norms for staff

| No. | Category of Staff | Number of Staff needed per Unit |
|---|---|---|
| 1 | PID specialists<br>- Regional hospitals<br>- State hospitals | <br>2<br>1 |
| 2 | Paediatricians | 1 |
| 3 | Fellows/ trainees (if available) | Max. 2 per trainer |
| 4 | Medical officers | At least 1 |
| 5 | Specialised/trained nurses<br>- HIV nurse counsellor/PID nurse<br>- Infection control nurse | <br>1<br>At least 1 |
| 6 | Nursing sisters | As per general ward requirement |
| 7 | Staff nurses / PPK | As per general ward requirement |

# ADOLESCENT MEDICINE UNIT POLICY

## 1. VISION

The Adolescent Medicine Unit of MOH will be a premier centre of excellence in adolescent patient care, training and research.

## 2. MISSION

The Adolescent Medicine Unit will:

a. Provide quality healthcare that is effective, appropriate, timely, and responsive to the patient, family, and community needs through a team of trained, committed, caring, and innovative personnel.
b. Provide continuing medical education and professional development.

## 3. OBJECTIVES

a. To give quality care incorporating aspects of promotive, preventive, curative and rehabilitative care which is adolescent-friendly.
b. To ensure that the level of knowledge and skill of its personnel continue to expand and improve by being actively involved in continuing medical education and professional development.
c. To create a conducive environment that is adolescent, family and personnel friendly.

# 4. SCOPE AND SERVICES

**The Adolescent Medicine ward**

a. The adolescent medicine ward shall be an age-based multidisciplinary ward catering to patients between 12-18 years old i.e. all patients 12-18 years old who do not require critical care shall be admitted to the adolescent wards.
b. There should preferably be a separate female and male ward.
c. The adolescent medicine specialist or general paediatrician (in the absence of an adolescent medicine specialist) shall be responsible for the overall administrative matters.
d. The general medical-based conditions shall be under the adolescent medicine unit and managed by an adolescent medicine specialist or general paediatrician( in the absence of an adolescent medicine specialist)
e. The surgically related conditions shall be managed by the respective surgical-based specialist i.e. surgery, orthopaedic, neurosurgery, ORL, Ophthalmology, gynaecology etc.
f. Patients under paediatric subspecialties shall be managed primarily by the subspecialists.

**The outpatient Adolescent Medicine Clinic**

a. The outpatient Adolescent Medicine Clinic shall cater for adolescents with general medical conditions and those adolescents referred for psychosocial issues

# 5. HUMAN RESOURCE

## 5.1 Staff organization

a. An adolescent medicine specialist or a paediatrician shall be in charge of the adolescent unit medical officers, ward manager and nursing staff.
b. The ward manager(s) shall be in charge of the day-to-day management of the ward.

## 5.2 Training and education

a. The Unit shall conduct regular CME activities for all medical personnel to continuously improve their clinical skills and knowledge.
b. Provide a platform for medical school and allied health training in adolescent medicine.

# 6. OPERATIONAL POLICIES

## 6.1 Operating hours

a. Adolescent wards shall be operated 24 hours
b. Adolescent medicine outpatient Clinics depending on the needs and set-up of various hospitals

## 6.2 Out-patient Clinic

a. Outpatient operational service is run in line with the hospital policy.
b. All patients are to be seen in the outpatient Adolescent Medicine specialist clinic on an appointment basis.
c. Walk-in patients (defaulters/existing patients) with urgent medical issues without appointment shall be directed to the emergency department
d. All other existing patients without an appointment shall be advised to make an appointment via telephone to the Adolescent Medicine specialist clinic.
e. All clinic referral cases are strictly on an appointment basis. They are to be accompanied by a referral letter, which shall be presented to the clinic reception counter at registration. The referring doctor could also call to get an appointment
f. The medical officer/adolescent Medicine Specialist in charge shall decide the appointment date according to the urgency based on the information provided in the referral letters or phone calls from the referring doctor.
g. All new referrals shall be seen by the paediatrician/adolescent medicine specialist
h. All repeat patients attending the clinic shall be seen by a medical officer or a specialist.
i. All major decisions on management and treatment shall be made by or discussed with the specialist.
j. A chaperon shall be made available when examining the opposite gender.
k. Patients shall be seen within 90 minutes from the time of appointment or registration (whichever is later). To facilitate this, patients shall be given staggered appointments.

## 6.3 In-patients

a. All admissions to the adolescent wards are decided by the respective discipline specialist.
b. Admission to the adolescent ward is from :

- The Emergency and Trauma Department
- The adolescent medicine clinic, paediatric subspecialty clinic and Ambulatory Care Centre
- Direct admission from other MOH health facilities and private health facilities after discussion and with prior approval of the respective discipline specialist

c. Registration of admissions shall be done at the Registration Counter of the hospital. However, patients from other health care facilities may be transferred directly to the ward, and the admission formalities attended to subsequently.
d. Admission or transfer to and from units providing intensive or specialized care is determined by the policies set up by the various units. (Please refer to documents of the PICU and other subspecialty services).
e. For other issues related to patient admissions, please refer to the general admission policies of the hospital.

## 6.4 Continuity of Care

a. Patients 16 -18 years of age who require continuing medical care shall be prepared for transfer of care to adult services. A transition clinic shall be operational and shall be staffed jointly by an adolescent medicine specialist/ paediatrician and an adult physician.

## 6.5 Assessment of Patients

a. All patients cared for in the adolescent medicine ward shall be categorised into emergency, semi-emergency and elective cases.
b. The assessment of patients shall be documented in the designated manual medical record or EMR comprising a full medical history
c. All patients admitted shall be seen by a specialist within 24 hours of their hospitalization
d. After assessment of the patient, the responsible medical officer/specialist shall decide on the most appropriate setting/level of care for the patient.
e. All monitoring of patients, re-assessment, management and progress of patients shall be recorded in the patient's manual medical records or EMR.

## 6.6 Care of Patients

a. There shall be provision of 24-hour in-patient care by medical officers on-site and 24-hour specialist cover.
b. Patients shall be reviewed by medical officers or specialists at least once a day, with the more severely ill cases reviewed more frequently.
c. Pass-over of patient care shall be conducted in person.
d. d. All patients who require intensive care shall be referred to the PICU / PHDW.
e. All specialists and medical officers shall perform the procedure(s) as privileged by the Credentialing and Privileging Committee of the hospital.
f. A chaperon shall be made available when examining the opposite gender.
g. Psychiatric patients who need isolation and one-to-one care shall follow the guidelines set by the Psychiatric Department
h. Patients with infectious diseases shall be placed in the isolation rooms when available or cohort nursing in cubicles located in each ward following transmission-based precautions.
i. There shall be a process to integrate and coordinate care.

- There shall be a responsible specialist for each patient who will plan, coordinate, and integrate the care of the patient.
- All plans, discussions, results and conclusions with other departments relating to the care of the patient shall be documented in the patient's manual medical records or EMR.
- There shall be a single integrated medical record for each patient.

j. Clinical procedures by the medical officers shall be performed in the treatment room unless otherwise indicated
k. On manual medical records or EMR:

- The following healthcare personnel who have direct care of the patient shall document in the patient's manual medical records or EMR: Medical practitioners, nurses, allied health staff, medical social worker
- The manual medical records or EMR shall be organised as per hospital policy
- Case summaries shall be completed within 3 working days from the day of discharge.
- For other policies please refer to policy on medical records – *Pekeliling KPK Bil. 3/2005 Garispanduan Rekod Perubatan Bagi Hospital-Hospital Kementerian Kesihatan 2 Mac 2005)*

## 6.7 Food and Nutrition

a. All patients shall be supplied with at least four meals a day. Dietary guidelines produced by the Ministry of Health shall be complied with.

## 6.8 Management of Pain and Palliative Care

a. Adolescent ward shall provide comprehensive patient care emphasising a pain-free environment for patients undergoing painful procedures.
b. Adolescents with life-limiting diseases, terminal illnesses and those requiring end-of-life care would be provided palliative care.
c. Reference can be made to the documents on:-

- *Pain Management Handbook prepared by the Malaysian Society of Anaesthesiologists and Malaysian Association for the Study of Pain 2004. (published in October 2013 by the Medical Development Division, MOH)*
- *Clinical Practice Guidelines on Management of Cancer Pain, MOH July 2010*
- *End of Life Issues and Management in Perinatal Care Manual. Clinical Practice Guidelines on Withholding and Withdrawing of Life Support in Children 2005.*
- *Pekeliling KPK Bil. 9 Tahun 2008, Pelaksanaan Tahap Kesakitan Sebagai Tanda Vital Kelima (Pain As Fifth Vital Sign) di Hospital -Hospital KKM*

## 6.9 Sedation

a. Steps shall be taken to minimize physical and emotional pain, trauma and distress to children undergoing procedures.
b. Pain control plans shall be individualised to the child and his/her family and prepared in collaboration with them. Cultural issues concerning the meaning and treatment of pain shall be known and respected. Non-pharmacological strategies for pain control shall supplement the use of analgesic and sedative drugs.
c. Invasive procedures shall be undertaken only when clinically necessary in the best interest of the adolescent and, except in an emergency, only with prior consent of the parent or legal guardian. Every effort shall be made to ensure that adolescents are accompanied and supported by a parent or caretaker
d. Refer to Paediatric Protocols for Malaysian Hospitals Latest Edition

## 6.10 Medication Management

Please refer to *Pekeliling KPK Bil. 3/2005 Garis Panduan Rekod Perubatan Bagi Hospital-Hospital KKM.*

## 6.11 Discharge

a. The patient's discharge criteria shall be based on the patient's health status and the social aspects of the family.
b. Decision for discharge shall be made by the specialist.
c. Decision for discharge shall be made early so that arrangements for transport and the continuing health needs of the patient can be made.
d. A discharge summary shall contain the following particulars:

- reason for admission
- significant physical findings
- diagnoses (according to ICD10) and co-morbidities
- diagnostic and therapeutic procedures
- medications given during ward stay
- patient's condition at the time of discharge
- discharge medications
- follow-up instructions

e. The Discharge summary shall be given to:-

- Patient
- The referring practitioner
- The practitioner responsible for the continuing care of the patient.

f. Discharge care plan

- Ensure that intravenous lines are removed before discharge
- Ensure the prescription for medication is ready and answer queries regarding medication
- Instructions as to the need for follow-up care, the date, time and location of the follow-up and where urgent care can be obtained shall be given
- Patients who have not received or updated their immunisation shall receive the relevant immunisation before discharge

- The discharge forms shall be duly signed by the parent/guardian and the discharge slip given to them. The identity of the parent/ guardian claiming the child on discharge shall be checked and recorded.
- Special security consideration shall be given to patients at risk of absconding.
- Patients admitted via the police or Jabatan Kebajikan Masyarakat shall be provided with appropriate safety and security arrangements.

## 6.12 Inter/interfacility transfers

Refer to *Garispanduan rujukan dan perpindahan pesakit diantara hospital-hospital KKM MOH/P/PAK/165.08(GU) Mei 2009*

## 6.13 Visiting hours

a. Visiting hours for the wards are in accordance with the hospital policy.

## 7. PATIENT AND FAMILY RIGHTS

Refer to General Hospital Operational Policy 2013 (or the latest edition available)

## 8. RESEARCH

a. There will be a dedicated Clinical Research Centre (CRC) to facilitate and develop research capacity and activities in all areas of paediatrics.
b. Refer to circular on research – NIH Guidelines for Conducting Research in the MOH Institutions & Facilities 5 Sept 2007

## 9. DEDICATED ADOLESCENT WARD

Dedicated Adolescent wards are planned in some regional hospitals and eventually in State Hospitals. However currently most Adolescents are housed in General Paediatric wards.

### 9.1 Admission criteria:

Adolescents between the ages 12 to 18 years who are stable and admitted after discussion with Paediatrician in charge.

### 9.2 Exclusion criteria:

i. Those who require intensive or high dependency care/acute post op care
ii. Those with intellectual disabilities with no caregivers
iii. Those with acute psychotic symptoms
iv. Pregnant teens beyond 22 weeks of gestation

## 9.3 Infrastructure

There should be two dedicated adolescent wards. One each for female and male adolescents.

Each ward shall consist of 24 beds comprising of:

i. 2 single rooms
ii. 2 isolation rooms
iii. 2 bedded ( 4 cubicles)
iv. 4 bedded ( 2 cubicles)
v. 4 bedded acute cubicle

***Isolation rooms to be designated for isolation purposes of patients with suicidal/psychiatric needs, to ensure safety and supervision or for general isolation for infection control.*

The Adolescent Medicine Unit aims at providing multidisciplinary and comprehensive Adolescent services to all patients 12 to 18 years of age. These services include outpatient, Inpatient, ambulatory /day care as well as outreach services.

### 9.3.1 **Physical Infrastructure**

A. The Adolescent **outpatient** Clinic

The Adolescent Medicine Unit should be separate from the main younger children's area to ensure maximum privacy for the client in view of their special medical needs. This area needs to be conducive for the young person to drop in for medical help in a confidential yet friendly milieu.

i. A spacious and private area away from the main Paediatric outpatient clinic will be ideal to give a sense of identity to young people.(Adolescents are too old to be in child friendly clinics).
ii. The layout of this area has to be Adolescent Friendly-(less childlike props and wall furnishing).
iii. The interview rooms should be big enough to house the whole family and the attending medical personnel (at least to accommodate six to eight seats for family discussion).
iv. Adjacent room with one way mirror for training, or medical legal purposes for use by police/social worker.
v. 3 other smaller interview room for simultaneous discussion with patient or family by medical social worker, occupational therapist or dietician.
vi. A treatment room with en-suite washroom for urine collection or for changing into hospital gear for gynaecological examination
vii. A recreational area while waiting to be seen by the physician- an area to accommodate computers, snooker table , resource area with book shelves etc.
viii. A waiting area away from the interview room for families while their teenagers
are being seen by the doctor.
ix. Separate male and female toilets.

The Adolescent outpatient clinic can be used by all disciplines of the Hospital who deal with young patients 12-18 years of age. The different disciplines can come on designated clinic times to see their patients in the same premise e.g. gynaecology, endocrine, neurology, renal etc.

B. The Adolescent Inpatient wards (2 WARDS-One Male and One Female)

i. Beds: 24 beds per ward.
ii. The nursing station is in a central area for supervision purposes.
iii. A common recreation and kitchen area. Young people heal better with healthy interaction as evidenced by developmental needs in this age group.
iv. The beds are ideally placed in 2 per cubicle to ensure privacy or the most 4 per cubicle. There has to be en suite bathrooms in each cubicle for maximum privacy.
v. Isolation rooms- at least 4 single bedded rooms need to be designated for isolation purposes with single rooms for patients with suicidal/ psychiatric needs- to ensure safety and supervision or for general isolation for infection control as in oncological teens or infectious diseases.
vi. Special interview rooms within the ward: Big enough for various team members and family with at least 6 chairs.
vii. Common recreation rooms with glass doors and walls: To ensure safety and to monitor them e.g. common TV/VIDEO rooms, common dining room, common games room.
viii. An Outdoor area (courtyard) next to the Adolescent ward for outdoor games-basketball court or open area to have group activities
ix. Staff room in the ward for clinical discussions amongst the multidisciplinary teams and for grand ward rounds.
x. Treatment rooms for special procedures.
xi. Special counselling room for group sessions in the ward.

### 9.3.2 **Equipment**

a. Out/In patient—Medical equipment e.g. weighing machines (sitting), height measurement, skin fold callipers, ophthalmoscopes, stethoscopes, examination couches, resus trolleys, surgical & orthopaedic appliances etc. This will be in accordance to General ward requirements.
b. Audio/Visual tools-TV, computers, videos, digital cameras.
c. Therapy tools- Treadmills (for obesity), exercise tools, occupational tools
d. Recreation - Snooker tables, TV , VCD player, computers, sewing machine (girls), carpentry tools (boys)

### 9.3.3 **Human Resource For 2 Adolescent Wards**

| | Category | Number |
|---|---|---|
| 1. | Adolescent Consultant (Head of Unit) | 1 |
| 2. | Adolescent Specialists /Paediatricians under training(Fellows) | 4 -6 |
| 3. | Adolescent psychiatrist | 2 |
| 4. | Medical officers | 8 |
| 5. | Clinical psychologist | 1 |
| 6. | Medical Social workers | 2 |
| 7. | Clinical counsellors | 2 |
| 8. | Occupational therapist | 1 |
| 9. | Medical Assistants | 4 |
| 10. | Nurses | 30 (15 per ward) |
| 11. | Nursing Sister | 1 |
| 12. | Ward clerk | 2 |
| 13. | Health Attendants(male& female) | 4 |
| 14. | Physiotherapists | 2 |
| 15. | Dietician | 1 |
| 16. | Research assistant | 1 |
| 17. | Recreational coordinator/artist/teacher | 1 |

# PAEDIATRIC SPECIALIST CLINIC POLICIES

## 1. VISION

The same as that of the Paediatric Department.

## 2. MISSION

To provide an excellent and high quality outpatient paediatric clinic services by a team of dedicated and professionally trained personnel who are committed, compassionate and disciplined.

## 3. OBJECTIVES

3.1 To provide an effective Paediatric Outpatient Sub-Specialty Clinic and General Paediatric Clinic for childhood and adolescent problems.

3.2 To provide basic emergency facility to cater for ambulatory outpatient attendances.

3.3 To provide relevant health education to parents and care givers on issues of child health.

3.4 To provide basic childhood immunization services.

3.5 Quality objective in which 90% of patients are to be served by the clinic personnel within half an hour after registration.

3.6 Quality objective in which 90% of the patient's medical records to be traced before the appointment date.

3.7 The Paediatric Specialist Clinic would operate daily in a punctual manner.

## 4. SCOPE OF SERVICE

4.1 The Paediatric Outpatient Clinic operates during office hours according to the clinic schedule.

4.2 Referral and follow-up Paediatric cases are to be seen on an appointment basis.

4.3 To provide immunization services to children according to the standard immunization schedule.

4.4 To provide 'blood-taking' facilities for investigation and also minor procedures (wound dressing, toilet & suture, etc.)

## 5. SCOPE OF SERVICE

5.1 The Paediatric Specialist Clinic is headed by a Consultant Paediatrician from the Paediatric Department.

5.2 The day-to-day management of the Paediatric Specialist Clinic shall be the responsibility of the nursing sister assisted by the staff nurses, assistant nurses and *'Pembantu Perawatan Kesihatan'.*

5.3 The clinic is made up of the various paediatric sub-specialties and each team is headed by the unit head.

## 6. OPERATIONAL POLICIES

6.1 Patient shall be seen at the Paediatric Specialist Clinic only on an appointment basis and patients without an appointment shall be seen only if necessary according to the discretion of the specialist on individual sub-specialty.

6.2 Patient medical records are to be traced a week before the appointment date and are kept confidential.

6.3 Patient for admission to the wards are accompanied by a nurse or an attendant.

6.4 Patient's weight and height and vital signs are taken before consultation. Blood pressure is taken for all nephrology patients and other relevant groups of patients.

6.5 Examination of female patients by male doctors shall be chaperoned by female staff.

6.6 Injections, dressing and ECG are carried out in the procedure rooms.

6.7 Immunisations are given in the treatment room by the staff nurse.

6.8 Blood specimens are taken in the treatment room by the staff nurse.

6.9 *The Baby Friendly Policy* shall be in practice. Breast feeding facilities shall be made available for mothers.

6.10 The staff nurse or sister shall keep an updated inventory of all equipment and ensure that they are maintained regularly and kept in good functional condition.

6.11 An emergency trolley shall be made available at all times. The contents are checked daily and replenished accordingly.

6.12 CSSD sets and Dangerous Drugs are daily checked and recorded.

6.13 Clinic census or statistics are maintained and submitted to medical records monthly.

6.14 Any untoward incident in the clinic is recorded and notified to the Consultant, Head of Department and Hospital Director.

6.15 Cleaning and housekeeping of premises including supply of clean linen shall be done by the concession holders which are appointed by the Ministry of Health Malaysia according to schedule drawn up and agreed upon by Hospital and concession holders.

## 7. TRAINING

7.1 Regular teaching activities will be carried out for staff to improve knowledge and skill.

7.2 Nurses are sent regularly for courses, conferences and in-house training is done through clinic supervision during working hours.

7.3 Health education is given to patients by nurses and doctors as and when the need arises.

## 8. UNIT MEETINGS

8.1 Staff meeting shall be held once a month to discuss problems and its solution.

8.2 Problems that cannot be solved during meetings will be brought up to the matron or to the department meeting.

## 9. WHOLE HOSPITAL & DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department General Policies and Whole Hospital Policies shall be complied with.

# PAEDIATRIC DAY CARE UNIT POLICIES

## INTRODUCTION

Paediatric day care centres shall be appropriately designed, staffed and equipped for the treatment of children. If there is no paediatric surgical day care services, the day care will be used mainly for the medical day care.

## 1. VISION

Same as the Paediatric Department's vision.

## 2. MISSION

2.1 To reduce the number of ward admission for patients who require simple procedures, investigations or treatment that can be done within the day, thus reducing the cost of medical treatment, nosocomial infection as well as being more friendly to the patient and family.

2.2 To provide diagnostic, curative and rehabilitative services that is appropriate, effective, adequate and comfortable to the children as an outpatient on a day-to-day basis.

## 3. SCOPE OF SERVICE

3.1 The Day Care Unit (DCU) receives patients who are referred from the wards or the Paediatric Outpatient Clinics.

3.2 The DCU provides services on working days and is closed on Public Holidays.

3.3 Official working hours shall depend on local requirements, aiming for 7.00 a.m. till 9.00 p.m. in 2 shifts of working days where feasible.

3.4 The DCU caters for a wide variety of patients from multiple disciplines:-

a. Haematology

i. Blood and blood product transfusions for thalassemia and aplastic anaemia patients scheduled from the clinics/wards.

b. Oncology

i. Blood taking and review
ii. Central venous line flushing
iii. Bone marrow aspiration & trephine biopsy
iv. Diagnostic lumbar puncture and intrathecal chemotherapy administration
v. Intravenous, intramuscular and subcutaneous chemotherapy administration
vi. Transfusion of blood and blood products

c. Gastroenterology

i. Patients with esophagogastroduodenoscopy under GA
ii. Patients for pH study
iii. Changing of nasogastric tubes

d. Dermatology

i. Patients for skin biopsy, local treatments and review

e. Cardiology

i. Patients for echocardiogram

f. Respiratory

i. Administration of nebulisers for patients from the outpatient clinic
ii. Review of patients with chronic lung problems

g. Genetic and Metabolic

i. Blood taking and review of new & follow-up cases whenever necessary
ii. Skin biopsies

h. Surgery

   i. Minor surgical procedure under GA e.g. herniotomy, circumcision and orchidopexy.
   ii. Minor procedures under sedation e.g. desloughing and dressings

i. Diagnostic Imaging

   i. Patients coming in for diagnostic imaging procedures either with or without sedation e.g. CT scan, IVU, MRI, MCUG, ultrasound, barium meal/swallow, genitogram/loopogram.

j. Nuclear imaging

   i. Patients requiring nuclear imaging studies with or without sedation e.g. DMSA, DTPA, Bone scan and HIDA scan

k. Endocrine

   i. Various laboratory diagnostic procedures / test for endocrine disorder e.g. insulin tolerance test, etc.

l. Dental

   i. Minor dental surgery
   ii. Dental clearance

m. ENT/Audiology

   i. ABR (audiology brain response) under sedation

n. Others

   i. Suprapubic aspiration of urine, Ryle's tube change, cathetherisation, intravenous immunoglobulin.

# 4. DESIGN AND ENVIRONMENT

## 4.1 Design Characteristic

a. A well-defined dedicated facility should be provided for the children, separate from adults and from inpatients.
b. The centre should be multidisciplinary but dedicated to children only. The physical environment should provide for the various and special needs of children and adolescents and in particular the special emotional needs of children must be recognized.
c. This area should be furnished and decorated in a manner that is comfortable and reassuring for both patients and their parents.
d. The children's area must be easily observed at all times by trained and registered nursing staff familiar with the care of children.
e. Suitable play areas and play facilities should be provided in the waiting area.
f. The design of consulting and treatment areas must permit parents to remain with their children.
g. The treatment and procedure rooms must be fully equipped to manage paediatric emergencies if required.
h. All day care centres should have a nappy change room and a separate breast feeding room.
i. A dedicated direct telephone line in and out of the centre is essential.
j. There should be internet access available.

## 4.2 Special areas

a. Common areas
b. Lounge/TV area
c. Play area for younger children
d. Reading/ quiet room for the older children / adolescent
e. Kitchenette / Pantry with controlled access to parents
f. Toilets with showers for the patients, attached to the cubicles.
g. Public toilets in the common area

# 5. ORGANISATION

The daily functioning of the unit is under the care of a nursing sister and her team of nursing staff and health attendants. As patients are from various units and disciplines, each patient will also be under a joint management of doctors from various units and disciplines. At least one medical officer is appointed on a rotational basis to carry out the procedures and administer the sedations. He / She is also required to run the thalassemia clinic with the specialist whenever possible.

# 6. OPERATIONAL POLICIES

## 6.1 Admission and Discharge

a. Patients referred for investigations, treatment or a procedure referred from the various wards and outpatient clinic must be given an appointment and the appointment book is kept at the nursing counter. Patients shall be admitted to the unit on the appointment date given.
b. On the appointment day, patients are registered at the registration counter before being admitted to the DCU. Children shall be accompanied by at least one parent or guardian.
c. Patients' particulars shall be recorded in the admission book.
d. The nurse on duty shall record the vital signs taken on admission. The weight and height of the patient will be chartered on the monitoring chart.
e. The doctor in charge shall discharge the patient after review.
f. Patients will be given an appointment for the DCU, the clinic or admission appointment to the ward depending on the plans decided by the primary team managing the child.
g. Patients who cannot be discharged by the time the DCU close who requires further monitoring will be transferred to the ward.
h. Exclusion criteria for day surgery/procedure should be strictly adhered to as follows:

| | |
|---|---|
| Medical exclusions | • ASA Class 3,4 or 5<br>• Diabetes Mellitus<br>• IEM<br>• Untreated or complex congenital disease<br>• Active viral or bacterial infection especially URTI |

| | |
|---|---|
| Age exclusions | • Ex-premature baby up to 60 weeks post conceptual age |
| Anaesthetic exclusions | • Inexperienced anaesthetist<br>• Operations of more than 1 hour<br>• Difficult airway<br>• Family history of malignant pyrexia<br>• Siblings of child with SIDS<br>• Haemoglobinopathies |
| Surgical exclusions | • Inexperienced surgeon<br>• Prolonged painful procedures<br>• Opening of body cavity<br>• High risk of post-op haemorrhage<br>• Adenotonsillectomy |
| Social exclusions | • Single parent with several children<br>• Poor home circumstances<br>• No transport<br>• Long distance from home (more than 1 hour) |

Working hours will depend on workload, aiming for 7 am to 9 pm working hours, in two shifts.

## 6.2 Clinical Appraisal

a. Patients who have procedures or chemotherapy infusions given will be assessed and continue to be monitored depending on the cases or the procedure planned.
b. The medical officer in charge will be informed to assess the patient before any procedure is carried out.
c. Patients who are still receiving treatment or being observed will again be seen by the medical officer before the office hour is over at 4.30 p.m. and cases that need to be reviewed will be passed over to the oncology medical officer on call.
d. Before the DCU is closed for the day, any patient that warrants further assessment or observation will be transferred to the active ward or oncology ward.

### 6.3 Referrals

a. Referrals to the unit are from the clinics and wards. Patients referred from the ward will be given an admission form upon discharge from the ward. The ward clerk shall inform the DCU nurse so that the names will be entered in the appointment book.
b. Patients who are referred from the clinic will also be given an admission form for procedures to be carried out in the unit and the clinic nurse shall inform the appointment to the unit.
c. Direct admissions shall be registered straight away before coming in to the unit.
d. For simple procedures i.e. administration of nebulisers, a small note will be given from the clinic to the staff in the DCU.
e. Patients who do not require further or subsequent DCU follow up shall be referred to the ward or clinic.

## 7. TRAINING

a. The unit holds regular teaching activities for all medical personnel and patients to improve knowledge and skills.
b. Regular department CME meetings for doctors and nurses are held.
c. The medical personnel are also encouraged to attend other training activities.
d. Nurses are sent regularly for courses, conferences and in-house training is done through ward supervision.
e. Health education sessions are given to patients by nurses and doctors as and when the need arises.

## 8. UNIT MEETINGS

a. Unit meetings shall be held to discuss issues and their solutions.
b. Issues that are unresolved during the meetings shall be brought up to the matron or to the department meeting.

## 9. WHOLE HOSPITAL AND DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department General Policies and Whole Hospital Policies shall be complied with.

# DEVELOPMENTAL PAEDIATRIC UNIT POLICY

## 1. OBJECTIVES

### General Objective

To provide holistic and optimal care for children with developmental disabilities by a team of trained and dedicated personnel using standardised assessment tools, facilitating treatment pathways and managing challenging behavioural and learning issues within a well-organized team, networking with schools and allied health personnel.

### Specific Objectives

1.1 To provide accurate diagnoses with comprehensive management planning involving the child, parents, allied health personnel and school.

1.2 To enhance the quality of care of children with developmental disabilities and their families by ensuring quality continuous professional development of its staff.

1.3 To provide a value-added treatment or management plan for these children and their family through well-coordinated clinician-led comprehensive assessment and interventions, caregivers' training and information.

1.4 To function as a training centre for Developmental Paediatrics Clinical Fellows.

1.5 To train various categories of healthcare professionals involved in the evaluation, diagnosis and intervention of children with developmental disabilities.

1.6 To provide and facilitate parental education and support in managing behavioural and learning challenges in children with developmental disabilities.

1.7 To conduct good quality research in Developmental Paediatrics.

## 2. SCOPE OF SERVICES

The Developmental Paediatrics unit will provide the following services:

2.1 Tertiary outpatient care for children with developmental disabilities namely Autism Spectrum Disorder, ADHD, Specific Learning Disorders, Intellectual Disability and challenging behaviours.

2.2 Use of standardised assessment tools ranging from development, learning, cognition, adaptive function, attention and social interaction among others, to establish accurate diagnosis and provide comprehensive management which includes networking with local paediatrician and Family Medicine Specialist, allied health and schools.

2.3 Counselling on pharmacotherapy for selected cases.

2.4 Conducting regular parent training programmes in addition to parental education given during consultation.

2.5 Providing detailed developmental assessment as part of pre-cochlear implant work up for regional centres.

2.6 Working together with schools in outreach programmes and facilitating management of children with behavioural and learning difficulties at school and intervention centres.

2.7 Supporting parents during challenging times by providing phone consultation, virtual clinics and providing supporting letters to employers.

2.8 Training of Developmental Paediatrics Clinical Fellows, medical officers, house officers, medical students and nurses.

2.9 Conducting high quality research in Developmental Paediatrics.

2.10 Advocacy roles in issues related to developmental disabilities.

## 3. COMPONENTS

The following are the components of Developmental Paediatrics services.

### Clinics

a. The Developmental Paediatrics outpatient services are run according to schedule at the designated area identified in the respective hospitals.
b. Highly specialised assessments are scheduled on an appointment basis.

### Community

a. Training Family Medicine Specialists, medical doctors and nursing staff at health clinics at regional level on screening for developmental delay and learning disability at primary care. Conducting regular training on CPGs related to Developmental Paediatrics (currently available CPGs are on ASD and ADHD). Supporting parents and schools to help manage behaviour and learning of affected children through parent training, school visits and training of staff.

All the services will be provided during office hours. Visiting clinics by the Developmental Paediatrician may be run in certain states when there is a pressing need and sufficient manpower.

## 4. ORGANIZATION

The unit shall be headed by a Developmental Paediatrician working together with Developmental Paediatrics specialist, Developmental Paediatrics trainees, medical officers (in rotation), trained nurse and health care assistant (PPK). Supporting staff e.g. clinical psychologist, occupational therapist, speech therapist, physiotherapist, counsellor and social welfare officer will complement the unit.

| | |
|---|---|
| Developmental Paediatrician | 1: 200,000 children |
| Developmental Paediatrics trainees | 2 trainees per trainer |
| Developmental Paediatrics MO (in rotation) | 1 per unit (minimum) |
| Trained nurse | 2 per unit |
| Health care assistant | 1 per unit |

# 5. OPERATIONAL POLICIES

a. General: As for General Paediatrics Services

b. Specific: Developmental Paediatrics

## 5.1 Clinics

a. All patients seen at the Child Development Specialist are strictly on an appointment basis. All referral letters are vetted by a team member and scheduled for an appointment. On the day of appointment, parents will be advised to register their child at the registration counter of the Paediatric Specialist Clinic. All appointments will be given according to available time slots, depending on number of staff available. Patients will be seen according to appointment time given, with follow up dates given after consultation.

b. Documentation of clinical notes. The Developmental Paediatrics specialist or trainee should ensure that all doctors in the unit make accurate and comprehensive documentation of the clinical notes.

   i. Documentation shall include:

   - Patient identification data
   - Clinical history, examination and observation of behaviour
   - Assessments and interpretation of findings
   - Investigations and results
   - Formulate management plan
   - Follow-up notes and consultation

   ii. Communication with the patient, parent/ caretaker, other doctors, other authorities etc. should also be documented.

## 5.2 Training and Continuing Medical Education

a. Developmental Paediatrics Clinical Fellows training. Standards and curriculum on training of Developmental Paediatrician apply.
b. Medical officers will attend all the clinic sessions, unit journal read and Paediatric department academic activities. At the end of 3-month rotation, the MO should be able to identify and manage development delays and have a basic understanding of common neurodevelopmental problems in children.
c. Nurse will be trained on the job and will be able help in performing developmental screening.

# 6. WHOLE HOSPITAL & DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department Policy and Whole Hospital Policies shall be complied with.

## Appendix:

1. **Equipment (Assessment tools)**: (or updated versions of assessment tools listed or new assessment tools available in the future)

    - Developmental assessment: Schedule of Growing Skills II, Bayley Scales of Infant and Toddler Development 3rd Edition, Griffiths Mental Development Scales (3rd Edition)
    - Learning/Cognitive assessment: Brigance Screens III, Raven's 2 Progressive Matrices, Wide Range Achievement Test (WRAT-5 test), Behavior Rating Inventory of Executive Function (BRIEF)
    - Autism assessment: Autism Diagnostic Observation Schedule-2 (ADOS-2), Social Responsiveness Scale, second edition (SRS-2), Autism Diagnostic Interview-Revised (ADI-R)
    - ADHD/behavioural assessment : Conners Rating Scale (3rd Ed), Child Behavior Checklist (CBCL)
    - Adaptive function assessment: Vineland Adaptive Behaviour Scales 3, Adaptive Behavior Assessment System (ABAS)
    - Coordination difficulties assessment: Movement Assessment Battery for Children (2nd Ed)

# PAEDIATRIC GASTROENTEROLOGY UNIT POLICIES

## 1. OBJECTIVES

1.1 To provide holistic and optimal healthcare through access to dedicated and competent gastroenterologists in fully equipped facilities. This includes diagnostic, curative and rehabilitative services that are appropriate, effective, efficient and timely to children with gastroenterological, hepatic and nutritional-related diseases.

1.2 To provide adequate and continuous training, and continuous motivation for its personnel

1.3 To cultivate and strengthen the positive attitudes towards learning and knowledge with quality assurance

1.4 To promote good quality research in paediatric gastroenterology, hepatology and nutrition

1.5 To promote good rapport among personnel, patients, family and community

## 2. SCOPE OF SERVICES

The Paediatric Gastroenterology Unit shall provide the following:

2.1 Outpatient and inpatient care in Paediatric Gastroentrology, Hepatology and Nutrition.

2.2 Day care centre facilities for patients who do not warrant admission such e.g diagnostic endoscopy andtreatment with biologics

2.3 Provision of specialised procedures

a. Endoscopy services:

   i. Diagnostic endoscopy service with oesophago- gastroduodenoscopy, enteroscopy and colonoscopy
   ii. Therapeutic endoscopy services including variceal banding / sclerotherapy / occlusion, foreign body removal, polypectomy and percutaneous endoscopic gastrostomy/jejunostomy

b. Motility services including bowel transit study and 24-hour pH impedance study
c. Food challenge tests
d. Liver biopsy for diagnostic purposes
e. Liver transplantation services through multidisciplinary teams at designated transplant centres
f. Nutritional support services and Community services:

   i. Home enteral therapy
   ii. Home parenteral nutrition therapy

g. Counselling on paediatric gastroenterology cases.

2.4 Training of doctors, nursing staff and allied health personnel including gastrointestinal assistants and dietitians in paediatric gastroenterology, hepatology and nutrition.

2.5 To conduct research in paediatric gastroenterology, hepatology and nutrition.

2.6 Visiting specialist clinics to other state hospital without paediatric gastroenterology services to provide professional input and care for paediatric gastroenterology cases.

2.7 Advocacy role for issues related to paediatric gastroenterology, hepatology and nutrition

2.8 To provide professional input or participate in support groups for chronic paediatric gastroenterology diseases.

## 3. ORGANIZATION

3.1 The unit shall be headed by a paediatric gastroenterologist

3.2 The number of paediatric gastroenterologists will depend on the need and availability of personnel with minimum of 2 paediatric gastroenterologists in a tertiary referral centre.

3.3 The medical officers in the unit will be from the general paediatric department who comes on scheduled rotation. The number of medical officers depends on the availability of medical officers with minimum of one at any one time.

3.4 The unit will be organized into various sections: gastroenterology, hepatology and nutrition. A transplant unit shall be set up in the designated transplant centre.

3.5 The Sister-in-charge shall be responsible for the day-to-day management of the ward and clinic with dedicated paediatric gastroenterology nurses

3.6 Assistant medical officers (AMO), nurses or preferably a certified gastrointestinal assistant (GIA) will be responsible for assisting in endoscopy and motility services

3.7 All the services will be provided during office hours. Inpatient care after office hours will be provided by the on-call team of general paediatrics. Teleconsultation service is provided by the paediatric gastroenterologist (or on a rotational basis if there is more than one paediatric gastroenterologist) as and when required.

3.8 The nutritional support team consisting of the paediatric gastroenterologist, dietitian and pharmacist shall help provide nutritional support to children that need specialised nutrition.

3.9 Please refer to Appendix 1 for norms in staffing

# 4. OPERATIONAL POLICIES

## 4.1 ADMISSION AND DISCHARGE POLICIES

a. Admission to the paediatric gastroenterology ward shall be from:

   i. The active clinic of the Paediatric Department
   ii. The paediatric gastroenterology clinic
   iii. Direct referrals from other clinics, wards, or hospitals
   iv. Direct referrals from emergency department

b. Registration of admissions – refer to department policies
c. Admissions are received daily during office hours. After office hours, admission shall be to the active general paediatric ward.
d. Emergency cases shall be seen by the Emergency Department and admitted to the Paediatric Ward if necessary
e. Direct admission shall be arranged with the specialist
f. Discharge and follow-up: -

   i. Upon discharge, patient shall be given a discharge summary and a clinic appointment dat.

g. For general policies on admission and discharge - refer to departmental operational policies.

## 4.2 INPATIENT POLICIES

a. Paediatric gastro medical officer/specialist in-charge of the ward shall be informed of all patients prior to their admission to the ward, preferably medical officer/paediatrician in-charge of the general paediatric ward should be informed too.
b. For other inpatient policies on admission and discharge - refer to departmental operational policies.

## 4.3 CLINIC POLICIES

a. Referrals to the Paediatric Gastroenterology Unit are accepted from the government or private health care centres or hospitals.
b. All referrals require written referral letters; the specialist or medical officer shall arrange to see the patient in the Gastroenterology clinic on a scheduled appointment. All new cases shall be seen within 6 weeks of referrals
c. Registration is done at the Registration Counter (Klinik Pakar Pediatrik) and each patient will be given a number to be called into the clinic room for review.
d. All investigation results will be traced and filed in the patients' case notes prior to their attendance.
e. All cases will be seen by specialists or medical officers under specialist supervision
f. Virtual clinic may be practice in certain situations following ministry's published operating policy

## 4.4 DAY CARE

a. Day care services shall be provided for cases which do not require admission. These include procedures like changing feeding tube, or PEG tube, diagnostic endoscopy, food challenge test, cases on home enteral/parenteral nutrition programme for review and others.
b. The administration of the day care unit shall be under the responsibility of the sister in-charge supported by day care staffs.
c. The receptionist in the day care shall be responsible to inform the paediatric gastro team when the patient arrives.
d. Paediatric gastro team shall review and discharge patient after review. Discharge summary shall be done prior discharge from day care.
e. If the patient is not fit for discharge, the patient shall be admitted to the ward for further management

## 4.5 REFERRALS

a. Referrals to the Paediatric Gastroenterology Unit are accepted from the government or private health care centres or hospitals.
b. In-patients referrals are to be seen or at least given consultation within 24 hours of referrals
c. Outpatients' referrals will be reviewed in clinic on a scheduled appointment.
d. Referrals are also received through designated email for non-urgent consultation.
e. The patient, after treatment may be follow up or referred to the referring doctor for follow-up. A reply to the referring doctor should be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent management of the patient
f. Referrals to other units/hospitals
g. Refer to general paediatric department policies and procedures.
h. Referrals to adult gastroenterology care
i. For those who have reached 18 years old, and to ease transition of care from the child unit to the adult unit, if possible, the patient is introduced to the adult counterpart before he/she is formally transferred to the adult unit.
j. Letter of referral to be given together with relevant copies of laboratory results and imaging.

## 4.6 RELEVANT PROCEDURES

### a. Endoscopy service

i. Elective cases shall be done in the properly equipped endoscopy unit, operation theatre (OT) or occasionally Paediatric / Neonatal Intensive Care Unit. Usually, patients shall be admitted to the ward before the procedure or sometimes on the day of procedure especially when day care facility available. The endoscopy list of cases shall be sent to the OT/endoscopy unit at least one day prior to the procedure. The list shall be prepared and signed by the medical officer/specialist in charge.
ii. Anaesthetic review is advisable before the elective procedure in OT. Certain high-risk cases may need intensive care backup.
iii. Consent for endoscopy shall be obtained from the parents by the Specialist and adequate information regarding the procedure explained.

iv. Emergency endoscopy can be done at any time necessary when the OT is available.
v. Patients may be discharged the same day if they are stable after the procedure.
vi. Patients who require endoscopic intervention procedures e.g., variceal banding or sclerotherapy will need to be monitored for at least 24 hours and to be discharged the following day if well.
vii. Patients who has percutaneous endoscopic gastrostomy insertion will need to be monitored for at least 24 hours and for caregivers to be educated regarding gastrostomy care before discharge.

**b. 24-hour pH impedance monitoring and other motility studies**

i. All patients need to be reviewed by paediatric gastroenterologist and appointments will be given to patients for the study.
ii. Usually, the patients need to be admitted for 24 hours for the procedure if they are outpatients.
iii. A trained technician/ medical assistant will help the paediatric gastroenterologist to set up the monitor.
iv. They may be discharged the next day.
v. The monitoring will be uploaded to the computer after the completion of the study.
vi. Report will be made available within 7 days. It will be reported by a Paediatric Gastroenterologist.

**c. Food challenge test**

i. All patients need to be reviewed by paediatric gastroenterologist and appointments will be given to patients for the procedure.
ii. Usually, the patients need to be admitted in the morning for the procedure. Food challenge test may be done as day care case if facility is available.
iii. Close monitoring is needed, and resuscitation measures should be in place for unforeseen situation.

### d. Liver biopsy

i. All patients need to be reviewed by paediatric gastroenterologist and appointments will be given to patients for the procedure
ii. Usually, the patients need to be admitted one day before the procedure. Ultrasound abdomen will be done before the procedure to ensure no structural anomalies and procedure is safe to be performed. Possible complications will be explained and consent to be taken from the care takers.
iii. Close monitoring right after procedure is needed and resuscitation measures should be in place for possible complications post procedure.
iv. Patient will be monitored for at least 24 hours and to be discharged the following day if well.

### e. Nutritional support

i. Nutritional support is provided by paediatric gastroenterologist to the needy.
ii. Ideally, a nutritional support team consists of a multidisciplinary team i.e., paediatric gastroenterologist, dietitian, TPN pharmacist, nutrition nurse, speech therapist, occupational therapist, psychologist, paediatric surgeon, and social welfare worker should be set up to deliver the service if possible.
iii. Inpatient and home enteral /parenteral therapy are provided.
iv. Home visit and training of the patients /parents/ guardians need to be done before home nutritional therapy is employed
v. Patients will be monitored closely to ensure proper nutrition delivery, growth, and development in nutrition clinic

### f. Liver Transplantation

i. Policy on donor and recipient liver transplant should be carried out using a liver from a suitable cadaveric donor or a living related liver donor only. The policy at this time discourages liver transplantation from a living unrelated donor. Practice and ethics of transplant shall be guided by the provision in the National Organ, Tissue and Cell Transplantation Policy, 2007 and Unrelated Living Organ Donation: Policy And Procedures 2011 by Medical Development Division, MOH

ii. Prior authorisation shall be obtained from the Unrelated Transplant Approval Committee (UTAC) before any organ transplantation involving unrelated living donor or non-Malaysian citizens can take place.

iii. Transplantation referral and assessment:
- Referral for liver transplant received by identified liver transplant centre. Patients identified who are indicated for liver transplant will be admitted for assessment. Serial investigations and multidisciplinary team assessment will be done during the admission to ensure patient suitability for liver transplant.

iv. Transplant meeting
- Monthly transplant meeting will be conducted to discuss about the new cases, review the investigations and radiology images and finally listing. The issues of the existing patients will be updated and discussed.

v. Elective living-related liver transplant and emergency cadaveric liver transplant programme are available. Patients who were identified to undergo living-related liver transplant will be work-up and decided the date for liver transplantation. Patients who have no potential living donor will be listed in the cadaveric liver transplant programme. Whenever there is organ available, patients will be called to be admitted and prepared for liver transplant.

vi. Transplant clinic
- Post liver transplant patients will be reviewed in liver transplant clinic regularly after discharge. Patients' general wellbeing, liver function test and TDM drug level will be monitored.

***Please refer to appendix 2 for relevant basic equipment that are needed to deliver service.***

## 4.7 TRAINING

a. The unit shall conduct regular CME activities for all medical personnel to continually improve clinical skills and knowledge.
b. Department CME activities include journal read, topic discussion, radiological and histopathological session.
c. Training for paediatric gastroenterologist for duration of 3 years in accordance with the guidelines adopted by the Medical Development Division, MOH and National Specialist Register/Malaysian Medical Council.
d. Training for the medical officers on a 3 monthly rotation basis
e. There will be also opportunity to attend conferences and courses
f. Training for the nurses and medical assistants by sending them for attachments, courses, conferences, and through clinical supervision at work.

## 4.8 OTHER RELATED OPERATIONAL POLICIES

a. Documentation Of Clinical Notes

   i. The specialist should ensure that all doctors in the unit make accurate, comprehensive, and legible documentation of clinical notes.
   ii. Documentation shall include:
      - Patient identification data
      - Clinical history and examination
      - Investigations and results
      - Treatment given
      - Procedures undertaken and reasons
      - Follow-up notes and consultation

   iii. Case summaries and medical reports shall be prepared, completed, and dispatched to the Medical Records Department according to general paediatric department policies.

b. Unit Meeting

   i. Unit meeting shall be held regularly to discuss problems related to clinical service and the unit operation.
   ii. Problems that cannot be solved at the unit level, shall be brought up to the department level.

c. Whole Hospital & Departmental Policy

   i. Relevant aspects of the General Paediatrics Policies and Whole Hospital Policies shall be complied with.

## Appendix:

1. Norms for staff

| Medical Personnel | Number | Remarks |
|---|---|---|
| Paediatric gastroenterologist | At least 3 per regional centres<br><br>*At least 2 per state hospitals*<br><br>*(It depends on availability. As the number of specialists are limited, regional centres are established to cater the needs. The service will be expanded to each state once the numbers are increasing. Targeted national norm for next decade: At least 6 per million children)* | FTE<br>Ref 1-4 |
| Medical officer | At least 1 per regional / state hospital<br><br>(usually on a rotational basis from general paediatrics pool) | FT |
| House officer | At least 1 per regional / state hospital<br><br>(usually on a rotational basis from general paediatrics pool) | FT |
| Paediatrician with special interest in gastroenterology, hepatology and nutrition | 1 per hospital cluster | FT |
| Nursing staff (specialised gastro nurse) | At least 2 per regional hospital<br><br>At least 1 per state hospital | FT |
| Medical assistant (to help in GI motility and specialised tests/ procedures) | At least 1 per regional / state hospital | FT |

| Medical Personnel | Number | Remarks |
|---|---|---|
| Endoscopy staff | At least 3 endoscopy staffs per unit.<br><br>At least 2 staffs per endoscopy session.<br><br>At least 1 endoscopy staff is a certified gastrointestinal assistant (GIA) | FT |
| Dietitian | At least 1 paediatric dietitian with special interest in gastroenterology, hepatology and nutrition per regional / state hospital | FT |
| Pharmacist | At least 1 TPN pharmacist (proficient in neonatal and paediatric TPN) per regional / state hospital and 1 TPN pharmacist per major specialist hospital | FT |
| Occupational therapist | At least 1 per regional / state hospital (with special interest in gastro, feeding and nutritional rehabilitation) | PT |
| Speech language pathologist | At least 1 per regional / state hospital (with special interest in feeding and nutritional rehabilitation) | PT |
| Clinical psychologist | At least 1 per regional / state hospital (with special interest in feeding disorders) | PT |
| Clinical psychologist | At least 1 per state hospital (with special interest in itch disorders) | PTE |
| Social worker | At least 1 per regional / state hospital | PT |
| Play therapist | As per general paediatrics norm | PT |
| Ward and clinic nursing staff | As per general paediatrics nursing norm | |
| Medical Attendants | As per general paediatrics norm | |
| Clerk | At least 1 per regional/state hospital | FT |

FT: Full time PT: Part time

2. Norms for equipment:

| Equipment | Number | Remarks |
|---|---|---|
| Basic Endoscopy Set:<br><br>1. Gastroscope x 2<br>2. Slim Gastroscope<br>3. Paediatric colonoscope x 2<br>4. Endoscopic video imaging system<br>5. Endoscopy irrigation set<br>6. Monitor<br>7. Printer<br>8. Leakage tester<br>9. Endoscopy tubing set - reprocessing tubing<br>10. Endoscopy trolley<br>11. Endoscopy cabinet<br>12. Endoscopy reporting system<br>13. Endoscopy washing system | At least 2 set per regional centres<br><br>At least 1 set per state hospital | |
| Electrocautery machine | At least 1 set per regional / state hospital | |
| Argon plasma coagulator systems | At least 1 set per regional / state hospital | |
| Feeding pump | At least 5 per regional centres<br><br>At least 3 per state hospital and 1 per major specialist hospital | |
| Ultrasound machine with elastography | At least 1 set per regional / state hospital | |
| pH impedance machine | At least 1 set per regional / state hospital | |

| Equipment | Number | Remarks |
|---|---|---|
| Breath test analyser | At least 1 set per regional centre | |
| Stool calprotectin analyser | At least 1 set per regional / state centre | |
| Manometry machine | At least 1 set per regional centre | |
| Harpenden skinfold caliper | At least 1 per regional / state hospital and major specialist hospitals | |
| Body composition analyser | At least 1 set per regional centre | |
| Bone mineral densitometry with paediatric software | At least 1 set per regional centre | |

## References:

1. Quality Standards for Paediatric Gastroenterology, Hepatology & Nutrition January 2017 by RCPCH & BSPGHAN
2. Medical Workforce in New South Wales. NSW Ministry of Health, Australia. November 2018
3. V Morinville et al. Canadian pediatric gastroenterology workforce: Current status, concerns and future projections. Can J Gastroenterol 2007;21(10):653-664
4. Pediatric Physicians Workforce Data Book 2017 - 2018 by the American Board of Pediatrics

# PAEDIATRIC ENDOCRINOLOGY UNIT POLICIES

## 1. OBJECTIVES

### General Objective:-

To provide holistic and optimum care for children with endocrine disorders through a team of dedicated personnel with appropriate equipment, adequate treatment facilities, and an up to date organization system and network.

### Specific Objective:-

1.1 To provide diagnostic and curative services that are appropriate, effective, efficient and in a timely manner to children with endocrine disorders.

1.2 To provide adequate and continuous training to the staff in the unit.

1.3 To conduct good quality research in paediatric endocrinology.

1.4 To create awareness on preventive measures on noncommunicable diseases – e.g. obesity, diabetes mellitus and advocacy on paediatric endocrine diseases

## 2. SERVICES

The Paediatric Endocrine unit shall provide the following services:

2.1 Outpatient and inpatient care for children 0 - 18 years old with endocrine disorders (in order to include many patients with delayed puberty and growth disorders who are <18 years old).

2.2 Consultation to various hospitals throughout Malaysia.

2.3 Scheduled visiting clinics to hospitals without a resident paediatric endocrinologist.

2.4 Full range of paediatric dynamic endocrine testing, growth stimulation testing etc.

2.5 Day care facilities for endocrine testing and treatment which do not warrant admission.

2.6 Outpatient management and counselling for patients with diabetes from a multidisciplinary team.

2.7 Outpatient management, counselling and exercise therapy for patients with obesity.

2.8 Training of doctors in paediatric endocrine and diabetes.

2.9 Training of nurses to be specialized paediatric endocrine/diabetic nurses.

2.10 Educational role for preventive issues related to paediatric endocrinology and diabetology.

2.11 To provide professional input or participate in support groups for patients with endocrine disease.

2.12 To provide talks, CME for the paediatric community on topics related to paediatric endocrinology.

2.13 To conduct research in paediatric endocrinology.

## 3. COMPONENTS

The following are the components of Paediatric Endocrinology services.

### 3.1 Ward

a. The Paediatric endocrinology inpatient services should be provided in a dedicated paediatric endocrinology ward or within a designated general paediatric ward
b. Emergency/ill patient - Patients with DKA should be admitted and managed in High Dependency Unit/ intensive care.
c. There should be specific facilities for bariatric services such as bariatric beds, chairs etc.

### 3.2 Clinics

a. The Paediatric Endocrinology outpatient services should be conducted at the specialist clinic.
b. There will be a need for specialised clinic sessions for endocrine disorders such as diabetes, obesity, disorders of sex development, bone disorders etc.

### 3.3 Day Care Centre

a. Day care facilities for endocrine testing and treatment which does not warrant admission

### 3.4 Multidisciplinary management

a. Paediatric Diabetes Team: A multidisciplinary team comprising of dietician, social worker, physiotherapist, occupational therapist, paediatric diabetic nurse educator, paediatric psychologist
b. Paediatric Obesity Team: A multidisciplinary team comprising of dietician, social worker, physiotherapist, exercise specialist, occupational therapist, paediatric diabetic, paediatric psychologist
c. Multidisciplinary teams for other endocrine conditions for a holistic management

## 4. EQUIPMENT

### 4.1 Clinic

a. Body composition analyser InBody
b. Stadiometer
c. Orchidometer
d. Bone age assessment book
e. Continuous glucose monitoring system (CGMS)
f. Ambulatory BP monitoring
g. Point of care hbA1c testing
h. Blood pressure monitor with BP cuff for neonates, paediatric, adult and thigh cuff.

**4.2 Imaging:** Bone Mineral Density with paediatric software

**4.3 Laboratory services:** Full equipped to perform wide range of endocrine tests and endocrine dynamic testing

**4.4 Ward :**

a. Stadiometer
b. Orchidometer
c. Bone age assessment book
d. Continuous glucose monitoring system (CGMS)
e. Blood pressure monitor with BP cuff for neonates, paediatric, adult and thigh cuff.

## 5. STAFF FOR ENDOCRINE SERVICE

### 5.1 Staffing norms for paediatric endocrine service

a. One paediatric endocrinologist per 500,000 population. (Reference: British Society for Paediatric Endocrinology and Diabetes, Royal College of Paediatrics and Child Health)
b. Paediatric endocrine service will be available in every states of Malaysia.
c. Staffing norms for medical officers (MO), medical assistants (MA) and nurses to follow the general paediatric policy

### 5.2 Multidisciplinary Team for the Endocrine Service

a. Dietician
b. social worker
c. physiotherapist or exercise specialist
d. occupational therapist
e. paediatric diabetic nurse educator
f. paediatric psychologist
g. Pembantu tadbir
h. Research assistant

# 6. OPERATIONAL POLICIES

## 6.1 Admission to the Paediatric endocrine ward can be from:-

a. The general paediatric outpatient clinic at the hospital.
b. The paediatric endocrine clinic.
c. The accident and emergency department.
d. Direct referrals from other clinics, hospitals or wards.

## 6.2 Referrals to the Paediatric endocrinology unit

a. In general, referrals can be received from any medical practitioners
b. Elective referrals should be accompanied by a full referral letter with relevant summary of the clinical findings and investigations done
c. Emergency cases shall be seen at the Emergency Department and admitted to the paediatric ward if necessary.
d. Direct admission shall be discussed with the unit specialist
e. The patient, after treatment either as an outpatient or inpatient, may be referred back to the referring doctor for follow-up. A reply letter and /or a small note book (to be kept by the parents) to the referring doctor should be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent management of the patient.
f. For children with diabetes, a diabetes diary will be given to the parent.
g. Patients who need specialised medications etc. insulin analogues may need to obtain the supply from the referring centre if there is limited supply/quota.

## 6.3 Clinics and Day Care

a. Upon receiving referrals an appointment at the Paediatric Endocrinology clinic will be scheduled.
b. On the day of appointment, patients will be advised to register themselves at the registration counter. An outpatient card will be given, and a waiting number will be provided.

## 6.4 Paediatric daycare services

**Procedures**

a. **Growth hormone stimulation test**

Most patients will be fasted overnight. The test shall be performed as per the test protocol.

b. **Other dynamic endocrine test**

ACTH stimulation test, LHRH stimulation test.

c. **CGMS**

i. Prior to the patient arrival device should be charged.
ii. Patient should come at a selected appointment time.
iii. Counselling will be provided and patients are given specialized logs to enter in food, activity ,medication and recording of blood glucose
iv. Technical information will be provided to patient.
v. Insertion of sensor is done via aseptic method.
vi. Counselling for care of meter will be given.
vii. Patient will be given another appointment for analysis of the data and further diabetes education will be given at that time.

# 7. TRAINING

7.1 The unit shall conduct regular CME activities for all medical personnel to continually improve clinical skills and knowledge.

7.2 Department CME shall include journal read, topic discussion, and interdepartmental and inter-hospital case discussions

7.3 Training for paediatric endocrinology fellows will be in accordance with the guidelines adopted by the Bahagian Perkembangan Perubatan KKM.

7.4 Paediatric endocrinologists and fellows should be encouraged and supported to attend local and international conferences to be updated on paediatric endocrine.

# PAEDIATRIC RHEUMATOLOGY UNIT POLICIES

## 1. OBJECTIVES

### General Objective:-

To provide a holistic and optimal care for children and adolescents with rheumatological disorders through a team of dedicated personnel with appropriate equipment, adequate treatment facilities, and an excellent organization system and network.

### Specific Objective:-

1.1 To provide diagnostic, curative and rehabilitative services that are appropriate, effective, efficient and in a timely manner to children and adolescents with rheumatic diseases and non-rheumatic musculoskeletal diseases including chronic primary pain disorders.

1.2 To optimize outcomes of children and adolescents with rheumatic disorders to minimize both short and long term organ damage, physical disability and psychosocial effects.

1.3 To promote and provide high quality continuous training for staff of all levels, and to cultivate positive attitudes towards life-long learning.

1.4 To provide counselling and health education to children, adolescents, parents and guardians.

1.5 To promote and conduct good quality audit and research in paediatric rheumatology

## 2. SCOPE OF SERVICES

The Paediatric Rheumatology unit shall provide the following services:

2.1 Secondary and tertiary outpatient and inpatient care for children and adolescents with rheumatological disorders.

2.2 Consultation services for external referrals from both public and private sectors

2.3 Joint aspiration, joint and soft tissue injections

2.4 Musculoskeletal ultrasound

2.5 Counselling and education to patients and their families

2.6 Teleconsultation with doctors and patients/families

2.7 Chronic primary pain disorder (non- cancer pain) management and interdisciplinary rehabilitation

2.8 Training of medical officers, nursing staff and other allied health professionals in basics aspects of paediatric rheumatology.

2.9 Training of paediatric rheumatologist

2.10 Advocacy for issues related to bone /joint health and paediatric rheumatic diseases in children

2.11 Professional input or participate in support groups for chronic paediatric rheumatological diseases such as the Arthritis Foundation Malaysia (AFM) and Persatuan SLE Malaysia.

2.12 Research in the field of paediatric rheumatology.

## 3. ORGANIZATION

3.1 The rheumatology unit shall be headed by a paediatric rheumatology consultant working together with other paediatric rheumatology consultants, specialists, paediatric rheumatology fellows, ward sister, staff nurses and rheumatology nurses (where available)

3.2 The consultants, specialist, fellows are responsible for the medical management of patients and all education, training and continuous professional development activities within the paediatric rheumatology unit

3.3 The ward sisters are responsible for day-to-day management of the ward such as nursing care, census, purchase of consumable items, adherence to protocols and infection control

3.4 The paediatric rheumatology nurse is responsible to assists in the running of the paediatric rheumatology clinics, paediatric rheumatology procedures such as joint injections, infusions of special medications as well as other procedures as well as assists in maintaining a database and responding to patient queries via the unit phone.

3.5 The number of consultant paediatric rheumatologists will depend on scope of service provided, the need and also availability of personnel.

3.6 The number of fellows (subspecialty trainees) will depend on the availability and the number of supervisors. (Ratio of 1 supervisor to maximum 2 trainees)

3.7 The medical officers in the unit will be from the common pool in the paediatric department who are deployed on a 3 monthly rotation. Medical officers may also be from other institutions or hospitals for attachment on a 3 monthly rotational basis.

3.8 The number of nurses will be according the paediatric ward norms. In addition, for every unit, there shall be at least one dedicated paediatric rheumatology specialist nurse.

# 4. POLICY DESCRIPTION

## 4.1 Admission and discharges

a. Patients shall be admitted through the following channels:

   i. the admission registration counter from the outpatient clinics
   ii. through direct referrals from Emergency Department
   iii. main registration counter of the hospital for elective admission
   iv. walk-in for ' direct ward access' patients preferably after informing the ward

b. Admissions will be on a daily basis including weekends
c. The general age for admission ranges from 0 years to 18 years, although existing paediatric rheumatology patients beyond the age of 18 years, may be admitted to the paediatric ward if deemed to be in the best interest of the patient e.g patient has a condition that is arising predominantly in the paediatric age- group more appropriately managed by the paediatric rheumatologist and/or patient's medical condition is not stable for transition.
d. Patients shall be seen by the House officer or Medical officer as soon as possible upon admission. All patients shall be seen by the attending Specialist at least once daily during their hospitalisation.
e. Patients requiring isolation (e.g either infective conditions like herpes zoster or severely immunosuppressed e.g. neutropenic) shall be nursed in single rooms whenever possible.
f. All ill cases shall be placed near the nurses' station or in PHDU.
g. Adolescent patients should be placed together in one cubical whenever possible
h. Infective patients should not be placed in the same cubicle as rheumatological patients.
i. Joint and soft tissue injections, skin biopsy & bone marrow aspirations can be carried in the ward procedure room under Ketamine sedation with pulse oximeter monitoring by trained personnel.
j. All patient requiring painful procedures should be given adequate pre -procedure analgesia including routine use of EMLA before line setting or blood taking unless patient opts not to.

k. Consent shall be obtained from the legal custodian prior to carrying out operative procedure unless patient is of legal age (> 18 years and mentally capable). In case of an emergency and after all efforts to trace relatives and next of kin have failed, the Hospital Director and the Head of Department shall authorize for the procedure to be carried out.
l. When possible, the patient will be informed of planned discharges on the day prior
m. Medications for discharge should be ordered the previous day in order to facilitate quick discharges
n. A diary book with summary of admission will be given/updated for patients who are shared care with other doctors (usually for those who are from out of Klang Valley or have complex conditions).
o. A reply letter to the referring doctor will be provided if further care required
p. Medical certificates or school leave will be provided when required, and also relevant letters e.g for school.

## 4.2 Clinics

a. Paediatric Rheumatology Clinics are specialist led and all patients' visit shall be reviewed or discussed with a specialist
b. All new referrals to the clinic will be by appointment only according to the nature and urgency of referral and the name slotted into the appointment book
c. All investigation results shall be reviewed within a week after receipt of the results and action taken if necessary. This may include recall of the patients for clinical review or repeat of laboratory tests.
d. For patients who have shared care with other facilities, relevant observations and changes in care plan and medications shall be penned into patient diary at each clinical encounter.
e. Appropriate appointments for follow-up in an appointment card shall be given
f. If a patient does not turn up for a new case appointment, the patient will be called to enquire the reason and a further appointment given. If the patient is not contactable, the referring paediatrician shall be notified.

## 4.3 Daycare

a. Day care services can be provided for services that do not require overnight stay or monitoring
b. These services can be offered as Day care services

    i. Joint injections
    ii. Infusion of medications that are for 5 hours or less e.g. certain biologics (example iv Tocilizumab, Infliximab, Golimumab), Methyl Prednisolone pulse or Pamidronate/Zolendronate

c. Patient medical management at the day care unit shall be managed by the Paediatric Rheumatology team ( a specialist aided by a medical officer)
d. The day care administration shall be under the responsibility of the sister in charge supported by other Day care staff
e. Admissions should be planned and done electively
f. Upon admission to Day care, the staff shall inform the doctors that the patient has arrived.
g. The patient will be reviewed by the Paediatric Rheumatology team and management instituted. Discharge medications if required ordered, and all relevant letters/diary book updates / discharge summary provided
h. Upon completion of treatment, the patient will be reviewed by the Paediatric Rheumatology team prior to discharge with a plan for further follow-up.
i. If the patient is not fit for discharge, he/she will be admitted to the paediatric ward for further management.

## 4.4 Referrals

a. Referrals can be made by any medical practitioners or even self-referrals by patients (with a doctor's referral letter)
b. Referrals can be made to the consultant/specialist/ fellows or medical officers
c. Referrals received by fellows or medical officers shall be discussed with the consultant/specialist in charge of referrals regarding the urgency of appointment
d. The unit specialist and doctors will arrange to see non urgent patients in the Paediatric Rheumatology clinic on a scheduled appointment. Urgent cases will be admitted directly to the ward if they are inpatients or seen early in the clinic on non-clinic days at a scheduled appointment.
e. Emergency cases shall be seen at the Emergency Department and admitted to the paediatric ward if necessary or admitted directly after discussion with the doctor concerned.
f. Direct admissions shall be arranged directly with the unit specialist.
g. The patient, after treatment either as an outpatient or inpatient, may be referred back to the referring doctor for follow-up. A reply letter and / or a small note book (to be kept by the parents) to the referring doctor should be provided, with the necessary information and management plan to enable the referring doctors to continue subsequent management of the patient.
h. Referrals to other units/ hospitals – refer Operational policy for Paediatric services
i. Referrals to adult rheumatological units. For patients aged 18 years and above, they shall be transitioned to the young adult clinic in Hospital Selayang if they are from Klang valley, or referred to relevant adult rheumatologist in other parts of the countries. The age of transition/ transfer should be individualized based on the patient's needs. Patients will be provided with a comprehensive letter and copies of relevant investigations.

## 4.5 Procedures

a. **Intra-articular (joint) aspiration and steroid injections**

i. These procedures are to be done in a sterile manner
ii. They shall be conducted either under local anaesthesia in the clinic (for older patients who can tolerate the procedure) or admitted to the ward and be done under sedation
iii. Consent shall be obtained from the parents /legal guardian (<18 years) and from patients themselves (age > 18 years)
iv. Sedation will be administered according to unit guidelines on sedation for painful procedures
v. Patients shall be given appropriate advice on post procedure care prior to discharge

## 4.6 Training

a. The unit shall conduct regular CME activities for all medical personnel to continually improve clinical skills and knowledge.
b. Department CME activities which includes journal read, topic discussion, and mortality conference.
c. Paediatric rheumatology fellowship programme (for duration of 3 years) will be conducted in accordance with the guidelines adopted by the Bahagian Perkembangan Perubatan KKM.
d. Medical officers on a 3 monthly rotation will be trained through active participation in clinical work and through bedside teaching and clinic consultation
e. Nurses will be trained on the job and by sending them for courses
f. All staff will be encouraged to attend courses and conferences

## 5. WHOLE HOSPITAL & DEPARTMENTAL POLICY

5.1 The Paediatric Rheumatology unit's specialist should ensure that all doctors in the unit make accurate and comprehensive documentation of clinical notes.

5.2 Documentation shall include:

i. Patient identification data
ii. Clinical history and examination (including weight and height and vital signs)
iii. Investigations and results
iv. Treatment given including drug dosages and duration
v. Procedures undertaken and reasons
vi. Follow-up notes and consultation

5.3 Important communication with the patient, their relatives, other doctors, or other authorities should be properly documented.

5.4 Case summaries shall be completed within 3 working days from the day of discharge.

5.5 Medical reports shall be prepared and dispatched to the Medical Records Department within 30 days from the date of request

## 6. WHOLE HOSPITAL & DEPARTMENTAL POLICY

Relevant aspects of the Paediatric Department Policy and Whole Hospital Policies shall be complied with.

### Appendix

1. Norms for staff

- Paediatric Rheumatologist : 1 : 250,000 children
- Paediatric specialist nurse : 1 -2 per Paediatric Rheumatology unit
- Paediatric medical officer : 1 per 500 follow-up outpatient clinic visits per year, on 3 monthly rotation from paediatric department

2. Equipment

- One Ultrasound machine – musculoskeletal with probes that span 1.5 MHz to 22 MHz to cater for the wide range of ages from infants to adolescents
- Available facilities in the hospital include

    - MRI machine
    - CT scan machine
    - DEXA machine

- One Nailfold capilloroscope
- Access to laboratory facilities to conduct specialized blood tests with results available in a timely manner including autoantibody panels

# PAEDIATRIC PALLIATIVE MEDICINE UNIT POLICY

## 1. BACKGROUND

1.1 Paediatric palliative care aims to provide active total care of the child's body, mind and spirit, and support to their family who are facing the life-limiting and life-threatening disease. The care begins when the illness is diagnosed, and continues regardless of whether or not a child receives treatment directed at the disease.

1.2 The care requires a **broad multidisciplinary** approach that includes the family and makes use of available **community resources**. It can be successfully implemented even if resources are limited. It should be provided in tertiary care facilities, in community health centres and even in the child's home.

## 2. OBJECTIVES OF THE PAEDIATRIC PALLIATIVE MEDICINE UNIT

2.1 The Paediatric Palliative Medicine (PPM) unit aims to support paediatricians (generalist paediatric palliative care), family medicine specialists and other clinicians who provide level 1 and level 2 (non-specialized) paediatric palliative care services in their respective health care facilities.

2.2 The PPM Unit aims to develop better quality of care in paediatric palliative care by promoting audit, research and continuous professional development of staff members who are providing paediatric palliative care services.

# 3. SCOPE OF SERVICES

3.1 Consultation and management of complex symptom control in various settings including inpatient, outpatient and hospital day-care settings. This may be conducted through telephone consultations between clinicians, preparing practical home symptom care plans and conducting collaborative home visits with hospice and domiciliary community care teams. Symptom management may include the following:

a. Complex acute and chronic pain ( nociceptive and neuropathic pain)
b. Management of nausea, vomit, nutrition and feeding issues
c. Neurological and neuromuscular conditions and symptoms ( dystonia, sialorrhea, terminal seizures, dysautonomia, central hyperalgesia, spastic, sleep issue )
d. Depression, anxiety, delirium and other psychological symptoms
e. Respiratory symptoms ( breathlessness / dyspnoea / cough )
f. Pressure sores, cancer wound care
g. Fatigue and weakness
h. Supports in intensive care units ( PICU and NICU )

3.2 Psychological and spiritual assessment and support through play communication with children, adolescent group therapy, caregiver workshops and advance care plan discussions with the patient and family.

3.3 Psychosocial and practical support for the patient and family including sourcing for medical equipment, school visits, home transition care plans and respite care plans for caregivers.

3.4 End-of-life care in both hospital and home settings, with continued follow up for complex grief and bereavement support.

3.5 Perinatal and neonatal Palliative Care Support beginning from referral during the antenatal period.

3.6 Advocacy and education for National Paediatric Palliative Clinical services through involvement in various training projects including the National Training of Paediatric Palliative Provider Programme and Subspecialty Fellowship for Paediatric Palliative Medicine.

3.7 Clinical service audit and research for Paediatric Palliative Medicine in Malaysia.

## 4. ORGANIZATION

4.1 The Paediatric Palliative Medicine Unit is headed by the consultant paediatric palliative medicine specialist, who works together with other paediatric teams, nursing management and staff, assistant medical officers and other allied healthcare professionals.

4.2 The consultants and specialists are responsible for decisions on clinical management for patients, designing and conducting education, training and research programmes within the PPM unit.

4.3 The unit sister and nurses are responsible for nursing procedures and unit administrative tasks including updating the census, managing consumable items, ensuring adherence to unit and paediatric department protocol, and managing clinic and day care appointments.

4.4 A trained Paediatric Palliative nurse is responsible specifically for palliative care nursing education and training for other medical staffs. The nurse is also in charge of organising educational and psychosocial supportive care sessions including the caregiver workshop training, adolescent group therapy and teenager transition education programme.

4.5 A medical assistant is responsible for the maintenance and setting up the equipment for the patients in the unit.

4.6 A healthcare assistant (Pembantu Perawatan Kesihatan, PPK) assists the team in transporting patients and medical equipment, administrative tasks (e.g. taking clinic appointments) and the running of any education and training programme.

4.7 All state hospital without paediatric palliative medicine specialist should have a developed **generalist paediatric palliative care (GPPC) services**. Trained general paediatrician with special interest should lead this service with the consultation support from specialized paediatric palliative medicine consultant or conjoined service with adult palliative medicine department. The service team should consist also minimum of one medical officer and one staff nurse. The service should provide both inpatient and outpatient consultations in order to enhance the existing paediatric services in the respective paediatric department. The service should have a written standard operation procedures (SOP) based on local department policy, available resources, feasible working time and manpower. The SOP should include referral and review process during and after office hours every day.[3]

# 5. OPERATIONAL POLICIES

## 5.1 Admission and Discharge

a. For PPM unit without dedicated inpatient beds, patients who are not under follow-up care from any specific subspecialty as their primary team will be admitted to the general paediatric ward according to the standard procedures. A patient may only be accepted for admission through the emergency department or the PPM clinic of the same hospital.
b. For patients who are concurrently receiving follow-up care under another subspecialty as a primary team, admission into the corresponding subspecialty wards will be prioritised, after discussion with the specialist or consultant of the corresponding subspecialty.
c. For PPM unit with dedicated inpatient beds, admission into the dedicated PPM ward will be prioritised for patients who are already under follow-up with the PPM unit, without curative option and where the goal of care is only comfort care. These patients may be admitted for:

    i. Complex symptom management (involving continuous infusion medication or patient controlled analgesia)
    ii. End of life care management
    iii. Respite care for caregivers

d. Patients may be discharged after agreement from both the PPM unit and the primary team (a subspecialty unit other than PPM). Discharge procedures will follow standard discharge protocols.
e. Upon discharge, all patients will be given

    i. Appointment for the next clinic follow-up
    ii. Individualized symptom care plan (if not previously available)
    iii. Letter to the police for home terminal discharge
    iv. Hospice referral (if indicated)
    v. Referrals to other multidisciplinary teams (if indicated)
    vi. An introductory pamphlet on the paediatric palliative service with contact details (for new inpatient referrals)
    vii. A pamphlet on Advance Care Plan (for new patient)

## 5.2 Referral

a. Criteria for referral to the PPM Unit are (either one)

   i. Paediatric Palliative Screening Scale scores of 15 and above1; or
   ii. Either one of the four categories of patients as listed in ACT/RCPCH categories of disease trajectories in paediatric palliative care.2

b. All referrals should be discussed with any doctor from the PPM unit and a formal referral letter should be prepared.

## 5.3 Clinic

a. There are 3 types of clinic running under PPM unit in general:

   i. Core PPM clinic (weekly)
   ii. Combined clinic with other subspecialty (monthly)
   iii. MDT clinic with allied health teams (monthly) such as chronic pain clinic

b. All patients should be seen by the specialist together with a medical officer.
c. In the first clinic review, detailed history on physical, psychosocial and spiritual needs assessment will be taken. Introduction of the PPM unit service will be given including pamphlets and phone contact.
d. Follow up clinic visits will focus on symptom management and psychosocial support for the patient and caregivers. The advance care plan will be discussed with all patients and their family members from the first clinic appointment (for those patient without curative option).

## 5.4 Day care

a. Patients may be scheduled to meet the PPM team at the hospital day care for the following indications:

   i. Titration of palliative home non-invasive ventilation
   ii. Severe pain or other symptom management (non-infective causes and clinically stable)
   iii. End-of-life care review
   iv. Nursing procedures such as NG tube replacement
   v. Adolescent support group therapy
   vi. Play-based psychosocial assessment

b. All registration and discharge procedures for scheduled day care visits will follow the general paediatric department protocol.

## 5.5 Home Visit

a. A home visit by the PPM unit can be arranged under two conditions

   i. Invitation for joined home visit from community home care team (either hospice team of health clinic domiciliary team).
   ii. Home assessment together with the occupational therapist before home transition from hospital.

b. All home visits must adhere to the following requirements prior to conducting the visit

   i. Nurses should obtain approval from matron in-charge.
   ii. Doctors should obtain approval from the Head of PPM Unit.
   iii. Occupational therapist should obtain approval from the Head of Occupational Therapy unit.
   iv. Agreement from the patient and parents for the indication and date of visit.
   v. Prior arrangements with the hospital transportation unit.

## 5.6 Documentation[1]

### a. Advance Care Plan ( ACP)

   i. The ACP should be documented in the patient's electronic medical records and a hardcopy should be given to the patient and parents together with an alert card. An alert sticker will be placed on the patient's home-based card. An ACP discussion should be done every 6 to 12 months or if there are changes in the patient's disease trajectory.
   ii. The ACP is a record of discussion which is not legally binding.
   iii. All patients with life-limiting diseases should have an ACP discussion either with the primary team or the PPM unit as early as possible.

### b. Consultations

   i. All consultations should be documented in the patient's medical records (physical or electronic record), including documentation of family conference and psychosocial assessment.

### c. Individualized Symptom Care Plan

i. All patients should have an individualized home symptom care plan.
ii. The patient or the caregivers should receive explanation and education related to the care plan. The pharmacist will double-check the dosage of medications in the care plan.

## 5.7 Relevant Procedures

### a. Palliative Non-Invasive Ventilation has 2 indications

i. Palliative with potentially reversible acute respiratory distress (Category 1). Patients with acute respiratory failure with Do Not Resuscitation and Intubation (DNI) as the patient's goal and ceiling of care. NIV can be seen as alternative to invasive (endotracheal ventilation) to improve lobar collapse secondary to impaired cough effort, impaired mucociliary clearance, pulmonary aspiration or pneumonia, in whom intensive care is declined or deemed inappropriate.
ii. Palliative symptom management and comfort measures only (CMO) at the end of life (Category 2). It is for symptom relief for respiratory distress caused by end-stage renal failure with pulmonary oedema, severe lung metastasis of cancer or withdrawal from invasive ventilation support for end of life. Resuscitation and intubation are not the options of care for patient. Palliative NIV is aimed to improve symptoms. NIV tolerance is priority.

### b. Opioids for Patient-Controlled Analgesia (PCA) in severe cancer pain palliative patient

Criteria for starting PCA for palliative pain control are as below:

i. Patients aged above 7 years who are able to fully understand the function and indication of PCA opioid, able to complete pain scoring assessment, and able to physically press the PCA button.
ii. This service can only be provided in the oncology ward where all the staffs have been given basic training for PCA monitoring and action plans for managing side effects.
iii. This service is only for paediatric oncology patients with moderate-to-severe pain who need palliative care service and rapid pain control, but are either intolerant to oral opioids or unable to attain effective pain control with oral opioids. Preference will be given to patients who have cancer pain with frequent breakthrough pain (eg. movement related bone pain, severe mucositis).

### c. Terminal Home Extubation[4]

Home extubation / home withdrawal of ventilation support could be offered by PPM unit if an agreement is achieved between all involved clinicians and the patient's family members that home death is the preferred place of death for patient and family members. Each PPM unit must have a standard home withdrawal protocol based on " Witholding and Withdrawing of Life Support in Children " Guideline by Ministry of Health Malaysia December 2005.

## 5.8 Training and meeting

### a. Core Team meeting and teaching

i. Teaching should be conducted by the PPM consultant or specialist for trainee specialists, medical officers and nurses at least once a week. This can be done together with the core team meeting.
ii. Everyone should attend departmental weekly education activities.
iii. All PPM subspecialty trainees will undergo a 3-year training programme as drafted in the Ministry of Health training module with MOH.

## 5.9 Whole Hospital & Departmental Policy

Relevant aspects of the Paediatric Department General Policies and Whole Hospital Policies shall be complied with.

## Appendix:

1. Minimum Functioning Members (Core) for the PPM Unit (without dedicated ward)

| Job Post | Minimum Number of Person |
|---|---|
| Paediatric Palliative Specialist | 1 |
| Paediatric Palliative Trained Nurse | 1 |
| Paediatric Nurse | 1 |
| Medical Officer | 1 |
| Medical Assistant/PPK | 1 |

2. Essential List of Medications for the PPM Unit can be referral from the drug formulary in the Handbook of Children's Palliative Care Malaysia.[1]

### 3. Essential Equipment List for the PPM unit

| Equipment Set | Minimum Number of set |
|---|---|
| Home Oxygen concentrator and oxygen tank | 4 |
| Non-invasive Ventilation ( BIPAP) | 2 |
| Milk Infusion Pump | 4 |
| Secretion Suction Machine | 4 |
| PCA machine | 2 |
| Home parenteral medication pump | 2 |

## References:


1. Lee Chee Chan, Tan Chai Eng et al. Handbook of Children's Palliative Care Malaysia. Ministry of Health Malaysia. 2021. ( https://moh.gov.my/moh/resources/Penerbitan/Perkhidmatan%20OnG%20&%20Ped/PED/3._Handbook_Of_Children%E2%80%99s_Palliative_Care_Malaysia_.pdf)
2. Wood F, Simpson S, Barnes E, Hain R. Disease trajectories and ACT/RCPCH categories in paediatric palliative care. Palliative Medicine. 2010 Dec;24(8):796-806.
3. MOH N. National Palliative Care Policy and Strategic Plan 2019-2030. Ministry of Health Malaysia. 2019.
4. CPG on Withholding and Withdrawing of Life Support in Children Malaysia. Ministry of Health Malaysia. December 2005. (https://www.moh.gov.my/moh/attachments/3929.pdf)

# APPENDIX

APPENDIX 1

# A. STAFFING NORMS:-

## 1. Medical Staff

### a. General Paediatric Wards (24 Bedded)

| | Number |
|---|---|
| Paediatrician | 2 |
| Medical Officers<br>Medical Officers (Acute Bay) | 1:8 beds<br>1:6 beds |
| House Officers | 1:6 beds |

### b. Day Care Unit

| | Number |
|---|---|
| Paediatrician | 1 |
| Medical Officers | 1:5 beds |
| House Officers | 1:5 beds |

## 2. Nursing

### c. General Ward

| | Number |
|---|---|
| Sister | 2 |
| Staff Nurse | Total: 30<br>a.m.: 7 (1:2=2,1:4=5)<br>p.m.: 7 (1:2=2,1:4=5)<br>Night: 6 (1:2=2, 1:4-1:6=3)<br>(Night off 5; Leave, Course, CPD 5) |

### d. Day Care Ward

| | Number |
|---|---|
| Sister | 1 |
| Staff Nurse | 1:4 |

### 3. Support Staff

#### e. Attendants (Penolong Perawatan Kesihatan)

| | |
|---|---|
| 7 per paediatric ward | (24 bedded). (a.m. 2; p.m. 2; night 1; night off 1; leave 1). |
| 1 per day care ward | (10 bedded). |

#### f. Other allied health and services and needed to support the paediatric ward or department: -

Per ward
- Pharmacist

Per Department
- Medical Social Worker
- Play Therapist
- Occupational therapist
- Physiotherapist
- Nutritionist/Dietician
- Radiographers
- Clinical Psychologist
- Counselor

## B. Equipment:-

### 1. Fittings in the Ward

| | |
|---|---|
| Medical gases | Each bed: 1 Oxygen, 1 suction outlet |
| Electrical points for each bed | a. Non acute bay: 4 normal points; 2 emergency points.<br>b. Acute bay: 6 normal points;4 emergency points. |
| 2 Negative pressure room Isolation Room for each 24 bedded wards | a. Cardiac Monitor<br>b. Ensuite toilet<br>c. 1 compress air<br>d. 2 oxygen port<br>e. 1 suction port<br>f. 1 internet port<br>g. Intercom<br>h. Nurse call bell |
| Milk preparatory room with (1 for each general ward) | a. 2 compartment stainless steel sinks for washing and rinsing equipment<br>b. 1 handwashing sink<br>c. Storage for powdered milk and feed product<br>d. 4 normal points & 2 emergency points |

## 2. Beds and Cots For 24 Bedded Ward

| | |
|---|---|
| For Acute Bay | Intensive Care Bed |
| For Non-Acute Bay areas | Standard size children's cot.<br>Adult beds if catering to bigger children and adolescences |
| 8 Baby Bassinets (in hospitals without separate neonatal ward) | |
| 24 Parents' Bed | |

## 3. Equipment for the milk preparatory room

| | |
|---|---|
| Milk preparatory room | a. 2 Milk bottle sterilizer<br>b. 1 refrigerator for milk<br>c. 1 freezer for EBM<br>d. 1 Stainless steel table top<br>e. 1 Stainless steel cabinet for storage<br>f. 2 stainless steel kettle<br>g. 2 Hospital grade breast pump |

## 4. Equipment for a 24 bedded general paediatric ward.

| Item | Numbers |
|---|---|
| Volumetric infusion pumps | 1 every 2 beds |
| Syringe pumps | 1 every 2 beds |
| Drip Stands | 2 per bed in acute bay and 1 per bed |
| Digital Thermometer | 1 per bed with 10% spares |
| Ear Thermometer | 1 per 8 beds |
| Pulse oximeter | 1 per 4 beds |
| Low-flow $O_2$ flowmeters | 1 per 4 beds |
| High-flow $O_2$ flowmeters | i) Acute bay: 1 for every bed.<br>ii) Non acute bay: 1 per 4 beds |
| Weighing scales | 1 infant, 1 sitting and 1 standing scales |
| Stadiometer | 1 for height, and 1 for length measurements |
| Resuscitation trolley | 2 (1 for acute bay & 1 Resuscitation cart for treatment room) With<br>• Paediatric & adult sizes tracheal tubes<br>• Paediatric & adult size laryngoscopes<br>• Paediatric & adult size self-inflating bags and masks<br>• Paediatric & adult sized airways. |
| Wheelchairs | 6 |
| 4-channel special care monitor (ECG, Resp, $O_2$ sat, NIBP) – for acute bay | 4 |
| ECG machine | 1 |
| Radiant Warmer | 2 |
| Trolleys with O2 tank stand and drip stand | 2 |
| Portable Suction Machine (if there are no built-in wall suction outlet) | 2 |
| X-ray Viewer Box | 4 |
| Thoracic suction pump | 1 |
| Medicine Trolley | 1 |
| Ward Round Trolley | 2 |
| Ripple Mattress for Acute Bay | 1 |
| Ophthalmoscope | 2 (1 for acute bay & 1 for ward) |
| Portable X-Ray Lead Shield. | 1 |
| High Flow Nasal Cannula | 8 |
| Stretcher | 2 |
| Medication Fridge | 1 |
| Stainless trolley for procedure | 4 |

## 5. General Paediatric Ward Treatment Room Fittings and Equipment

| | |
|---|---|
| 1 per ward<br>Treatment Room: 2 Couches per Room (depending on size) | Per Couch:<br>a. Medical Gas: 1 Compress Air and 2 Oxygen Point<br>b. 1 Suction point or 1 portable suction machine.<br>c. 1 Portable 4 channel special care monitor (ECG, Resp, $O_2$ sat, NIBP) able to detect at low perfusion.<br>d. Ceiling Mounted Examination Lamp.<br>e. 2 Drip Stands.<br>f. 1 Volumetric infusion pump<br>g. 2 Syringe pumps |
| 1 per ward<br>#Procedure room: 2 Couches per Room (depending on size) | Per couch:<br>a. Medical Gas: 1 Compress Air and 2 Oxygen Point<br>b. 1 Suction point or 1 portable suction machine.<br>c. 1 Portable 4 channel special care monitor (ECG, Resp, $O_2$ sat, NIBP) able to detect at low perfusion.<br>d. Ceiling Mounted Examination Lamp.<br>e. 2 Drip Stands.<br>f. 1 Volumetric infusion pump<br>g. 2 Syringe pumps |
| 2 per ward Resuscitation carts | With:-<br>• Paediatric/adult sizes tracheal tubes<br>• Paediatric/adult size laryngoscopes<br>• Paediatric/adult size ambubags and masks.• Paediatric/adult sized airways |
| 1 Defibrillator with children's paddles and voltages. | |

*# District hospital may have 1 combined treatment and procedure room*

## 6. Per Paediatric Department for use in General Wards

(i.e. excluding any found in the NICU or PICU)

| |
|---|
| 1 Ultrasound Machine with paediatric transducer (For cardiac, abdominal and head) |
| 1 Blood Gas Electrolyte Analyser |
| 1 Transport ventilator with portable 4 channel special care monitor. (For temporary ventilation before transfer to PICU) |
| 1 Transport incubator (with ventilator if possible) |

APPENDIX 2

# CODE PINK-PREVENTION AND MANAGEMENT OF INFANT ABDUCTION

## POLICIES AND PROCEDURES

**1.** Measures that will assist in the prevention of Infant abduction and aid recovery of abducted infants:

1.1 All staff is required to wear the hospital identification tags at all times.

1.2 Hospital scrubs and lab coats are kept in a restricted area and not loaned to unauthorized personnel.

1.3 Staff must ensure that the infant is in direct line of sight of the parents or the medical staff.

1.4 Parents should be informed of the security measures at the earliest opportunity.

1.5 Nurses should review the security measures during orientation of the parents at admission to the ward.

1.6 Only hospital staff is allowed to transport the child during admission.

1.7 The staff shall transport the infant using a bassinet or portable incubator or cot at all times.

1.8 Mother shall carry the infant while being wheeled out upon discharge.

1.9 Procedures in accordance of the discharge protocol are adhered to upon discharge.

1.10 All visitors to the paediatric and neonatal ward should identify themselves to the staff in-charge and the name of the person they are visiting.

**2. Parents and Infant Identification** measures include

2.1 Upon the delivery of a baby, a name bracelet consisting of the mother's name and IC number is placed immediately on the baby.

2.2 At the event of multiple births, the respective name bracelets will have in addition, the position of the infants of the multiple births.

2.3 If the bracelet is removed for any reason, it must be replaced immediately in accordance to re-tagging SOP.

**3. CODE PINK- Disaster Plan**

3.1 As soon as the abduction occurs or suspected, the sister/ staff nurse in charge must be informed. She will then call the telephonist who will then announce "code pink in progress" through the public address system.

3.2 Immediately, all nurses must check their patients and make sure they are accounted for.

3.3 The nurses will then report to the ward sister or the sister-on call whether each baby is present and accounted for.

3.4 During the intervening period, all staff should look for suspicious looking individual/s in the wards.

3.5 The sister in charge must inform the security personnel/ administration and the police regarding the missing infant.

3.6 A log book should be kept to track on the time of events. This should be filled by the staff nurse in charge.

3.7 The security personnel should immediately block all exits once the announcement of code pink in progress is made.

3.8 All staff should start on search for the unaccounted baby in all areas of the hospital including curtained areas and restricted areas.

3.9 No one is allowed to leave the hospital premises until code pink is aborted.

4. **Care of the family** involved

   4.1 Move the parents to a secured location (sister's room/ meeting room).

   4.2 The nurse assigned to the infant should be with the parents at all times.

5. Other administrative duties of the sister

   5.1 Ensure all blood samples pertaining to the infant is secured and stored safely.

   5.2 Secure the infant's medical records safely.

   5.3 Ensure that the hospital director, head of paediatric department, and matron is informed.

   5.4 Brief staff in the Unit.

   5.5 Explain situation to other mothers.

6. **CODE PINK shall be aborted-**

   6.1 In the event that infant is found.

   6.2 Upon the advice of the police where the infant is nowhere to be found.

   6.3 Instruction for code pink to be aborted shall be given either by the hospital Director or the deputy, head of paediatric department or matron.

APPENDIX 3

# MILK KITCHEN POLICY

## OBJECTIVES

1. To provide guidelines for the storage, preparation and handling of powdered milk formula, ready to feed formula and mother's milk.
2. To provide guidelines for a supply of milk that is nutritionally optimum, safe and free of contamination.

## SCOPE OF SERVICES

1. Provision of facilities for the storage and reconstitution of powdered milk formula, including infant formula, preterm formula and specialised formula.
2. Provision of facilities for the storage and pasteurisation of mother's milk.
3. Provision of facilities for the storage and handling of ready to feed milk formulas.
4. Provision of reconstituted milk formula to the neonatal and paediatric patients in the hospital.
5. Provision of pasteurised mother's milk to the neonatal patients in the hospital.

## ORGANISATION

The Milk Kitchen shall be headed by a Neonatologist or a Paediatrician. The Matron or the Ward Sister in charge of the Milk Kitchen shall be responsible for the day to day management of the Milk Kitchen, assisted by trained Nurses.

## PHYSICAL FACILITIES

1. Powdered feeds must be prepared in a specific location away from the bedside with adequate space and equipment. Where there is a high demand for specialised feeds, as in hospitals, a separate room for the preparation and handling of powdered feeds is recommended.
2. During the preparation of powdered feeds, there must be no other activity in the Milk Kitchen. Access to the Milk Kitchen is restricted to minimise the risk of cross-infection and tampering of feeds.

3. The Milk Kitchen should consist of storage, preparation, clean-up and office areas.

**a. Storage**

i. This room should ideally be separate from the preparation room.
ii. It should be shelved with all feed products stored above floor level.
iii. The temperature should be ambient without large variations in temperature. Daily records of the room temperature should be monitored.
iv. Products should be stored in a manner allowing adequate air flow.
v. The expiry dates of stock must be checked regularly and stock rotated when storing to avoid the use of out of date products. The expiry dates of all products must be checked before use.
vi. There must be a designated area for feed storage and a separate area for cleaning equipment.

**b. The Office**

There should be a designated area for receiving orders, record keeping and label preparation. In larger units, there should be space for a telephone/ fax machine, computer terminal, printer and stationery store.

**c. The Preparation Area**

i. The preparation area contains a stainless steel work surface, a hand wash sink with hand free taps, anti-bacterial hand wash and drying facilities, storage for utensils and current feeds being used, and refrigerators for holding the prepared feeds.
ii. Utensils and currently used feed products should be stored in closed cupboard(s). Depending on the procedures required by the individual health care facility, optional equipment used in the preparation room may include a pasteuriser, blast-chiller and
iii. Freezer.
iv. There should be provision for water for feed preparation to meet national and institutional standards.
v. Adequate electric outlets with sufficient power should be provided for the equipment
vi. Within the room and be compliant with local standards. Electric outlets for the refrigerators and freezers should be backed by emergency generators in cases of power failure.
vii. Lights within the unit should be enclosed and allow adequate illumination for accurate feed production.
viii. Clean air should be supplied through the ventilation system.
ix. Floors, walls and ceilings should be of a material that can be easily maintained clean. The unit must be cleaned daily and deep cleaned on a weekly basis.
x. All waste bins must be covered, foot operated and emptied daily.

**d. The Clean-up Area**

i. This can be a designated area within the preparation room or in larger units situated in a separate area. In the former, the processes of preparation and clean-up must be separated by time and space.
ii. Small equipment can be cleaned in a dish washer or sterilised in an autoclave. When a dishwasher with an 82°C final rinse cycle is used, a single sink for pre-rinsing is sufficient.
iii. If bottles are re-used, a two or three compartment sink with bottle-washing brushes and a rinse nozzle is suggested. A stainless steel three compartment sink allows for washing, rinsing and sanitising.
iv. Dedicated food compatible cleaning supplies must be stored away from feed products and equipment.

4. Facilities without a Separate Formula Milk Preparation Room

A section of the food production area or dedicated space in a nursery can be designated a formula milk preparation area.

## EQUIPMENT AND SUPPLIES

### 5. Equipment

a. All equipment and utensils used within the preparation room should be made of stainless steel or other non-absorbent material. They must be easily cleaned and decontaminated and withstand temperatures of a commercial dishwasher.
b. Written guidelines should be produced outlining the regular scheduled checking and monitoring of maintenance for any equipment used during the preparation and storage of feeds produced.

### 6. Refrigerator, blast-chiller and freezer

a. Prepared feeds must be chilled rapidly and stored at 2-4°C.
b. Commercial refrigerators are recommended. Blast-chillers are recommended for larger units.
c. Domestic refrigerators can sometimes have temperatures above the recommended 4°C storage temperature and these must be carefully monitored and acted on accordingly.
d. If maternal expressed breast milk (MEBM) is stored and fortified in the milk preparation room, a freezer that holds the milk at -20°C is needed. A commercial grade freezer with external thermometer and alarm systems is recommended.
e. Refrigerator and freezer temperatures should be checked and recorded daily
f. Feeds must be discarded if operational temperatures are not within the recommended range (refrigerator: 2-4°C; freezer: <-20°C).

## 7. Pasteuriser

## 8. Dishwasher

a. A commercial dishwasher is recommended. This should reach a temperature of 66-74°C and a rinse temperature of 82-91°C.
b. Use of the facility's foodservice dishwasher is not recommended.
c. Where a dedicated dishwasher is not available, controlled practices to avoid cross contamination must be implemented.

## 9. Utensils

a. Equipment and utensils used for the preparation of feeds must be easily decontaminated and facilitate the use of the aseptic technique. This includes items such as measuring and mixing devices, scales, trays, spoons, sieves, bowls and jugs.
b. Blenders should be avoided.
c. Bottles and teats are for single use only unless they can be sterilised or decontaminated adequately.
d. All devices used for mother's milk must be sterilised between uses.

## 10. Transportation Equipment

a. Transportation equipment must cover the bottles of feed and easily cleaned. Depending on the distance and traveling time, coolers with ice pack or similar containers shall be used for transportation.

## 11. Supplies

a. Tap water that is freshly boiled and cooled to 70-80°C should be used for feed preparation.
b. Commercial bottled water should never be used to make feeds.
c. The formulas and proprietary products should be available in the preparation room. These should be obtained from reputable sources.
d. Once opened, packages should be dated and stored in closed cupboards or the refrigerator as appropriate. Any damaged products together with out of date stock must be disposed of.
e. Cleaning supplies must be approved for food service use by the health care facility's infection prevention and control department. These must be stored separately from feed ingredients.

## PERSONNEL

1. In the Milk Kitchen, aseptic clothing is essential as a uniform or theatre blues.
2. Staff should have a separate area to change into their uniform.
3. Disposable aprons and hats should be worn and be put on before hand washing. Sterile gloves are recommended when handling MEBM or to cover cuts.
4. Shoes must be closed, nonslip and comfortable.
5. Eating and drinking is prohibited in the milk preparation area.

## TRAINING

A written training policy should be developed and implemented.

## FORMULA MILK PREPARATION AND HANDLING

### 1. Aseptic Technique

The aseptic technique must be followed in the preparation of all feeds.

Prior to feed preparation, work surfaces must be properly cleaned and during feed preparation, there should be no admittance of other staff to the milk room and no other activities taking place.

### 2. Ingredient Water

The WHO recommends reconstituting powdered formula with previously boiled tap water cooled to ≥70°C.

Such made up feeds must be stored in the refrigerator for no longer than 24 hours from the time of reconstitution.

### 3. Formula Mixing

All feed products should be checked to ensure that the packaging is not damaged. Check both the expiry date and that the seal is intact before the use of such products.

Clean sterilised or disinfected mixing equipment should be used to prepare feeds. Opened feed can be covered and stored in the original containers, according to the manufacturer's directions; the container must be labelled with the expiry date and time.

Prepared feeds should not be frozen and thawed as freezing can cause irreversible physical changes.

## 4. Powdered Formula

Measure the ingredient water according to the feed instructions and add to the powder. Mix well with a whisk.

Opened containers should be covered, labelled with the expiry date and stored in a cool dry area for up to one month.

## 5. Pasteurisation

In the pasteurisation of formula feeds, the feeds are heated to a temperature of 67°C for 4 minutes and rapidly cooled to a safe temperature.

In the pasteurisation of human milk (EBM), the feeds are heated to a temperature of 63°C for 30 minutes and rapidly cooled to a safe temperature.

Pasteurisers must be data logged to ensure that correct temperatures are reached.

## 6. Chilling and Storage of Feeds in the Milk Room

Prepared feeds must be rapidly cooled and either fed immediately or refrigerated at ≤4°C. Once cooled, the containers are dried and stored in a dedicated refrigerator with a temperature gauge.

The temperature of prepared feeds should be maintained at ≤4°C until used.

## 7. Care and Maintenance of Facilities and Equipment

The work area and equipment in the Milk Room must be kept clean and organised. All equipment and work surfaces must be thoroughly cleaned after use. There should be a written cleaning schedule for the Milk Room.

# Storage, Collection and Handling of Maternal Expressed Breast Milk (MEBM) and Pasteurised Donor Breast Milk (PDBM)

## 1. Breast Milk Storage

Breast milk must be stored in breast milk containers that meet current health and safety standards with respect to plastic components. Currently this includes absence of Bisphenol A.

Breast milk supplied to the hospital must be labeled correctly, including the baby's name, Mother's IC and date and time of expression.

There should be dedicated fridge and freezers for breast milk in the milk room. Ensure fridges and freezers have temperature monitoring and temperatures are recorded two times daily.

Fridges should maintain a temperature of 2-8°C.

Freezers should maintain a temperature of < -20°C.

Freshly expressed breast milk may be kept at room temperature for up to 4 hours. However, if it will not be used within this time for a feed, it should be refrigerated immediately following expression. If breast milk is kept at room temperature and subsequently not used it should be discarded.

Fresh breast milk can be stored in a refrigerator for up to 48 hours at 2-8°C

Any breast milk that will not be required for a feed within the 48 hours recommended storage time should be frozen as soon as possible, preferably within 24 hours. Breast milk may be stored frozen at -20°C for up to 3 months for an infant who is hospitalised.

## 2. Pasteurisation

In the pasteurisation of breast milk, the milk is heated to a temperature of 63°C for 30 minutes and rapidly cooled to a safe temperature.

Once cooled, the containers are dried and stored in a dedicated refrigerator with a temperature gauge.

## 3. Thawing and Warming of Breast Milk

The following methods are recommended for thawing frozen expressed breast milk:

- Place container(s) of frozen breast milk in a fridge to thaw slowly. This may take up to 12 hours or more depending on the temperature of the fridge and the volume of milk. Ensure the thawing milk is clearly labelled and placed in a suitable container such as a plastic box or foil tray to prevent drips of condensation reaching other containers of milk.

- Frozen milk may be thawed at room temperature if needed more quickly. This will usually take 0.5-4 hours depending on the room temperature and the volume of milk.

- If using an electric milk thawing/warming device follow manufacturer's instructions for its use and cleaning to prevent cross contamination and overheating.

- Thawed milk should be stored in a fridge and used within 12 hours of complete thawing, alternatively, for ease of recording, if thawing the milk in the fridge, use within 24 hours of placing the container of frozen milk in the fridge.

- Thawed breast milk should be NOT be kept at room temperature for more than 4 hours. Do not return milk to the fridge. Discard unused feeds.

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