Department of Pediatrics
Department Manual
1430-2009

Contents:

- Section 1: Administrative
- Section 2: Job Description
- Section 3: Department Policies and Procedures
Section 1 : Administrative
Section 1: Administrative

1.1. VISION

To be highly recognized center at national and international levels in pediatric health care, research, academic and postgraduate education.

1.2. MISSION

We are committed towards excellence in Pediatric:

- Health care
- Research
- Education

1.3. GOALS

- Education of future health professionals in healthy learning environment.
- Collaboration between highly professional, and sub-specialized multi disciplinary teams.
- Promotion of research through clinical research unit and basic science research laboratories.
- Implementation of continuous quality improvement programs.
- Provision of safe and child-friendly environment.
- Adoption of state-of-art technologies and innovative community programs.

1.4. OBJECTIVES

- To educate the under graduate students and post graduate trainees to meet the national and international standards in Pediatrics.
- To implement, evaluate and monitor the high standards of professional clinical and academic practices as defined by national and international standards.
- To facilitate effective multidisciplinary teamwork and communication to ensure patient-centered care and safety.
- To establish and promote clinical research units and basic science research laboratories.
- To initiate and participate in community education programs.
1.5. **VALUES**

- Islamic ethic code
- Creativity and innovation
- Excellence
- Leadership and teamwork
- Honesty
- Transparency and accountability
- Lifelong learning

1.6. **SCOPE OF SERVICE**

1.6.1 **Pediatric Clinical Services.**

- The Pediatric Department provides all range of services: primary, secondary and tertiary.
- The Pediatric Department undertakes the provision of care for patients from birth to 12 years of age. Children receiving specialty consultant care may be followed up to 14 years of age for boys and 16 years of age for girls in Out Patient Clinics.
- The Department emphasize close and smooth integration between Pediatric Emergency, Pediatric wards, Pediatric Out Patient Clinics and all other services ensuring all patients receive appropriate screening, diagnostic, management, education, and follow up care.
- The clinical services are divided into three areas:
  - Out Patient Services
  - Critical Care Services (PICU &NICU)
  - In-Patient Services

1.6.1.1. **Out Patient Services**

- The clinics provide care for patients in two shifts with pre-scheduled appointments:
  - 9:00am – 12:00pm
  - 1:30pm to 4:00pm
- The average number of patients seen in Out Patient Services is 45,000 to 50,000 per year.
- No high risk procedure done in Pediatric Clinic.
- The clinics are subdivided into six areas as down-stated:
  - **Consultant Specialist Clinics.** 21 Subspecialty Clinics provide appropriate care according to the child’s condition. If required, referral and admission will be initiated. If urgent management is required, the child will be transferred to Pediatric Emergency.
  - **Primary Care Clinic.** These clinics accept referral from Department of Emergency, Clinics and other health institutions. The Primary Care Clinics provide a service which includes screening, assessment,
diagnosis, management and referral to specialty care or admission if required.

- **Well Baby Clinic**: Clinic delivers care to infants born in KKUH, up to the age of one year. The babies have developmental assessment performed during their visits. If any abnormality detected, they are referred to specialty management. All babies attending the Clinic commence a full vaccination program. During clinic visits, education and instruction are given to the parents regarding child development, feeding, safety and other aspects of health education.

- **Vaccination Clinic**: Clinic provides vaccination programs to children in accordance with the Ministry of Health directives. Children are referred for vaccination from the Well Baby Clinic, Sorting Clinic and Specialty Clinics.

- **Dressing Clinic**: Clinic provides services to pediatric patients coming from Pediatrics Emergency for simple cases of wound care, changing of dressing and suture removals.

- **Pediatric Nutrition Clinic**: Clinic provides independent services daily. It is held by the Dieticians and supervised by Department of Nutrition.

1.6.1.2. **Critical Care Services (PICU & NICU)**

1.6.1.2.1. **Pediatric Intensive Care Unit (PICU)**

- The Pediatric Critical Care services are provided through multidisciplinary, highly qualified and trained team, including physicians, nurses, clinical pharmacist and dietitian.
- The Unit provides its services to age groups starting from term neonate to 12 years of age according to hospital administration policy.
- The PICU currently is an eight bed unit that is going to be expanded to 20 beds by January 2010.
- The current average annual admission rate for the 8-beds is 250-300 admissions per year, with average occupancy rate of more than 90%.
- We provide the following services:

  - **Pediatric Medical Diseases**: The Unit provides assessment, diagnosis and management of critically ill children, for both in-patients and through pediatric emergency. The commonly managed problems include Shock states, Cardiopulmonary failure and / or arrest, Pulmonary, Cardiac, Hematologic, or Neurologic problems, that necessitate intensive care management.

  - **Pediatric Surgical cases**: The Unit serves peri-operative care including assessment, stabilization and close observation; for General Pediatric, Neurosurgical, Orthopedic, Plastic, Urologic, Ophthalmologic Surgeries.
• **Pediatric burn and trauma patients**: Including traumatic brain injuries, cardiothoracic, orthopedic and abdominal traumas who are in need for PICU management.

• **Environmental hazards**: The Unit accommodates pediatric patients with serious illness of intoxications, poisoning, near-drowning, electrocutions and envenomation.

• **Extended Pediatric Critical Care service**: The Unit responds to in-hospital and Pediatric Emergency consultations, in addition to other health facilities calling for Pediatric Critical Care opinion.

• **Referral Acceptance**: The Unit accepts patients referred from other health care facilities throughout the Kingdom.

• **Diagnostic and therapeutic tools:**
  - Well trained, skilled and updated staff.
  - Collaboration with other subspecialties whenever needed.
  - Available diagnostic resources including laboratory, radiological and electrophysiological, in hospital and outside through collaboration with other tertiary centers nationally and internationally.
  - The unit is well equipped with facilities and tools that help to achieve management goals. For instance, monitors, ventilators, defibrillators, ultrasound machine, Doppler, Video-laryngoscopy, fiberoptic-bronchoscope and Continuous Renal Replacement Therapy (CRRT).

• **Procedures:**
  - Vascular access: Peripheral and central venous catheters, and intra-osseous needles.
  - Airway management procedures including oro- and naso-pharyngeal airways and endotracheal intubation.
  - Ventilation (bag and mask, non invasive, invasive and high frequency oscillation).
  - Central venous pressure, invasive blood pressure and intracranial pressure monitoring.
  - Other diagnostic and therapeutic procedures that are carried out in the unit include chest tube placement, exchange transfusion, lumbar puncture, urethral catheterization, gastric tube placement, bone marrow aspiration, and nitric oxide inhalation.

1.6.1.2.2 **Neonatal Intensive Care Unit (NICU)**

• The neonatal intensive care services are provided by highly qualified doctors and nurses and fully supported by all hospital services.

• The unit is fully equipped with up to date technology which made it capable of dealing with all kinds of neonatal problems.
NICU bed capacity now is 27 beds which will expand in the near future to 40 beds (already approved by administration).

Turnover rate is high.

Around 10% of total number of babies delivered per year is admitted to NICU (300-450 admissions per year).

The unit provides services to:
- All newborn babies at KKUH
- Neonates referred from other hospitals for special interventions
- Neonates with surgical conditions for intervention

The team also covers the post-natal wards (2 wards with max capacity of 40 babies) which contain normal newborn babies.

All high risk deliveries are attended by neonatal intensive care team consisting of at least one physician and one nurse who are trained for neonatal resuscitation.

Our NICU has a neonatology fellowship program recognized by the Saudi Council for medical education and many consultants had been graduated from our unit.

The unit is unique for having neonatal follow-up program. We have daily clinics divided into:

- High risk clinics – covered by senior physicians. It acts as sorting clinic for NICU graduates and refer high risk cases to developmental evaluation clinics run by the unit.

- Developmental evaluation clinics: Run by qualified consultants who have special training and able to perform Gesell developmental schedule and Bayley Infants Neuro-developmental Screener.

An early detection and, hence, early intervention program is made for each neonate with developmental disability.

**Procedures:**

- Vascular access: peripheral and central
- Insertion of umbilical catheters
- All kinds of ventilation
- Nitric oxide inhalation therapy
- Chest tube insertion
- Lumbar puncture
- Exchange transfusion
- Circumcision
• Gastric tubes
• Bone marrow aspiration
• Blood extractions

1.6.1.3. **In-Patient Services**

• The department provides 24 hours service for in-patient.
• The current average annual admission rate is 2500 admissions per year
• The Department of Pediatrics provides tertiary care for inpatient through the following clinical units:
  - Hematology/Oncology
  - Neurology
  - Gastroenterology
  - Endocrinology
  - Genetics
  - Rheumatology
  - Nephrology
  - General Pediatrics
  - Allergy and Immunology
  - Infectious Diseases
  - Respiratory / Pulmonology

1.6.2. **Administrative Services**

The Department members contribute to the following Departmental committees:

1.6.2.1. **Development and Planning Committee**

• To set and monitor implementation of a strategic plan in accordance to departmental vision, mission, goals and values.
• To develop Programs of Excellence in Pediatric health care, education, and research.
• To set and monitor departmental key performance indicators.
• To review the recruitment and staffing plans.

1.6.2.2. **Undergraduate Committee**

• To supervise the education for undergraduate students according to committee specified objectives.
• To review periodically the contents of the curriculum and format of teaching.
• To supervise execution of the curriculum and its components.
• To coordinate clinical teaching activities.
• To coordinate the clinical (OSCE) examinations.
• To deal with unspecified matters concerning UGTP.
1.6.2.3. **MCQs Bank & Written Examination Committee**

- To evaluate, update and edit exams questions-bank for undergraduate students.
- To coordinate conduction of written examinations for undergraduate students.

1.6.2.4. **Post Graduate and CME Committee**

- To supervise training in pediatrics for:
  - Residents enrolled in Saudi Board and Arab Board Training Programs.
  - Residents rotating through pediatrics from other programs (e.g. Family Medicine) or other hospitals.
  - Fellows in Sub-specialty Programs.
- To ensure the provision of best standard of training.
- To Prepare and conduct in-training and final examinations of Saudi and Arab Board Residents.
- Develop and promote postgraduate fellowship program in all pediatric subspecialties either independent King Saud Fellowship or in affiliation with the Saudi Council for Health Specialties.
- Supervise, coordinate and improve the departmental academic activities.
- Coordinate CME activities (conferences, symposium, courses, etc).

1.6.2.5. **Morbidity and Mortality Review Committee**

- To review all Morbidities and Mortalities within the department and recommend policies to the QMC to prevent the avoidable M&M.
- To coordinate with Hospital wide Morbidity and Mortality Committee.

1.6.2.6. **Quality Management Committee**

- To collaborate with hospital wide accreditation team through Accreditation Pediatric Focus Team.
- To promote the standard of care through Performance Improvement Programs or projects.
- To revise existing and development of new policies and procedures related to the services provided.
- To review DNR (Do Not Resuscitate) orders according to DNR hospital wide policy.

1.6.2.7. **Research Development Committee**

- Promote excellence of research in Pediatrics within the department.
- Establish the clinical research unit (Research assistants, Statistician, Data entry registrars)
- To review research projects prior submitting them to CMRC.
- To assess the applications for research grants.
- To mentor/coach investigators and provide project’s consultation
- To assess and coordinate the potential collaboration with national and international research institutes.

1.6.2.8. **Credential & Promotion Committee**

- To assess the applications for promotion of all teaching staff.
- To assess the applications for promotion of all hospital staff.
- To assess the credentials of applicants for academic/clinical position.

1.7. **CLIENT AND SUPPLIER**

1.7.1. **Clients:**

- Children and their families (including community and King Saud University dependents).
- Medical students.
- Pediatric Residents.

1.7.2. **Suppliers:**

- Pharmacy
- Dietician
- Social Worker
- Laboratory Services
- Radiology Department
- Health Educators
- Physiotherapy
- Speech Therapy
- Medical Supply
- Information Technology
- Other supportive services
- Other subspecialties (Pediatric Surgery, Pediatric Urology, Pediatric Orthopedics, ENT)
ORGANIZATIONAL CHART

CHAIRMAN

DEPUTY CHAIRMAN FOR ACADEMIC AFFAIRS

DEPUTY CHAIRMAN FOR CLINICAL AFFAIRS

ADMINISTRATIVE

COMMITEE

* RCPC
* RDC
* UGTPC
* MCQ’s
* PDE
* QMC
* CME

M&M

* Credentials Promotion Committee
* Research & Development Committee
* Postgraduate and Continuous Medical Education Committee
* Multiple Choice Question / Bank & Written Examination
* Planning & Development Committee
* Mortality and Morbidity Committee
* Quality Management Committee
* Undergraduate Training Program Committee

SECRETARY

OFFICER

Case Manager
Data Manager
Research Assistant
Statistician

CLINICAL

CLINICAL SUBSPECIALITIES UNITS

UNIT HEADS
CONSULTANTS
S. REG/FELLOWS
REGISTRAR
RESIDENTS
INTERN

HEMA/ONCO
NEUROLOGY
PULMONARY
NEPHROLOGY
RHEUMATOLOGY
ID
ENDOCRINOLOGY
GASTROENTEROLOGY
IMMUNOLOGY
NEONATOLOGY
GENERAL PEDIA
CRITICAL CARE
GENETICS & METABOLIC

CLINICAL TEACHING UNITS

TEAM A
TEAM B
TEAM C
NICU
PICU
POPD

* RCPC
* UGTPC
* QMC

TEAM A
TEAM B
TEAM C
NICU
PICU
POPD
1.9. **STAFFING PLAN**

1.9.1. **Clinical Teaching Unit:**

- The staff of the department pediatrics provides clinical services 24 hours daily, 7 days a week (24 hrs/7 day) for inpatients throughout the year in both Clinical Teaching Unit and Pediatric Subspecialties.
- All the staff of the department will be assigned to one of three teams (Team A,B,C).
- Each team will be staffed by consultants, registrars, residents and rotating interns.
- The Clinical Teaching Units (CTU) shall provide coverage for inpatients through 24 hours a day throughout the year including Eid and summer holidays.
- The number of blocks assigned per staff per year will be determined according to the subspecialty coverage and its work loads.
- Average of 6 blocks/staff/year who has no subspecialty coverage, and 1-2 blocks/staff/year for staff covering their subspecialties as well.
- CTU will be covered by Pediatric Consultant in blocks of consecutive two weeks, assuming full responsibility of all the new admission as well as the previous admissions which shall be transferred under his/her responsibility by previous on-service consultant and receive all the consultations for general pediatrics.

1.9.2. **Subspecialty services**

- Each Subspecialty Unit is staffed by 4-6 consultants, 1-2 senior registrars and 1-2 registrars/residents, according to the workload and demand of that subspecialty.
- 20% extra in number of staff will be allowed for highly demanded services (PICU, NICU, Hematology/Oncology, etc)
- The recruitment for new faculty members and hospital staff shall adhere to these plans.
- The plans of staffing will be reviewed regularly and subject for modification according to new and emergent matters after approval from the board.
- The Subspecialty consultants will contribute to the coverage of the CTU according to their workload in their respected subspecialties.
- Pediatric Subspecialties Units will be covered by subspecialty consultant assuming full responsibility of all the new admission as well as the previous admissions which shall be transferred under his/her responsibility by previous on-service consultant and receive all the consultations for the Subspecialty.
- All the subspecialties which are not covered during Eid holidays shall be covered by CTU staff.
1.9.3. **Other general guidelines applied to all services:**

- Each consultant has at least one to two sessions of outpatient clinic per week. The outpatient clinics are held 5 days/week throughout the year except during the official holidays or vacation.
- The on-call rota is prepared by the Department Chairman designee then approved by the Chairman and Chief of Staff. It is prepared each month and distributed hospital wide.
- When a consultant is on his/her annual leave his/her admitted patients will be covered by the corresponding consultant on service and the outpatient clinic is usually closed during the annual leave as per hospital regulation.
- Eid holidays usually covered by a separate on-call schedule and provide 24 hours coverage for CTU and high demanding subspecialty (e.g. Hematology/Oncology, Nephrology, and Neurology). All subspecialties not covered during Eid holidays shall be covered by CTU staff.

1.9.4. **Critical care services:**

- The Neonatal Intensive Care Unit (NICU) is covered by 6-8 consultant neonatologists, 3-4 senior registrars/fellows and 4-6 registrars/resident and provides 24 hours service throughout the year. After the working hours, one on-call consultant, senior registrar/registrar and a resident provide 24 hours coverage.
- The Pediatric Intensive Care Unit (PICU) is covered by 6 consultant Intensivist, 3-4 senior registrars/fellows and 4-6 registrars/resident and provides 24 hours service throughout the year. After the working hours, one on-call consultant, senior registrar/registrar and a resident provide 24 hours coverage.
- If one of the staff has emergency/sick leave, the unit head/chairman shall assign or distribute his duties to one or among the unit staff.

1.10. **COMMUNICATION AND REPORTING**

1.10.1 **Within the department:**

- The department holds monthly departmental board meeting attended by all consultants’ staff.
- Adhoc meeting be held to discuss emerging matters.
- In the clinical service units: the staff report to the head of the unit who reports to the Chairman or Deputy Chairman for Clinical Affairs.
- Quality Management Committee shall reports to the Chairman or Deputy Chairman for Clinical Affairs.
- The Undergraduate, M.C.Q Bank & Written Examination, and Postgraduate Committees shall report to the Chairman, or to the Deputy Chairman of Academic Affairs.
• Credentials Promotion, Research & Development, Planning & Development, Mortality and Morbidity Committees shall report to the Chairman.

• The department has daily morning meeting consists of morning reports, resident case presentation, consultant ground round lecture and report from other subspecialty.

• Daily sign-in and sign-out reports between day covering and on-call teams.

1.10.2 Community / Patient Communication

• Communication with patients and families is carried by the corresponding team and by the unit head or chairman if needed.

• Meetings with community representatives are carried out by the chairman or his designees.

1.10.3 Inter-departmental Communication

• Communication with other departments is carried out in accordance with the hospital wide policy and regulations.

• All meetings are documented by responsible member/secretary and kept in both electronic and paper form.

1.11. Clinical Excellence programs:

• The department will provide the best standard care in all pediatric discipline.

• The department shall be recognized as center of excellence in certain pediatric disciplines determined by expertise and resources.

• These programs will provide excellence in the following domains
  ▪ Clinical services.
  ▪ Research
  ▪ Education (Post graduate and CME)

• Details of the proposals will be provided in separate documents prepared by each respected units and shall be approved by the Board.

• These programs will be given priorities of staffing and resources

• The productivities and outcomes will be continuously monitored and reviewed.

1.12. Continuous Medical Education:

• The department should be pioneer at the national level in prompting and organizing CME activities at.
- The department shall organize an annual Pediatric symposium and minimum of 2-3 specialized workshops per year.
- Encourage the Research development committee to organize Pediatric Research day every 2 years
- Encourage staff to participate at International meetings with abstracts and papers
# TABLE OF CONTENTS

**Section 1: General Pediatrics**

PED-001 - Age limit for pediatric patients
PED-002 - Admission Criteria
PED-003 - Standards of Practice
PED-004 - Pediatric Right & Responsibilities of Parents/Guardians
PED-005 - Hand-off Communication
PED-006 - Pediatric Medication Dosing
PED-007 - Medications Administration to Pediatric Patients
PED-008 - Range and PRN Orders for Medications
PED-009 - Telephone/Verbal Orders for Medication
PED-010 - Medications Reconsolidation Verification
PED-011 - Pediatric Emergency Medications Dosing
PED-012 - Stat/Urgent Medications
PED-013 - Therapeutic Drug Monitoring
PED-014 - Discharge Medication Counseling
TABLE OF CONTENTS

Section 2: Neonatal Intensive Care Unit (NICU)

PED-001- Admission Criteria to NICU
PED-002- Admission to NICU from Labour & Delivery
PED-003- Readmission to NICU
PED-004- Transfer babies to NICU from Ped. A/E
PED-005- Transfer out of a Neonate to Other Hospitals
PED-006- Unit policy for Outborn Transfer
PED-007- Newborn Assessment
PED-008- Gestational Age
PED-009- Pain Assessment in Neonates
PED-010- Care Planning
PED-011- Neonatal Resuscitation
PED-012- Decreasing Medication Errors
PED-013- Standing Orders
PED-014- Tapering of Medications
PED-015- Gentamicin Dosage & Administration for Neonates
PED-016- Concentrated Electrolyte Solutions
PED-017- Handwashing
PED-018- Blood Culture
PED-019- Rh Sensitization
PED-020- Exchange Transfusion
PED-021- Phototherapy
PED-022- Transillumination
PED-023- Percutaneous / Central Venous Catheters
PED-024- Chest Drain
PED-025- Bladder Catheterization
PED-026- Endotracheal Intubation
PED-027- Central Line Insertion & Maintenance
PED-028- Umbilical Catheterization
PED-029- Neonatal Circumcision
PED-030- Discharge of Infant
PED-031- Visitors in NICU
PED-032- Family Education in NICU
PED-033- Death of Infant
1.0. **CONDITION:**

Applies to all pediatric staff (physicians & nurses).

2.0. **PURPOSE:**

To identify the age group for which pediatric care to be given and when to transfer the patient for adult medical care.

3.0. **POLICY:**

Children are accepted for medical care in pediatric department until the age of 12 years.

4.0. **PROCEDURE:**

4.1. New pediatric patients can only be accepted between 0-12 years of age.

4.2. Follow-up patients in pediatric OPD and ER are up to 16 years of age for girls and 14 years for boys.

4.3. Boys after the age of 14 years and girls after the age of 16 years, who require continuity care, should be transferred to the appropriate medical sub-specialty with clear discharge summary and reasons for transfer.

4.4. Girls may be readmitted to pediatric wards up to 16 years of age and boys up to 14 years of age.

4.5. If child is above the age limit (i.e. 14 years for boys and 16 years for girls) and before being seen in the adult medical unit, requires ER admission – the ER room pediatric physician and the adult ER physician are to arrange admission to medical unit.

5.0. **REFERENCES:**

Old Hospital Policy
1.0. **CONDITIONS:**

Appplies to all pediatric physicians and nurses.

2.0. **PURPOSE:**

Appropriate categorization of patients in order to ensure proper distribution of clinical load to achieve best patients care.

3.0. **DEFINITION:**

Social admission: When the patient has a breast-fed sibling who has to be accompanying the mother, or when there is a special social reason that necessitates admission of another sibling.

4.0. **POLICY:**

Admission to Pediatric Wards is divided into: ER admissions Elective admissions, Social admission, Day Care admission and admission from KAUH, each of them has certain steps to be followed.

5.0. **PROCEDURES:**

5.1. **ER admissions:**

All patients in the Pediatric ER who need admission will be admitted to pediatric wards after arrangement with the on-call team in the ward as follows:

5.1.1. New patients: new patients for 1st time admission or not followed up by KAUH clinic to be admitted to the on-call consultant ward except:

- patients with IDDM to be admitted in Ward 11A (Endocrine Unit)
- patients with renal failure and peritoneal dialysis to be admitted to Ward 11B (Renal Unit)
- patients with cardiac problem to be admitted in Ward 11B (Cardiology Unit)
- Thalassemia, SCA will be admitted to Ward 12B (Hematology Unit)

5.1.2. Chronic patients:

a) Known cases being followed-up by a consultant in KKUH clinical will be:

- IDDM in Ward 11A (Endocrine Unit)
- Nephrotic syndrome, renal failure and peritoneal dialysis patients to Ward 11B (Renal Unit)
- Cardiac cases to Ward 11B (Cardiac Unit)
- Neurological cases to 11A or 12B according to follow-up consultant (Neurology Unit)
- SCA, thalassemia to 12B (Haematology Unit)
- All Pediatric Oncology patients to pediatric oncology unit

b) If known cases come with problem other than the primary disease, to be admitted to on-call consultant in the ward. e.g. SCA with GE – to the on-call was not necessary in the ward.

5.1.3. All other patients not included above will be admitted to on-call ward irrespective of their diagnosis.

5.2. Elective admissions:

5.2.1. Admission scheduled by consultant from KKUB clinics, arranged re-admission and referral from other hospital of different regions in the Kingdom.

5.2.2. Only 4-6 elective admissions may be scheduled/week for each pediatric ward.

5.2.3. Not more than 2 patients to be admitted per day, in each ward.

5.2.4. Bed may be reserved for maximum of 36 hours.

5.2.5. On-call ward may not reserve more than one bed or their on-call day, exception for social admission (see below)

5.3. Social Admission:

5.3.1. Breast fed siblings of the patient

5.3.2. Emergency social reasons
5.4 **Day Care Admission:**

All scheduled pediatric patients who may require day care service such as blood products transfusion, other medications, sedation for procedures and reassessment.

5.5 **Admission from KAUH:**

Any case at KAUH that needs admission will be transferred to our pediatric ward KKUH directly after acceptance by the on-call team.

6.0 **FORMS:**

See attached forms of the cases to be admitted under pediatric care.

7.0 **REFERENCES:**

Old IPP & Hospital Policy
1.0. **CONDITIONS:**

This internal policy and procedure applies to all physicians and nurses working in Pediatric Department at KKUH.

2.0. **PURPOSE:**

To develop a process for assessment and problem identification for pediatric patients.

3.0. **POLICY:**

The process of assessment includes 6 standards:

3.1. Assessment

3.2. Diagnosis

3.3. Outcome identification

3.4. Planning

3.5. Implementation

3.6. Outcomes evaluation

4.0. **PROCEDURES:**

4.1 Assessment: which include:

4.1.1 A comprehensive patient history and physical

a. Patient / family interview:
   - Chief complaint
   - History of present illness/injury
   - Birth history
   - Growth and development milestones
   - Childhood disease
   - Exposure to hazardous materials
   - Allergies
4.1.2. The collection of data from available sources:

- Patient, family, caregiver
- Healthcare providers
- Individuals and/or agencies in the community
4.1.3. The collection of data by scientific methodology:

a. Interview
b. Observation
c. Inspection
d. Auscultation
e. Palpation
f. Reports and records

4.1.4. The organization of data in a systematic arrangement:

The arrangement provides:

a. Accurate collection
b. Complete collection
c. Accessibility
d. Confidentiality

4.1.5. The communication of data in an orderly fashion:

a. Data are recorded by each shift, daily
b. Data are updated by each shift, daily
c. Data are revised and recorded as appropriate
d. Data are communicated verbally among interdisciplinary team, daily.

4.2. Diagnosis consists of analyzing patient assessment information to determine patient’s actual or potential healthcare problems.

Diagnoses are:

- Derived from assessment information
- Age and developmentally appropriate
- Takes into account cultural issues, family
- Provides the foundation for the plan of care and outcomes
- Verified with the child/parents/guardians, other healthcare workers involved in the child’s care

4.3. The formulation of desired outcomes:

4.3.1. Desired outcomes are derived from diagnoses, congruent with child’s problems and established norms.

4.3.2. Desired outcomes are measurable within a certain time frame.

4.3.3. Child/family/guardian, pediatric nurse agree upon desired outcomes.

4.3.4. Desired outcomes are established to restore the child’s optimal functioning capabilities. The outcomes are realistic and attainable for the child and his family/guardian.

4.3.5. Desired outcomes are developmentally and age appropriate with consideration to the child’s cultural issues.
4.4. The plan of care is formulated to achieve desired outcomes.

The formulation of nursing prescriptions that delineate actions to be taken

Prescribed actions:

- Are specific to the identified problems of the patient and family
- Are based on current scientific knowledge, current pediatric nursing practice
- Incorporates principles of child/family teaching
- Includes growth and development
- Are developmentally and age appropriate
- Includes cultural issues
- Includes the child’s family
- Provides for continuity of care among healthcare workers, family, community resources
- Are documented and part of the child’s medical record
- Are re-assessed and changed as needed

4.5. Implementation of actions delineated in the plan of care. Actions implemented:

4.5.1. Actively involve the child and family

4.5.2. Are consistent with the nursing prescription

4.5.3. Are based upon current scientific knowledge

4.5.4. Are developmentally and age appropriate

4.5.5. Are cultural relevant

4.5.6. Include principles of safety

4.5.7. Encourage children of appropriate age self-responsibility/care

4.5.8. Include care/family education on disease and injury prevention as documented

4.6. Outcomes of nursing actions (interventions) are evaluated for further assessment and planning. This is evidenced by:

4.6.1. Evaluating the achievement of desired outcomes:

- Data are collected concerning the child’s health status
- Data are compared to the specified desired outcomes
- The child, family and pediatric nurse evaluate the achievement of desired outcomes
- Child’s and family response to desired outcomes are documented.
Reassessment of the nursing plan of care:

- Outcome of nursing actions direct the reassessment of the identified patient’s problems.
- Outcome of nursing actions direct assessment of desired outcomes (assess the desired outcome to determine if appropriate, realistic and stated accurately).
- Outcome of nursing actions direct the reassessment of nursing prescriptions (assess the nursing prescriptions to determine if appropriate, realistic and stated accurately).
- Nursing actions are assessed for effectiveness in achieving desired outcomes.

Further planning as directed by the re-assessment:

- Re-assessment determines new patient present/potential problems.
- New patient problems direct the formulation and revision of desired outcomes.
- Desired outcomes are continually evaluated for achievement.
- The plan of care is continually evaluated and revised according to changes in the patient’s health status. All revisions are documented.

ATTACHMENT:

Categories of pediatric patients who may be admitted to the Pediatric Unit provided that the patient is stable hemodynamically:

- Abdominal pain
- Dehydration
- Developmental delay
- Enteral feedings
- Failure to thrive
- Gastroenteritis
- Genetic / congenital anomalies
- GI disorders
- Growing preterm patients with chronic medical conditions
- Infections: fever, cellulitis
- IV therapy, hydration
- Munchausen-by-proxy
- Oral-motor feeding disorders / gastrooesophageal reflux
- Oxygen dependent patients who are stable
- Patients with mature tracheostomies who do not require excessive suctioning
- Physical abuse/neglect
- Pyelonephritis
- Respiratory illnesses: asthma, Croup, pneumonia, bronchiolitis
- Routine dialysis
- Seizure disorder (in control)
- Spina bifida
- TPN / lipid infusion
- Uneventful surgery
- UTI
- Other conditions that need admission

6.0 **REFERENCE:**

Hospital Policy
1.0. **CONDITIONS:**

This is applied to all pediatric physicians and nurses.

2.0. **PURPOSE:**

Respecting patient’s rights and performing parents’ responsibilities will help to achieve the best care for all children.

3.0. **POLICY:**

All pediatric patients and their parents/guardians should have their rights respected and all parents should ensure that their responsibilities are fulfilled.

4.0. **PROCEDURES:**

4.1. Each child should be respected as a unique individual.

4.2. Respect for the care-taking role and individual response of the parents.

4.3. Provision for normal physical and physiological needs of a growing child to include nutrition, rest, sleep, warmth, activity and freedom to move and explore.

4.4. Consistent, supportive and nurturing care which:

4.4.1. Meets the emotional and psychosocial needs of the child

4.4.2. Fosters open communication

4.5. Provision for self-esteem needs which will be met by attempts to give the child:

4.5.1. The reassuring presence of a caring person, especially a parent

4.5.2. Freedom to express feelings or fears with appropriate reactions

4.5.3. As much control as possible, over both self and situation

4.5.4. Opportunities to work through experience before and after they occur, verbally, in play or in other appropriate ways.
4.5.5. Recognition and reward for coping well during difficult situations

4.6. Provision for varied and normal stimuli of life which contributes to cognitive, social, emotional and physical developmental needs:

4.6.1. Play, educational and social activities essential to all children and adolescents

4.7. Information about what to expect prior to, during and following procedure/experience and support in coping with it.


4.9. Minimization of hospital stay duration by recognizing discharge planning needs.

4.10. Family responsibility:

Parents/family* shall have the responsibility for:

4.10.1. Continuing their parenting role to the extent of their ability

4.10.2. Being available to participate in decision-making and providing staff with knowledge of parents/family whereabouts.

*The family consists of those individuals responsible for physical and emotional care of the child on a continuous basis, regardless of whether they are related.

5.0. REFERENCES:

5.1. Hospital IPP & Policy from Quality Department

5.1.2. The collection of data from available sources:

a. Patient, family, caregiver  
b. Healthcare providers  
c. Individuals and/or agencies in the community

5.1.3. The collection of data by scientific methodology:

a. Interview  
b. Observation  
c. Inspection  
d. Auscultation  
e. Palpation  
f. Reports and records
5.1.4. The organization of data in a systematic arrangement:
   a. The arrangement provides:
   b. Accurate collection
   c. Complete collection
   d. Accessibility
   e. Confidentiality

5.1.5. The communication of data in an orderly fashion:
   a. Data are recorded by each shift, daily
   b. Data are updated by each shift, daily
   c. Data are revised and recorded as appropriate
   d. Data are communicated verbally among interdisciplinary team, daily.

5.2. Diagnosis consists of analyzing patient assessment information to determine patient’s actual or potential healthcare problems.
   - Diagnoses are:
     - Derived from assessment information
     - Age and developmentally appropriate
     - Takes into account cultural issues, family
     - Provides the foundation for the plan of care and outcomes
     - Verified with the child/parents/guardians, other healthcare workers involved in the child’s care

5.2. The formulation of desired outcomes:
   - Desired outcomes are derived from diagnoses, congruent with child’s problems and established norms
   - Desired outcomes are measurable within a certain time frame
   - Child/family/guardian, pediatric nurse agree upon desired outcomes
   - Desired outcomes are established to restore the child’s optimal functioning capabilities. The outcomes are realistic and attainable for the child and his family/guardian.
   - Desired outcomes are developmentally and age appropriate with consideration to the child’s cultural issues.

5.3. The plan of care is formulated to achieve desired outcomes.
   - The formulation of nursing prescriptions that delineate actions to be taken
     - Prescribed actions:
       - Are specific to the identified problems of the patient and family
       - Are based on current scientific knowledge, current pediatric nursing practice
       - Incorporates principles of child/family teaching
       - Includes growth and development
       - Are developmentally and age appropriate
5.4. Implementation of actions delineated in the plan of care. Actions implemented:

5.4.1. Actively involve the child and family

5.4.2. Are consistent with the nursing prescription

5.4.3. Are based upon current scientific knowledge

5.4.4. Are developmentally and age appropriate

5.4.5. Are cultural relevant

5.4.6. Include principles of safety

5.4.7. Encourage children of appropriate age self-responsibility/care

5.4.8. Include care/family education on disease and injury prevention as documented

5.5. Outcomes of nursing actions (interventions) are evaluated for further assessment and planning. This is evidenced by:

5.6.1. Evaluating the achievement of desired outcomes:
- Data are collected concerning the child’s health status
- Data are compared to the specified desired outcomes
- The child, family and pediatric nurse evaluate the achievement of desired outcomes
- Child’s and family response to desired outcomes are documented.

5.6.2. Reassessment of the nursing plan of care:
- Outcome of nursing actions direct the reassessment of the identified patient’s problems.
- Outcome of nursing actions direct assessment of desired outcomes (assess the desired outcome to determine if appropriate, realistic and stated accurately).
- Outcome of nursing actions direct the reassessment of nursing prescriptions (assess the nursing prescriptions to determine if appropriate, realistic and stated accurately)
- Nursing actions are assessed for effectiveness in achieving desired outcomes

5.6.3. Further planning as directed by the re-assessment:
- Re-assessment determines new patient present/potential problems
• New patient problems direct the formulation and revision of desired outcomes
• Desired outcomes are continually evaluated for achievement
• The plan of care is continually evaluated and revised according to changes in the patient’s health status. All revisions are documented.
1.0. **CONDITIONS:**

This (hand-off) communication policy and procedure applies to all physicians and nurses in the Department of Pediatrics.

2.0. **PURPOSE:**

The Department of Pediatrics is committed to ensure patient safety whenever there is a change in the patient’s caregivers.

3.0. **POLICY:**

3.1. Hand-off communication will take place whenever there is:

3.1.1 A physician transfer complete responsibility for a patient

3.1.2 Physicians and nurses are transferring patient’s to another level of care within or outside the organization.

3.1.3 Physicians are transferring on-call responsibilities.

3.1.4 At the change of shift between nurses

3.1.5 A nurse leaves the unit for a period of time, such as lunch or to accompany a patient to another unit or diagnostic department.

4.0. **PROCEDURES:**

4.1. When a physician is transferring complete responsibility for a patient or when transferring a patient to or another level of care within or outside the organization, the physician or his designee will:

4.1.1. Write a detailed summary of the patient illness and course including:

   a. patient name, sex and age
   b. date of admission
   c. presenting symptoms and reason for admission
   d. diagnosis
   e. patient problem list
   f. patient medication and when they last given, IVF & O₂
4.1.2. Patient past medical and surgical history

a. wound dressing, drains, central line, etc.
b. recent or anticipated charges in the patient condition
c. treatment, care and services that need to be completed (to-do-list)
d. any other information which is important to the patient’s care.

4.2. At the change of shift between nurses or when the patient’s nurse leave the unit for a period of time, the patient nurse will report as follows:

4.2.1. Find a quiet area to give a verbal report (hand-off communication) to ensure accurate, clear and concise information is given with a minimum of interpretation.

4.2.2. Caregiver will give each other opportunity to ask questions, answer questions and read book or repeat book information, as needed.

4.2.3. Information provided during hand-off communication will include at a minimum:

a. Patient’s name and location
b. Patient’s physician
c. Date of admission
d. Diagnosis
e. Summary of the patient’s comment, physical and mental condition including:
   - medication and when were last given
   - IV present: heplock /solution rate infusion
   - O₂ when applicable
   - wound dressing, drains, etc.
   - allergies
   - emotional status
   - pain assessment and management
   - treatment care and services that need to be completed (to-do-list)

4.3 Any other information which is important to the patient’s care

5.0. **REFERENCES:**

- Inter-unit and Inter-departmental transfer checklist
- Nursing Department Policy
- Hospital Regulations
- MCN Guidelines
1.0. **CONDITIONS:**

Physicians, nurses & pharmacists

2.0. **PURPOSE:**

To prevent and minimize pediatric medication errors.

3.0. **POLICY:**

3.1 Pediatric department shall use weight-based dosing, relative to safe and effective dosing for pediatric patients.

3.2 Due to age-related changes in pharmacokinetic parameters, the dosage of medications prescribed for pediatric patients should be based on

3.2.1. The patient’s weight (in Kg)
3.2.2. The patient’s age
3.2.3. The patient’s renal and hepatic function
3.2.4. The medication’s chemical characteristics
3.2.5. Other medications the pediatric patient is taking
3.2.6. The patient’s physical condition

3.3. All orders for pediatric medication must include the patient’s current weight listed in kilograms (kg) and body surface area (BSA) as applicable.

3.4. The order must include the dose (in mg or mEq as applicable) of the medication, the weight-based dosing (dosage parameter) utilized to calculate the medication regimen and the patient’s current weight in kilograms.

3.5. Any medication order contains “Error-Prone Abbreviations or symbols” will not be accepted by the pharmacy. The Pharmacist will contact the prescriber to clarify and/or rewrite the medication order.

4.0. **PROCEDURES:**

4.1. All pediatric patients shall be weighed in kilograms at the time of admission, and weights shall be placed on the front of the chart and on each Physician’s Order Sheet.
4.2. Any pediatric medication orders that do not specify the patient’s weight will be considered incomplete and will not be prepared, dispensed or administered. The Pharmacist will contact the prescriber to clarify the medication order.

4.3. If the prescriber cannot be reached within a reasonable amount of time and the medication is felt to be urgently needed, Pediatric On-Call House Staff for the day (or the nurse in charge) will be contacted to clarify the order.

4.1. The clarified order which includes the patient’s weight and dosing parameters will then be documented in the patient medical record either by the prescriber or the Pharmacist.

5.0. FORMS AND ATTACHMENTS:

5.1. Institute for Safe Medication Practices’ List of Error-Prone Abbreviations, Symbols, and Dose Designations

5.2. Weight-based Renal Dosing Recommendations for Pediatrics

6.0. REFERENCES:
- MCN Guidelines
1.0. CONDITIONS:

Physicians, nurses & pharmacists

2.0. PURPOSE:

To prevent and minimize pediatric medication errors.

3.0. DEFINITIONS:

Range Orders: are orders for medications that are written in dose and/or frequency range (with a lower and upper limit). A range order is expressed (for example) as: “Tylenol 325 mg tablets, 1 to 2 every 4 to 6 hours, PRN pain.”

4.0. POLICY:

4.1 It is the policy of KKUH to eliminate range orders wherever possible. Range orders that are deemed essential to patient care by the prescribing physician will be carried out per the procedure outlined below.

4.2 PRN orders must be written to include the symptom or indication for use (i.e., PRN pain, PRN fever…etc).

5.0. PROCEDURES:

5.1 All range orders for medications are to be followed utilizing the lowest dosage at the greatest frequency for initial administration.

5.2 Medication ordered for administration of one (1) to two (2) tablets shall be administered upon initial dose as one (1) tablet. If symptomatic relief is not obtained, the subsequent dose should be increased to two (2) tablets.

5.3 Medication ordered for administration every three to four (3-4) hours, four to six (4-6) hours, etc., shall be administered upon initial dose as the greatest (longest) frequency; in the instance of every three to four (3-4) hours at four (4) hours, and in the instance of every four to six (4-6) hours, at six (6)
hours. If symptoms appear before the next dose, the dosing interval can be decreased pursuant to the order.

5.4 If, upon a thorough clinical assessment, the healthcare practitioner determines the greater dose or reduced frequency is necessary to adequately manage the patient’s condition, the medication may be administered in the higher dose or the reduced frequency. The rationale for administration of medication in this manner must be well documented in the medical record, including patient complaints, vital signs and observable symptoms.

5.5 Pursuant to organizational policy for medication administration, the effect of the medication on the patient must be documented in the medical record.

6.0 REFERENCES:

- MCN Guidelines
1.0. **CONDITIONS:**

Physicians, nurses & pharmacists

2.0. **PURPOSE:**

To prevent and minimize pediatric medication errors.

3.0. **POLICY:**

3.1 Telephone/Verbal orders are allowed, however in an effort to reduce medication errors, the use of these types of orders is discouraged. The medical staff is educated on a continual basis to make all attempts to minimize the use of verbal and telephone orders.

3.2 Telephone/Verbal orders are to be issued in the best interest of the patient and therefore will be kept to a minimum. Telephone/Verbal orders for medications will be accepted only in the following instances:

3.2.1 STAT/URGENT medications when fax machine is not working or not available.

3.2.2 The prescribing practitioner (within NICU and PICU ONLY) has determined that the patient is in need of medication within a specific time period and he/she is unable to physically write the order in the patient’s medical record due to his/her physical location. To delay administration of the medication would not be in the best interest of the patient’s plan of care and treatment, therefore expedient ordering and administration of the medication is necessary.

3.3 Telephone/Verbal orders for medications may be received and recorded by pharmacists.

3.4 Telephone/Verbal orders for administration of medications may be received and recorded by RN.

3.5 It is the policy of this institution never to allow verbal or telephone orders for the purposes of medical staff practitioners convenience only. Whenever possible and practicable, all members of the medical staff with privileges and approval to prescribe medication, will do so by physically entering an order in the patient’s medical record or on a Pharmacy prescription pad.
4.0. **PROCEDURES:**

4.1 In cases of extreme emergencies, telephone and verbal orders would be accepted initially from a physician by a pharmacist; the order shall be signed with the name of the physician per the name of the person who accepted the order.

4.2 All telephone and verbal orders for medications shall include the following criteria:

4.2.1 Date and time the order is prescribed verbally or via telephone
4.2.2 The name of the individual prescribing the drug and his/her licensure (i.e., MD, DPM)
4.2.3 The generic and/or brand name of the drug
4.2.4 Drug dosage (strength or concentration)
4.2.5 Quantity and/or duration
4.2.6 Route drug is to be administered
4.2.7 Frequency of administration
4.2.8 Age and weight of the patient if this is not known, or in clinical circumstances where this is appropriate
4.2.9 Known allergies (if this has not been determined at the time of the verbal/telephone order)
4.2.10 The reason the drug is ordered for the patient
4.2.11 Specific indications for use, as appropriate
4.2.12 Name and level of licensure of the individual receiving and documenting the order
4.2.13 Name and level of licensure of the individual who implemented the order

4.3 Telephone/Verbal orders must be repeated by the pharmacist from the written transcription to ensure that the listener has properly heard and understood the communication (“read-back” requirement); receiving confirmation from the prescriber that the order is correct.

4.4 Telephone/Verbal orders must be repeated by **TWO** nurses to ensure that the listener has properly heard and understood the communication (“read-back” requirement); receiving confirmation from the physician that the order is correct.

4.5 A written order, for the above mentioned telephone order, should be signed by the prescribing physician and sent to the pharmacy within 30 min. (Medications prepared in response to telephone orders will be released only after receiving the written order)

5.0. **REFERENCES:**

- MCN Guidelines
1.0. CONDITIONS:

Physicians, nurses & clinical pharmacists

2.0. PURPOSE:

To prevent and minimize pediatric medication errors such as omissions, duplications, dosing errors, or drug interactions.

3.0. DEFINITION:

Medication Reconciliation: is the process of comparing a patient's medication orders to all of the medications that the patient has been taking. It should be done at every transition of care in which new medications are ordered or existing orders are rewritten. Transitions in care include changes in setting, service, practitioner or level of care.

4.0. POLICY:

4.1 Pediatric department will implement and maintain a process to obtain and document a complete list of a patient’s current medications upon admission.

4.2 Medication reconciliation is a multidisciplinary process between nursing, physician, and clinical pharmacist with patient/family involvement.

4.3 The medication reconciliation process comprises five steps:

4.3.1 Develop a list of current medications
4.3.2 Develop a list of medications to be prescribed
4.3.3 Compare the medications on the two lists
4.3.4 Make clinical decisions based on the comparison
4.3.5 Communicate the new list to appropriate caregivers and to the patient.

4.4 Medication reconciliation/verification will be performed:

4.4.1 Upon admission/entry into the facility, i.e., Emergency Department, Surgery, Direct Admits.
4.4.2 When a patient is transferred or referred to another setting, service, practitioner or level of care within or outside of this organization.
4.4.3 Any transition of care where new medications are ordered or existing orders are rewritten (as defined by the organization).
4.4.4 At the time of discharge

4.5 Reconciliation of medications will include:

4.5.1 Any omissions.
4.5.2 Any duplications.
4.5.3 Interactions.
4.5.4 Dosing errors.
4.5.5 Name/dose/route confusion.

4.6 Clinical Pharmacy consultation shall be requested for:

4.6.1 Patients taking high-risk medications
4.6.2 Patients taking anticonvulsants
4.6.3 Patients taking more than 5 medications
4.6.4 When a patient reports abnormal doses
4.6.5 Other situations when seemed necessary.

4.7 The complete list of the patient’s medications will be communicated to the next provider of service when the patient is referred or transferred to another setting, service, practitioner or level of care within or outside of KKUH

4.8 The next provider of service will compare the medications on the Medication Reconciliation/Verification Form and the patient’s MAR from the sending unit to any new medications ordered.

4.9 Reconciliation of medications for non-urgent medications will be completed within 24 hours of admission

4.10 Reconciliation for urgent medications, high-risk medications and those medications with potentially dangerous variances in dosage will be completed within four (4) hours after orders are written.

4.11 Medications for which the next dose is due to be administered within four (4) hours shall be reconciled within four (4) hours after orders are written.

4.12 Medications that must be reconciled include:

4.12.1 Prescription medications, including inhalers, eye drops, contraceptives, medication patches, PRN medications, etc.
4.12.2 Over-the-counter drugs
4.12.3 Herbal, vitamins and dietary supplements

4.13 The attending physician will make any additions, deletions or corrections to the patient’s medication orders using the physician’s order sheet.

4.14 The Medication Reconciliation/Verification Form shall be placed in a highly visible location within the patient’s medical record to assure easy accessibility by providers writing orders.
5.0. **PROCEDURES:**

5.1 **Admission:**

5.1.1 The nurse completing the admission assessment will obtain and document the patient’s current medications taken at home. These medications will be listed on the Medication Reconciliation/Verification Form.

5.1.2 If the patient does not remember all of his/her medications, the family may be asked to bring all of the patient’s prescriptions to the hospital.

5.1.3 The patient’s medication history may be obtained by: Family recall, Patient’s pharmacy record, The patient’s prescription containers, Recent H&P, Transfer Records…etc.

5.1.4 The following will be documented on the Medication Reconciliation/Verification Form: Medication, Dose, Route, Frequency, Date and time medication last taken.

5.1.5 The RN assigned to the patient will reconcile the admission medication orders with the list of the patient’s home medications.

5.1.6 The physician shall review the Medication Reconciliation/Verification Form within 24 hours of admission. He shall make decisions about drug therapy, document the reason(s) to discontinue, change and/or hold medications, and then sign the form. Changes in medication orders will be made on the physician’s order sheet.

5.2 **Transfer:**

5.2.1 Before patient transfer, the RN assigned to the patient will reconcile the medications using:

5.2.1.1 The patient’s MAR from the sending unit
5.2.1.2 The Medication Reconciliation/Verification Form against the medications on the transfer orders

5.2.2 The receiving RN will complete the medication reconciliation process and notify the physician of any variances.

5.2.3 If any pre-transfer medication is not ordered on the transfer orders, the nurse will contact the physician. The physician will then order the medication or confirm that the omission or change was deliberate.

5.2.4 The physician should review the Medication Reconciliation/Verification Form and the patient’s MAR to decide if medications should be continued, discontinued, resumed or held upon transfer to another level of care. After reviewing the Medication Reconciliation/Verification Form, the physician will sign the form.
5.3 Discharge:

5.3.1 The RN assigned to the patient will review discharge medication orders with the Medication Reconciliation/Verification Form, the patient’s home medication list and the most recent inpatient orders.

5.3.2 Variances will be reported to the physician.

5.3.3 All variances must be corrected before the patient is discharged.

5.3.4 The physician should also review the Medication Reconciliation/Verification Form and sign accordingly.

5.3.5 All discharge medications and instructions are documented on the Discharge Instruction Sheet, with a copy given to the patient/family.

5.3.6 Patient instructions should include how to take the medications prescribed, the time for the next dose and how long to take any new medications that may be prescribed.

5.3.7 Encourage the patient to carry a list of his/her medications at all times and to present this list to all healthcare providers who are providing care to the patient, i.e., pharmacist, primary care physician, follow-up care physician.

5.4 Orientation to and continuing education regarding KKUH medication reconciliation process will be provided to staff, i.e., Nursing, Pharmacy and the medical staff.

5.5 The medication reconciliation process will be monitored via performance improvement activities, and changes will be made to improve processes as needed.

6.0 FORMS AND ATTACHMENTS:

Medication Reconciliation Form

7.0 REFERENCES:

- MCN Guidelines
1.0. CONDITIONS:

Physicians, nurses & pharmacists

2.0. PURPOSE:

To prevent and minimize pediatric medication errors.

3.0. POLICY:

3.1 Emergency medication dosing guidelines will be prepared according to Pediatric Advanced Life Support (PALS) standards for drugs related to cardiopulmonary resuscitation for pediatric patients.

3.2 IV drips concentrations will be limited and standardized throughout the KKUH according to the attached IV drips list.

3.3 Due to age-related changes in pharmacokinetic parameters, the dosage of medications prescribed for pediatric patients should be based on:

- 3.3.1 The patient’s weight
- 3.3.2 The patient’s age
- 3.3.3 The medication’s chemical characteristics.
- 3.3.4 Other medications the pediatric patient is taking.
- 3.3.5 The patient’s physical condition

4.0. PROCEDURES:

4.1 The physician will calculate emergency medications weight based dosing for each patient using the emergency medication Guidelines and will forward the printed sheet to the nurse.

4.2 The printed dosing sheet will remain with the patient's medical record during the entire admission.

4.3 All initial continuous infusion orders must include drug name, dose (e.g., mcg/kg/min); and patient weight.
4.4 The pharmacy will automatically dispense the default concentration from the attached Standardized Drip List unless otherwise specified in the order.

4.5 The physician may specify fluid restriction criteria in the order sheet. If the patient is fluid restricted, then the pharmacist may need to choose an alternate concentration from the Standardized Drip List such that the rate is approximately 0.2 – 0.5 ml/hr or dispense the drip utilizing the maximum concentration.

4.6 Dextrose 5% will be the default diluent unless the drug is incompatible in dextrose or unless the order is written for another diluent and the drug is compatible in that ordered diluent.

4.7 Any concentration ordered that exceeds the maximum concentration requires appropriate clinical justification in the medication order.

4.8 Dosage adjustment may be necessary in patients with renal dysfunction. Pediatric clinical pharmacist will be consulted regarding any dose adjustments.

4.9 Drips for neonates & infants are to be dispensed in a syringe for administration via syringe pump.

4.10 For drips dosed in mcg/kg/min, the following formula will be used to calculate the rate of drip infusion: (Caution: All units must agree when calculating infusion rate).

\[
\text{Rate (mL/hour)} = \frac{\text{Desired dose (mcg/kg/min)} \times \text{Weight (kg)} \times 60 \text{ (min/hour)}}{\text{Concentration of Drip (mcg/mL)}}
\]

5.0. FORMS AND ATTACHMENTS:

5.1 Pediatric Emergency Medications Guidelines
5.2 Standardized Pediatric IV Drips List

6.0. REFERENCES:

- MCN Guidelines
1.0. **CONDITIONS:**

Physicians, nurses & pharmacists

2.0. **PURPOSE:**

To identify the processes, including timeframes necessary to ensure safe medication delivery in cases of extreme emergencies (when medication delay would result in serious harm to the patient).

3.0. **DEFINITIONS:**

3.1 **STAT/URGENT Medication Order:** When the medication requested should be received by the patient within 30 minutes in order to prevent or treat a potentially life threatening or emergency situation.

3.2 **ROUTINE Medication Order:** When the medication requested is not of urgent need and will be processed within the time frame established for normal performance (Turnaround Time = 2 hours).

4.0. **POLICY:**

4.1 STAT/URGENT medication orders should be given the priority in handling by means of physicians, nurses and pharmacists in order to ensure safe medication delivery for patients in an appropriate timely manner.

4.2 Turnaround Time for STAT/URGENT orders should not exceed 30 minutes.

4.3 No STAT/URGENT order should be initiated for medications stocked in the ward.

4.4 Telephone order should be initiated for STAT/URGENT medications when fax machine is not working or not available.

5.0. **PROCEDURES:**

5.1 **Written Orders:**

5.1.1 STAT/Urgent medication orders should be written separately from ROUTINE orders; and must be labeled as "URGENT" , Date and time should be clearly documented in the order.
Example: Meropenem 500 mg IV x1 dose STAT [URGENT]
Then, Meropenem 500 mg IV q 8hr.

5.1.2 The physician should communicate STAT/URGENT order immediately with the assigned nurse.

5.1.3 The nurse/ward clerk should fax the order immediately to the pharmacy; and document the time of order faxing on patient chart.

5.1.4 The nurse/ward clerk should call the pharmacy immediately after faxing the order to insure its safe arrival and ask the pharmacist when the medication will be ready to be picked up. (the nurse should document that in patient chart along with the pharmacist’s name).

5.1.5 STAT/URGENT medication orders will be given priority by the pharmacist for review and preparation. (Unless an order specifically states that a medication is STAT/URGENT, the order will be processed as routine).

5.1.6 After the above mentioned time has been elapsed, the nurse/physician should send a porter directly to the pharmacy to pick up the medication; and he/she will carry the responsibility of following him.

5.2 Telephone Orders:

5.2.1 In cases of extreme emergencies, telephone orders would be accepted initially from a physician by a pharmacist; the order shall be signed with the name of the physician per the name of the person who accepted the order.

5.2.2 Verbal orders must be repeated from the written transcription to ensure that the listener has properly heard and understood the communication (“read-back” requirement); enunciate what is being read as clearly as possible.

5.2.3 A written order, for the above mentioned telephone order, should be signed by the prescribing physician and sent to the pharmacy within 30 min. (Medications prepared in response to telephone orders will be released only after receiving the written order)

5.2.4 If the STAT/URGENT medication is not administered to the patient within maximum of 60 min, an incidence report should be documented; and clearly indicates the source of delay.

5.0. REFERENCES:

- MCN Guidelines
1.0. CONDITIONS:

Physicians, nurses & Clinical pharmacists

2.0. PURPOSE:

To ensure safe & effective use of narrow therapeutic index medications.

3.0. DEFINITIONS:

3.1 Therapeutic Drug Monitoring: is the measurement of specific drugs levels at intervals in order to maintain a relatively constant concentration of the medication in the bloodstream. Drugs that are monitored tend to have a narrow “therapeutic range”

3.2 Narrow Therapeutic Index Medications: the medication’s quantity required to be effective is not far away from the quantity that causes significant side effects and/or signs of toxicity.

4.0. POLICY:

4.1 Pediatric department will implement and maintain a process for therapeutic drug monitoring of narrow therapeutic index medications.

4.2 Therapeutic Drug Monitoring is a multidisciplinary process between physicians Nursing, and Clinical Pharmacists.

4.3 Therapeutic Drug Monitoring will be performed for the following medications:

4.3.1 Aminoglycosides
4.3.2 Vancomycin
4.3.3 Phenytoin
4.3.4 Phenobarbital
4.3.5 Carbamazepine
4.3.6 Valproic acid
4.3.7 Theophylline
4.3.8 Digoxin
4.3.9 Lidocaine
4.3.10 Procainamide
4.3.11 Quinidine
4.4 Therapeutic Drug Monitoring form shall be filled by the RN for all the above mentioned medication.

4.5 The exact time and date of the specimen collection in relation to the last dose of the drug should be recorded accurately in the drug monitoring form.

4.6 A clinical pharmacist shall be consulted for interpretation of the drug serum levels, performing the required patient specific pharmacokinetic calculations, and do adequate dose adjustment, and document his recommendation in the patient chart.

4.7 Therapeutic Drug Monitoring form shall be placed in a visible location within the patient’s medical record to assure easy accessibility by physicians.

5.0. PROCEDURES:

Therapeutic drug monitoring (TDM) is of great value for monitoring drugs with Narrow Therapeutic Index. For such measurements to be clinically worthwhile the following criteria should be fulfilled:

5.1 Recording the exact time and date of the specimen collection in relation to the last dose of the drug.

5.2 A blood specimen should not be taken until "steady-state" has been achieved (approximately five times the drug's half-life). This applies to changes in dosage as well as following the initiation of therapy. Please refer to the table above for guidance on sampling times of specific drugs.

5.3 Samples for drug monitoring should be sent immediately to pharmacokinetic lab.

5.4 Samples should be analyzed maximum within 2 hours from the time of collection (otherwise, should be stored frozen at 0°C) to avoid any artifactual decrease in the measured concentration that might be happened due to drug interactions, inactivation or adsorption to the tube wall. (For example: an aminoglycoside will be deactivated by B-lactam antibiotics if both are present in the same blood sample).

5.5 Note that the "target" or "therapeutic" range is only a guide to proper dosing of the patient. Aim to treat the whole patient rather than the drug concentration.

5.6 In patients with end-stage renal disease, it may take 15-20 days to reach steady-state.

6.0. FORMS AND ATTACHMENTS:

Therapeutic Drug Monitoring form

7.0. REFERENCES:

- MCN Guidelines
1.0. **CONDITIONS:**

Physicians, nurses & Clinical pharmacists

2.0. **PURPOSE:**

Assuring safe and correct use of medications after discharge.

3.0. **POLICY:**

The patient/parents/guardians will be educated on the importance and correct use of medications to be taken following discharge of the patient.

4.0. **PROCEDURES:**

4.1 Discharge medication instructions will be provided by the appropriate person and documentation of the counseling will be made on the discharge summary form.

4.2 Discharge instructions will be provided by the physician or the nurse before discharge.

4.3 Discharge instructions may be provided by a Clinical Pharmacist when requested for particular medications.

4.4 Discharge instructions may be provided by a Clinical Dietitian when requested if a potential food-drug interaction exists.

4.5 Discharge medication instructions will focus on the following drug counseling categories:

   4.5.1 Drugs that may cause enhanced drowsiness
   4.5.2 Drugs that may cause flushing, nausea or headache
   4.5.3 Drugs that may interact with food
   4.5.4 Drugs to be taken on an empty stomach
   4.5.5 Drugs to be taken with food to decrease stomach irritation
   4.5.6 Foods to be avoided or aware of while taking certain medication

4.0. **REFERENCES:**

- MCN Guidelines
1.0. **CONDITIONS:**

All physicians and RN in NICU.

2.0. **PURPOSE:**

To ensure proper care and management of all newborns and identify those who require NICU admission.

3.0. **POLICY:**

3.1. The NICU will admit any neonate who requires continuous nursing care and cardiopulmonary support.

3.2. Neonates transferred from outside hospitals will be referred to the physician on duty in the NICU.

4.0. **PROCEDURES:**

NICU Admission Criteria:

4.1 Infants less than two (2) Kilograms

4.2 Infants who have experienced difficult labor and/or delivery

4.3 Infants who are cyanotic

4.4 Infants with anomalies, severe congenital heart disease

4.5 Infants who have undergone resuscitation or laryngoscopy

4.6 Infants in respiratory distress

4.7 Erythroblastic infants

4.8 Infants of diabetic mothers

4.9 Infants with possible sepsis

4.10 Asphyxia neonatorum
4.11 Infants requiring:

- Monitoring
- Oxygen
- Respirator/nasal CPAP
- IV therapy
- Gavage feeding
- Further evaluation

5.0. REFERENCES:

Medical Consultants Network. Inc.
1.0. **CONDITIONS:**

All physicians and RN in NICU and labor & delivery ward.

2.0. **PURPOSE:**

To facilitate the admission process to

3.0. **POLICY:**

3.1 Admission procedure to the NICU is the responsibility of the NICU RN underwritten orders from a physician.

3.2 The Assessment Flowsheet and care plan will be completed within eight (8) hours of admission.

3.3 All infants will be transported to the NICU in a heated isolette with appropriate equipment and personnel.

4.0. **PROCEDURES:**

4.1 The NICU RN will:

4.1. Check the neonate’s ID band for the mother’s name and medical record number.

4.2. Sign, document time and date on the delivery flow sheet.

4.3. Weigh the neonate and document.

4.4. Maintain thermoregulation by placing the neonate in warmer, start O₂ as ordered.

4.5. Obtain neonate’s vital signs (respiratory rate, apical pulse and blood pressure) in all extremities. Neonatal cardio respiratory status can change quickly and must be monitored per protocol.

4.6. Obtain blood glucose (glucometer).
4.7. Place neonate on the cardiac monitor and oximeter if on O\textsubscript{2}. Monitor neonate for the need to be intubated and/or UAC placement, and notify physician of changes in patient status.

4.8. Administer vitamin K as ordered, if not given in Labor and Delivery.

4.9. Administer ophthalmic ointment as ordered, if not given in Labor and Delivery.

4.10. Assist with or insert IV and begin IV therapy per physician’s orders.

4.2. Document all information on the NICU flowsheet and Nurses’ Notes

5.0. REFERENCES:

Medical Consultants Network. Inc.
1.0. **CONDITIONS:**

All physicians and RN in NICU and pediatric ER.

2.0. **PURPOSE:**

To define criteria for NICU re-admission

3.0. **POLICY:**

A newborn who has been recently discharged may be readmitted to NICU under the following conditions:

3.1 By order of Neonatologist
3.2 Within 14 days of discharge
3.3 No evidence of new infection or acute illness.
3.4 If his illness is the same prior to discharge
3.5 Weight upon arrival less than 2 kg

4.0. **PROCEDURES:**

5.0. **REFERENCES:**

Medical Consultants Network, Inc.
1.0. CONDITIONS:

To all physicians and RN in NICU and pediatrics a/e.

2.0. PURPOSE:

Physicians and Nursing staff in NICU will ensure safety on receiving babies to NICU.

3.0. POLICY:

All physicians and nursing staff in NICU will be responsible and accountable to standards precautions.

3.1. From A/E, a baby for admission is to be received in the portable incubator with monitor by the NICU staff.

3.2. NICU physician (senior) will go down to emergency room to evaluate the newborn baby and make admission decision.

3.3. Once Physician indicated admission, Nursing staff in A/E should telephone NICU requesting a nurse to bring portable incubator.

3.4. Admission opened in NICU only for KKUH delivery for sick neonates.

4.0. PROCEDURES:

5.0. REFERENCES:

Medical Consultants Network, Inc.
1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

All physicians and Nursing staff in NICU to ensure safety on transferring neonates to other hospitals.

3.0. **POLICY:**

All physicians and RN in NICU will be responsible and accountable with standard precautions on transferring neonates to other hospitals.

3.1. All NICU RN and neonatologists will comprise the transfer team for the neonate.

3.2. The attending neonatologist will confirm all transfers

4.0. **PROCEDURES:**

4.1. **PREPARATION:**

4.1.1. Equipments:
- Portable incubator (both oxygen cylinders should be full >1500 liters.
- Cardiac monitor/ECG leads/saturation probe.
- Emergency medication box
- Ambu bag, mask, y-connector and pressure gauge
- Infusion pump
- Bubbler CPAP/ ventilator tubing’s accessories, Sterile water.
- Transport flow sheet and progress notes.
- Medical record, including informed consent from parents/legal guardians.

4.1.2. Send ambulance request on the previous day and inform the ambulance department the portable incubator number, the exact date and time of transfer.

4.1.3. Verify transport incubator is clean, plugged in and working.
4.1.4. Ensure that portable incubator is charged and pre-warmed/both oxygen cylinders are full>1500litres.

4.1.5. Check transport packs; complete checklist.

4.1.6. Check emergency drug box; ensure drugs are not expired.

4.1.7. Give the following information to the parents/legal guardian.

- Name of the hospital the infant is being transferred to
- Telephone number of the hospital
- Written directions to the hospital

4.1.8. Handover only the medical report to other hospital.

4.2. Neonates will only be transferred from the NICU under the following conditions:

- Neonates for cardiac surgery or other non available facilities.
- When a neonate is received from other transferring facility.

4.3. The neonate must be stable to transfer.

4.4. The receiving facility must consent to the transfer before transport.

4.5. The neonate's medical record will be copied and the copy sent with the neonate.

4.6. **Transfer out to other hospital** FORM should be filled.

4.7. Copies of x-rays, Clinical Laboratory results, cardiac echocardiograms, head ultrasound, etc., will be sent with the patient.

5.0. **REFERENCES:**

Medical Consultants Network, Inc.
1.0. CONDITIONS:

To all physicians and RN in NICU.

2.0. PURPOSE:

Nursing staff in NICU will ensure safety in following guidelines for out born transferal.

3.0. POLICY:

All nursing staff in NICU will be responsible and accountable in following the guidelines for out born transferal.

3.2. NICU have a single room (ROOM 4) for out born surgical admission provided or total number of in-patients is less than 27.

3.3. All cases should have clear diagnosis of correctable surgical diagnosis, not syndromes, no dysmorphism, or lethal anomalies.

3.4. The infants age must be less than 28 days.

3.5. All cases will be admitted to isolation room, all surface swabs should be taking, and if negative up to Neonatologist in service to keep isolation or transfer to level 1 unit.

3.6. In a situation where we have high census acute shortage of nursing, medical staff, and equipment the unit will be closed for any outside referrals.

3.7. Other non surgical referrals or faxes should be directed to Eligibility committee at fax number 467-1986.

4.0. PROCEDURES:

4.1. Cases will be accepted only under the following condition

- The referring hospital will accept the patient back as soon as he/she is stable.
• The father must sign a written consent at the referring hospital indicating that his baby will be back to original hospital as soon as it is decided by the Neonatologist in service at KKUH.

• A special checklist form will be signed by the accepting physician or surgeon to ensure all the requirements are fulfilled. (See ATTACHMENT).

4.2. After reviewing the report by the Neonatologist and he/she decide to bring the baby.

4.3. The acceptance checklist will be faxed to the referring hospital signed by KKUH NICU CONSULTANT to fill all necessary information in the form.

4.4. Once the checklist is received back to KKUH NICU by fax with the writing consents and ID of the father, then the acceptance letter will be send to the referring hospital indicating that the above baby (named, sex, age and diagnosis) is accepted to be transferred to KKUH signed by the consultant or on call REGISTRAR in NICU. Laboratory and radiological investigations, current patient condition, management report should be send with the fax.

4.5. The nurse in charge must be called by the referring hospital prior to departure to make sure that the bed is still available.

4.6. Bed reservation will last only for 48 hours, it should be clear writing in the acceptance letter.

5.0. FORMS AND ATTACHMENTS:

5.1. Out born acceptance check list.

PATIENT NAME : 
FILE NO : 
DIAGNOSIS : 
REASON FOR REFERRAL : 
REFERRING HOSPITAL : 
REFERRING PHYSICIAN : 
CONTACT NUMBER :

5.2. Written agreement from the referring physician to accept and arrange for receiving the patient after transferal.

5.3. Written consent by the father or accept his baby back to the referring hospital.

5.0. REFERENCES:

Medical Consultants Network, Inc.
1.0. **CONDITIONS:**

To all physicians and RN IN NICU.

2.0. **PURPOSE:**

All physicians and RN in NICU will ensure accuracy of baby's condition and ongoing systematic assessment.

3.0. **POLICY:**

All newborns should have ongoing assessment during their stay in NICU.

4.0. **PROCEDURES:**

4.1. **SKIN:**

4.1.1. **Colour:**

- Pallor - associated with low haemoglobin.
- Cyanosis - associated with hypoxemia.
- Plethora – associated with polycythemia.
- Jaundice – Elevated bilirubin.
- Slate grey colour – Associated with methemoglobinemia.

4.1.2 Lesions:

- **Milia** - Pinpoint white papules of keratogenous material usually on nose, cheeks and forehead, lasts several weeks.
- **Miliaria** - Obstructed eccrine sweat ducts. Pinpoint vesicles on forehead and scalp and skin folds. Clear within 1 week.
- **Transient neonatal pustular melanosis** - Small vesicopustules, generally present at birth, containing WBCs and no organisms. The intact vesicle ruptures to reveal a pigmented macule surrounded by a thin skin ring.
- **Erythema toxicum** - Most common newborn rash. Variable irregular macular pathches. Lasts a few days. Wright's Stain shows sheets of eosinophilies.
- **Café au lait spots** - Suspected neurofibromatosis if there are many large spots.
- **Junctional Nevi** - If large numbers, suspect tuberous sclerosis xeroderma pigmentosus, generalized neurofibromatosis.
4.2. **NEUROLOGICAL EXAM:**

4.2.1. **State of Alertness:**

Check for persistent lethargy or irritability.

4.2.2. **Posture:**

In term infant, normal position is one with hips abducted and partially flexed and with knees flexed. Arms are adducted and flexed at the elbow. The fists are often clenched, with fingers covering the thumb.

4.2.3. **Tone:**

Support the infant with one hand under the chest. The neck extensors should be able to hold the head in line for 3 seconds. Should not have more than 1-2% head lag when moving from supine to sitting position.

4.2.4. **Reflexes:**

Reflexes must be symmetrical. Biceps jerk test C5 and C6, Knee jerk tests L2-L4. Ankle jerk tests S1,S2. Truncal incurvation reflex tests T2 through S1. Anal wink test S4,S5. Other primitive reflexes include the Moro, Palmer and planter grasps, sucking and rooting reflexes and the asymmetric tonic neck reflex (seen in ventral suspension with arms rigidly extended and fists clenched) is abnormal.

4.3. **HEAD AND NECK:**

4.3.1. **Head:**

Check for overriding sutures, the number of fontanelles and their size. Check for abnormal shape of head. Check for encephaloceles. Measure the head circumference.

4.3.2. **Eyes:**

- Check for colobomas, heterochromia.
- Cornea – check for cloudiness.
- Conjunctiva – Inspect for erythema, exudates, edema, jaundice and haemorrhage. Check for papillary size and reactivity to light.
- **Red Reflex:** Ophthalmologist will held the ophthalmoscope 6-8 inches from the eye using the +10 diopter lens. The normal newborn transmits a clear red colour back to the observer. Black dots may represent cataracts. A whitish colour may be suggestive of retinoblastoma.
4.3.3. **Ears:**

Check for asymmetry, irregular shapes. Look for auricular or pre-auricular pits, fleshy appendages, lipomas or skin tags.

4.3.4. **Nose:**

Look for flaring of the alae nasi as a sign of increased respiratory effort. Look for hyper- or hypo-telorism. Check for choanal atresia (CA) as manifested by respiratory distress (neonates are obligate nose breathers). A soft NG tube should be passed through each nostril to confirm patency if choanal atresia is suspected.

4.3.5. **Palate:**

Check for cleft lip and palate.

4.3.6. **Mouth:**

- Observe the size and shape of the mouth.
- Macrostomia – seen in mucopolysaccharidoses.
- Fish mouth – seen in fetal alcohol syndrome.
- Epstein pearls - Small white cysts which contain keratin, frequently found on either side of the median raphe of the palate.
- Ranulas – small bluish white swellings of variable size on the floor of the mouth representing benign mucous gland retention cysts.

4.3.7. **Tongue:**

Macroglossia – Hypothyroidism, mucopolysaccharidoses.

4.3.8. **Teeth:**


4.3.9. **Chin:**

Micrognathia - occurs with Pierre-Robin syndrome, Treacher – Collins syndrome, Hallermann Streiff.

4.3.10. **Neck:**

Palpate over all muscles, palpate clavicles for possible fractures. Web neck found in Turner's and Noonan's syndromes. Torticollis usually secondary to sterno cleidomastoid hematoma. Cystic hygromas most common neck masses. Lymph nodes are unusual at birth and their presence usually indicates congenital infection.
4.4. **CHEST AND LUNGS:**

Observe respiratory rate, respiratory pattern (periodic breathing, periods of true apnoea). Observe chest movements for symmetry and for retractions. Listen for stridor, grunting. Note that there may be some enlargement of the breasts secondary to maternal hormones.

4.5. **CARDIO-VASCULAR SYSTEM:**

Measure heart rate, blood pressure in upper and lower extremities, respiratory rate.

- **Inspection:** Check baby's color for pallor, cyanosis, plethora.
- **Palpation:** Check capillary refill. Check pulses; note any decrease in femoral pulses or radio femoral delay as a sign of possible coarctation of the aorta, note character of pulses (bounding or thread). Locate PMI with single finger on chest; abnormal location of PMI can be clue to pneumothorax, diaphragmatic hernia, situs inversus or other thoracic problem.
- **Auscultation:** Note rhythm and presence of murmurs which may indicate patent ductus arteriosus.

4.6. **ABDOMEN:**

4.6.1. Note shape of abdomen. Flat abdomens signify decreased tone, abdominal contents in chest or abnormalities in abdominal musculature. Note abdominal distension.

4.6.2. Observe for diastasis recti. Observe for any obvious malformations, e.g., omphalocele. An omphalocele has a membrane covering (unless it has been ruptured during the delivery) whereas a gastroschisis does not.

4.6.3. Examine umbilical cord and count the vessels. Note colour of cord. Palpate liver and spleen. It may be normal for the liver to be about 2cm below the right costal margin. The spleen is not usually palpable; if the spleen is felt, be alert for congenital infection or extramedullary haematopoiesis. After locating these organs (checking for situs inversus), palpate for any abnormal masses.

4.6.4. Auscultate for bowel sounds.
4.6.5. Examine for hernias – umbilical or inguinal.
4.6.6. Inspect anal area for patency and/or presence of fistulas.

4.7. **GENITO-URINARY EXAM:**

4.7.1. **Kidneys:**

Examined by palpation. The kidneys should be about 4.5-5.0cm vertical length in the full term newborn. The technique for palpation is either

- One hand with four fingers under the baby's back, palpation by rolling the thumb over the kidneys.
• Palpate the left kidney by placing the right hand under the left lumbar region and palpating the abdomen with the left hand (do reverse for the right kidney).

4.7.2. **Male genitalia:**

Term normal penis is 3.6+/-0.7 cm stretched length. Inspect glans, urethral opening, prepuce and shaft. Normally difficult to completely retract. Observe for hypospadias, epispadias. Inspect circumcision penis for edema, incision, bleeding. Full term infant should have brownish pigmentation and fully rugated scrotum. Palpate the testes.

4.7.3. **Female genitalia:**

Inspect the labia, clitoris, urethral opening and external vaginal vault. Often a whitish discharge is present; this is normal, as is a small amount of bleeding, which usually occurs a few days after birth and is secondary to maternal hormone withdrawal. Hymeneal tags may be present normally.

4.8. **EXTREMITIES AND SKELETAL SYSTEM:**

4.8.1. **Spine:**

Scoliosis, kyphosis, lordosis, spinal defects, meningomyeloceles.

4.8.2. **Upper Extremity:**

• Look for clavicular fracture, absence of radius or ulna.
• Inspect creases and fingers.

4.8.3. **Lower Extremity:**

• Do Ortolani maneuver to check for congenital hip dislocation.
• Check toes.

5.0. **REFERENCES:**

Medical Consultants Network. Inc.
1.0. **CONDITIONS:**

All physicians and RN in NICU.

2.0. **PURPOSE:**

This policy is made to make sure that all newborns are appropriately evaluated for their proper gestational age upon which the plan of management greatly depends.

3.0. **POLICY:**

All infants will be evaluated for gestational age so as to be observed and treated appropriately.

4.0. **PROCEDURES:**

4.1 Assess the neonate using the “New Ballard Scoring System.”

4.1.1 **Posture:**

With the infant supine and quiet, score as follows: (The greater flexion equals greater gestational age.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Arms and legs extended</td>
</tr>
<tr>
<td>1</td>
<td>Slight or moderate flexion of hips and knees</td>
</tr>
<tr>
<td>2</td>
<td>Moderate to strong flexion of hips and knees</td>
</tr>
<tr>
<td>3</td>
<td>Legs flexed and abducted, arms slightly flexed</td>
</tr>
<tr>
<td>4</td>
<td>Full flexion of arms and legs</td>
</tr>
</tbody>
</table>

4.1.2 **Square window:**

Flex the hand at the wrist; do not rotate wrists. Exert pressure sufficient to get as much flexion as possible. The angle between the hypothenar eminence and the anterior aspect of the forearm is measured and scored as follows: (The greater the gestational age, the lesser the square window angle.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>greater than 90 degrees</td>
</tr>
<tr>
<td>0</td>
<td>90 degrees</td>
</tr>
<tr>
<td>1</td>
<td>60 degrees</td>
</tr>
<tr>
<td>2</td>
<td>45 degrees</td>
</tr>
<tr>
<td>3</td>
<td>30 degrees</td>
</tr>
<tr>
<td>4</td>
<td>0 degrees</td>
</tr>
</tbody>
</table>
4.1.3 **Arm recoil:**
Flex the hand at the wrist; do not rotate wrists. Exert pressure sufficient to get as much flexion as possible. The angle between the hypothenar eminence and the anterior aspect of the forearm is measured and scored as follows: (The greater the gestational age, the lesser the square window angle.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>greater than 90 degrees</td>
</tr>
<tr>
<td>0</td>
<td>90 degrees</td>
</tr>
<tr>
<td>1</td>
<td>60 degrees</td>
</tr>
<tr>
<td>2</td>
<td>45 degrees</td>
</tr>
<tr>
<td>3</td>
<td>30 degrees</td>
</tr>
<tr>
<td>4</td>
<td>0 degrees</td>
</tr>
</tbody>
</table>

4.1.4 **Popliteal angle:**
Flex the hand at the wrist; do not rotate wrists. Exert pressure sufficient to get as much flexion as possible. The angle between the hypothenar eminence and the anterior aspect of the forearm is measured and scored as follows: (The greater the gestational age, the lesser the square window angle.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>greater than 90 degrees</td>
</tr>
<tr>
<td>0</td>
<td>90 degrees</td>
</tr>
<tr>
<td>1</td>
<td>60 degrees</td>
</tr>
<tr>
<td>2</td>
<td>45 degrees</td>
</tr>
<tr>
<td>3</td>
<td>30 degrees</td>
</tr>
<tr>
<td>4</td>
<td>0 degrees</td>
</tr>
</tbody>
</table>

4.1.5 **Scarf sign:**
With the infant supine, take the infant’s hand and draw it across the neck and as far across the opposite shoulder as possible. Assistance to the elbow is permissible by lifting it across the body. Score according to the location of the elbow: (The greater the gestational age, the less distance the elbow will cross the throat.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>Elbow reaches or nears level of opposite shoulder</td>
</tr>
<tr>
<td>0</td>
<td>Elbow crosses opposite anterior axillary line</td>
</tr>
<tr>
<td>1</td>
<td>Elbow reaches opposite anterior axillary line</td>
</tr>
<tr>
<td>2</td>
<td>Elbow at midline</td>
</tr>
<tr>
<td>3</td>
<td>Elbow does not reach midline</td>
</tr>
<tr>
<td>4</td>
<td>Elbow does not cross proximate axillary line</td>
</tr>
</tbody>
</table>

4.1.6 **Heel to ear:**
With the infant supine, hold the infant’s foot with one hand and move it as near to the head as possible without forcing it. Keep the pelvis flat on the examining surface. (The greater the gestational age, the lesser the flexion of the hip joints.)
4.1.7 **Physical maturity:**

**Skin:**
Check thickness of the peeling, presence of veins. (Increased gestational age will have fewer veins, thicker skin, cracking and peeling.)

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>Sticky, friable, transparent</td>
</tr>
<tr>
<td>0</td>
<td>Gelatinous, red, translucent</td>
</tr>
<tr>
<td>1</td>
<td>Smooth, pink, visible veins</td>
</tr>
<tr>
<td>2</td>
<td>Superficial peeling and/or rash, few veins</td>
</tr>
<tr>
<td>3</td>
<td>Cracking, pale areas, rare veins</td>
</tr>
<tr>
<td>4</td>
<td>Parchment, deep cracking, no vessels</td>
</tr>
<tr>
<td>5</td>
<td>Leathery, cracked, wrinkled</td>
</tr>
</tbody>
</table>

**Lanugo:**
Increased gestational age will have less body hair.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>None</td>
</tr>
<tr>
<td>0</td>
<td>Sparse</td>
</tr>
<tr>
<td>1</td>
<td>Abundant</td>
</tr>
<tr>
<td>2</td>
<td>Thinning</td>
</tr>
<tr>
<td>3</td>
<td>Bald areas</td>
</tr>
<tr>
<td>4</td>
<td>Mostly bald</td>
</tr>
</tbody>
</table>

**Breast:**
Increased gestational age will have fuller breasts.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>Imperceptible</td>
</tr>
<tr>
<td>0</td>
<td>Barely perceptible</td>
</tr>
<tr>
<td>1</td>
<td>Flat areola, no bud</td>
</tr>
<tr>
<td>2</td>
<td>Stipple areola, 1-2 mm bud</td>
</tr>
<tr>
<td>3</td>
<td>Raised areola, 3-4 mm bud</td>
</tr>
<tr>
<td>4</td>
<td>Full areolas, 5-10 mm bud</td>
</tr>
</tbody>
</table>

**Plantar Creases:**
Increased gestational age will have increased percentage of foot covered by wrinkles.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>Heel-to less than 40 mm</td>
</tr>
<tr>
<td>-1</td>
<td>Heel-toe 40-50 mm</td>
</tr>
<tr>
<td>0</td>
<td>Heel-toe greater than 50 mm, no creases</td>
</tr>
<tr>
<td>1</td>
<td>Faint red marks</td>
</tr>
<tr>
<td>2</td>
<td>Anterior transverse crease only</td>
</tr>
<tr>
<td>3</td>
<td>Creases over anterior 2/3</td>
</tr>
<tr>
<td>4</td>
<td>Creases over entire sole</td>
</tr>
</tbody>
</table>
**Eye and Ear:**
Ear: Assess shape of pinna, amount of cartilage and recoil of pinna when folded. (Increased gestational age will have well-formed ear with much cartilage and instant recoil.)

-2  Lids fused, tightly  
-1  Lids fused, loosely  
0  Lids open, pinna flat, stays folded  
1  Slightly curved pinna, soft with slow recoil  
2  Well-curved pinna, soft but ready recoil  
3  Formed and firm, with instant recoil  
4  Thick cartilage, ear stiff

**Genitals, Male:**
Examine scrotum; locate testes and rugae. (Increased gestational age will have testes descended testes and deep rugae.)

-1  Scrotum flat, smooth  
0  Scrotum empty, faint rugae  
1  Testes in upper canal, rare rugae  
2  Testes descending, few rugae  
3  Testes down, good rugae  
4  Testes pendulous, deep rugae

**Genitals, Female:**
Examine labia major, minora and clitoris. (Increased gestational age will have clitoris and labia minora completely covered by labia majora.)

-1  Clitoris prominent, labia flat  
0  Prominent clitoris, small labia minora  
1  Prominent clitoris, enlarging minora  
2  Majora and minora equally prominent  
3  Majora large, minora small  
4  Majora cover clitoris and minora
Add up the individual neuromuscular and physical maturity scores for the 12 categories, then obtain the estimated age from the table below:

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Gestational Age, Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10</td>
<td>20</td>
</tr>
<tr>
<td>-5</td>
<td>22</td>
</tr>
<tr>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>45</td>
<td>42</td>
</tr>
<tr>
<td>50</td>
<td>44</td>
</tr>
</tbody>
</table>

5.0. REFERENCES:

1.0. **CONDITIONS:**

All physicians and RN in NICU.

2.0. **PURPOSE:**

All nursing staff in NICU ensures safety in assessing level of pain and evaluating the effectiveness of pain relief measures.

3.0. **POLICY:**

All RN in NICU is responsible and accountable to ensure safety with standard precautions in assessing pain among neonates.

4.0. **PROCEDURES:**

<table>
<thead>
<tr>
<th>SCORE</th>
<th>ASSESSMENT GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No sign of irritability or pain exhibited.</td>
</tr>
<tr>
<td>+</td>
<td><strong>Signs of Irritability</strong></td>
</tr>
<tr>
<td></td>
<td>• Intermittent vocalization, soft or brief cries but able to suck or feed.</td>
</tr>
<tr>
<td></td>
<td>• Increased activity of extremities, restless, purposeless movement but trunk is relaxed.</td>
</tr>
<tr>
<td></td>
<td>• Frowning furrowed brow and eye open.</td>
</tr>
<tr>
<td></td>
<td>• Mildly increased tone of extremities.</td>
</tr>
<tr>
<td></td>
<td>• More awake than usual.</td>
</tr>
<tr>
<td></td>
<td>• Unexplained mild changes in respiratory pattern HR and BP.</td>
</tr>
<tr>
<td>SCORE</td>
<td>ASSESSMENT GUIDELINES</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------</td>
</tr>
<tr>
<td>++</td>
<td><strong>Signs of Pain:</strong></td>
</tr>
<tr>
<td></td>
<td>• Loud cry, sustained attempts to cry.</td>
</tr>
<tr>
<td></td>
<td>• Refused to feed, eat and or pacifier does not relieve crying.</td>
</tr>
<tr>
<td></td>
<td>• Thrashing of limbs of infants.</td>
</tr>
<tr>
<td></td>
<td>• Marked brow bulge in infants, grimace, eyes closed tightly.</td>
</tr>
<tr>
<td></td>
<td>• Decreases activity, fatigue and social withdraw.</td>
</tr>
<tr>
<td></td>
<td>• Tense muscle, guarding and posturing</td>
</tr>
<tr>
<td></td>
<td>• Flushed face and diaphoresis.</td>
</tr>
<tr>
<td></td>
<td>• Change in sleep or awake pattern.</td>
</tr>
<tr>
<td></td>
<td>• Attempts to withdraw limb pain or tries to touch hurt area.</td>
</tr>
<tr>
<td></td>
<td>• Unexplained duskinex/ decreased oxygen saturation.’</td>
</tr>
<tr>
<td></td>
<td>• Unexplained changes in RR, HR and BP.</td>
</tr>
</tbody>
</table>

This tool should be used as a guideline for health care providers attempting to assess irritability and pain in non-verbal or pre-verbal neonates.

**Instructions for use of Assessment Guideline:**

**Evaluate all neonates at regular interval.**

**Score 0**

Neonates are identified as those who do not exhibit one or more of the behaviors listed in the (+) or (+++) boxes.

**Score +**

Neonates demonstrate one or more of the behaviors listed in the (+) box. Use age-appropriate comforting measures. Re-evaluate.

**Score ++**

Neonates demonstrate one or more of the behaviors listed in the (+++) box. Consider trial of pain medication. Re-evaluate.

There is no reliable tool yet developed that accurately measures 0 pain in neonates that are unable to verbalize their pain. It is possible that the neonate may be experiencing pain and not show any of the behaviors listed above. Whenever pain is suspect, pain medication may be indicated.


4.1.1. Signs and symptoms of stress and pain may include: increased HR, BP and RR, seizures, spitting, hiccupping, straining, coughing, sneezing, yawning, desaturation, pallor, flushing, diaphoresis, dilated pupils, cry, whimper, facial grimace, thrashing, excessive reactivity, decreased sleep periods, gaze aversion, hyperglycemia, glucosuria, ketonuria.

4.2. Implement the comfort measures and environmental modifications necessary to control or minimize stress indicators and or pain in the neonate. These measures can include:

4.2.1. Decreased auditory overload to infant.

• Modulate conversation and noise level the bedside. Close portholes gently. Prohibit placement of charts or formula bottles on top of isolette. Adjust auditory level of all monitors to
minimum but maintain alarm levels so they can be immediately recognized.

4.2.2. Assess current level of light in NICU and decrease exposure to infant when possible.

- Lower and adjust level of lighting. Drape blanket over isolette.

4.2.3. Help infant organize behavior and orient to stimulation. With certain infants, handling should be kept to a minimum. Nursing care should be clustered to enable infant to have longer periods of uninterrupted sleep.

- Arrange boundaries, swaddle infant. When infant is stressed, hold the infant close to your body. Encourage sucking, lip and mouth activities. Position infant whenever possible in prone or side-lying position to facilitate flexion or extremities. Consider patient consult with infant development specialist.

4.2.4. Attempt to limit stressful and noxious stimuli to infant.

- Limit routine care, individualize care to each infant. Use smallest needle gauge to perform peripheral punctures.

4.2.5. Support parent/infant interaction. Keeping parents involve in infant's care is important to outcome of infant.

- Teaching appropriate actions to assist infant in coping with environment. Place parent in situations where they will succeed in interacting with their infant.

4.3. Administer pain medication as ordered by the physician. Infant need for invasive procedures necessitates consideration of pain relief during and after the event.

4.3.1. Narcotic analgesics. i.e. Morphine or Fentanyl may cause respiratory depression, hypotension, urinary retention. Have naloxone nearby, have resuscitation equipment at bedside. If sedation is prescribed, they are ineffective in relieving pain. Infant experiencing pain may become irritable when give sedatives without pain medication.

5.0. REFERENCES:

Medical consultants Network, Inc.
1.0. CONDITIONS:

All NICU physicians.

2.0. PURPOSE:

To ensure appropriate care for patients.

3.0. POLICY:

3.1 Care, treatment and services are planned to ensure that they are appropriate to the patient’s needs.

3.2 Care planning will be implemented through the integration of assessment findings, consideration of the prescribed treatment plan and development of goals for the patient that are reasonable and measurable.

3.3 Formation of the plan of care for the infant begins in Labor and Delivery, and continues in the NICU.

4.0. PROCEDURES:

4.1. The plan of care shall be individualized, based on the diagnosis, patient assessment and personal goals of the patient and his/her family.

4.2. The planning for care, treatment and services will include the following:

4.2.1 Care planning is based on data collected from patient assessments with integration of those assessment findings in the care planning process.

4.2.2 Developing a plan for care, treatment and services that includes patient care goals that are reasonable and measurable.

4.2.3 The needs of the patient, goals, time frames, required services and the service settings are critical considerations in determining the plan for care.
4.2.4 Regularly reviewing and revising the plan for care, treatment and services.

4.2.5 Determining how the planned care, treatment and services will be provided.

4.2.6 Documenting the plan for care, treatment and services.

4.2.7 Monitoring the effectiveness of care planning and the provision of care, treatment and services.

4.3 The plan of care will be individualized to the needs of the patient.

4.4 The plan of care will be continually evaluated based on the patient’s clinical condition, care goals and the plan for treatment, care and services, and revised as needed to meet the needs of the patient’s changing condition.

4.5 Patients and/or families are involved in care planning.

4.6 The plan of care will consider strategies to limit the use of restraints and/or seclusion as appropriate to the condition of the patient.

4.7 The plan of care shall address the learning needs of the family/legal guardian.

4.8 After the initiation of the plan of care by nursing, those disciplines consulting in the care shall contribute to the plan as appropriate to the patient’s assessed needs.

4.9 The transfer of patients between levels of nursing care shall require a revision in the plan of care as appropriate to that level of care.

4.10 The plan of care shall be updated daily, with revisions reflecting the reassessment of needs of the patient.

5.0 REFERENCES:

Medical consultants Network, Inc.
1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

NICU nursing staff will ensure safety in assisting neonatal resuscitation.

3.0. **DEFINITION:**

*Neonatal Resuscitation* is to provide effective and efficient interventions to minimize the effects of hypoxia on the infant. This will be achieved by providing full oxygenation, ventilation, and circulatory support.

4.0. **POLICY:**

All RN in NICU will be responsible and accountable with standard precautions in neonatal resuscitation. Complete neonatal support and full resuscitation measures (in accordance with the American Academy of Pediatrics Neonatal Resuscitation Program guidelines) will be provided.

5.0. **PROCEDURES:**

5.1. All new born who are 23 weeks or greater by date and/or ultrasound, regardless of weight, and/or

5.2. Newborns whose birth weight is 500 grams or more, regardless of gestational age.

5.3. Check for signs of apnea, cyanosis and bradycardia.

5.4. Initiate Resuscitation measures if infant has no spontaneous breathing and heart rate below 100 per minute.

5.5. Charge Nurse immediately takes command of crisis situation and instructs NICU staff for specific roles,
- Stimulate infant to restore breathing,
- Suction upper airway to clear secretions,
- Initiate positive pressure ventilation with 100% oxygen, in case of infant is not responding with tactile stimulation.
5.6. Immediately bleep for: NICU Resident (During official working hours) or On Call Resident (After working hours).

5.7. Bring crash cart to infant's side.

5.8. Prepare emergency drugs and items for intubation.

5.9. Initiate chest compression if heart rate is within 60/min and not increasing.

5.10. NICU charge nurse delegates other nurses as:
   - Time keeper – Record all events at precise time.
   - Medication Nurse – Preparing and checking emergency drugs according to pre calculated Emergency Drugs Form.

5.11. At completion of code, clean area, restock crash cart.

5.12. Complete all charting, document in the flow sheet's problem, action and result column provided, and in the detailed notes with invasive procedures, outcome of CPR, medications given, baby's tolerance of procedure.

5.13. An intensive care admission space will be maintained in the NICU ready for immediate use for any neonate requiring resuscitation. It will have a bag, mask and oxygen source, and suction ready for use at all times.

5.14. Nursing and medical personnel performing neonatal resuscitation are at high risk of exposure to blood and body fluids and the potential infectious status of the patient is unknown. For this reason universal precautions will be adhered to at all times during resuscitative efforts.

5.15. The NICU nurse may prepare and administer resuscitation medications to infants only by direct clinician's order.

5.16. Laerdal bags used for infants on ventilators will have a manometer in the line to measure pressure.

5.17. Unplanned extubation procedure (SUSPECTED OR DETERMINED): If the infant appears unstable and/or deteriorates suddenly (oxygen saturation and heart rate drop, respiratory distress becomes acute), the NICU nurse will quickly perform a respiratory assessment to identify position and patency of ET tube. If ET tube is either completely blocked or is not in correct placement, the clinician will be immediately contacted and the tube should be removed. Alternative ventilation/oxygenation will be provided until the clinician's arrival.

5.18. Cardio pulmonary arrest in NICU:
   NICU staff covers neonatal cardiopulmonary arrest in NICU. A code blue is NEVER announced on the over-head paging system. If a neonatologist/ward physician is not on the unit then they will be called to NICU STAT emergency paging system.
5.19. **Resuscitation in the delivery room:**

- An NICU nurse will attend all problem deliveries as determined by the L&D charge nurse and/or obstetrician, or the neonatologist.
- The assignment for an NICU nurse to "attend in L&D" for the purposes of neonatal resuscitation is made every shift and noted on the patient assignment record.
- Name, pager and telephone numbers of clinician on call for L&D are written each shift on the notice board at the front desk in NICU.
- The extent of resuscitation delivered to infants in the delivery room will be determined by the neonatologist on call. Live born infants will be resuscitated pending direction from the neonatologists.
- All infants are transferred to the NICU in a transport isolette by an NICU nurse and must be properly identified with arm bands prior to leaving the delivery room.
- Infants delivered by Cesarean section with the NICU nurse attending and are stable will be transferred to the regular/high risk nursery by the midwives.
- Infants who have received Narcan (Naloxone) in L&D will be admitted to NICU for monitoring.

- NICU Nurses shall:
  - Anticipate the need to provide resuscitation and will be prepared to do so promptly during her shift.
  - Check the resuscitation equipment for her assigned patients every shift.
  - Check the resuscitation cart, as assigned (each shift).
  - Initiate and participate in resuscitation efforts as described in the guidelines.
  - Administer medications as ordered by the clinician.

5.20. **NICU nurse assigned to L&D shall:**

- Prepare equipment and supplies in L&D when resuscitation is imminent.
- Transfer infants who are being admitted to the NICU.

6.0. **FORMS AND ATTACHMENTS:**

Neonatal Resuscitation drug chart available in NICU.

7.0. **REFERENCES:**

1.0. **CONDITIONS:**

All physicians, nurses and allied health professionals dealing with prescribing, ordering, dispensing, storage, administration or monitoring of the effects of medications to inpatient and outpatient departments.

2.0. **PURPOSE:**

To minimize medication errors that can occur at any step of the processes mentioned above.

3.0. **POLICY:**

To institute a “Medication Safety Awareness” program and to take a proactive approach by focusing performance improvement activities on medication use.

4.0. **PROCEDURES:**

The University Hospitals have adopted the following strategies to decrease the incidence of medication errors:

4.1. A unit dose system of medication distribution has been implemented.

4.2. A monthly Pharmacy Newsletter will be distributed to every patient care unit and to physicians, updating information on drugs and reviewing the error potential on new products.

4.3. Information on ordered medications will be produced in Pharmacy and provided, in writing, for the patient/family upon discharge. The Pharmacist will be available to counsel patients on complex drug therapies.

4.4. There is an on-call Pharmacist during Pharmacy off hours.

4.5. The Pharmacy and Therapeutics Committee has developed standardized practices for prescribing medications:

4.5.1 All drug orders will include a brief notation of purpose unless considered a breach of confidentiality by the prescriber (medications for certain disease states).

4.5.2 All drug orders must be written in the metric system. Units must be spelled out.

4.5.3 Medication orders must include the name of the drug, dosage amount and form.

4.5.4 All verbal orders received (orally or via telephone) will include the read-back verification process by the individual receiving the order.
4.5.5 A leading zero (0) must always precede a decimal point for a dose less than one (1); a trailing zero (0) is never to be used after a decimal.

4.5.6 The use of abbreviations is to be avoided, both for drug names (i.e., MOM) and for Latin directions for use (i.e., QD, SC).

4.6. Storage of medications will be done in a way as to distinguish similar products from one another:

4.6.1. Drugs will be repackaged in a different outer wrapper to differentiate products.
4.6.2. Drug labels will be highlighted to identify the active ingredients in those products prepared by the Pharmacy.
4.6.3. Special computer fonts written in bold print will be utilized on labels generated from the Pharmacy.
4.6.4. Look-alike, sound-alike drugs and high alert drugs will be separated on patient care units to prevent error in dispensing and administration on these units.

4.7. There will be special awareness with appropriate safeguard policies in the ordering, storage and administration of the identified “high-risk, high alert drugs”.

4.8. Prior to dispensing of medications from both the Pharmacy and on patient care units, the patient’s diagnosis and the appropriateness of the drug dispensed will be checked to reduce potential for incorrect high-risk, high alert medication dispensing and/or look-alike, sound-alike medication interchange error.

4.9. Medication errors will be reported and trended via the performance improvement activities of the organization.

5.0. REFERENCES:

MCN Guidelines
1.0. **CONDITIONS:**

All physicians and RN of NICU.

2.0. **PURPOSE:**

It is the responsibility of physicians and nurses at NICU to assure the safety of neonates by strictly adhering to policy and procedures of standing orders.

3.0. **DEFINITIONS:**

Standing orders are written documents containing medical directives for the provision of patient care in selected stipulated clinical situations.

4.0. **POLICY:**

4.1. It is the policy of this institution to allow standing orders. Standing orders must meet specified criteria and must be approved by the medical staff.

4.1.1. Standing orders are generally developed by the physician.

4.1.2. Standing orders are a group of orders that commonly apply to all or almost all patients of a like category, relating to routine care or standard treatment measures for common problems or conditions.

4.1.3. Standing orders may also address emergency measures, which may be required in life-threatening situations to stabilize a patient's condition or prevent more serious complications, injury or death.

4.1.4. Implementation of standing orders in emergency situations when a physician is not available requires critical decision-making by nurses who are competent in the recognition, understanding and interpretation of the patient's condition.

4.1.5. Therefore standing orders must also be approved by the nursing staff.

4.1.6. Standing orders should be individualized to the needs of each patient.

5.0. **PROCEDURES:**

5.1 General criteria for standing orders. Standing orders must:

5.1.1. Reflect generally accepted medical practices and therapies

5.1.2. Be consistent with the legal scope of nursing practice in the state in which they will be applied to the patient
5.1.3 Be approved for use in this institution through the appropriate medical staff and nursing processes
5.1.4 Be authorized and countersigned by the appropriate physician(s) within 24 hours of their implementation
5.1.5 Be individualized as appropriate to the needs and condition of the specific patient to which the order(s) are being applied
5.1.6 Be transcribed and verified with the physician prior to being implemented
5.1.7 Be reviewed by both the medical and nursing staffs on an annual and as needed basis for revisions as necessary

5.2 The patient must be assessed for appropriateness of implementing the standing order.
5.3 In the event that a change in the order is deemed necessary for the well being of the patient, the ordering physician shall be notified. Orders shall be rewritten.
5.4 Standing orders are filed in the physician order sheet. They are filed under the physician's name.

5.0. REFERENCES:

MCN Guidelines
1.0. **CONDITIONS:**

All physicians and RN at NICU.

2.0. **PURPOSE:**

All are responsible for the safety of infants regarding the use of medications which need tapering rather than abrupt discontinuation.

3.0. **POLICY:**

It is the policy of this institution to allow orders for medication tapering, which is the progressive reduction in dose or frequency of a medication to achieve a desired status of the patient.

4.0. **PROCEDURES:**

4.1 Medications are ordered to be tapered to protect the patient, when abrupt discontinuation of the medication would harm the patient (physiological rebound) or present the patient with unpleasant effects or withdrawal symptoms. By reducing a medication’s dosage in increments, these reactions can be avoided. Additionally, medications are ordered for tapering when gradual reduction of a dose will benefit the patient.

4.1.1 Orders for tapering of medications must include the dosing limits for tapering the medication and the time factors required to achieve the desired clinical state for the patient.

4.1.2 Accepting orders for tapering of medications without reduction dose and frequency limits is not acceptable. Orders received for tapering of medications without dose and frequency reductions will not be prepared or dispensed. The Pharmacist will contact the prescriber to obtain dose and frequency reduction limits.

4.1.3 Tapering requirements must be clearly documented on all labels of medications to be tapered.

4.1.4 Tapering requirements for medications to be tapered must be included on any preprinted orders, clinical practice guidelines or written protocols.

5.0. **REFERENCES:**

MCN Guidelines
1.0. CONDITIONS:

All physicians and RN in NICU

2.0. PURPOSE:

It is NICU physicians and nurses responsibility to make sure that Neonates received correct dose of Gentamicin and that safety is reassured.

3.0. POLICY:

Gentamicin dosage and intervals will be based on the gestational age of the infant.

<table>
<thead>
<tr>
<th>Gestational Age</th>
<th>Dose</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 28 weeks</td>
<td>2.5 mg per kg per dose</td>
<td>24 hours</td>
</tr>
<tr>
<td>28-34 weeks</td>
<td>2.5 mg per kg per dose</td>
<td>18 hours</td>
</tr>
<tr>
<td>35 weeks or more</td>
<td>2.5 mg per kg per dose</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

4.0. PROCEDURES:

4.1 Check medication with physician’s orders.
4.2 Verify ID of infant, using two (2) patient identifiers.
4.3 Wash hands.
4.4 Infuse gentamicin by syringe pump over 30 minutes.
4.5 Draw blood for electrolytes, BUN and Creatinine at or within 24 hours of first dose and thereafter when ordered by physician.
4.6 A serum gentamicin level should be drawn before the third dose and when ordered by physician.

NOTE:

► Serum Gentamicin Levels:
Peak: Draw 30 minutes after the infusion is complete 5 to 12 mcg per mL.
Trough: Level prior to giving next dose 0.5 to 1 mcg per mL.
5.0. REFERENCES:

1.0. CONDITIONS:

All health care providers looking after patients in Pediatric patient care areas

2.0. PURPOSE:

To avoid inadvertent use of concentrated electrolyte solution in undiluted form in the patient care areas

3.0. POLICY:

The hospital will maintain supplies of concentrated electrolytes in the Pharmacy Department only.

3.1. Concentrated electrolytes will not be available in stock supply areas on the patient care areas or in the emergency crash carts

3.2. The following concentrated electrolyte solutions will be stored by and mixed in the Pharmacy Department only:

- Potassium chloride
- Potassium phosphate
- Sodium chloride greater than 0.9%
- Magnesium sulfate
- Calcium chloride
- Calcium gluconate

4.0. PROCEDURES:

4.1 Concentrated electrolyte solutions for intravenous use will in the Pharmacy Department only, with the exception of the Surgical Services Unit.

4.2. Concentrated electrolytes are available in the Surgical Services unit to the anesthesiologist and physician staff only.

4.2.1 All concentrated electrolytes in this unit follow scheduled medication controls and include appropriate high alert labeling precautions to avoid them being mistaken for other similarly packaged medications.

4.2.2 The same strict controls that are required of scheduled medications are required for the concentrated electrolytes in the Surgical Services Unit
4.3. Concentrated electrolyte solutions will not be available in the emergency crash carts located on patient care units.

4.4. Concentrated electrolyte solutions will not be provided as a floor stock medication.

4.5. Physician orders for concentrated electrolyte solutions will be filled (mixed) by Pharmacy staff and distributed to patient care areas for administration to the patient as ordered by the patient’s physician.

4.6. Nursing staff will not mix solutions for concentrated electrolyte solutions for intravenous patient use.

4.7. The number of drug concentrations available in the organization are standardized and limited to include those listed above, available only to pharmacy staff (with the noted exception of the Surgical Services Unit, Anesthesiologists and Surgeons).

5.0. REFERENCES:

MCN
1.0. **CONDITIONS:**

To all health care providers and visitors.

2.0. **PURPOSE:**

All physicians and nursing staff in NICU will ensure safety and follow guidelines for effective hand washing in preventing the transmission of bacteria, germs and infections.

3.0. **POLICY:**

All physicians and RN in NICU will be responsible and accountable with standard precautions in effective hand washing.

3.1. All personnel will use the hand washing techniques, as set forth in the following procedure, after:

- Before and after the duty.
- Hands are soiled.
- Each patient encounter.
- Toileting.
- Blowing or wiping the nose.
- Leaving an isolation area.
- Handling soiled dressing.
- Handling used mucous extractor.
- Handling used urinary indwelling catheters, diapers, feeding tubes.
- Before and after eating
- After removing gloves.

4.0. **PROCEDURES:**

4.1. Keep clothing away from sink and splashes.
4.2. Turn on water and adjust temperature for your comfort.
4.3. Wet hands and apply soap/chlorhexidine hand scrub. Lather well. (Soap reduces surface tension enabling the removal of bacteria.
4.4. Clean fingernail area (bacteria may be harbored beneath fingernails).
4.5. Before starting duty, on entering NICU, **Scrub hands** thoroughly for...
about 3 minutes. **Routine hand washing** using rigorous scrubbing action for at least 15 seconds, work lather around fingernails, top of hands, etc. (to facilitate eradication of all bacteria)

4.6. Rinse hands and wrists under running water.
4.7. Repeat hand washing technique, if necessary (to prevent recontamination of hands).
4.8. Dry hands with clean paper towel.
4.9. Turn off faucets with used paper towels and discard.

5.0. **REFERENCES:**

MCN
1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

All physicians and RN in NICU will ensure safety with standard precautions in assisting physicians for obtaining blood culture from neonates.

3.0. **POLICY:**

All RN in NICU will be responsible and accountable to safety with standard precautions in assisting physician to obtain blood culture from neonates.

4.0. **PROCEDURES:**

4.1. Gather Equipments:
- Sterile Gloves
- Blood culture bottle.
- 23 Gauge butterfly needle.
- 3 cc syringe
- Alcohol swabs
- Povidone
- Sterile gauze pack (4x4)

4.2. Identify the patient with name and hospital number.

4.3. Physician will obtain blood culture.

4.4. Physician will swab the site with betadine and prick the artery (preferably radial artery) with a butterfly 23 gauge.

4.5. Nurse will gently withdraw the blood through the 3cc syringe.

4.6. Obtain 2cc of blood and insert into the blood culture bottle with **aseptic technique** using a sterile 23gauge needle.

4.7. Apply gentle pressure to the site for 3-5minutes.

4.8. Label the blood culture bottle with infant's name, hospital number, date and time and send to the MICROBIOLOGY with requisition form.

4.9. **Documentation:**
- Date and time blood culture obtained in the nurses flow sheet and Kardex.
- Mention the blood out in the nurses flowsheet.
5.0. REFERENCES:

Medical Consultants Network Inc
1.0. CONDITIONS:

All physicians and RN in NICU.

2.0. PURPOSE:

To assist in the identification of Rh sensitization and prevent the possibility of Rh hemolytic disease related to future pregnancies and deliveries.

3.0. POLICY:

3.1 The prevention of antibody development in an Rh-negative mother, who has conceived an Rh-positive infant will be initiated through the use of the Rh immune globulin vaccine (RhIG), to prevent sensitization related to future pregnancies.

3.2 Management of the Neonate shall be in accordance of international guidelines.

3.3 Patient/Family Education shall be emphasized.

4.0. PROCEDURES:

4.1 Based on the prevention of antibody development in an Rh-negative mother, who has conceived an Rh-positive infant will be initiated through the use of the Rh immune globulin vaccine (RhIG), to prevent sensitization related to future pregnancies.

4.2 Rhig is given intramuscularly.

4.3 Rhig may be given to unsensitized pregnant women at 28 weeks of gestation.

4.4 Rhig will be administered by a member of the Nursing staff within 72 hours after term or preterm delivery.

4.5 Rhig will be administered if the infant is Rh-positive after an induction, or spontaneous abortion and immediately following amniocentesis to prevent maternal sensitization from possible transplacental hemorrhage during procedure.
4.6 If mother refuses the RhIG, the RhIG Refusal Release Form will be obtained and incorporated into the patient’s chart. The physician will be notified.

4.7 For the Rh-positive baby with antibodies:
   • Frequent monitoring of bilirubin level, as needed.
     ▪ If bilirubin level rises to serious levels, exchange transfusion may be necessary.
     ▪ Phototherapy and increased fluid intake may be used to reduce jaundice.

4.8 Family education:
   • Explain to mother the potential risks of Rh incompatibility to fetus and herself.
   • Describe the rationale for diagnostic and treatment procedures.
   • Explain the importance of treatment with each pregnancy.

5.0. REFERENCES:

Medical Consultants Network Inc
1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

NICU nursing staff will ensure safety when exchange transfusion is performed by the physician.

2.1. To lower the serum bilirubin level, and reduce the risk of brain damage and kernicterus.

2.2. To remove the infants "sensitized" red blood cells and the circulating antibodies, and reduce the degree of red cell destruction.

2.3. To control the blood volume and relieve potential heart failure.

2.4. To remove toxins significantly concentrated in the blood and not otherwise removable.

2.5. To correct life-threatening electrolyte and fluid imbalance.

2.6. To treat coagulation defects not remedied by single component replacement.

3.0. **DEFINITION:**

Exchange transfusion is performed to remove increased bilirubin, hemolytic antibodies or to correct anemia.

4.0. **POLICY:**

All RN in NICU will be responsible and accountable with standard precautions.

4.1. Exchange transfusion will be performed by a clinician, with the nurse assisting.

4.2. Informed consent must be obtained and documented before this procedure is carried out.

4.3. Strict aseptic technique will be maintained throughout the procedure.

4.4. Peripheral intravenous infusion will be in place before procedure is begun.

4.5. Standard precautions must be followed when handling blood or blood contaminated items.

4.6. The donor blood is warmed to 37°C – 37.5°C and maintained at this temperature throughout the Procedure, using a blood warmer unit.

4.7. Due to substantially elevated serum potassium, blood administered during an exchange transfusion should be more than five days old.
4.8. All blood administered should be irradiated, especially if blood donor is first or second degree relative. This will prevent graft versus host disease.

4.9. Due to risk of potassium leakage, red blood cells (RBCs) should be transfused within 24 hours of irradiation if hyperkalemia represents a clinical risk.

5.0 PROCEDURES:

5.1. Indications:
- Hyperbilirubinemia.
- Hemolytic disease of the newborn – Rhesus isoimmunization.
- Other hemolytic antibodies.
- ABO incompatibility.
- Glucose-6-phosphate dehydrogenase deficiency (G6PD)
- Sepsis.
- Disseminated intra vascular coagulation(DIC).
- Metabolic disorders.
- Severe fluid or electrolyte imbalance.
- Polycythemia.
- Severe anemia.

5.2. Types of exchange transfusion:
Type used depends on the underlying etiological cause.

5.2.1. DOUBLE VOLUME EXCHANGE: Serial withdrawal and injection of aliquots (5-20mls) usually performed through the umbilical vein. Each cycle should take 4-5 minutes.

5.2.2. ISOVOLEMIC DOUBLE VOLUME EXCHANGE: Slow removal of aliquots (10mls usually) from an artery and simultaneous injection of similar aliquots into a vein. This is now the preferred method, as it should not cause wide fluctuations of blood volume and pressure.

<table>
<thead>
<tr>
<th>ACCESS SITES FOR AN ISOVOLEMIC EXCHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access sites</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Umbilical arterial catheter</td>
</tr>
<tr>
<td>Peripheral arterial catheter</td>
</tr>
<tr>
<td>Umbilical venous catheter</td>
</tr>
<tr>
<td>Peripheral intravenous site</td>
</tr>
</tbody>
</table>

5.2.3. PARTIAL EXCHANGE: (Less than double volume) with normal saline, 5% albumin in saline, or plasma protein fraction (Plasmanate)
5.3. **Selection of blood products:**

5.3.1. **Rh hemolytic disease of the newborn.** Fresh O Rh negative blood is used. This blood does not have an antigen so it is not hemolyzed by maternal antibodies that may still be present in the infant's circulation.

- If the blood is made available before delivery of the sensitized infant the blood must be O Rh negative cross-matched against the mother's blood.

- If the blood is obtained after delivery it must be cross-matched against the infant's blood. In an emergency O-Negative blood is always available in the blood bank.

5.3.2. **ABO incompatibility:** The blood must be type O Rh compatible with the mother and the infant or Rh negative, low titer anti-A, anti-B blood. It must be cross-matched with the infant's and with the mother's blood.

5.3.3. **Other blood group incompatibilities:** For other hemolytic diseases (e.g., anti-Rh-c, anti-kell, anti-Duffy), blood must be cross-matched to the mother's blood to avoid offending antigens.

5.3.4. **Hyperbilirubinemia, metabolic imbalance, or hemolysis – not caused by iso-immune disorders.**

The blood must be cross-matched against the infant's plasma and red blood cells.

5.4. **Pre-exchange laboratory data:**

5.4.1. **Hematology:**

- Blood type and cross match – from infant.
- Direct & Indirect Coombs test
- Serum Bilirubin
- Hematocrit
- Platelet count
- WBC and differential

5.4.2. **Blood Chemistry**

- Total calcium
- Sodium
- Potassium chloride
- CBG/ABG (pH, PaCO2, acid-base status and bicarbonate)
- Serum glucose.
5.5. **Preparation of the Infant:**

5.5.1. Gather equipments and supplies:

- Baxter administration set
- Resuscitaire
- Betadine swabs
- Dextrostix for blood glucose.
- Stop cock
- 18g needle
- Oxygen equipment
- Blood from blood band for exchange transfusion
- Exchange transfusion pack
- Sterile gloves, cap, mask and drapes.
- Heparinized saline.
- Umbilical catheters
- Masks / sterile gown / gloves
- Suction equipment
- Cardio-respiratory monitor
- Hematology, biochemistry containers and forms.

5.5.2. **Preparing to perform Exchange:**

- Keep infant NPO prior to exchange.
- Type and cross match blood (0.5cc infant's blood), notifying physician that blood is available. Bring blood to NICU when ready.
- Ensure parental consent has been obtained and documented.
- Prepare Lab forms and label for pre- and post-lab work as ordered. All specimens must be labeled with date, time etc., including pre-or post-exchange specimen. Additional Labs may be ordered and obtained during the procedure.
- Verify blood with infant's ID band and physician's orders. Two RNs and physician will check and must sign as per Blood transfusion policy. Keep ready to run blood through blood filter and administration set.
- Place infant on radiant warmer. Restrain infant's upper and lower extremities securely to radiant warmer mattress as ordered.
- Hook infant up to cardiac monitor, documenting pre transfusion HR,BP,T,O2 Saturation, set alarms, and ensure the monitor and alarms are working.
- Evacuate gastric contents using an 8 Fr. Feeding tube; leave it on free drainage. Suction endotracheal tube, oro-pharynx if applicable.
- Sick neonates need attention to asphyxia, hypoglycemia, acidosis and temperature control before commencement of the exchange.
- Utilize pacifier, if required.
• Apply a skin temperature probe to assist with temperature control during the procedure.
• Draw pre-exchange lab work, including bilirubin (total and direct) CBC with platelets, lytes, Ca, TP, glucose.
• Obtain dextrostix.

Baseline observations: temperature, apex beat, respirations, blood pressure, blood glucose, abdominal girth, urinalysis and specific gravity; observe stool for blood if possible; infant's color, tone and behavior.

5.6. **Principles of care during exchange:**

5.6.1. Assist physician as needed and instructed.
5.6.2. Tape blood collection bag securely to bed side.
5.6.3. Exchange transfusion is always carried out through catheters or a catheter, using a 3-way tap.
5.6.4. Invert blood bag at frequent intervals to avoid sedimentation of RBCs.
5.6.5. The last aliquot of blood drawn by the physician at the end of the procedure can be placed in the appropriate tubes for post-exchange lab work.
5.6.6. Blood is drawn out of the baby in 3 to 20 mls amounts (depending on gestation) over a period of 3-5 minutes.
5.6.7. Exchange in increments of 5 – 10 mls is as efficient as using 20ml aliquots.
5.6.8. If umbilical catheter is removed, and umbilical tie should be tied around the cord snugly for one hour. Loosen tie after one hour.
5.6.9. Observe umbilicus for bleeding.
5.6.10. Remove drapes and restraints.
5.6.11. Obtain vital signs every 15 minutes for 1 hour, every 30 minutes for next hour.
5.6.12. Feedings may resume 4 hrs post transfusion if infant is stable according to physician's order.
5.6.14. Monitor infant for signs of NEC, infection.
5.6.15. 1 hour post exchange – send blood specimen for glucose.
5.6.16. 2 hour post exchange – send blood specimen for bilirubin (total and direct), CBC with platelets and Ca.

- The larger the increment, the greater the decrease of bilirubin – but the greater the rebound. The smaller the increment, the smaller the decrease of bilirubin- but the smaller rebound.
- Withdrawing 20 mls of blood from a 3000 gm infant represents an acute depletion of blood volume that will cause a decrease in cardiac output and blood pressure, particularly if done rapidly.
- As the cardiovascular system is adapting to these changes an equal volume of blood is re-infused which reverses the adaptation. The use of smaller aliquots places less stress on the infant's cardiovascular mechanism.

5.6.17. Record exactly how much blood has been exchanged; equal amounts in and out are exchanged. This is extremely important.
5.7. **Nursing care post – exchange:**

5.7.1. Begin or resume phototherapy following exchange transfusion for disorders involving a high bilirubin level.

5.7.2. Continue monitoring with a cardiac monitor with waveform readout to detect any deviation in ECG. Observe the baby behavior and catheter sites for bleeding or signs of infection.

5.7.3. Record temperature, apex beat, respirations and blood pressure hourly for six hours. If stable and within normal limits after this time routine observations may be recommenced.

5.7.4. Test blood glucose on completion of transfusion and then every 3 hours until stable. Observe for rebound hypoglycemia for the next 24 hours.

5.7.5. Measure girth with routine observations (2-4 hourly) for 24 hours. Listen for bowel sounds.

5.7.6. Test urine for blood specific gravity and urinalysis.

5.7.7. Observe stools for blood.

5.7.8. Record the procedure in the nursing notes and document how the baby tolerated the procedure. Ensure the parents are enforced of how the exchange went and the condition of the baby.

5.7.9. Continue necessary re-medication orders from the clinician.

5.7.10. Infants receiving antibiotics or anticonvulsants will need to be re-medicated.

5.7.11. Unless the cardiac status is deteriorating or serum digoxin levels are too low, infants receiving digoxin should not be re-medicated.

5.8. **Post exchange laboratory data:**

From the last sample of the blood taken from the baby, send blood for,

- Serum Bilirubin
- Hemoglobin
- Hematocrit
- Platelet count
- Total calcium
- Sodium
- Potassium chloride
- pH, paCO2, acid-base status and bicarbonate.
- Serum glucose

5.9. **Possible complications:**

5.9.1. **Vascular:** Clot or air embolism, arteriospasm of the lower limbs, thrombosis and infarction of major organs may occur.

5.9.2. **Coagulopathies:** may be due to thrombocytopenia or diminished coagulation factor. Platelets may decrease ny more than 50% after a double volume exchange transfusion.

5.9.3. **Electolyte abnormalities:** Hyperkalemia and hypocalcemia can occur.

5.9.4. **Hypoglycemia:** is especially likely in infants of diabetic mothers and those with erythroblastosis fetalis.
5.9.5. **Metabolic acidosis:** from stored donor blood (due to acid load) occurs less often in citrate phosphate dextrose (CPD) blood.

5.9.6. **Metabolic alkalosis:** may occur because of delayed clearing by the liver of citrate Preservative from the donated blood.

5.9.7. **Necrotizing enterocolitis:** An increased incidence of necrotizing enterocolitis following exchange transfusion has been suggested. For this reason, the umbilical vein catheter should be removed after the procedure unless central access is required. Also, feeding should be delayed for at least 24 hours to observe the infant for the possibility of post exchange ileus.

5.10. **Additional documentation:**

Documentation includes:

- Record whether this was a partial or total exchange.
- Who performed the procedure.
- Date and time procedure began and ended.
- Blood identification.
- Infant's vital signs, pulsoximetry, temperature.
- Blood product type and amount.
- Total amount of blood products exchanged.
- Lab reports.
- Medications administered if any.
- How infant tolerated the procedure and if there was any reaction to blood products.

6.0. **REFERENCES:**


9
1.0. CONDITIONS:

To all physicians and RN in NICU.

2.0. PURPOSE:

To ensure all RN in NICU provides nursing care safely and effectively to the infants under phototherapy treatment.

3.0. POLICY:

All RN in NICU are responsible and accountable to safety in providing nursing care of an infant under phototherapy.

3.1. Written clinician’s order is required for phototherapy and will include:

- Commencement and discontinuation of treatment.
- Type and number of light sources to be used.

3.2. Initial lab work consists of:

- Blood group
- Direct combs test
- Full blood count with retics count
- Screening hemoglobin electrophoresis (if indicated).
- G6PD status (if indicated).
- Total & Direct bilirubin.

3.3. Phototherapy lights must:

Be shielded at all times with a Plexiglas cover to protect the infant in the event of bulb breakage, and to screen out certain wave lengths, protecting the infant from ultraviolet light.

4.0 PROCEDURES:

4.1. Gather equipments:

- Phototherapy unit.
- Eye shield
- Blue/white pads.
• Mask.

4.2. Secure eye shields in place, make sure the eyes are close but shouldn't be too tight.

4.3. Remove all of the infant's clothing (photo-oxidation is dependent on skin exposure).

4.4. Cover genitalia with a piece of gauze or mask.

4.5. Use disposable pack to protect bed linen.

4.6. Lights should be positioned approximately 45cm/18 inches above the infant. When using isolette, leave 5-8cm/2-3 inches of space to prevent over heating.

4.7. Turn on the phototherapy unit.

4.8. Use phototherapy unit according to physician's order. There are 3 types of phototherapy unit.

• Single light - 400-480nm - white/blue light.
• Double light - 430-490nm - white/blue light.
• Spiral phototherapy

4.9. Check with bilimeter every shift if available.

4.10. Turn down isolette temperature slightly if needed as photo lights supply heat.

4.11. Turn the phototherapy unit off before doing any procedure/care/assessment of the infant.

4.12. Assess the initial skin color because phototherapy lights can alter the perception of color.


4.14. Check infant's temperature PRN until temperature stabilization has been assured, and then Q3H.

4.15. Feed infant every 3 hours with breast milk or formula. Remove eye pad (Observe signs of erythema, conjunctivitis and yellow eye discharge) while giving feed and apply diaper when taking baby out for feeding. Make sure baby is out of phototherapy unit for minimum possible duration.

4.16. Obtain bilirubin blood levels as per physician's order.

4.17. Evaluate hydration by monitoring urine output, specific gravity, electrolytes, and daily weight.

4.18. Assess infant's fluid intake and output every 12 hrs, and observe stool for color and consistency. Notify physician for any abnormalities.
4.19. Documentation:

- Environment-radiant warmer/incubator.
- Type (single, double and spiral) number and intensity of light sources.
- Physical assessment and any changes in infant's condition, including temperature and behavior.
- Blood tests and results.
- Frequency and character of output.
- Parental interaction and teaching.
- Bilirubin chart.

5.0. FORMS AND ATTACHMENTS?

Bilirubin Chart

6.0. REFERENCES:


1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

To ensure all RN in NICU to safely assist physician in transillumination procedure.

3.0. **POLICY:**

All nursing staff in NICU are responsible and accountable to safely assist doctors in performing transillumination procedure.

4.0. **PROCEDURE:**

4.1. **Transilluminator** should be charged and battery full all the time and ready to use.

4.2. Transillumination of the infant's chest wall will be performed by the physician.

4.3. Dim the lights.

4.4. Place the infant in supine position.

4.5. Assist the physician in procedure, physician will turn the transillumination on, hold the light probe at a 90 degree angle to the infant's chest.

4.6. Physician will observe the infant's chest at a minimum of five (5) different sites:
   - Anterior axillary line above and below the nipple.
   - Right and left side of the chest.
   - Midline over the sternum for pneumomediastenum.

4.7. Physician will make a comparison of the right and left sides of the chest while using the transilluminator.

4.8. A positive transillumination is asymmetrical.

4.9. Once pneumothorax is confirmed, prepare for IMMEDIATE chest tube insertion procedure.
Infants who are risk for developing Pneumothorax:

- Infants on CPAP
- Infants on Ventilator
- Infants with interstitial emphysema
- Infants with pneumomediastinum
- Infants with meconium aspiration syndrome.
- 4.10. Documentation
- Date and time of procedure.
- Infant’s tolerance of procedure.

5.0. REFERENCES:

Medical consultants Network Inc.
1.0. CONDITIONS:

To all physicians and RN in NICU.

2.0. PURPOSE:

NICU nursing staff will ensure safety with the use and care of CENTRAL VENOUS CATHETERS (CVC).

3.0. DEFINITION:

Central venous catheters include:

3.1. Percutaneous Central Venous Catheter (PCVC):

It is an intravenous line that is threaded percutaneously into a peripheral vein and then further into a central venous location of the body normally into the superior vena cava (SVC) or the top/junction of the right atrium. The line is inserted into the SVC either via the cephalic and/or basilar veins of the antecubital space, thus providing an alternative to the subclavian and jugular veins. Other names used for this type of central line are "long line" or "peripherally inserted central venous catheter" (PICC).

3.2. Tunneled Catheters:

E.g. Broviacs, are surgically implanted catheters, which are inserted into the subclavian or jugular veins in preference to the femoral vein. These lines are inserted in the operating room or in NICU in case of emergency under standard precautions.

4.0. POLICY:

All RN in NICU will be responsible and accountable for safety with the STANDARD PRECAUTIONS in caring of neonates with CENTRAL VENOUS CATHETERS (CVC).

4.1 Aseptic technique will be followed when handling CVCs. Standard precautions will apply at all times.

4.2. The clinician is responsible for inserting CVCs.

4.3. Central Venous catheters must always be removed by the physician.
4.4. CVC solution tubing must be changed every 24 hours. Two nurses must check that the IV solution is as prescribed by the clinician.

4.5. Connectors to CVC tubing must always be sterile and with stop-cock. Should ensure that connections are tight.

4.6. A STAT-X-ray must be performed post line insertion and reviewed by the clinician to confirm catheter placement prior to any infusion being commenced.

4.7. Never attempt to flush the CVC if resistance is felt.

4.8. Never use 1 cc syringes for administration of medication or for flushing any forms of CVC inclusive of BROVIAC lines.

4.9. Catheters used in neonates require at least 1.0 ml of continuous fluid to be infused into them every hour.

4.10. **Never infuse blood through a CVC.** Unless this method is specifically ordered.

4.11. Transparent dressings should only be changed every 7-10 days unless evidence of leaking, bleeding or signs of local infection are found.

4.12. All lines will be carefully inspected visually upon removal of dressing to ensure that they are intact.

4.13. **HEPLOCKING:** PCVCs are never to be heplocked.

4.14. Changes or complications may be related to catheter placement or function shall be immediately referred to the clinician.

5.0. PROCEDURE:

5.1. **Percutaneous Central Venous Catheter (PCVC) Procedure.**

- The nurse shall:
- Gather all equipments.
- Position the patient appropriately.
- Secure the catheter using Steri-strips and temporarily place loose gauze dressing over the site while awaiting x-ray confirmation of insertion length.
- Withdraw the catheter if directed to do so by the clinician following x-ray.
- Clinician may flush catheter intermittently with heparinized saline until x-ray confirms position. *Only a 3cc syringe is ever used to flush a PCVC.*
- Offer comfort measures to the infant during and after the procedure.
- Continually assess infant’s vital signs during procedure.

5.2. **Stabilization of PCVCs.**

- Assist physician to secures the PCVC once the X-ray is been confirmed.
- Wash hands; put on sterile gloves.
5.3. Changing PCVC Lines (IV tubing).

5.3.1. Gather equipment:
- Sterile gloves
- Solution to be infused
- Appropriate IV tubing (maintain sterility at all times)
- Sterile gauze (4x4)
- Sterile gauze and antiseptic solution
- 3ml sterile syringe
- normal saline for flushing.

5.3.2. Procedure:
- Position infant appropriately for ease of access to connection.
- Gather supplies
- Wash hands
- Open necessary supplies and connect tubing ensuring that the ends are not touched thus preventing contamination.
- At the bedside – open sterile gloves, 3ml syringe, sterile gauze and antiseptic solution. Clamp the catheter and place infusion on pause/hold. Wash hands and don gloves, draw up saline flush.
- Place sterile gauze under the PCVC connection.
- Clean around the connection site with sterile gauze soaked with antiseptic solution for 2 minutes.
- Remove the old tubing.
- Fill any dead space with heparinized saline to prevent introduction of air into the line.
- Remove syringe and connect new tubing.
- Turn on the infusion rate as ordered.

5.4. Medication Administration via PCVCs.

5.4.1. Intravenous medication should only ever be given via a PCVC if there is absolutely no other venous access option.

5.4.2. All medications to be administered via a closed circuit system.

5.4.3. Gather equipment:
- Relevant needles and syringes.
- Sterile gauze and antiseptic solution.
- Normal saline – one ampoule/one bag.
- Sterile gloves.
- Stop cock
- Medications.
5.4.4. Procedure (using strict aseptic technique):
- Gather supplies.
- Open sterile gloves. Don't wear now.
- For a sterile field, use the packet, which your gloves are in.
- Open all syringes, needles, sterile gauze and antiseptic solution onto your sterile field.
- Wash hands, put on sterile gloves, and proceed with assistant (2nd drug checker).
- Take sterile field to infant.
- Wipe port of entry for administration of drugs thoroughly with antiseptic solution soaked sterile gauze (two minutes). Allow to dry.
- Pause infusion.
- Flush catheter with small amount of saline to check patency.
- Administer drug using a syringe driver.
- If prescribed drug is a continuous infusion, check compatibility with existing IV fluid.
- Once all drugs have been administered, flush T-port with 0.5ml of normal saline and clamp the T-port.
- IV infusion fluid tubings will be changed **routinely every 24 hours.**

5.5. **Dressing Changes.**

5.5.1. Dressing will be replaced when it is:
- No longer air occlusive (current recommendations are 7-10 days).
- If there is visible discharge, or if dressing is removed for inspection of catheter site.

5.5.2. Only a Tegaderm dressing will be applied to cover the site of incision. Do not cover the site with gauze.

5.6. **Documentation:**

5.6.1. Procedures performed by the clinician, including name of clinician, insertion site, catheter type, date and time of insertion and patient's tolerance in the flow sheet.

5.6.2. Diagnostic procedures (i.e., x-rays).

5.6.3. If Clinician withdraws the catheter, the final insertion length should be written in the flow sheet and kardex.

5.6.4. Changes or complications observed related to catheter placement or function (which should be immediately referred to the clinician).

5.6.5. Volume and type of flush solution; volume of blood out in the flow sheet.
5.0. REFERENCES:


1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

All RN in NICU will ensure safety in assisting for chest drain insertion and how to care and maintain chest drain.

3.0. **DEFINITION:**

A Pleur-Evac is a one-piece, molded plastic chest drainage system.

4.0. **POLICY:**

All nursing staff in NICU will be responsible and accountable to safely assist in insertion of chest drain and follow the nursing skills in maintaining and caring chest drain.

4.1. Chest tubes will be inserted by physicians only.

4.2. Chest x-ray to verify chest tube placement will be performed post insertion.

4.3. Small, sterile dry dressings will be used for chest tube insertion sites. Dressings are to be changed only if leakage occurs or is suspected.

4.4. Assess the status of the pneumothorax. An **Active pneumothorax** is indicated by bubbling during inspiration / expiration. A **Resolved pneumothorax** is indicated by no bubbling during inspiration / expiration.

4.5. Check the water seal chamber **hourly**. The tubing of the suction control unit should be very briefly clamped/pinched and activity in the water seal chamber should be noted and documented.

4.6. Chest tubes are **never** routinely clamped (because it increases tension pneumothorax unless it is ordered by clinician on removing tube or when changing Pleur-Evac system.

4.7. **Transillumination** of the chest will be performed PRN using the fiber-optic Light source if a tension pneumothorax or dislodgment of the chest tube is suspected.
4.8. Review the clinician’s order for level of suction to be applied to the Pleur-Evac system.

4.9. Correctly position the infant to maximize drainage/fluctuation, prevent accidental dislocation, and provide comfort.

4.10. Ensure correct water level is maintained, with the addition of sterile water when needed.

4.11. Ensure the chest tube is always kept below the level of the chest.

4.12. Standard precautions must be followed due to potential exposure to blood and body fluids.

5.0. PROCEDURE:

5.1. Gather equipment:

5.1.1. Pleur-Evac chest drainage system.

- Pleur-Evac unit
- Sterile water
- Sterile syringe (50-60cc)
- Intermittent suction unit
- 2 rubber tipped clamps - kept at bedside
- Adhesive tape - 1 inch roll, to secure tubes to bed
- Connector tube - between chest tube and Pleur-Evac tubing

5.1.2. Chest tube set up

- Chest tube insertion set from CSSD.
- 1% Lignocaine - 2 ml syringe, 20g needle, 25g needle.
- Povidone Iodine
- Sterile gloves.
- 3-0 silk suture.
- Sterile gauze 2x2.

5.2. Chest tube insertion:

5.2.1. Restrain infant appropriately following effective sedation/pain relief.

5.2.2. Assemble Pleur-Evac according to the instructions on pack.

5.2.3. Check with clinician regarding amount of suction required - i.e. amount of water to add to unit. Chest tube is inserted by the clinician, connected to drainage system, and secured in place with dry dressing.

5.2.4. Ensure suction is turned on and operational (bubbling in suction control Compartment).
5.3. **Dislocation of tube (UNINTENTIONAL):**

5.3.1. If the pneumothorax is active – apply a sterile dry dressing and inform the clinician.

**Note:** Never apply an occlusive dressing due to risk of developing a tension pneumothorax (especially if the patient is on mechanical ventilation)

5.3.2. If the pneumothorax is not active, or has been clamped – apply petroleum gauze with occlusive dressing and inform the clinician.

5.4. **Chest tube removal (PLANNED):**

5.4.1. Prior to planned removal of chest tube, the clinician may order the tube to be clamped in order to assess for re-accumulation of air in the pleural spaces. If no re-accumulation occurs the chest tube can be removed.

5.4.2. Following removal of chest tube, cover with a sterile dry dressing followed by Tegaderm.

5.4.3. Dressing to remain in situ until either removal of sutures or excessive oozing from wound site is observed.

5.4.4. Removal of sutures is carried out in approximately 5-7 days.

5.5. **Thoracentesis:**

5.5.1. This procedure is performed by physicians only. Gather equipments:
- 23g butterfly
- 10 ml syringe
- 3-way stopcock
- Alcohol wipes
- Sterile water

5.5.2. Connect butterfly to three-way stop cock. The stopcock allows for aspiration of free air into the syringe and emptying of the syringe while maintaining a closed system.

5.5.3. Position the infant on his back.

5.5.4. Prepare area with alcohol-wipe (second or third intercostal space).

5.5.5. Once clinician has obtained free air, stabilize the needle and continue aspirating until preparations for chest tube insertion are complete, or until the air leak is evacuated.

5.6. **Documentation:**

5.1. Hourly – observe and record patency of the chest tube, tidaling/fluctuation and bubbling.

- Each shift – note the time and amount of fluid drained. Transillumination of chest, when performed.
- Observe Chest wall movement, air entry, oxygen requirements, and vital signs.

5.0. REFERENCES:

1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

All RN in NICU will ensure safety to assist in urinary catheterization when neonates requires indwelling catheter or urinary sample is collected.

3.0. **DEFINITION:**

Bladder catheterization involves the passage of a catheter into the bladder via the urethra.

4.0. **POLICY:**

All RN in NICU is responsible and accountable to safely assist the doctor in urinary catheterization and care of urinary catheterization.

4.1. A doctor's order is required before bladder catheterization is attempted for any purpose.

4.2. Standard precautions must be adhered to at all times.

4.3. Strict aseptic technique must be observed.

5.0. **PROCEDURE:**

5.1. **Gather equipment:**

- Sterile gloves
- Cotton wool balls
- Chlorhexidine cleanser
- Sterile drapes
- Lubricant
- Sterile collection bottle if required
- Urethral catheters. If urethral catheters are unavailable the following may be used.
  - 3.5F umbilical artery catheter for infants weighing <1000 g.
  - 5F feeding tube for infants weighing 1000 – 1800 g.
  - 8F feeding tube for infants weighing > 1800 g.
5.2. **Bladder catheterization of a Male Neonate by the Physician:**

5.2.1. Place the infant supine, with the thighs abducted (frog leg position).

5.2.2. Doctors will:
- Wear sterile gloves
- Stabilize infant's penis.
- Gently retract foreskin to expose meatus.
- Prep glans three (3) times with betadine. Prep from the meatus outward.
- Dry with sterile gauze.
- Place sterile towel on legs and abdomen.
- Lubricate tip of feeding catheter.
- Place opposite end in specimen container.
- Gently insert feeding catheter through meatus until urine is seen. Do not advance further.
- Collect urine specimen.
- If indwelling secure catheter to inner thigh with tape.
- Connect to collection bag with stopcock and extension tubing.

5.3. **Bladder catheterization of a Female Neonate by the physician:**

5.3.1. Place the infant supine, with the thighs abducted (frog-leg position)

5.3.2. Doctors will
- Wear sterile gloves.
- Retract labia with gauze.
- Prep area between labia minora with betadine three (3) times. Always clean anterior to posterior.
- Dry with sterile gauze.
- Gently insert catheter into urethral meatus until urine is seen. Do not advance further.
- Collect urine specimen.
- If indwelling, tape catheter to inner thigh.
- Connect to collection bag with stopcock and extension tubing.

5.3.3. Collect the urine specimen.

5.3.4. If the catheter is to remain indwelling connect the catheter to a closed sterile system for urine collection and tape the tube securely to the inner thigh.

5.4. **Complications of bladder catheterization:**

5.4.1. Infection - Strict sterile technique is necessary to help prevent infection. "In and-out" catheterization carries a small risk of urinary tract infection. The longer a catheter is left in place the greater the chance of infection.
5.4.2. Trauma to the urethra or bladder is more common in males. It can be prevented by using the smallest diameter catheter with ample lubrication and stretching the penis to straighten the urethra. The catheter should never be forced if resistance is encountered.

5.4.3. Hematuia – Hematuria is usually transient but may require irrigation with normal saline solution.

5.4.4. Stricture – Stricture is more common in males. It is usually caused by using a catheter that is too large or by prolonged or traumatic catheterization. In males, taping the catheter to the anterior abdominal wall will help decrease the pressure on the posterior urethra.

5.5. Catheter care should be performed routinely with cares by the nurse:

5.5.1. Inspect the outside of the catheter where it enters the meatus for any signs of irritation, swelling or encrusted material.

5.5.2. If there is evidence of encrustation inform the physician, remove with sterile gauze and normal saline once the physician orders to do so.

5.5.3. If there are any signs of swelling, infection or irritation remove catheter and inform clinician.

5.6. Document:
- Date and time of procedure,
- Catheter size used,
- Frequency of catheter care for indwelling catheter.

5.0. REFERENCES:


1.0. **CONDITIONS:**

To all Physicians and RN in NICU.

2.0. **PURPOSE:**

To ensure that ET intubation is safely performed for critically ill newborn.

3.0. **POLICY:**

All Registered Nursing staff are responsible and accountable to safely assist with ET intubation as a life saving procedure performed by the clinician when

- Bag and mask ventilation is ineffective or undesirable.
- Ongoing mechanical ventilation is required.
- Tracheal suctioning is needed.
- The infant has diaphragmatic hernia, RDS, Airway obstruction or any other lung pathologies.

3.1. Endotracheal intubation is performed by **clinicians only.**

3.2. Standard precautions are implemented at all times.

3.3. The following patient safety precautions are observed during the procedure.

3.3.1. The infant's heart rate shall be monitored during the procedure; monitoring of oxygen saturation is optimal.

3.3.2. Hypoxia during the procedure shall be minimized.

3.3.3. The intubation attempt should be stopped after 20 seconds.

3.3.4. 100% free flowing oxygen should be held near the nose and mouth of any infant with a respiratory effort to maximize oxygenation during the procedure.

4.0. **PROCEDURE:**

4.1. Gather equipment and supplies.

- Resuscitation equipment: Y connector, pressure gauge.
- Laryngoscope and blade, size 00 for ELBW infants, size 0 for preterm infants, size 1 for term infants.

...
• **ETT**
  - 2.5 - <1 kg or <28 weeks gestation.
  - 3.0 - 1-2 kg or 28-34 weeks gestation.
  - 3.5 - 2-4 kg or 34-38 weeks gestation.
  - 4.0 - >4 kg or > 38 weeks gestation.
• Stylet, if desired.
• Suction source, and suction catheter.
• Oxygen source, Ambu bag and appropriate size mask.
• Supplies to secure endotracheal tube.
• Stethoscope.
• Naso-gastric tube, if one is not already in place.

4.2. Position the patient on a flat surface with the head midline and the neck slightly extended. The clinician performing the procedure must have easy access to the airway and equipment while positioned at the patient's head.

4.3. Suction the airway, clear the secretions.

4.4. Prepare the resuscitation equipment, so that the infant may be given ventilation during the procedure, and can be hand ventilated when intubation is complete.

4.5. Aspirate gastric contents and suction the oropharynx.

4.6. Once clinician achieved successful intubation attach the ambu bag with pressure gauge to the ET tube and deliver manual breaths and auscultate breath sounds bilaterally to ensure proper placement.

4.7. Assess tube placement.
  - Auscultate both sides of the chest for presence and intensity of breath sounds.
  - Auscultate the stomach and assess for distention.
  - Assess chest movements with manual breaths.

<table>
<thead>
<tr>
<th>Tube length guidelines (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td>&lt;1000 gm</td>
</tr>
<tr>
<td>1000-2000</td>
</tr>
<tr>
<td>2000-3000 gm</td>
</tr>
<tr>
<td>3000-4000 gm</td>
</tr>
<tr>
<td>&gt;4000 gm</td>
</tr>
</tbody>
</table>

4.8. Note: If intubation is unsuccessful or the infant's condition deteriorates, stop and provide positive pressure ventilation with bag and mask. Limit attempts to 20 seconds.
4.9. When the ETT is assessed to be in good position, its markings relative to the upper lip are noted and documented, and the tube is secured.

4.10. The clinician shall order an x-ray to confirm the ETT placement.

4.11. After ETT placement is confirmed by x-ray, any length that extends more than 4 cm beyond the lip should be cut off to limit dead space and the possibility of kinking.

4.12. Assess complications such as hypoxia, bradycardia (due to hypoxia vagal stimulus from laryngoscope, endotracheal tubes, or suction catheter), trauma to oropharyngeal tissues, perforation of esophagus or trachea, infection, pulmonary air leak, especially with the ETT is misplaced to a main-stem bronchus.


- ET tube size and length.
- Infant's tolerance of procedure.
- X-ray confirmation.

5.0. REFERENCES:


1.0. **CONDITIONS:**

All physicians and RN in NICU.

2.0. **PURPOSE:**

NICU nursing staff will ensure safety in assisting doctors in central line insertion.

3.0. **DEFINITION:**

Central IV Lines: IV cannulas longer than 20cm. (8”) or cannulas placed so that the distal end rests in a major vessel. They can be used for:

- rapidly administering blood or fluids.
- obtaining venous access when peripheral veins are small, thrombosed or difficult to find.
- administering drugs that should not be given through peripheral veins.
- administering TPN solutions with greater than 10% concentration of dextrose.
- measuring central venous pressure.

4.0. **POLICY:**

All nursing staff in NICU will be responsible and accountable with standard precautions.

4.1. Central line insertion and removal will be performed only by a clinician.

**NOTE:** A STAT portable Chest X-Ray will normally be ordered by the clinician to check line placement.

4.2. Patients with a central line may be cared for on general units.

4.3. All professional nursing staff are required to have specific training/orientation prior to caring for a central line and established competency per unit requirement.

4.4. Standard Precautions will be followed throughout this procedure.
4.5. Central line tubing and solutions are changed in accordance with current IV Therapy policy.

4.6. Central line infusions will be administered via an infusion pump.

4.7. Tubing connections for central lines will have a luer lock.

4.8. Central lines inserted through a PCVC must be treated as central line and dressing change every 72 hours. Exception: the central catheter inserted through a cut-down, is left in place or the duration of use.

5.0. PROCEDURE:

5.1. For Central line Insertion:

5.1.1. Gather the equipment: Pre packaged Central Line Catheterization tray- obtained from CSSD.

5.1.2. Explain the procedure to the patient and family.

5.1.3. Wash hands.

5.1.4. Avoid any break in the skin as this may lead to infection.

5.1.5. Place the patient in a 15° Trendelenberg position to dilate the veins in the neck and upper chest.

5.1.6. Place a rolled towel between the patient’s shoulders to encourage vein distension.

5.1.7. Turn the patient’s head away from the site.


5.1.9. Assist the clinician to clean and anesthetize the skin. Prepare a 10 ml. syringe with 0.9% saline.

5.1.10. Assist the patient to maintain position during the procedure. Ensure that no air bubbles are allowed in the IV tubing at the connection point.

5.1.11. If IV infusion is being used, connect IV tubing to the catheter, or connect the stop cock and flush with the ordered solution.

5.1.12. Place steri-strips around the hub of the catheter to stabilize it, then cover the insertion site with a transparent semi-permeable membrane (TSM) dressing, e.g. Tegaderm Do not cover the connection between the catheter and tubing. Secure IV tubing with tape.

5.1.13. Remove gloves, gown, and wash hands.
NOTE: X-Rays are usually used to check central line placement.

5.2. CENTRAL LINE DRESSINGS WILL BE CHANGED EVERY 72 HOURS OR AS NEEDED.

5.2.1. Gather the equipment:
- sterile gloves
- dressing tray
- sterile metal bowl X2
- transparent semipermeable membrane (TSM) (Tegaderm)
- povidone iodine solution
- isopropyl alcohol 70%
- steri-strip X2
- non-sterile gloves.

5.2.2. Identify patient by ID band and name.

5.2.3 Explain procedure to parents.

5.2.4 Wash hands and put on gloves.

5.2.5 Remove old dressing. Discard appropriately.

5.2.6 Assess insertion site.

5.2.7 Remove gloves and wash hands. Put on sterile gloves.

5.2.8 Clean insertion site to periphery (2 inches from site) in a circular motion. Repeat (3) times.

5.2.9 Allow skin to air dry.

5.2.10 Repeat above with Betadine swabs.

5.2.11 Place opsite over the dressing site.

5.2.12 Tape central line to secure it in place.

5.2.13 Remove gloves and discard

Note:
- Central line dressings will be changed when needed.
- Line changes and dressing changes should be done at the same time if possible.
- If the insertion site appears infected and/or there is drainage, a culture will be done and sent to lab and physician should be informed.

Documentation:
- Date and time dressing changed.
- Appearance of insertion site.
- Nurses signature.
5.0. REFERENCES:

Medical Consultants Network Inc.
1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

NICU nursing staff will ensure safety when umbilical catheterization is performed by the physician.

3.0. **POLICY:**

All RN in NICU will be responsible and accountable with standard precautions.

3.1. Standard precautions and aseptic technique apply when dealing with umbilical catheters.

3.2. A STAT X-RAY must be performed following insertion of any umbilical catheter for correct placement prior to commencement of infusions.

3.3. Tubing changes on umbilical venous lines are performed daily. An order for the fluids must be prescribed daily.

3.4. All connections on umbilical arterial and venous lines must be with stop cock.

3.5. Ensure that all solution containers are labeled appropriately.

3.6. Observe and document **hourly** if extremities are "warm and pink".

3.7. The clinician should be notified immediately if any of the following occur:
   - An umbilical catheter becomes plugged or fails to function properly.
   - If blanching or discoloration of the buttocks or extremities is observed.

3.8. All lines will be visually inspected upon removal to ensure they are intact.

3.9. The catheter tip may only be sent for culture if requested by the clinician or if evidence of infection has occurred.
4.0. **PROCEDURE:**

4.1. **Umbilical Catheter insertion:**

4.1.1 Gather equipments and supplies:
- Gown, mask and sterile gloves for clinician.
- Umbilical tray, containing suitable antiseptic solution, catheters, suture and umbilical tie.
- Supply of 3-way luer-locked taps, 3 ml syringe with Heparinized saline.
- Transparent semi-permeable membrane (TSM) dressing material, such as tegaderm.
- Duoderm dressing material
- Primed neonatal transducer and administration set with solution as ordered by clinician.
- Blood gas sampling kit and other sample bottles as required.

4.1.2. Restrain the infant appropriately, normally using a diaper (if needed). Ensure a patent airway is maintained at all times.

4.1.3. Assist the clinician during the insertion of the catheters while observing the infant's tolerance to the procedure and informing the clinician as necessary.

4.1.4. Connect 3 ml syringe of saline to 3-way tap at the end of the umbilical catheter and intermittently infuse solution until catheter placement is verified by the clinician on X-ray. The clinician must request that the infusion of heparinized saline (UAC) be infused if he is certain of the line placement.

4.1.5. Once the catheter is confirmed in the correct position, secure it to the infant's abdomen using 1 piece of Duoderm on one side of the umbilicus or on both sides if 2 catheters are in place. Coil the catheter/catheters, and secure with TSM (Tegaderm). Correct placement of catheter is determined on X-Ray as follows.
- High UAC – between T6 – T9
- UVC – 1 CM above the diaphragm.

4.1.6. Note the cm markings on the catheters and record the level of UAC and UVC in the flow sheet and kardex.

4.1.7. Connect the prescribed infusion at the correct rate.

4.1.8. Calibrate the transducer (if invasive blood pressure is to be monitored) and note the blood pressure wave on the monitor if applicable.
4.2. **Blood sampling from an umbilical Arterial catheter.**

4.2.1. Gather equipment and supplies:
- Non sterile gloves
- Appropriate blood bottles
- Labels with infant registration number
- 3ml syringe, blood gas kit, Ice, extra 3ml syringes if more tests other than blood gas is being obtained
- 3ml syringe of Saline
- Sterile gauze
- Chlorhexidine

4.2.2. Wash hands and put on gloves. Place gauze under 3-way tap, Remove syringe, discard, and wipe 3 way tap with Chlorhexidine and allow to dry. Replace with sterile 3ml syringe.

4.2.3. Silence monitor alarms. Turn 3-way tap lever away from infant to stop infusion. Withdraw 1ml of blood slowly to clear line. Observe buttocks and lower extremities for any signs of blanching.

4.2.4. Turn 3-way tap lever half way between stopped infusion position and syringe. All ports are now closed. Remove syringe with blood and place on sterile gauze (this will be returned to the infant).

4.2.5. Connect blood gas syringe and other syringes to 3-way tap. Withdraw required amount of blood for tests.

4.2.6. Turn 3-way tap lever to close all ports and remove syringe with blood for sampling.

4.2.7. Connect syringe with the blood previously aspirated to clear line, to 3-way tap. Turn tap off to infusion and holding syringe upright gently aspirate to remove any air bubbles trapped in 3-way tap. Gently, infuse the aspirated blood, observing for any air or resistance. Wipe clean with Chlorhexidine.

4.2.8. Turn 3-way tap lever to close ports, connect 3ml syringe of saline and flush to clear line using the least amount of solution needed. Reactivate the alarms on monitor.

4.2.9. Do not allow blood to settle in 3-way tap. Change 3-way tap by clamping umbilical catheter with padded hemostats or flush excess blood onto some sterile gauze with syringe of infusing fluid.

4.3. **Removal of Umbilical Arterial Catheter:**

4.3.1. Turn off the intra-arterial infusion and blood pressure monitor. Leave for 5 minutes. Physician will carefully and slowly withdraw the catheter till only 4 cm remains in the patient. If suture needs to be cut, use extreme care to avoid cutting the catheter.
4.3.2. Apply pressure below the umbilicus to encourage constriction of the vessels.

4.3.3. Physician slowly withdraw remaining 4 cm of catheter at a rate of 1 cm every minute. Nurse will assist only in UAC removal.

4.3.4. Continue to observe closely.

4.3.5. Comfort the infant but do not place in the prone position or obstruct the view of the umbilicus i.e., with dressing, diaper or clothing, for at least two to three hours after catheter removal.

4.3.6. Continue to observe for oozing or frank bleeding from the umbilicus.

4.4. **Removal of umbilical venous catheter:**

4.4.1. Turn off the intravenous infusion.

4.4.2. Carefully withdraw the catheter, cutting sutures if necessary until approximately 4 cm of catheter remains in patient.

4.4.3. Slowly withdraw the remaining 4 cm of catheter, observing closely and applying pressure above the umbilicus to control any bleeding.

4.4.4. Comfort the infant. Do not place in the prone position or obstruct the view of the umbilicus, i.e. with dressing, diaper or clothing, for at least two to three hours after catheter removal.

4.5. **Tubing change for both umbilical venous and arterial catheterization should be sterile, with standard precaution.**

4.6. **Fill any dead space with heparinized saline to prevent introduction of air into the line.**

4.7. **Document:**

- Type of catheter inserted.
- Tolerance of procedure.
- Date and site of catheter insertion.
- Length of catheter inserted after X-Ray / with drawl.
- Date and time tubings changed.
- Volume and type of flushed solution.
- Amount of blood taken for tests.
- Date and time catheter removed.
5.0. REFERENCES:


1.0. **CONDITIONS:**

To all physicians and RN in NICU.

2.0. **PURPOSE:**

All physicians and nursing staff in NICU will ensure safety in assisting doctors for circumcision in the unit.

3.0. **DEFINITION:**

Circumcision is the surgical removal of the end of the prepuce of the penis.

4.0. **POLICY:**

All RN in NICU will be responsible and accountable in safely assisting the doctors for circumcision procedure in the unit.

4.1. A signed consent form (Informed consent) is required prior to performing this procedure.

4.2. The Neonatologist must examine infants prior to circumcision and declare them "fit for circumcision". This assessment shall be documented in the chart.

4.3. If more than 2 months of age, infant must go to OR for procedure.

5.0. **PROCEDURE:**

5.1. Prior to procedure:

5.1.1. Apply 1 gram of EMLA Cream to the distal end of the penis 60-80 minutes before circumcision and cover with an occlusive dressing.

5.1.2. **EMLA CREAM:**

- Effective analgesic effect is achieved 60 – 90 minutes after application under an occlusive dressing. The degree of dermal analgesic effect increases for up to 3 hours when an occlusive dressing is applied.
- Should not be rubbed into the skin.
5.2. Following the procedure, apply Vaseline gauze around penis before diapering infant.

5.3. Leave the gauze in place for at least 4 hours. Remove only if soiled or if site is clean and dry.

5.4. Gelfoam may be applied to the circumcision area if excessive bleeding occurs after the procedure or at dressing changes.

5.5. Observe the site for bleeding, swelling, or necrosis every 30 minutes for 1-hour post procedure and at each diaper change. Notify the clinician if excessive bleeding occurs prior to circumcision.

5.6. Observe infant for voiding within four hours post procedure. Notify clinician if the infant fails to void within four hours.

5.7. PARENT TEACHING:

5.7.1. Wash hands before and after diaper changes.

5.7.2. Remove soiled diapers Q4hrs or prn.

5.7.3. Cleanse the circumcision area with saline solution. Avoid using diaper wipes, lotions or powders.

5.7.4. Apply Vaseline gauze with each diaper change until the area begins to heal.

5.7.5. After DISCHARGE, report to PAEDIATRIC CLINIC/A&E:
- If the infant fails to pass urine.
- If the infant appears to be experiencing pain or discomfort with voiding.
- If there is swelling or excessive bleeding at the circumcision site.
- If the infant develops a fever.

5.8. DOCUMENTATION:

5.8.1. Date and time circumcision was performed.

5.8.2. Adverse reactions to complications.

5.8.3. Time of passing urine (after circumcision).

6.0. REFERENCES:

Medical Consultants Network. Inc.
1.0. **CONDITIONS:**

To all physicians and RN IN NICU.

2.0. **PURPOSE:**

All physicians and Nursing staff in NICU will ensure safety and follow the discharge criteria confidentially.

3.0. **POLICY:**

All physicians and RN in NICU will be responsible and accountable to safety in following the criteria’s of discharge, confidential with the hospital guidelines on discharging a neonate from NICU.

3.1. NICU RNs will discharge infants only after the physician has written discharge orders.

3.2. The infant must meet the following criteria to be discharged from the NICU to home.

- Ability to maintain body temperature.
- Consistent weight gain.
- Ability of parents/legal guardian to care for the infant.

3.3. No apnoea or bradycardia for at least 48 hours prior to discharge.

4.0. **PROCEDURE:**

4.1. **Parent Teaching:**

4.1.1. Parent teaching begins with parents view the infant for the first time. It is ongoing and concludes with discharge instructions.

4.1.2. Mother is given information and taught techniques of caring for the baby including:

- Infant Diaper changing / Dress changing.
- Care of umbilical cord and skin care.
- Infant bath
- Sleeping position.
- Infant's safety.
• Circumcision site care.
• Caring for special medical needs of infant i.e. tube feeding, colostomy care, oxygen therapy, tracheostomy care.
• Breast feeding technique on proper latch on, position and frequency and formula feeding instructions on positioning, quantity and frequency. Mothers are encouraged to ask questions throughout hospital stay.
• Caring for special medical needs of infant i.e. gavage feedings, colostomy care and oxygen.

4.2. Preparation for Discharge:

4.2.1. Order for discharge must be written by physician including prescription, follow up appointment and special investigation if required.

4.2.2. BCG and Hepatitis Vaccines should be given as per discharge criteria. Respiratory Syncytial Virus prophylaxes is given for premature infant with chronic lung disease according to physician order.

4.2.3. Routine for neonatal screening i.e., Retinopathy, Hearing test, Thyroid Function study must be done prior discharge.

4.2.4. Discharge physical examination must be completed by physician prior to discharge. If there are any abnormal findings, the physician will notify the mother.

4.3 Discharge:

4.3.1. Check mother's Hospital No. with the infant's ID band.

4.3.2. Take father signature with father national ID No. on the discharge summary form.

4.3.3. Take DISCHARGE FOOT PRINT (Rt &Lt leg) - OF BABY and LEFT THUMB PRINT - OF MOTHER. If mother is not present at the time of discharge, then take father's thumb print and mention.

4.3.4. If father not available in Riyadh or can not reach at the time of discharge, baby can be discharged with the mother provided that father's ID is brought and enter the National ID No, father's name in the Discharge Summary form. Make sure On Call Doctor is present while taking signature.

4.3.5. Make sure On Call Doctor will give all the discharge instructions to the parents and all doubts are clarified.

4.3.6. Document:
• Condition of infant during discharge.
• Date and Time of discharge.
• Complete discharge summary form
• Complete information in Admission book including final diagnosis
- Enter discharge in the computer once the infant is taken out of the unit.
- Compile chart and arrange in order before sending to Medical Record (Unit Clerk).
- Scrub both red and blue file and dry. Should be ready for next use.
- Discard all used disposable items, clean the cot, drawers and the entire area. Inform cleaner to do the cleaning.

5.0. **FORMS AND ATTACHEMENT:**

Discharge examination form
Vaccination card

6.0. **REFERENCES:**

Medical Consultants Network. Inc.
1.0. **CONDITIONS:**

To all physicians RN at NICU and Visitors of the unit.

2.0. **PURPOSE:**

It is the responsibility of physicians and nurses at NICU to prevent infection by instructing the unit visitors to adhere to the unit visitation policy.

3.0. **POLICY:**

3.1 All visitors will wash their hands per hospital policy and wear a cover gown before entering the NICU.

3.2 Before entering the NICU, parents must contact the NICU receptionist.

3.3 Parents are permitted to visit their baby 24 hours a day.

3.4 Only parents are allowed to visit.

3.5 Siblings are permitted to visit when accompanied by parents, but not to enter inside patient area.

3.6 Visitors with the following will be denied access to the NICU:
   - Sore throat, diarrhea, fever, cold symptoms or exposure to contagious disease within the last two (2) weeks

3.7 All parents must remain at the baby’s bedside.

3.8 Only parents are permitted to hold their baby.

4.0. **PROCEDURE:**

5.0. **REFERENCES:**

Medical Consultants Network, Inc.
1.0. CONDITIONS:

All physicians and RN in NICU.

2.0. PURPOSE:

Proper family education is the sole responsibility of physicians and NICU nurses who are caring for the family’s newborn baby.

3.0. POLICY:

The physician and NICU RN caring for a high-risk infant will educate the infant’s parents in order to facilitate parent-infant interaction and attachment.

4.0. PROCEDURE:

4.1. Encourage parents to visit their infant in the NICU.

4.2. Explain to the parents the NICU environment, i.e., noise, equipment, alarms.

4.3. Orient parents to the NICU.

4.4. Involve parents in the care of the infant; allow for return demonstrations:

4.6.1. Bottle feeding
4.6.2. Breast feeding
4.6.3. Skin care, i.e., baths, umbilical care, diaper changes, vaginal care, penis care,
4.6.4. Infant CPR
4.6.5. Other

4.5. Continuously assess parents’ needs and knowledge for optimal infant care.


4.7. Consult Social Service for referrals to special programs, support groups for parents of special needs infants, i.e., Down’s Syndrome, Spina Bifida.

4.8. Include siblings, when appropriate, in the care and visitation of the infant.
5.0. **FORMS AND ATTACHMENT:**

KKUH NICU booklets.

6.0. **REFERENCES:**
1.0. **CONDITIONS:**

To all physicians and RN IN NICU.

2.0. **PURPOSE:**

All nursing staff in NICU will ensure safety and release the body of the dead infant to parents according to the hospital policy with reassurance.

3.0. **POLICY:**

All RN in NICU will be responsible and accountable in performing all the procedures, notification and release the body of the dead infant to parents according to the hospital policy.

4.0. **PROCEDURE:**

4.1. Notify the attending physician of the infant's condition.

4.2. Notify the Nursing Supervisor.

4.3. Once the physician pronounced the death of the infant, attending consultant will be informed and the parents are informed as soon as possible if they are not present at the time of death.

4.4. Never inform the mother directly. If mother is in PNW inform the nurse about the death of the infant and **mother will be informed by father only.**

4.5. Physician will fill-up death certificate in both English and Arabic and necessary documents.

4.6. Keep the body in the unit for at least 2 hours after death of the infant.

4.7. If parents willing to take the body, it can be directly handed over to them by the unit itself, but **inform MORTICIAN.**

4.8. **USE MORTUARY PACK.**
4.9. Wrap the infant body in Mortuary wrap and attach tags after correctly filling all the required items on the tag (e.g. Name, Hospital no.,)

4.10. Inform Mortician and handover the body with Arabic filled death certificate. English death certificate to keep in the file.

4.10.1. Note and record pertinent observation and treatment on infant chart.
   - Accurate description of infant’s condition prior to death.
   - Time of physician visit.,
   - Examination and treatment given. Resuscitation and Resuscitation drugs if used.

4.10.2. Record time of death on flow chart, same with the time on the doctor’s order sheet.

4.10.3. Send chart to MEDICAL RECORD DEPARTMENT.

5.0. FORMS AND ATTACHMENT:

   Death certificate (Arabic and English)

6.0. REFERENCES:

   Medical Consultants Network. Inc.
1.0 CONDITIONS:

All Physicians and in the Pediatric Intensive Care Unit.

2.0 PURPOSE:

To admit to PICU patients who are likely to benefit from PICU care in order to ensure appropriate utilization of PICU resources.

3.0 POLICY:

3.1 The Pediatric Intensive Care Unit provides care for critically ill patients (younger than 12 years for males and 14 years for females). Every effort is made to facilitate the optimum care and placement of these patients.

3.2 PICU will provide care for patients with actual or potential vital system failure, which appear reversible with the PICU support. Patients will be prioritized based on diagnosis and objective parameters and predicted benefit. The patients requiring intensive treatment have priority over terminally ill patients with poor prognosis.

3.3 Establishment of PRIORITY for ICU admission.

3.4 Establish OBJECTIVE Parameters: Patients will be admitted to PICU based on diagnosis and objective parameters after prioritizing them for likely benefit.

3.5 Admission to the PICU requires written order after approval of the PICU consultant.

3.6 Patient would be admitted strictly on their potential to benefit from PICU care.

3.7 Decisions should be made explicitly and without bias.

3.8 Ethnic origin, race, sex, social status or financial status will not be considered in admission decisions.

4.0 PROCEDURE:

All patients who are candidates for admission to PICU will be prioritized according to the following priority ranking criteria:
4.1. PRIORITY 1:

These are critically ill, unstable patients in need of intensive treatment and monitoring that cannot be provided outside the ICU. Priority 1 patients have no limits placed on the extent of therapy they are to receive. e.g. patient who is requiring:

- Aggressive and persistent volume and/or blood products resuscitation
- Invasive monitoring and/or vasoactive drugs
- Airway intervention and/or ventilatory support
- Invasive intra-cranial monitoring and/or intensive intervention
- Acute Continuous Renal Replacement Therapy (CRRT).
- Intensive detoxification interventions
- Administration of life saving medications that could not safely be administered in a non-ICU setting (e.g. Anti-Arrhythmic, Bronchodilators, infusions of sedatives, Potassium boluses...etc)
- Life saving Interventions that could not safely be performed in a non-ICU setting (e.g. pericardial tamponade drainage ...etc)

4.2. PRIORITY 2:

These patients require intensive monitoring and may potentially need immediate intervention. No therapeutic limits are generally stipulated for these patients. e.g. patient who is requiring:

- Intensive cardio-pulmonary monitoring
- Intensive Neuro-vitals monitoring
- Intensive nursing care (e.g. suctioning, blood sampling, Nebulization, temperature control...etc).
- An intermediate care with high potential for deterioration (e.g. respiratory distress with high potential for respiratory failure, head injury with high potential for rapid deterioration of level of consciousness...etc).
- Urgent Interventions that could not safely be performed in a non-ICU setting.
- Administration of medications that could not safely be administered in a non-ICU setting (e.g. infusions of Heparin, Insulin, etc...).

4.3. PRIORITY 3:

These are patients who are generally not appropriate for PICU admission due to low risk of requiring active intervention(s) not safely performed in a non-ICU setting. Their admission should be on case to case basis at the discretion of on call consultant of PICU, e.g.:

- Stable chronic heart failure.
- Low risk drug overdose.

4.4. PRIORITY 4:

These unstable patients are critically ill but have a reduced likelihood of recovery because of underlying disease or nature of their acute illness. These patients may receive intensive treatment to relieve acute illness but limits on therapeutic efforts may be set such as no intubation or CPR.

- DNR (Do Not Resuscitate) status.
- Patients who meet the criteria of DNR policy, but not yet finalized e.g.:
- Metastatic malignancy unresponsive to treatment and/or complicated by infection, tamponade or airway obstruction.
- Multi organ system failure.
- Severe irreversible brain damage.
- Too sick patients in persistent vegetative state.
- Brain dead non-organ donor.
1.0 CONDITIONS:

All Physicians, Registered Nurses and Ward Clerks in the Pediatric Intensive Care Unit.

2.0 PURPOSE:

To ensure all new admissions are effectively communicated to the relevant departments.

3.0 POLICY:

All patients will be admitted according to the department admission policy guidelines and unit protocols.

4.0 PROCEDURE:

4.1 Admission to PICU is arranged by on-call PICU Senior Registrar/Consultant 24 hours a day.

4.2 To ensure acceptance by the primary Physician on-call before being admitted to PICU.

4.3 Patient is managed by the PICU consultant while in the PICU and whenever need other subspecialties. After transfer out of PICU, patient’s care will be back to the primary consultant.

4.4 Admission of a patient from another hospital must be arranged with the PICU Consultant in service and admission desk before patient’s transfer. Proper documentation with PICU telefax form is warranted.

4.5 Admission dispute must be referred to the on-call PICU consultant.

4.6 Once admitted the computer will be appropriately checked by the Ward Clerk / PICU Registered Nurse to ensure the patient’s information has been correctly entered by the Admission Department.

4.7 Patient’s profiles will be entered into the computer upon admission to the unit, relevant patient information required by the pharmacy and the dietary department will be entered on HIS by a Registered Nurse or the designee as instructed.
4.8 The PICU Physicians responsible for the patient’s care will be notified of the admission by PICU Registered Nurse.

4.9 Notification of the patient admissions to the Nursing Supervisors on duty undertaken as follows:
   4.9.1 DEM will alert supervisors of admission to the unit after 4:30PM.
   4.9.2 The ward nurses will then inform the supervisor of the patient’s admission to the unit, giving up to date information on the patient’s condition.

5.0 **REFERENCE:**

5.1 Nursing Broad Policy Guidelines.
1.0 CONDITIONS:

All Physicians in the PICU.

2.0 PURPOSE:

To discharge patients who are no longer in need for PICU care in order to ensure appropriate utilization of PICU resources.

3.0 POLICY:

3.1 The patients will be discharged from PICU to the general ward once they no longer need PICU care.

3.1.1 When a patient’s physiologic status has stabilized and the need for PICU monitoring and/or intervention is no longer necessary.

4.0 PROCEDURE:

4.1 Transfer/discharge will be based on the following criteria:

4.1.1 Stable hemodynamic parameters.

4.1.2 Stable respiratory status (Clear, patent and maintained airways).

4.1.3 Oxygen requirements not more than 60%

4.1.4 Intravenous inotropic support, vasodilators, vasopressors drugs are no longer required.

4.1.5 Intracranial pressure monitoring equipment has been removed.

4.1.6 Neurologic stability with proper seizure control.

4.1.7 Removal of all hemodynamic monitoring catheters.

4.1.8 Chronically mechanically ventilated patients whose critical illness has been reversed or resolved.

4.1.9 Patients with artificial airways (tracheostomies) who no longer require excessive suctioning and/or PICU monitoring and they had their first tracheostomy tube changed.
1.0 CONDITIONS:

All Physicians in the PICU.

2.0 PURPOSE:

To define Physician’s responsibility upon patients discharge.

3.0 POLICY:

Patient’s discharge from PICU will be carried out through proper, communication with patient's family and primary care team.

4.0 PROCEDURE:

4.1 Conscious elder patients and/or their families should be notified in advance of pending discharge.

4.2 All discharges must be approved by the PICU consultant in service.

4.3 Primary care team (consultant and / or registrar) must be informed about the patient discharge and any potential or continuing problems by the PICU Registrar.

4.4 If appropriate, limitation/non-escalation of treatment must be clearly documented and discussed with the primary team prior to discharge.

4.5 Transfer documents must be completed in the patient's file before discharge and the Physician Order transfer sheet should be filled and attached with the patient’s file.

5.0 REFERENCE:

Nursing Broad Policy Guidelines
1.0. CONDITIONS:
Applies to all pediatric staff (physicians & nurses).

2.0. PURPOSE:
To identify the age group for which pediatric care to be given and when to transfer the patient for adult medical care.

3.0. POLICY:
Children are accepted for medical care in pediatric department until the age of 12 years.

4.0. PROCEDURE:
4.1. New pediatric patients can only be accepted between 0-12 years of age.
4.2. Follow-up patients in pediatric OPD and ER are up to 16 years of age for girls and 14 years for boys.
4.3. Boys after the age of 14 years and girls after the age of 16 years, who require continuity care, should be transferred to the appropriate medical sub-specialty with clear discharge summary and reasons for transfer.
4.4. Girls may be readmitted to pediatric wards up to 16 years of age and boys up to 14 years of age.
4.5. If child is above the age limit (i.e. 14 years for boys and 16 years for girls) and before being seen in the adult medical unit, requires ER admission – the ER room pediatric physician and the adult ER physician are to arrange admission to medical unit.

5.0. REFERENCES:
5.1 Hospital Policy
5.2 Pediatric Department Manual
1.0. CONDITIONS:

This internal policy and procedure applies to all physicians and nurses working in Pediatric Department at KKUH.

2.0. PURPOSE:

To develop a process for assessment and problem identification for pediatric patients.

3.0. POLICY:

3.1 The process of assessment includes 6 standards:

3.1.1 Assessment
3.1.2 Diagnosis
3.1.3 Outcome identification
3.1.4 Planning
3.1.5 Implementation
3.1.6 Outcomes evaluation

4.0. PROCEDURES:

4.1 Assessment: which include:

4.1.1 A comprehensive patient history and physical examination
4.1.2 Patient / family interview:
    4.1.2.1 Chief complaint
    4.1.2.2 History of present illness/injury
    4.1.2.3 Birth history
    4.1.2.4 Growth and development milestones
    4.1.2.5 Childhood disease
    4.1.2.6 Exposure to hazardous materials
    4.1.2.7 Allergies
    4.1.2.8 Medications
    4.1.2.9 Immunizations
    4.1.2.10 Pain assessment
    4.1.2.11 Past medical / surgical history
    4.1.2.12 Family history
    4.1.2.13 Cultural, environmental, spiritual, socio-economic conditions
4.1.2.14 Abuse / neglect potential
4.1.2.15 Activities of daily living
4.1.2.16 Personal habits, sleep patterns
4.1.2.17 Food and fluid preferences
4.1.2.18 Appetite changes / weight changes
4.1.2.19 Available and accessible human, community and material resources
4.1.2.20 Educational needs of the child and family/caregiver
4.1.2.21 Peer relationships
4.1.2.22 Psychological assessment:
   4.1.2.22.1 Emotional status
   4.1.2.22.2 Patterns of coping
   4.1.2.22.3 Concerns during hospitalization
4.1.2.23 Behavioral and physical assessment:
   4.1.2.23.1 Personal hygiene and grooming
   4.1.2.23.2 Nutritional status
   4.1.2.23.3 Mental status
   4.1.2.23.4 Physical status
   4.1.2.23.5 Vital signs, height, weight, head circumference
4.1.2.24 Development assessment:
   4.1.2.24.1 Fine and gross motor skills
   4.1.2.24.2 Cognitive, language
   4.1.2.24.3 Social abilities
4.1.2.25 Perception of illness:
   4.1.2.25.1 Understanding of disease process/illness
   4.1.2.25.2 Understanding of reasons for hospitalization
   4.1.2.25.3 Desired outcome for hospitalization

4.1.3 The collection of data from available sources:
   4.1.3.1 Patient, family, caregiver
   4.1.3.2 Healthcare providers
   4.1.3.3 Individuals and/or agencies in the community

4.1.4 The collection of data by scientific methodology:
   4.1.4.1 Interview
   4.1.4.2 Observation
   4.1.4.3 Inspection
   4.1.4.4 Auscultation
   4.1.4.5 Palpation
   4.1.4.6 Reports and records

4.1.5 The organization of data in a systematic arrangement:
   4.1.5.1 The arrangement provides:
      4.1.5.1.1 Accurate collection
      4.1.5.1.2 Complete collection
      4.1.5.1.3 Accessibility
      4.1.5.1.4 Confidentiality
4.1.6 The communication of data in an orderly fashion:
4.1.6.1 Data are recorded by each shift, daily
4.1.6.2 Data are updated by each shift, daily
4.1.6.3 Data are revised and recorded as appropriate
4.1.6.4 Data are communicated verbally among interdisciplinary team, daily.

4.1.7 Diagnosis consists of analyzing patient assessment information to determine patient’s actual or potential healthcare problems.
4.1.7.1 Diagnoses are:
4.1.7.1.1 Derived from assessment information
4.1.7.1.2 Age and developmentally appropriate
4.1.7.1.3 Takes into account cultural issues, family
4.1.7.1.4 Provides the foundation for the plan of care and outcomes
4.1.7.1.5 Verified with the child/parents/guardians, other healthcare workers involved in the child’s care

4.1.8 The formulation of desired outcomes:
4.1.8.1 Desired outcomes are derived from diagnoses, congruent with child’s problems and established norms
4.1.8.2 Desired outcomes are measurable within a certain time frame
4.1.8.3 Child/family/guardian, pediatric nurse agree upon desired outcomes
4.1.8.4 Desired outcomes are established to restore the child’s optimal functioning capabilities. The outcomes are realistic and attainable for the child and his family/guardian.
4.1.8.5 Desired outcomes are developmentally and age appropriate with consideration to the child’s cultural issues.

4.1.9 The plan of care is formulated to achieve desired outcomes.
4.1.9.1 The formulation of nursing prescriptions that delineate actions to be taken
4.1.9.1.1 Prescribed actions:
4.1.9.1.1.1 Are specific to the identified problems of the patient and family
4.1.9.1.1.2 Are based on current scientific knowledge, current pediatric nursing practice
4.1.9.1.1.3 Incorporates principles of child/family teaching
4.1.9.1.1.4 Includes growth and development
4.1.9.1.1.5 Are developmentally and age appropriate
4.1.9.1.1.6 Includes cultural issues
4.1.9.1.1.7 Includes the child’s family
4.1.9.1.1.8 Provides for continuity of care among healthcare workers, family, community resources
4.1.9.1.1.9 Are documented and part of the child’s medical record
4.1.9.1.1.10 Are re-assessed and changed as needed

4.1.10 Implementation of actions delineated in the plan of care. Actions implemented:
4.1.10.1 Actively involve the child and family
4.1.10.2 Are consistent with the nursing prescription
4.1.10.3 Are based upon current scientific knowledge
4.1.10.4 Are developmentally and age appropriate
4.1.10.5 Are cultural relevant
4.1.10.6 Include principles of safety
4.1.10.7 Encourage children of appropriate age self-responsibility/care
4.1.10.8 Include care/family education on disease and injury prevention as documented

4.1.11 Outcomes of nursing actions (interventions) are evaluated for further assessment and planning. This is evidenced by:

4.1.11.1 Evaluating the achievement of desired outcomes
4.1.11.2 Data are collected concerning the child’s health status
4.1.11.3 Data are compared to the specified desired outcomes
4.1.11.4 The child, family and pediatric nurse evaluate the achievement of desired outcomes
4.1.11.5 Child’s and family response to desired outcomes are documented.

4.1.12 Reassessment of the nursing plan of care:

4.1.12.1 Outcome of nursing actions direct the reassessment of the identified patient’s problems.

4.1.12.2 Outcome of nursing actions direct assessment of desired outcomes (assess the desired outcome to determine if appropriate, realistic and stated accurately).

4.1.12.3 Outcome of nursing actions direct the reassessment of nursing prescriptions (assess the nursing prescriptions to determine if appropriate, realistic and stated accurately)

- Nursing actions are assessed for effectiveness in achieving desired outcomes

5.6.3 Further planning as directed by the re-assessment:

5.6.3.1 Re-assessment determines new patient present/potential problems
5.6.3.2 New patient problems direct the formulation and revision of desired outcomes
5.6.3.3 Desired outcomes are continually evaluated for achievement
5.6.3.4 The plan of care is continually evaluated and revised according to changes in the patient’s health status. All revisions are documented.

5.0. REFERENCE:

5.1 Hospital Policy
5.2 Pediatric Department Manual
1.0. **CONDITIONS:**
This is applied to all pediatric physicians and nurses.

2.0. **PURPOSE:**
Respecting patient’s rights and performing parents’ responsibilities will help to achieve the best care for all children.

3.0. **POLICY:**
All pediatric patients and their parents/guardians should have their rights respected and all parents should ensure that their responsibilities are fulfilled.

4.0. **PROCEDURES:**

4.1. Each child should be respected as a unique individual.
4.2. Respect for the care-taking role and individual response of the parents.
4.3. Provision for normal physical and physiological needs of a growing child to include nutrition, rest, sleep, warmth, activity and freedom to move and explore.
4.4. Consistent, supportive and nurturing care which:
   4.4.1. Meets the emotional and psychosocial needs of the child
   4.4.2. Fosters open communication
4.5. Provision for self-esteem needs which will be met by attempts to give the child:
   4.5.1. The reassuring presence of a caring person, especially a parent
   4.5.2. Freedom to express feelings or fears with appropriate reactions
   4.5.3. As much control as possible, over both self and situation
   4.5.4. Opportunities to work through experience before and after they occur, verbally, in play or in other appropriate ways.
   4.5.5. Recognition and reward for coping well during difficult situations
4.6. Provision for varied and normal stimuli of life which contributes to cognitive, social, emotional and physical developmental needs:
   4.6.1 Play, educational and social activities essential to all children and adolescents
4.7. Information about what to expect prior to, during and following procedure/experience and support in coping with it.


4.9. Minimization of hospital stay duration by recognizing discharge planning needs.

4.10. Family responsibility:
   Parents/family* shall have the responsibility for:
   4.10.1. Continuing their parenting role to the extent of their ability
   4.10.2. Being available to participate in decision-making and providing staff with knowledge of parents/ family whereabouts.

*The family consists of those individuals responsible for physical and emotional care of the child on a continuous basis, regardless of whether they are related.

5.0. REFERENCES:
5.1. Hospital IPP & Policy from Quality Department
   5.1.1. The collection of data from available sources:
      5.1.1.1. Patient, family, caregiver
      5.1.1.2. Healthcare providers
      5.1.1.3. Individuals and/or agencies in the community

   5.1.2. The collection of data by scientific methodology:
      5.1.2.1. Interview
      5.1.2.2. Observation
      5.1.2.3. Inspection
      5.1.2.4. Auscultation
      5.1.2.5. Palpation
      5.1.2.6. Reports and records

   5.1.3. The organization of data in a systematic arrangement:
      5.1.3.1. The arrangement provides:
         o Accurate collection
         o Complete collection
         o Accessibility
         o Confidentiality

   5.1.4. The communication of data in an orderly fashion:
      5.1.4.1. Data are recorded by each shift, daily
      5.1.4.2. Data are updated by each shift, daily
      5.1.4.3. Data are revised and recorded as appropriate
      5.1.4.4. Data are communicated verbally among interdisciplinary team, daily.
5.2. Diagnosis consists of analyzing patient assessment information to determine patient’s actual or potential healthcare problems.

5.2.1. Diagnoses are:

5.2.1.1. Derived from assessment information
5.2.1.2. Age and developmentally appropriate
5.2.1.3. Takes into account cultural issues, family
5.2.1.4. Provides the foundation for the plan of care and outcomes
5.2.1.5. Verified with the child/parents/guardians, other healthcare workers involved in the child’s care

5.3. The formulation of desired outcomes:

5.3.1. Desired outcomes are derived from diagnoses, congruent with child’s problems and established norms

5.3.1.1. Desired outcomes are measurable within a certain time frame
5.3.1.2. Child/family/guardian, pediatric nurse agree upon desired outcomes
5.3.1.3. Desired outcomes are established to restore the child’s optimal functioning capabilities. The outcomes are realistic and attainable for the child and his family/guardian.
5.3.1.4. Desired outcomes are developmentally and age appropriate with consideration to the child’s cultural issues.

5.4. The plan of care is formulated to achieve desired outcomes.

5.4.1. The formulation of nursing prescriptions that delineate actions to be taken

5.4.1.1. Prescribed actions:

- Are specific to the identified problems of the patient and family
- Are based on current scientific knowledge, current pediatric nursing practice
- Incorporates principles of child/family teaching
- Includes growth and development
- Are developmentally and age appropriate
- Includes cultural issues
- Includes the child’s family
- Provides for continuity of care among healthcare workers, family, community resources
- Are documented and part of the child’s medical record
- Are re-assessed and changed as needed
5.5. Implementation of actions delineated in the plan of care. Actions implemented:

5.5.1. Actively involve the child and family
5.5.2. Are consistent with the nursing prescription
5.5.3. Are based upon current scientific knowledge
5.5.4. Are developmentally and age appropriate
5.5.5. Are cultural relevant
5.5.6. Include principles of safety
5.5.7. Encourage children of appropriate age self-responsibility/care
5.5.8. Include care/family education on disease and injury prevention as documented

5.6. Outcomes of nursing actions (interventions) are evaluated for further assessment and planning. This is evidenced by:

5.6.1. Evaluating the achievement of desired outcomes:

5.6.1.1 Data are collected concerning the child’s health status
5.6.1.2 Data are compared to the specified desired outcomes
5.6.1.3 The child, family and pediatric nurse evaluate the achievement of desired outcomes
5.6.1.4 Child’s and family response to desired outcomes are documented.

5.6.2. Reassessment of the nursing plan of care:

5.6.2.1 Outcome of nursing actions direct the reassessment of the identified patient’s problems.
5.6.2.2 Outcome of nursing actions direct assessment of desired outcomes (assess the desired outcome to determine if appropriate, realistic and stated accurately).
5.6.2.3 Outcome of nursing actions direct the reassessment of nursing prescriptions (assess the nursing prescriptions to determine if appropriate, realistic and stated accurately)
5.6.2.4 Nursing actions are assessed for effectiveness in achieving desired outcomes

5.6.3. Further planning as directed by the re-assessment:

5.6.3.1 Re-assessment determines new patient present/potential problems
5.6.3.2 New patient problems direct the formulation and revision of desired outcomes
5.6.3.3 Desired outcomes are continually evaluated for achievement
5.6.3.4 The plan of care is continually evaluated and revised according to changes in the patient’s health status. All revisions are documented.
1.0. CONDITIONS:

This (hand-off) communication policy and procedure applies to all physicians and nurses in the Pediatric Intensive care Unit.

2.0. PURPOSE:

The Pediatric Intensive Care Unit is committed to ensure patient safety whenever there is a change in the patient’s caregivers.

3.0. POLICY:

3.1. Hand-off communication will take place whenever there is:

3.1.1 A physician transfer complete responsibility for a patient.

3.1.2 Physicians and nurses are transferring patient’s to another level of care within or outside the organization.

3.1.3 Physicians are transferring on-call responsibilities.

3.1.4 At the change of shift between nurses.

3.1.5 A nurse leaves the unit for a period of time, such as lunch or to accompany a patient to another unit or diagnostic department.

4.0. PROCEDURES:

4.1 When a physician is transferring complete responsibility for a patient or when transferring a patient to or another level of care within or outside the organization, the physician or his designee will:

4.2. Write a detailed summary of the patient illness and course including:

4.2.1. patient name, sex and age

4.2.2. date of admission

4.2.3. presenting symptoms and reason for admission

4.2.4. diagnosis

4.2.5. patient problem list

4.2.6. patient medication and when they last given, IVF & O₂

4.2.7. most recent vital signs
4.2.8. results of recent clinical laboratory and diagnostic tests
4.2.9. allergies
4.2.10. patient past medical and surgical history
4.2.11. wound dressing, drains, central line, etc.
4.1.12. recent or anticipated charges in the patient condition
4.2.13. treatment, care and services that need to be completed (to-do-list)
4.2.14. any other information which is important to the patient’s care.

4.3. At the change of shift between nurses or when the patient’s nurse leave the unit for a period of time, the patient nurse will report as follows:
4.3.1. Find a quiet area to give a verbal report (hand-off communication) to ensure accurate, clear and concise information is given with a minimum of interpretation.
4.3.2. Caregiver will give each other opportunity to ask questions, answer questions and read book or repeat book information, as needed.
4.3.4. Information provided during hand-off communication will include at a minimum:
4.3.5. Patient’s name and location
4.3.6. Patient’s physician
4.3.7. Date of admission
4.3.8. Diagnosis
4.3.9. Summary of the patient’s comment, physical and mental condition including:
4.3.10. medication and when were last given
4.3.11. IV present: heparlock /or solution rate infusion
4.3.12. O₂ when applicable
4.3.13. wound dressing, drains, etc.
4.3.14. allergies
4.3.15. emotional status
4.3.16. pain assessment and management
4.3.17. treatment care and services that need to be completed (to-do-list)
4.3.18. Any other information which is important to the patient’s care

5.0 REFERENCES:
5.1 Inter-unit and Inter-departmental transfer checklist
5.2 Nursing Department Policy
5.3 Hospital Regulations
5.4 MCN Guidelines