Drug use in newborn and organization of neonatal unit

Conti…

- Right drug in the right dose to the right patient at the right time and right documentation.
- **Dosages may be calculated based on:**
- Milligrams/kg (e.g. Lasix)
- Micrograms/kg (e.g. Fentanyl)
- Units/kg (e.g. Heparin)
- Body surface area (BSA)
- Weight of the baby.
- 1 Kilogram (kg) = 1000 grams 1 gram (g) = 1000 milligrams 1 milligram (mg) = 1000 micrograms 1 microgram (mcg) = 1000 nanograms

- **CARDIAC DRUGS:**

- **Digoxin**
- Dose:0.035mg/kg IM/IV
- Indication :increases heart rate,
- Sideeffect:arrythmias,hypokalemia,nausea, vomitting.
- **ADRENALINE**
- Dose:0.1 -0.3ml/kg/dose/IV
- Indication: as a part of newborn resuscitation.
- Side effect: nausea, vomitting, diarrhoea

- **CARDIAC DRUGS:**

- **Dopamine**
- Dose:5-15 mcg/kg/min IV (medium dose): May increase renal blood flow, cardiac output, heart rate, and cardiac contractility,.
- **Dobutamine**
- Dose: 2.5 to 15 mcg/kg/minute IV
- Indication :increases cardiac output,.
- Side effect: nausea, vomitting diarrhoea

- QUINIDINE
- Dose:2to 10 mg/kg/24hrs/im/iv
- Indication:antiarrhythmics
- Sideefffect:headache,fever,anorexia, abdominal pain.
- **METHYLDOPA**
- Dose:10mg/kg
- Indication: antihypertensive
- Sideeffect:vertigo

- **FUROSEMIDE:**
- **Dose**:1-3mg/kg/oral and iv.
- Indication: loop diuretics
- Sideeffect:hypokalemia,hypovolemia

Antibiotic commonly used for newborn

- **CEPHALOSPORINS:**
- Dose:20-40mg/kg/24hrs/po/50-100mg/kg/iv/im
- Indication:antibiotic,most effective against gram positive bacteria
- Sideeffect:gastrointestinal
- Amoxicillin
- Dose:20-40mg/kg/24hrs/po/50-100mg/kg/iv/im
- Indication:antibiotic,most effective against gram positive bacteria

Conti..

- **PENICILLIN G**
- Dose:25,000to 100000 u/kg/24hrs/po/im/iv
- Indication: effective against gram positive and gram negative cocci.
- **Benzathine penicillin**: 1.2 million units or 600,000 units if <30 kg, every 4 weeks.
- Zentamycin
- Dose; 1-2ml/kg

- **CHLORAMPHENICOL;**
- Dose:50to100mg/kg/24hrs/po
- Indication: used for severe infection,bonemarrow depression.
- Side effect: headache,confusion,nausea ,vomittin g.
- **ERYTHROMYCIN**:
- Dose:250mg/kg/24hrs/po
- Indication: bacterial infection
- Sideeffect:nausea,vomitting,diarrhoe

- **CORTICOSTEROIDS USED IN NEONATES:**

- **HYDROCORTISONE: {prednisolone,dexamethasone}**
- **Dose**:2.5mg/kg/po
- **Indication:** antiinflammatory agent.
- **Sideeffect:**nausea,vomitting
- PREDNISOLONE
- Dose:2-5mg/iv
- DEXAMETHASONE
- Dose:2-5mg/kg/iv/po

- **DRUGS USED IN TREATMENT OF ASTHMA**:
- Theophylline
- Dose:10-16mg/kg/day/po
- Indication: bronchodilators
- Sideeffect:nausea,vomitting,anorexia
- DERIPHILINE
- Dose:5-10mg/kg
- Route:i.v
- Sideeffect:local pain. Fever
- Indication:broncho-dilator

- Calcium gluconate
- Dose:1-10mg/kg/bwt
- Indication: calcium supplement.
- **ANTICONVULSANTS DRUG USED IN NEONATE**
- CLONAZEPAM
- Dose:0.1-0.35mg/kg/day/p0
- Indication: reduce convulsion ,seizure
- Sideeffect:drowsiness,irritability

- **ANTITUBERCULOSIS DRUGS USED IN CHILDREN;**
- **Isoniazid**
- Dose:10mg/kg/day
- Indication: treatment of tuberculosis
- Side effect:peripheral neuropathy.
- **Rifampicin**
- Dose;10mg/kg/day
- Sideeffect:muscle cramp,stomach upset
- **Streptomycin**
- Dose:20 to 40mg/kg/day
- Sideeffect:ototoxicity

DRUG USED TO TREAT ANEMIAS

- **Ferrous sulfate**
- Dose:6mg/kg
- Route: per oral
- Indication: treat iron deficiency anemias.
- Side effect:nausea,vomitting,constipation
- **IRON DEXTRAN**
- Dose:50mg/24hr/im
- Route:intra muscular
- Side effect: head ache, local pain, fever

Drug preparation and calculation

- **Formula of calculation of drugs**
- **Inj- Ampicillin 100 mg in 2ml normal saline over 15-20 minute.**
- **Desired strength/actual strength of drug x quantity = amount of dose**
- **100/500 x 5ml=1ml**

- **Remember:** Before doing the calculation, convert units of measurement to one system.
- **I. <u>Basic Formula:</u>** Frequently used to calculate drug dosages.
  D = dose ordered or desired dose
  H = dose on container label or dose on hand
  V = form and amount in which drug comes (tablet, capsule, liquid)
- **<u>Example:</u>** Order-Dilantin 50mg p.o. TID
  Drug available-Dilantin 125 mg/5ml

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D=50MG H=125MG V=5ML

Desired dose/dose on hand x vehicle
tablet or liquid = amount to give

50/125 x50

250/125 = 2ml

Administration of drug

- Oral
- Intravenous
- Intramuscular
- subcutaneous

ORGANIZING NEONATAL ICU



NICU

- A **neonatal intensive care unit** (**NICU**) is an intensive care unit specializing in the care of ill or premature newborn infants. The first official ICU for neonates was established in 1961 at Vanderbilt University Mildred Stahlman, officially termed a NICU when Stahlman used a ventilator off-label for a baby with breathing difficulties, for the first time ever.

NICU

- Newborn babies who need intensive medical attention are often admitted into a special area of the hospital called the Neonatal Intensive Care Unit (NICU).
- NICUs may also have intermediate or continuing care areas for babies who are not as sick but do need specialized

Conti..

- Newborn babies who need intensive medical attention are often admitted into a special area of the hospital called the Neonatal Intensive Care Unit (NICU). The NICU combines advanced technology and trained health care professionals to provide specialized care for the sick patients.

- **The newborn care team provides care** to babies in the unit 24 hours a day. Our team includes:
- Physicians, including attending physicians, fellows and residents
- midwife, including neonatal nurse practitioners, clinical midwife specialists, midwifery staffs, charge nurses and case managers
- Clinical specialists respiratory care, physical therapy, occupational therapy, speech-language pathology, child life
- Feeding and nutrition specialists, including dietitians and lactation specialists
- Support service professionals, such as social workers and psychologists, who can help you and your family.

- Equipments required in NICU:



Incubator and oxygen cylinder





Ambu bag and oxygen hood





- Ventillator
- Incubator
- Cardiac monitor
- Oxygen tent or oxygen hood
- Syringe pump
- Emergency medication
- NEONATAL UNIT.
- Nurses station
- Doctor room
- Separate cubic for each child
- Hand washing room
- Procedure room
- Drug storage room

- An **incubator** is an apparatus used to maintain environmental conditions suitable for a neonate (newborn baby). It is used in preterm births or for some ill full-term babies.
- Possible functions of a neonatal incubator are:
- Oxygenation, through oxygen supplementation by head hood or nasal cannula
- Protection from cold temperature, infection, noise, drafts and excess handling

- Provision of nutrition, through intravenous catheter or NG tube.
- Administration of medications.
- Maintaining fluid balance by providing fluid

Factors which may necessitate neonatal admission include

- Premature birth <37 weeks gestation
- Delayed birth >42 weeks gestation
- Birth weight <2500 g
- Concern about size, e.g., intrauterine growth restriction (IUGR)
- Medication or resuscitation required in the delivery room
- Birth defects, e.g., congenital heart defects, intraventricular haemorrhage, macrosomia, retinopathy of prematurity (ROP)

- Respiratory problems including RDS (respiratory distress syndrome) and BDP (bronchopulmonary dysplasia)
- Infection (including neonatal sepsis)
- Seizures
- Hypoglycemia
- Feeding issues
- Jaundice

Common diagnosis and pathologies in the NICU include:

- Anemia
- Apnea
- Bradycardia
- Bronchopulmonary dysplasia (BPD)
- Hydrocephalus
- Intraventricular hemorrhage (IVH)
- Jaundice
- Necrotizing enterocolitis (NEC)
- Patent ductus arteriosus (PDA)
- Periventricular leukomalacia (PVL)
- Infant respiratory distress syndrome (RDS)



Nicu staff auscultation baby



Open and close incubator







- Midwife patient ratio in neonatal unit:
- midwife patient ratio in neonatal unit is 1:1 there is 1 patient one nurse.
- 24 hours neonatologist physician
- In charge nurse.
- Supervisor nurse.

the most important thing in nicu is aseptic technic,before touching the child, midwife should wash there hands, aseptic technique is most important in NICU.

Conti…..

- Neonatologist. A pediatrician with additional training in the care of sick and premature babies. The neonatologist supervises pediatric fellows and residents, nurse practitioners, and midwife who care for babies in the NICU.
- Respiratory therapists
- Occupational therapists
- Dietitians
- Lactation consultants
- Pharmacists
- Social workers
- Hospital staff

- The members of the NICU team work together with parents to develop a plan of care for high-risk newborns. Ask about the NICUs parent support groups and other programs designed to encourage parental involvement.

Techniques of sample collection

- Informing parents about screening Before sample collection, staff must ensure parents are properly informed about screening and its importance.
- Informed consent Prior to sample collection, staff must obtain written consent. The consent form is on the front of the screening card and has two sections;

Blood sample

- **Collecting sample from newborn baby**
- Identifying blood group
- Investigation of any bleeding disorders
- Complete blood count test
- Identifying HIV infection
- Diagnosing diseases.

Conti..

- **Labeling The Sample**
- All specimens must be received by the laboratory with a legible label containing at least two (2) unique identifiers.
- The specimen must be labeled with the patient's full name (preferably last name first, then first name last) and one of the following:

Blood samples collection tubes





Urine sample

- Urine can be used for analysis of microscopy & culture, biochemical analysis or toxicology.
- For diagnosis of urinary tract disorders
- Urine analysis test

Equipment for urine collection

- Sterile container for urine collection
- Antiseptic liquid and gauzes

- One person holds the baby under the armpits with their legs dangling and lower body undressed.
- A second person then starts the bladder stimulation, which consists of a gentle tapping in the suprapubic area at a frequency of 100 taps or blows per minute for 30 s.