

ACUTE DISEASES OF THE NEWBORN

- high-risk neonate regardless of Gestational Age
- begins 23wks - 28 days post birth

CLASSIFICATIONS OF HIGH RISK NB

According to Size

- Low Birth Weight **LBW** (<2.5kg)
- Very Low Birth Weight **VLBW** (<1.5kg)
- Extremely Low Birth Weight **ELBW** (<1kg)

- Appropriate for Gestational Age **AGA** (10%-90%)

- Small for Gestational Age **SGA** (<10%)
- Large for Gestational Age **LGA** (>90%)
- Intrauterine Growth Restriction **IUGR**

>Risk Factors:

- Hereditary
- Placental Insufficiency
- Maternal Disease

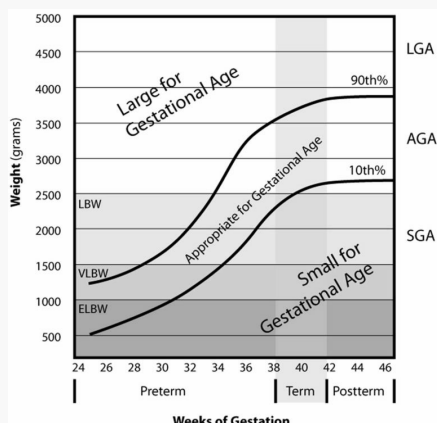
According to Gestational Age (regardless of BW)

- Late Preterm (**34-36wks AOG**)
- Preterm (**<37wks AOG**)
- Full term (**38-42wks AOG**)
- Post term (**>42wks AOG**)

According to Mortality

- Live Birth
- Fetal Death
 - = death before 20wks
- Neonatal Death
 - = death within first 27wks of extrauterine life
- Perinatal Mortality
 - = total # of fetal & neonatal death/1000 live births
- Postnatal Death
 - = death 28 days - 1y/o

Intrauterine Growth Curve



ASSESSMENT OF HIGH-RISK NB

1. Physical Assessment

- General Assessment
 - > BW
 - > Anthropometric Measurements
 - > Deformities
 - > Signs of distress (poor color, mottling, hypotonia)

2. Respiratory Assessment

- Chest Shape (barrel/concave)
- Describe use of accessory muscles
- Determine RR; O2 Sat
- Auscultation

3. Cardiovascular Assessment

- HR and rhythm
- Auscultation
- Determine Point of Maximal Impulse (PMI)
- Color

> mucous membranes, lips, BP, perfusion

4. Genitourinary Assessment

- Genitalia and abnormalities
- Describe urine

ASSESSMENT OF HIGH-RISK NB (cont)

> amount, pH, specific gravity

5. Gastrointestinal Assessment

- Presence of abdominal distention, regurgitation
- Stool assessment
 - > amount, color, consistency

6. Neurologic-Musculoskeletal Assessment

- Movements, Level of Activity with stimulation
- Changes in Head Circumference

7. Temperature

- Determine axillary temperature

HIGH-RISK CONDITIONS RT DYSPMAT-URITY

1. Preterm Infants

- *Cause:*
 - > idiopathic
- *Risk Factors:*
 - > low socio-economic status
 - > multigravida
 - > gestational HTN
- *Characteristics:*
 - > very small and thin; little SQ fat
 - > proportionally large head
 - > bright pink, shiny, smooth skin
 - > abundant fine lanugo
 - > ear cartilage soft and pliable
 - > male NB = few scrotal rugae; cryptochordism
 - > female NB = labia minora & clitoris prominent

2. Post-term Infants

- *Cause:*
 - > idiopathic
- *Characteristics:*
 - > absent lanugo



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HIGH-RISK CONDITIONS RT DYSPNOEA (cont)

- > abundant scalp hair; long fingernails
- > cracked skin/parchment-like/desquamation
- > depleted SQ fat
- > little vernix caseosa

PROBLEMS RT GESTATIONAL WEIGHT

SGA RT Intrauterine Growth Restriction (IUGR)

- **Cause:**
 - > poor nutrition
 - > adolescent pregnancy
 - > placental anomaly
 - > maternal systemic disease (HTN, DM)
- **Diagnostic Evaluation**
 - > fundal height < expected
 - > UTZ = ↓ size; placental grading; amniotic fluid
 - > biophysical profile
 - > non-stress test (NST)
- **Fetal Implications**
 - > poor skin turgor
 - > large head, small body
 - > small liver
 - > skull sutures widely separated
 - > ↑ Hct level
 - > polycythemia (↑ RBC)
 - > hypoglycemia (<45mg/dL)

LGA (Macrosomia)

- appears healthy, but will soon reveal underdevelopment
- **Causes:**
 - > gestational DM (GDM)
 - > multiparity
 - > **Beckwith Syndrome** (overgrowth+macroglossia)
 - > congenital anomalies (omphalocele)
- **Diagnostic Evaluation**
 - > UTZ
 - > NST
 - > amniocentesis
- **Fetal Implications**
 - > immature reflexes
 - > extensive bruising/birth injury **Erb-Duchenne**
 - > caput succedaneum; cephalhematoma
 - > hyperbilirubinemia
 - > polycythemia vera
 - > cyanosis
 - > ↑ insulin (up to 24hrs post birth=hypoglycemia)

MANAGEMENT OF HIGH-RISK NEWBORN

NEWBORN PRIORITIES

1. **Initiating/Maintaining Respiration**
 - most deaths occur within 48hrs
 - ineffective respiration = cerebral hypoxia
 - > Management:
 - O2 administration
 - appropriate positioning to open airway
 - resuscitation+ventilation
2. **Establish Extrauterine Circulation**
 - > Management:

MANAGEMENT OF HIGH-RISK NEWBORN (cont)

- closed-chest massage (1-2cm, 100x/min)
- lung ventilation (30x/min)
- monitor pulse oximeter
- 0.1-0.3mL/kg **Ephedrine** may be sprayed on ET tube
- transfer to NICU
- 3. **Maintain Fluid Balance**
 - > Management: (after initial resuscitation)
 - Hypoglycemia (**D10W IVF**)
 - Hypotension (vasopressor)
- Dopamine**
 - Hypovolemia (**NSS/RL IVF**)
 - Dehydration (**RL/D5W IVF**)
- 4. **Maintaining Thermoneutrality**
 - > Management:
 - thorough drying
 - skin-skin contact
 - neutral thermal environment
- 5. **Establishing Adequate Nutritional Intake**
 - > Management:
 - parenteral/enteral nutrition
 - breastfeeding
- 6. **Establishing Waste Elimination**
 - Immature infants void within 24hrs
 - stool passage may be later than term infants
- 7. **Protection from Infection**
 - > Prevention:
 - handwashing and PPE use
 - standard precautions
 - physical isolation
- 8. **Skin Care**
 - ↑ skin sensitivity & fragility



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MANAGEMENT OF HIGH-RISK NEWBORN (cont)

- > Management:
 - Zinc Oxide-based tape is used
 - avoid use of solvents

9. Establishing Mother-Infant Bonding

- parents kept informed
- spend time with NB

*2. (1:3 = Lung ventilation:Cardiac massage)

*3. Monitor UO (if UO=<2mL/kg/hr = inadequate fluid intake)

*4. 3 Main Methods for Neutral Thermal Environment: Incubator, Radiant panel, Bassinet

*5. If gavage fed, provide oral stimulation to develop effective sucking reflex

ACUTE CONDITIONS OF NEONATES

Respiratory Distress Syndrome (RDS)

- Hyaline Membrane Disease
- surfactant deficiency
- **Types:**
 - > *Structural*
 - lungs are underdeveloped
 - respiratory muscle prone to fatigue
 - > *Functional*
 - deficient surfactant
- **Risk Factors:**
 - > Multifetal pregnancy
 - > GDM
 - > CS Delivery
 - > Cold stress
 - > Asphyxia
 - > Hx of RDS
- RDS of Non-Pulmonary Origin Risk Factors:
 - > Sepsis
 - > Cardiac Defect
 - > Hypoglycemia
 - > Metabolic Acidosis

Respiratory Distress Syndrome (RDS) (cont)

- > Drugs
- **Clinical Manifestations:**
 - > tachypnea (>60cpm)
 - > retractions; nasal flaring
 - > inspiratory crackles
 - > circumoral and central cyanosis
- **Laboratory Diagnoses:**
 - > Glucometry (tests hypoglycemia)
 - > ABG (tests acidosis, hypoxia, hypercapnia)
 - > CXR
 - diffuse granular pattern = alveolar atelectasis
 - dark streaks = dilated, air-filled bronchioles
- **Treatment:**
 - > ventilation and oxygenation with Continuous Positive Airway Pressure (CPAP)
 - > maintain acid-base balance
 - > neutral thermal environment
 - > maintain hydration and electrolytes
 - > avoid nipple and gavage feedings
 - > administer exogenous surfactants
- **Nursing Responsibilities:**
 - > collect and monitor ABG
 - > O2 monitoring
 - > assess tolerance on procedure/drug

* Surfactants produced at 24wks AOG, matures at 36wks

* Surfactant Complications: pulmonary hemorrhage; mucus plugging

Meconium Aspiration Syndrome

Meconium

- sticky and tarlike; present at bowel 10wks AOG

- accumulates at 16wks AOG

Meconium Aspiration

- occurs inside utero/at first breath at birth

- occurs when the vagus reflex is stimulated due to hypoxia → releasing meconium to amniotic fluid

- NB born at breech position

- Pathophysiology:

> hypoxia → meconium passing → aspiration → obstruction → atelectasis → respiratory failure

- Clinical Manifestations:

- > tachypnea; retractions; expiratory grunting; nasal flaring
- > cyanosis/pallor
- > barrel chest (from hyperinflation)
- > hypoglycemia; hypocalcemia

- Diagnostic Evaluation:

- > laryngoscopy
- > CXR

- Management:

- > tracheal suctioning
- > intubation (in severe cases)
- > surfactant administration
- > Echocardiography (diagnose shunting)
- > chest physiotherapy



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Apnea of Prematurity (AOP)

Apnea

- cessation of respiration that lasts >20secs, accompanied by bradypnea and cyanosis

Types:

1. Central Apnea

- absent function of diaphragmatic and other respiratory muscles
- CNS does not transmit signals to respiratory muscles

2. Obstructive Apnea

- airflow stops due to obstruction

3. Mixed Apnea

- central + obstructive
- most common on premature infants

- Causes:

- > prematurity (weak thorax muscles)
- > airway obstruction
- > anemia; polycythemia vera
- > hypoglycemia; hypocalcemia
- > sepsis; meningitis; seizures

- Management:

- > gentle tactile stimulation
- > Caffeine Citrate PO/Parenteral (CNS Stimulant)
- > monitor weight and UO (Caffeine citrate = diuretic)
- > nasal CPAP & nasal intermittent positive pressure ventilation
- > neutral thermal environment

- Nursing Responsibilities:

- > routine observation (RR & HR)

Apnea of Prematurity (AOP) (cont)

- > gentle tactile stimulation, if it fails, raise chin to open airway
- > careful burping = reduces apnea
- > never take rectal temperature



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