

The High-Risk Infant

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- The term *high-risk infant* designates an infant who should be under close observation by experienced physicians and nurses
- Approximately **10-20% of all births** require special or neonatal intensive care.
- Usually needed for only a few days, such care may last from a few hours to several months.
- In some institutions, initial care for high-risk infants is provided in a special or transitional care nursery, often within the labor and delivery suite.
- This facility should be equipped and staffed like a neonatal intensive care area

- Examination of the fresh placenta, cord, and membranes may alert the physician to a newborn infant at high risk and may help confirm a diagnosis in a sick infant
- **Fetal blood loss** may be indicated by:
 - placental pallor
 - retroplacental hematoma
 - tears in the velamentous cords or chorionic blood vessels supplying the succenturiate lobes.
- **Placental edema** and secondary possible immunoglobulin G deficiency in a newborn may be associated with:
 - fetofetal transfusion syndrome
 - hydrops fetalis
 - congenital nephrosis
 - hepatic disease
- **Amnion nodosum** (granules on the amnion) and oligohydramnios are associated with **pulmonary hypoplasia** and **renal agenesis**,
- **small whitish nodules on the cord** suggest a **candidal infection**.

- **Short cords** and **noncoiled cords** occur with:
 - chromosome abnormalities
 - omphalocele
- **True umbilical cord knots** are seen in approximately **1%** of births and are associated with :
 - long cord
 - small fetal size
 - polyhydramnios
 - monoamniotic twinning
 - fetal demise
 - low Apgar scores.

- **Meconium staining suggests in utero stress**
- **opacity of the fetal surface of the placenta suggests infection.**
- **Single umbilical arteries are associated with an increased incidence of congenital renal abnormalities and syndromes.**
- **For many infants who are born prematurely, are small for gestational age (SGA), have significant perinatal asphyxia, are breech, or are born with life-threatening congenital anomalies, there are no previously identified risk factors.**

- For any given duration of gestation, the lower the birthweight, the higher the neonatal mortality; for any given birthweight, the shorter the gestational duration, the higher the neonatal mortality
- The highest risk of neonatal and infant mortality occurs in infants who weigh $<1,000$ g at birth and whose gestation was <28 wk.
- The lowest risk of neonatal mortality occurs in infants with a birthweight of $3,000$ - $4,000$ g and a gestational age of 39 - 41 wk
- As birthweight increases from 400 to $3,000$ g and gestational age increases from 23 to 39 wk, a logarithmic decrease in neonatal mortality occurs.

- In the United States, approximately **50%** of all infant deaths occur in infants born after less than 27 wk of gestation or infants weighing **less than 1,000 g**.
- Neonatal mortality rates rise sharply for infants weighing more than 4,000 g at birth and for those whose gestational period is 42 wk or longer.
- Because neonatal mortality largely depends on birth weight and gestational age, can be used to help identify high-risk infants quickly

Factors That Define an Infant as Being High Risk

- **DEMOGRAPHIC SOCIAL FACTORS**

- Maternal age <16 or >40 yr
- Illicit drug, alcohol, cigarette use
- Poverty
- Unmarried
- Emotional or physical stress

- **PAST MEDICAL HISTORY**

- Genetic disorders
- Diabetes mellitus
- Hypertension
- Asymptomatic bacteriuria
- Rheumatologic illness (systemic lupus erythematosus)
- Immune-mediated diseases (immunoglobulin G crossing placenta)
- Long-term medication

Factors That Define an Infant as Being High Risk

- **PREVIOUS PREGNANCY**

- Intrauterine fetal demise
- Neonatal death
- Prematurity
- Intrauterine growth restriction
- Congenital malformation
- Incompetent cervix
- Blood group sensitization, neonatal jaundice
- Neonatal thrombocytopenia
- Hydrops
- Inborn errors of metabolism

- **PRESENT PREGNANCY**

- Vaginal bleeding (abruptio placentae, placenta previa)
- Sexually transmitted infections (colonization: herpes simplex, group B streptococcus, chlamydia, syphilis, hepatitis B, HIV)
- Multiple gestation
- Preeclampsia
- Premature rupture of membranes
- Short interpregnancy time
- Poly-/oligohydramnios
- Acute medical or surgical illness
- Inadequate prenatal care
- Familial or acquired hypercoagulable states
- Abnormal fetal ultrasonographic findings
- Treatment of infertility

Factors That Define an Infant as Being High Risk

- **LABOR AND DELIVERY**
- Premature labor (<37 wk)
- Postdates pregnancy (≥ 42 wk)
- Fetal distress
- Immature lecithin : sphingomyelin ratio; absence of phosphatidylglycerol
- Breech presentation
- Meconium-stained fluid
- Nuchal cord
- Cesarean section
- Forceps delivery
- Apgar score <4 at 1 min
- **NEONATE**
- Birthweight <2,500 or >4,000 g
- Birth <37 or ≥ 42 wk of gestation
- Small or large for gestational age
- Respiratory distress, cyanosis
- Congenital malformation
- Pallor, plethora, petechiae

Premature Newborns

- **Definition of prematurity : birth <37 weeks gestation**
- **At higher risk of complications following birth**
- **Early complications :**
 - Hypothermia
 - Respiratory – RDS, apnoea
 - GI – feeding intolerance, NEC
 - Infection
 - IVH
 - Susceptible to hypovolaemic effects of blood loss
- **Later complications :**
 - BPD ,Developmental delay and learning disabilities ,Cerebral palsy
 - Retinopathy of prematurity ,Failure to thrive, feeding issues



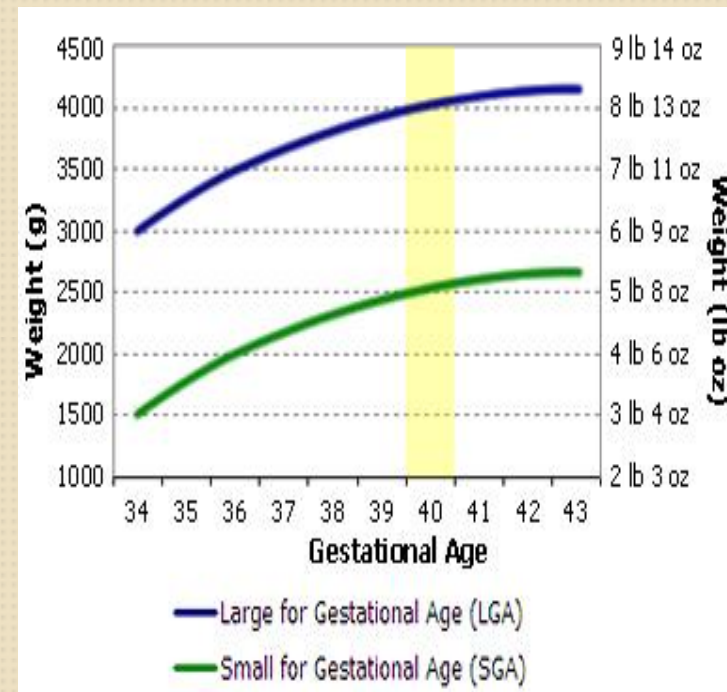
Post Term Infants

- Infants who are born >42 weeks gestation
- Significantly increased risk of mortality when delivery is delayed
- **Problems of post term infants:**
 - Intrauterine Asphyxia
 - Meconium Aspiration



IUGR (SGA) Newborns

- when plotted on intrauterine growth chart, they lie below 10th percentile
- **Associated problems:**
 - IUFD
 - Perinatal asphyxia
 - Hypoglycaemia
 - Polycythemia – hyperviscosity
 - Hypothermia
 - Dysmorphism



Large for Gestational Age

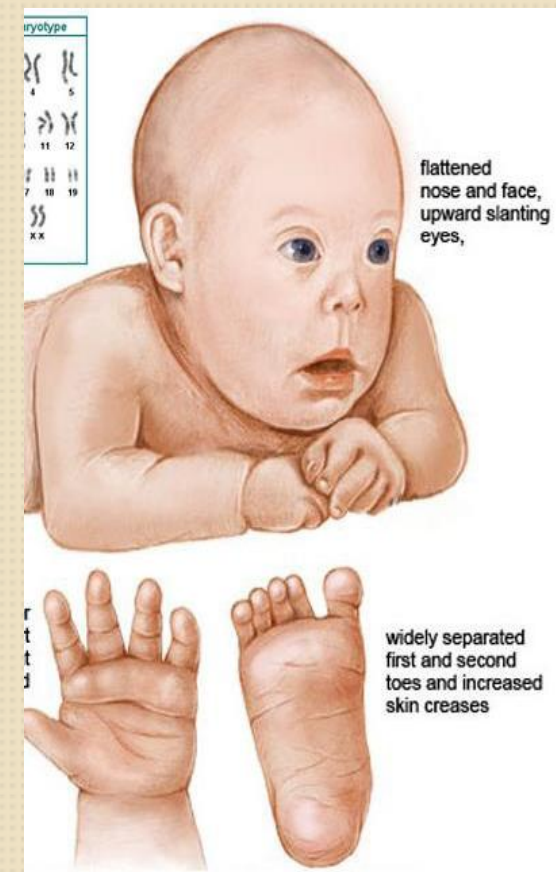
- When plotted on intrauterine growth chart, they lie above 90th percentile
- **Associated problems:**
 - Risk for birth injuries (e.g., clavicle fracture, brachial plexus injury, cephalohaematomas)
 - *May need caesarean birth*
 - Hypoglycemia
 - Polycythemia (HCT > 65%)

What is a sick infant?

- A sick infant does not appear well and has *abnormal clinical signs*
- The most important clinical signs that indicate that an infant is sick are:
- **Heart rate.** The infant may have a:
 - Tachycardia (a heart rate more than 160 beats per minute)
 - Bradycardia (a heart rate less than 100 beats per minute)
- **Respiration rate and pattern.** Abnormal signs are:
 - Slow, shallow, irregular respiration
 - Rapid respiration (tachypnoea) more than 60 breaths per minute
 - Grunting, recession or gasping
 - Apnoea

- **Colour.** The infant may be:
 - Pale
 - Plethoric (very red)
 - Cyanosed. Centrally or peripherally
 - Severely jaundiced
- **Temperature.** The infant may be hypothermic (cold) or pyrexial (hot).
- **Activity.** The infant may be:
 - Lethargic and respond poorly to stimulation
 - Hypotonic and less active than before
 - Feeding poorly
 - Jittery with abnormal movements or fits

Infants that have a **congenital abnormality** but are otherwise well are often grouped together with sick infants when management is planned.



Signs & Symptoms in Sick Newborns

- **Respiratory insufficiency**



Cyanosis



- **Apnoea**



Pallor



Signs & Symptoms in Sick Newborns

- **Feeding difficulties**



Vomiting



- **Abdominal distension**



Diarrhoea



Signs & Symptoms in Sick Newborns



Fever or Hypothermia



icterus

What are the causes of a sick infant?

- **Of the many causes of a sick infant, the most important are:**
- **Infection.**
- **Hypoxia.**
- **Hypothermia**
- **Hypoglycaemia.**
- **Acute blood loss.**
- **Anaemia.**
- **Trauma.**
- **Marked hyperbilirubinaemia.**
- **Intraventricular haemorrhage**

Managing a sick infant

- **Resuscitate the infant if needed**
- **Give the infant general supportive care.**
- **Monitor the vital signs.**
- **Attempt to make a diagnosis of the cause of the clinical signs.**
- **Treat the cause if possible**
- **Decide whether to transfer the infant to a level 2 or 3 nursery**

What general supportive care is needed by a sick infant?

- Maintain adequate respiration and circulation.
- Maintain a normal body temperature.
- Handle the infant as little as possible.
- Provide extra oxygen only if needed.
- Observe the infant carefully, paying special attention to the vital signs.
- Provide fluid and energy by giving intravenous fluid. Usually the stomach is emptied via a nasogastric tube.
- Prevent infection by washing your hands or spraying them with a disinfectant before touching the infant

- **Thanks for your attention**
- **Comments? Questions?**

