Management of Low Birth Weight Babies
Low birth weight (LBW)

- **Definition**: Birth weight < 2500 g
- **Incidence**: 30% of neonates in India
LBW: Significance

- 75% neonatal deaths and 50% infant deaths occur among LBW infants
- LBW babies are more prone to:
  - Malnutrition
  - Recurrent infections
  - Neuro developmental delay

LBW babies have higher mortality and morbidity
Types of LBW

2 types based on the origin

Preterm
- < 37 completed weeks of gestation
- Account for 1/3rd of LBW

Small-for-date (SFD) / intra uterine growth retardation (IUGR)
- < 10th centile for gestational age
- Account for 2/3rd of LBW neonates
Causation: LBW

Etiology of prematurity

- Low maternal weight, teenage / multiple pregnancy
- Previous preterm baby, cervical incompetence
- Antepartum hemorrhage, acute systemic disease
- Induced premature delivery
- Majority unknown
Causation: LBW

Etiology of SFD / IUGR

- Poor nutritional status of mother
- Hypertension, toxemia, anemia
- Multiple pregnancy, post maturity
- Chronic malaria, chronic illness
- Tobacco use
LBW: Identification of types

**Prematurity**

- Date of LMP
- Physical features
  - Breast nodule
  - Genitalia
  - Sole creases
  - Ear cartilage / recoil
Identification: Preterm LBW

Breast nodule

Preterm

Term

Teaching Aids: NNF
Identification: Preterm LBW

Male genitalia

Preterm

Term
Identification: Preterm LBW

Female genitalia

Preterm

Term

Teaching Aids: NNF
Identification: Preterm LBW

**Sole creases**

**Preterm**

**Term**

Teaching Aids: NNF

LBW-11
Identification: Preterm LBW

Ear Cartilage
LBW: Identification of types

SFD / IUGR

- Intrauterine growth chart
- Physical characteristics
  - Emaciated look
  - Loose folds of skin
  - Lack of subcutaneous tissue
  - Head bigger than chest by >3cm
Identification: SFD / IUGR

2.1 Kg - IUGR

3.2 Kg - AFD

Teaching Aids: NNF
LBW (Preterm) : Problems

- Birth asphyxia
- Hypothermia
- Feeding difficulties
- Infections
- Hyperbilirubinemia
- Respiratory distress
- Retinopathy of prematurity
- Apneic spells
- Intraventricular hemorrhage
- Hypoglycemia
- Metabolic acidosis
LBW (SFD) : Problems

- Birth asphyxia
- Meconium aspiration syndrome
- Hypothermia
- Hypoglycemia
- Infections
- Polycythemia
LBW: Issues in delivery

- Transfer mother to a well-equipped centre before delivery
- Skilled person needed for effective resuscitation
- Prevention of hypothermia - topmost priority
LBW: Indications for hospitalization

- Birth weight <1800 g
- Gestation <34 wks
- Unable to feed*
- Sick neonate*

* Irrespective of birth weight and gestation
LBW: Keeping warm at home

<table>
<thead>
<tr>
<th>Birth weight (Kg)</th>
<th>Room temperature (°C)</th>
</tr>
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<tbody>
<tr>
<td>1.0 – 1.5</td>
<td>34 – 35</td>
</tr>
<tr>
<td>1.5 – 2.0</td>
<td>32 – 34</td>
</tr>
<tr>
<td>2.0 – 2.5</td>
<td>30 – 32</td>
</tr>
<tr>
<td>&gt; 2.5</td>
<td>28 – 30</td>
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</tbody>
</table>

Skin-to-skin contact

Warm room, fire or heater

Prevent heat losses

Baby warmly wrapped

Teaching Aids: NNF

LBW-20
LBW: Keeping warm at home

Well covered newborn
LBW: Keeping warm in hospital

- Skin-to skin method
- Warm room, fire or electric heater
- Warmly wrapped

Teaching Aids: NNF
LBW: Keeping warm in hospital

Overhead Radiant warmer
LBW: Fluids and feeding

Weight <1200 g; Gestation <30 wks*

- Start initial intravenous fluids
- Introduce gavage feeds once stable
- Shift to katori-spoon feeds over next few days. Later on breast feeds

* May try gavage feeds, if not sick
LBW: Fluids and feeding

Weight 1200-1800 g; Gestation 30-34 wks*

- Start initial gavage feeds
- Katori-spoon feeding after 1-3 days
- Shift to breast feeds as soon as baby is able to suck

* May need intravenous fluids, if sick
LBW: Fluids and feeding

Weight >1800 g; Gestation > 34 wks*

- Breast feeding
- Katori-spoon feeding, if sucking not satisfactory on breast
- Shift to breast feeds as soon as possible
LBW: Feeding schedule

- Begin at 60 to 80ml/kg/day
  - Increase by 15ml/kg/day
  - Maximum of 180-200ml/kg/day
- First feed at 2 hrs of age then every 2 hourly
LBW: Feeding

Gavage feeding
LBW: Feeding

Katori-spoon feeding
Guidelines for fluid requirements

- First day 60-80 ml/kg/day
- Daily increment 15 ml/kg till day 7
- Add extra 20-30 ml/kg for infants under radiant warmer and 15 ml/kg for those receiving phototherapy
# Fluid requirements (ml/kg)

<table>
<thead>
<tr>
<th>Day of life</th>
<th>Birth Weight</th>
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<tbody>
<tr>
<td></td>
<td>&gt;1500 g</td>
</tr>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
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<td>3</td>
<td>90</td>
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<tr>
<td>4</td>
<td>105</td>
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<tr>
<td>5</td>
<td>120</td>
</tr>
<tr>
<td>6</td>
<td>135</td>
</tr>
<tr>
<td>7 onwards</td>
<td>150</td>
</tr>
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</table>
LBW: Adequacy of nutrition

Weight pattern*
- Loses 1 to 2% weight every day initially
- Cumulative weight loss 10%; more in preterm
- Regains birth weight by 10-14 days
- Then gains weight up to 1 to 1.5% of birth weight daily

Excessive loss or inadequate weight
- Cold stress, anemia, poor intake, sepsis

* SFD - LBW term baby does not lose weight
LBW: Supplements

- **Vitamins**
  - IM Vit K 1.0 mg at birth
  - Vit A* 1000 I.U. per day
  - Vit D* 400 I.U. per day

- **Iron**
  - Oral 2 mg/kg per day from 8 weeks of age

*From 2 weeks of age*
Danger signals (Early detection and referral)

- Lethargy, refusal to feed
- Hypothermia
- Tachypnea, grunt, gasping, apnea
- Seizures, vacant stare
- Abdominal distension
- Bleeding, icterus over palms/soles
Transportation of LBW baby

- Adequate warmth
- Life support
- With mother
- Referral note
Prognosis

- **Mortality**
  - Inversely related to birth weight and gestation
  - Directly related to severity of complications

- **Long term**
  - Depends on birth weight, gestation and severity of complications