

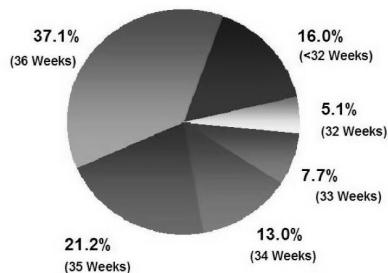
Late Preterm Neonate

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Objectives

- 1) Recognize the incidence of late preterm neonates as a subgroup of premature infants
- 2) Recognize the morbidities associated with late preterm neonates
- 3) Define the gestational age of the late preterm neonate and understand that the definition is arbitrary

Figure 2 – Distribution of Preterm Births,
All Live Births, United States, 2003



Gestational Definitions NICHD Workshop in 2005

- Preterm neonate < 36 6/7 wks gestation
- Late preterm neonate = 34 0/7-36 6/7 wks gestation
- Term neonate = 37 0/7-41 6/7 wks gestation
- Post-term neonate > 42 0/7 wks gestation

AAP, Fetus and Newborn Committee, 2007

- During last 15 years, proportion of all US births that were late preterm increased from 7.3% to 9.1% in 2005. In 2005, late preterm births accounted for more than 70% of all preterm births.
- The reason for the increase in late preterm births during the last decade is not well understood.
- Definition of "late preterm" is arbitrary

Late preterm definition

- 34 0/7 as lower limit since frequently used a) as cutoff point for obstetric decision making, b) as criterion for admission to level 2 or 3 NICU, and c) for epidemiologic and clinical research.
- 36 6/7 as upper limit previously established for prematurity and therefore maintained

Developmental and physiologic immaturity of late preterm neo.

- ✦ Apnea >> incidence late preterm neonate 4-7% compared with <1-2% at term
- ✦ Late preterm >> centrally mediated apnea higher risk due to developmentally immature CNS with brains 2/3 the size of term brain
- ✦ Cold exposure >> late preterms with less white adipose tissue for insulation and can't generate heat from brown as well given larger ratio of surface area to weight

Developmental immaturity (cont'd)

- ✦ Late preterm neonates are 2 times more likely than term infants to have significantly elevated bilirubin concentrations and higher concentrations 5 and 7 days after birth.
- ✦ Physiologic hyperbilirubinemia
 - Elevated Hct
 - Decreased half-life of RBC
 - Decreased uptake by liver exaggerated in premature

Developmental immaturity (cont'd)

- ✦ Immature GI function with feeding difficulties that are associated with relatively low oromotor tone, function, and neural maturation that predispose to dehydration and hyperbilirubinemia
- ✦ Probiotics >> Bifidobacteria, lactobacillus
- ✦ Prebiotics >> Oligosaccharides, galactooligosaccharide, lactoferrin
- ✦ Feeding Protocols for VLBW and ELBW

Morbidity and Mortality Late Preterm neonates

- ✦ During birth hospitalization
 - Late preterm neonates 4 times more likely than term neonates to have 1 medical condition diagnosed
 - Late preterm neonates 3.5 times more likely than term neonates to have 2 medical conditions diagnosed.
 - Temp instability, hypoglycemia, respiratory distress, apnea, jaundice, and feeding difficulties

Morbidity and Mortality (cont'd)

- ✦ One study of all California singleton live births who survived to 1 year age found that infants born at 34-36 wks gestation were 3-9 times more likely to require mechanical ventilation than infants born at 38 wks gestation.
- ✦ Another large cohort study found that 88% at 34 wks, 54% at 35 wks, 25% at 36 wks, 12% at 37 wks, and 2.6% of infants born at 38-40 wks were admitted to a NICU.

Morbidity and Mortality (cont'd)

- ✦ In 2002, the neonatal mortality rate (deaths among infants 0-27 days' chronologic age) for late preterm infants was 4.6 times higher than the rate for term infants (4.1 vs 0.9 per 1000 live births, respectively).
- ✦ Given that late preterm neonates are born before their nervous systems have fully developed, large population studies, to evaluate neuro-developmental outcome are needed.

Optimal Outcomes

- ✦ **Optimal outcomes are usually achieved if the pregnancy continues to full term.**
- ✦ Elective induction should follow ACOG guidelines which call for confirmation of 39 weeks gestation for singleton births.
- ✦ Options be discussed to help women find the best way to get their full 9 months of gestation.

Montana statistics > 2006 from March of Dimes

- ✦ Preterm (< 37 wks) = 11.5% of live births
- ✦ Late preterm neonate = 8.5% of live births
- ✦ < 32 wks gestation = 1.7% of live births
- ✦ **Total births Montana 2008 = 12,505**
- ✦ Preterm (<37 wks) 2008 = **1438** in 2008
- ✦ Late preterm neonate = **1063** (74%) in 2008
- ✦ < 32 wks gestation = **213** (15%) in 2008

Late preterm neonate Nonemergency endotracheal intubation AAP Clinical Report, March 2010

- ✦ Several studies have shown that the use of premedications for elective neonatal intubation is effective and safe
- ✦ All neonates requiring elective intubation should receive analgesics or an anesthetic dose of a hypnotic at a minimum; rapid onset muscle relaxants should be considered; and sedatives and/or muscle relaxants alone w/o analgesics should not be used.

Minimum Discharge Criteria

- ✦ Accurate gestational age has been determined
- ✦ "Medical home" with follow-up visit arranged for 24-48 hrs after hospital discharge
- ✦ Vital signs documented within reference range stable for 12 hrs preceding discharge
 - Respiratory rate < 60 breaths per minute
 - Heart rate of 100-160 beats per minute
 - Axillary temperature of 36.5-37.4 degrees C
 - No pulse oximetry reading noted

Minimum Discharge Criteria (cont'd)

- ✦ At least 1 stool passed spontaneously
- ✦ 24 hrs of successful feeding either breast or bottle. Wgt loss more than 2-3%/day or maximum 7% during hospitalization should be assessed for evidence of dehydration before discharge.
- ✦ Formal evaluation of breast feeding and a feeding plan developed and understood

Minimum Discharge Criteria (cont'd)

- ✦ Risk assessment for development of severe hyperbilirubinemia
- ✦ No evidence of active bleeding at circumcision site for at least 2 hours
- ✦ Initial Hepatitis B vaccine administered or appointment scheduled for administration
- ✦ Metabolic and genetic screenings have been performed.

Minimum Discharge Criteria (cont'd)

- ✦ Car safety seat study completed by trained professional to observe for apnea, bradycardia, or oxygen desaturation
- ✦ Hearing assessment has been performed and results documented in chart
- ✦ Family, environmental, and social risk factors have been assessed and when risk factors identified, discharge is delayed until they are resolved.

In Conclusion

- ✦ 75% of all premature newborns are late preterm neonates
- ✦ Significant morbidities exist for the late preterm neonate
- ✦ The late preterm neonate is defined as the premature baby between 34 0/7 weeks and 36 6/7 weeks gestation
- ✦ Decrease incidence of late preterm neonate by taking pregnancy to term when possible