I have no financial conflicts of interest and nothing to disclose.

I will not be discussing any drugs or products off-label.

Objectives

- Describe the rates, costs, and causes of late preterm birth
- Describe short-term and long-term risks of late preterm birth
- Describe ways of reducing risks for the late preterm infant & introduce "Multidisciplinary Guidelines for the Care of Late Preterm Infants"

Late Preterm Terminology

Preterm Birth is an Epidemic

- 43 preterm births occurs every hour, of every day, in every month, throughout the year in the US
- 1,044 preterm births before this day is over
- Late preterm births account for ~75% of all preterm births
  - 4,000,000 births in 2014
  - 381,000 preterm births (9.57%)
  - ~286,000 late preterm births (75%)
US Rates of Preterm Births

- 1981 preterm birth rate: 9.1%
- 2003 preterm birth rate: 12.3%
- 2004 preterm birth rate: 12.5%
- 2005 preterm birth rate: 12.7%
- 2006 preterm birth rate: 12.8%
- 2007 preterm birth rate: 12.7%
- 2008 preterm birth rate: 12.3%
- 2009 preterm birth rate: 12.2%
- 2010 preterm birth rate: 12.0%
- 2011 preterm birth rate: 11.7%
- 2012 preterm birth rate: 11.5%
- 2013 preterm birth rate: 11.4%
- 2014 preterm birth rate: 9.57%
- 2015 preterm birth rate: 9.62%

Healthy People 2020 Objective
Reduce preterm birth rate to 8.1%


Cost of Preterm Birth: US, 2005
Average First Year Medical Costs
Inpatient and Outpatient

Costs of Preterm Birth

- Average length of postpartum stay
  - Term infant: 2.2 days
  - Late preterm infant: 8 days

- Subanalysis among infants discharged early
  - Hospital costs for late preterm infants was greater than for term infants (when length of stay was equivalent).

Causes of Preterm Birth

- Specific causes of preterm birth are largely unknown.
- Preterm birth is likely due to a complex interplay of multiple risk factors, as opposed to any single isolated risk factor.
- Approximately one quarter of all preterm births are the result of medical intervention.
- The remainder occur spontaneously.

Causes of PretermBirths

- Traditional Causes
  - Maternal and fetal disorders
  - Multi-fetal pregnancies
  - Smoking, drug use
  - Errors in GA assessment
- Newer causes
  - Increasing maternal age
  - Increasing maternal obesity
- Medical interventions:
  - Earlier evaluation
  - Earlier diagnosis and deliveries
  - Efforts to reduce stillbirth rates

ShiK
in
Gesta’onal
Age
Distribu’on

Gestational Age (weeks)

Percent

0% 5% 10% 15% 20% 25% 30%

28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

1992 Peak number of births, 40 wks
2002 Peak number of births, 39 wks

Source: NCHS, final natality data
Prepared by March of Dimes Perinatal Data Center, April 2006.

Obstetrical Causes of Preterm Birth

• The rise in late preterm births linked to rising rates of
  • Cesarean sections
  • Early induction of labor


Cesarean Section and Labor Induction Rates
Singleton Live Births by Week of Gestation - United States, 1992 and 2002

Late Preterm

Source: NSHD, intercity data
Prepared by March of Dimes Perinatal Data Center, April 2006.

Objectives

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Medical Issues of Late Preterm Infants

• Transitional
  • Respiratory Distress
  • Apnea
  • Hypothermia
  • Hypoglycemia
  • Feeding difficulties
• First Week
  • Poor feeding and dehydration
  • Neonatal jaundice
  • Infection
• Later Neonatal Period
  • Late-onset sepsis
  • Hospital readmission
• Early Infancy
  • SIDS
  • Anemia
• Later Outcome
  • Learning difficulties & School failures
  • Behavior problems

Risks of Late Preterm Births

• Threefold higher rate of infant mortality among late preterm infants compared with term infants
  • Late preterm infants: 7.3 deaths per 1,000 live births
  • Term infants: 2.4 deaths per 1,000 live births

Morbidity of Late Preterm Infants in Massachusetts

- Late preterm infants: 22.2% vs term infants: 3%
- Morbidity rates doubled for each gestational week earlier than 38 weeks
  - 40 wks: 2.5%
  - 39 wks: 2.8%
  - 38 wks: 3.3%
  - 37 wks: 5.9%
  - 36 wks: 12.1%
  - 35 wks: 25.6%
  - 34 weeks: 51.9%


Shapiro, et al., 2008

Short-Term Neonatal Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Late Preterm</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital stays</td>
<td>5 days</td>
<td>2.4 days</td>
</tr>
<tr>
<td>NICU admissions</td>
<td>56%</td>
<td>4%</td>
</tr>
<tr>
<td>Feeding problems</td>
<td>36%</td>
<td>5%</td>
</tr>
<tr>
<td>Hyperbilirubinemia</td>
<td>25%</td>
<td>3%</td>
</tr>
<tr>
<td>Respiratory problems</td>
<td>20%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Neonatal complications were minimal at 38 weeks or later.


NICU Admissions

- Increased NICU admissions
  - 38 to 40 wks gestation: 3%
  - 36 wks gestation: 25%
  - 35 wks gestation: 54%
  - 34 weeks’ gestation: 88%
- Admission associated with
  - Respiratory complications
  - Jaundice/hyperbilirubinemia
  - Feeding problems
  - Sepsis


Late Preterm Infants at Increased Risk of ED Visit or Hospital Readmissions

- Increased risk of ED visit within 30 days
  - 36 weeks gestation – OR 1.91
- Increased risk of hospital readmission within 30 days
  - Discharged less than 48 hours after birth – OR 2.34
  - Stayed in the normal newborn nursery – OR 3.12

Shahid, R, Hanson, AL, Brooks, E. Risk Factors for Emergency Department Visits or Hospital Readmissions in Late Preterm Infants, Abstract 2010.

Respiratory Risks

- Dramatic changes in lung compliance, laryngeal reflexes, diaphragmatic work of breathing, and chemical control of breathing from 33-38 wks PMA.
- Respiratory distress at birth
  - Late preterm infant: 28.9%
  - Term infant: 4.2%


Causes of Respiratory Distress

- **Surfactant deficiency**
  - Iatrogenic immaturity – earlier GA than expected
  - Induction or planned c-section or without labor

- **Transient tachypnea of the newborn**
  - Induction or planned c-section without labor
  - Cortisol and epinephrine surge associated with labor helps to mature the lung and prepare for fluid absorption
  - Oxytocin induces IL-1 beta stimulation of lung fluid absorption (increased with skin to skin contact after birth)

- **Infection**
  - Pneumonia or sepsis

- **Persistent Pulmonary Hypertension of the Newborn**
  - 2-4 times higher in late preterm infant

Sleep/Arousal and SIDS Risks

- **Sleep and Arousal**
  - REM sleep vitally important for brain development
  - Late preterm: 60-80% of sleep is REM
  - Term: 50% of sleep is REM
  - 9 month old: 25-30% of sleep is REM

- **SIDS**
  - Late preterm infants: 1.7/1000
  - Term infants: 0.69/1000
  - Breastfeeding reduces the rate of SIDS by 50% at all gestational ages


Thermoregulation Risks

- Circadian rhythms of body temperature begin at 30 wks PMA and become mature by 37 wks PMA
- **Causes for cold stress in term infants**
  - Temperature difference between infant and delivery room
  - Evaporative heat loss in wet newborn
  - Large surface area to weight ratio
  - Conductive heat losses to surface infant is placed on

- **Additional causes of cold stress in late preterm infants**
  - Immature epidermal layer results in higher evaporative losses
  - Higher ratio of surface area to body weight
  - Less body weight leads to decreased ability to regulate temperature

Skin-to-Skin Care Provides Optimal Thermoregulation

- **Dads Can Give Skin-to-Skin Care**
  - Babies delivered by cesarean section
  - Placed skin-to-skin with father
    - Baby’s temperature increased
    - Baby’s blood glucose increased
    - When compared to cesarean-section babies placed in an incubator or cot.

Christenson, Acta Paediatr, 1996

Hypoglycemia Risks

- Incidence in late preterm infant estimated at 10-15%
- **Symptoms**
  - Irritability, excessive crying, lethargy, apnea, cyanosis, poor feeding, tachypnea, tachycardia, grunting, hypothermia, hypotonia, tremor, jitteriness, seizures

- **Causes of increased risk in late preterm infant**
  - Limited enteral intake due to immature suck/swallow
  - Delay in hepatic glucose-6-phosphatase activity
  - Cold stress
  - Infection
Hyperbilirubinemia Risks
- Late preterm infants have 2-5 times higher rates of hyperbilirubinemia requiring hospitalization for phototherapy
- UDP-Glucuronyltransferase activity is 1/4 of term infant
- Increase risk of developing kernicterus
  - Decreased enteral intake
  - Increased enterohepatic circulation
  - Increased bilirubin load
  - Decreased hepatic uptake
  - Decreased bilirubin conjugation

Hyperbilirubinemia Risks
- Jaundice as a cause for delayed discharge
  - 37-41 wk: 0.03%
  - 35-36 wk: 16%
- Jaundice as a cause for readmission
  - 37-41 wk: 27%
  - 34-36 wk: 46%

Readmission Diagnoses for Late Preterm Infants Discharged Early
Re-hospitalization rates for late-preterm infants 2-4 times higher

Infection Risks
- Late preterm infants have 3 times the rate of septic work ups requiring hospitalization
  - Tachypnea in term infant
    - More likely to be infection
  - Tachypnea in late-preterm infant
    - More likely to be immature respiratory system
    - Often admitted “just to be sure”
  - Immature immune system places late preterm infant at higher risk for infections even after discharge

Fetal Brain Development
- Cortical volume increases by 50% between 34 and 40 weeks gestation. (Adams Chapman, 2008)
- Brain volume increases at rate of 15 mL/week between 29 and 41 weeks gestation.
- A 5-fold increase in myelinated white matter occurs between 35-41 wks gestation.
- Frontal lobes are the last to develop, therefore the most vulnerable. (Huttenloher, 1984; Yakavlev, Lecours, 1967; Schade, 1961; Volpe, 2001).
### 3rd Trimester is Critical Period for Neuronal Organization and Synaptogenesis

- Cell proliferation, differentiation and migration
- Apoptosis
- Axonal growth
- Myelination
- Reorientation of cells
- Formation of dendrites
- Formation of synapses
- Formation of gyri and sulci

### Late Preterm Brain

- Golgi drawings: Chan and Armstrong, 2002
- Slide Courtesy, Dr. Hannah Kinney, 2006

### Early School Age Outcomes

- All 1997 births in the state of Florida
- Healthy late preterm and healthy term, went home <72 hours
- Early school age outcome analyzed from a large state database

<table>
<thead>
<tr>
<th>Early School Age Outcomes</th>
<th>Age</th>
<th>Healthy Late Preterm</th>
<th>Healthy Term</th>
<th>Logistic Regression with 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing delay/ Disability</td>
<td>0.02</td>
<td>0.03</td>
<td>1.01(0.98-1.04)</td>
<td></td>
</tr>
<tr>
<td>Disability in public education</td>
<td>4.92</td>
<td>4.92</td>
<td>1.01(1.01-1.01)</td>
<td></td>
</tr>
<tr>
<td>Disability in private education</td>
<td>6.03</td>
<td>6.03</td>
<td>1.01(1.01-1.01)</td>
<td></td>
</tr>
<tr>
<td>Nonmedical in special</td>
<td>6.03</td>
<td>6.03</td>
<td>1.01(1.01-1.01)</td>
<td></td>
</tr>
<tr>
<td>Exceptional independent education</td>
<td>6.03</td>
<td>6.03</td>
<td>1.01(1.01-1.01)</td>
<td></td>
</tr>
<tr>
<td>Autism or autism spectrum</td>
<td>6.03</td>
<td>6.03</td>
<td>1.01(1.01-1.01)</td>
<td></td>
</tr>
</tbody>
</table>

Morse SJ et al. Pediatrics, 2009 (April, electronic version)

### Special Education Needs

- Special Education Need (SEN) recorded in 17,784 children
- Risk of SEN decreased with increase in gestational age
  - 24-27 wk – adjusted OR 6.92 (95% CI 5.58-8.58)
  - 28-32 wk – adjusted OR 2.66 (95% CI 2.38-2.97)
  - 33-36 wk – adjusted OR 1.53 (95% CI 1.43-1.63)
  - 37-39 wk – adjusted OR 1.16 (95% CI 1.12-1.20)
- Early term deliveries (37-39 wk) accounted for 5.5% of SEN
- Preterm deliveries (< 37 wk) accounted for only 3.6% cases


### Behavioral Problems

- Prospective study of 869 low birth weight infants
- Nearly 20% of late preterm infants had significant behavioral problems that persisted to 8 years of age.

Cerebral Palsy Developmental Delays

- Large sample of children enrolled in the Northern California Kaiser Permanente Medical Care Program
- Cerebral Palsy
  - Term infants: 2.0 per 1,000
  - Late preterm infants: 7.3 per 1000
- Learning, speech, developmental delays
  - Late preterm infants: 25% more likely than term infant


Feeding Risks

- Late preterm infants can be deceptively vigorous, but ineffective at feeding
- Less able to achieve effective sucking and swallowing
- Suck/swallow/breathing coordination fully mature by 37 weeks post-menstrual age (Bullock, 1990)
- Difficult to arouse due to immature sleep/wake cycles
- Tire more easily – less stamina
- High risk for breastfeeding failure

Conceptual Framework of Breastfeeding Failure for Late Preterm Infants

- Immature Physiology of Late Preterm Infant
- Maternal Risk Factors for Delayed Lactation (e.g., Pre-Eclampsia, C-Section)
- Delayed or Impaired Lactogenesis II
- Decreased Maternal Milk Volume
- Inadequate Infant Milk Intake from Breastfeeding
- Lactation-Related Infant Mortality

Furman, L, Miele, P – Christine Hansson, RN, BSN, BC/CLC

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Reducing Risks by Providing Prenatal Care

- Prenatal screening for risk factors of preterm birth
  - Diabetes
  - Obesity
  - Hypertension
  - Infections
  - Smoking, drug, ETOH
  - Previous preterm delivery
  - Multi-fetal gestation
- Education
  - Taking folic acid, PNV
  - Ensuring optimal nutrition
  - Reducing life stressors
  - Recognizing signs of preterm labor

<table>
<thead>
<tr>
<th>Disability</th>
<th>Relative Risk (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebral Palsy</td>
<td>2.7 (2.2–3.3)</td>
</tr>
<tr>
<td>Mental Retardation</td>
<td>1.6 (1.4–1.9)</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>1.3 (1.0–1.7)</td>
</tr>
<tr>
<td>Disorders of Psychological Development, Behavior and Emotion</td>
<td>1.3 (1.2–1.5)</td>
</tr>
<tr>
<td>Other Major Medical Disabilities</td>
<td>1.3 (1.2–1.5)</td>
</tr>
<tr>
<td>Any Medical Disability Severely Affecting Working Capacity</td>
<td>1.4 (1.3–1.5)</td>
</tr>
</tbody>
</table>
Reducing Risks by Reducing Medical Interventions

- Cesarean section and induction of labor are medically indicated when continuation of pregnancy poses a risk to the mother or her fetus.
- C-section and induction of labor are discouraged prior to 39 weeks gestation in the absence of a medical indication.


Reducing Risks by Supporting Breastfeeding

- LPI has increased risk of feeding failure
  - Less able to achieve effective sucking and swallowing
  - Immature suck/swallow/breathing coordination
  - Difficult to arouse due to immature sleep/wake cycles
  - Tires more easily

Two Critical Breastfeeding Goals for Immediate Postpartum Period

- Establish mother’s milk supply
  - Early frequent breastfeeding
  - Early frequent hand expression
  - Pumping after inadequate feeding sessions
- Ensure infant is adequately fed
  - Frequent breastfeeding (every 1-3 hrs)
  - Proper latch
  - Adequate milk transfer

Establishing Mother’s Milk Supply

Jane Morton, MD
Lucile Packard Children’s Hospital, Stanford University

Hand Expression Hands-on Pumping Monitoring

67 mothers of infants < 31 wks EGA
- Mothers taught hands-on pumping increased mean daily volumes 48%
- Mean daily volumes rose to 820 mL/day by week 8 for all participants
- Mean daily volumes rose to 955 mL/day in mothers who hand expressed more than 5 times per day during the first 3 days.


Hand Expression and Hands-on Pumping Increase Milk Supply

Mean Daily Volumes ofExpressed Milk

Frequency of Hand Expression During the First 3 Postpartum Days

- 2 times per day – Group I (n=15)
- 3 times per day – Group II (n=18)
- 5 times per day – Group III (n=16)
Hand Expression and Spoon Feeding

Resources

- "A Premie Needs His Mother, First Steps to Breastfeeding Your Premature Baby"
  - 2 DVDs - $125
  - English and Spanish on each DVD
  - Purchase at www.breastmilkssolutions.com
- Watch videos at www.newborns.stanford.edu
  - Scroll to Breastfeeding icon – click to find list of videos
    - "Maximizing Milk Production" – 9:35 video
    - "Hand Expressing Milk" – 7:33 video

Ensuring Infant is Adequately Fed

- **Frequent breastfeeding**
  - Challenge - increased sleepiness
- **Proper latch**
  - Challenge - immature sucking patterns
- **Adequate milk transfer**
  - Challenge - weak suction pressures

Laid Back Breastfeeding

- Ventral feeding (vs. feeding on back or side) seems elicit baby’s primitive feeding reflexes
- Reflexes elicited even when baby is sleepy
- Baby usually gets proper latch unaided
- Reclined position is comfortable for mother

Colson, S. Early Human Dev. 2008 Jul;84(7):441-9

Biological Nurturing

Laid Back Breastfeeding

Suzanne Colson, PhD, Midwife
Canterbury Christ Church University, Kent, UK

Resources

University of California, San Diego

- **Late Preterm Infant Protocol and Feeding Guidelines**
  - Mother and baby stay on postpartum until weight gain is establish
  - Seen by lactation q shift
  - Supplemented with expressed mother’s milk or formula
    - If baby unable to breastfeed adequately
    - Using appropriate volumes
    - Pumping and hand expression support

health.ucsd.edu/women/spin/staff/late-preterm.htm
Lactation Support for Late Preterm Infants

- Even more important than for term infants
- Monitoring mother’s milk supply
- Monitoring adequacy of infant feeding
- Judicious use of lactation aids
  - Hand expression and/or electric pump
  - Supplementation systems
  - Cup, spoon, or finger feeding
  - Nipple shields (with appropriate follow-up)
- Outpatient breastfeeding follow up
  - Within 1-2 days after discharge

Reducing Risks by Appropriate Follow-up Care

- Transition to Outpatient Care
- Short-term Follow Up
- Long-term Follow Up

Recommended Criteria for Transition to Outpatient Care

- Thorough physical exam on admission and prior to discharge
  - Gestational age assessment
  - Discharge not earlier than 48 hrs after birth
  - Vital signs in normal range
    - Temp 36.5-37.4
    - HR 100-160 bpm
    - RR < 60/min
  - Serum glucose screening per hypoglycemia algorithm
  - Passage of at least one stool spontaneously

Recommended Criteria for Transition to Outpatient Care

- Risk assessment plan for jaundice
  - Pre-discharge bilirubin check
  - Maternal and infant blood tests results reviewed
  - Discharge feeding plan in place
  - 24 hrs of successful feeding
  - Formal evaluation of breastfeeding
  - Monitoring by trained caregiver at least twice a day
  - Breastfeeding follow-up support identified

Recommended Criteria for Transition to Outpatient Care

- Newborn metabolic screen
- Hepatitis B vaccine
- Car seat safety test
- Hearing assessment
- Critical cardiac disease screening
- Family, environmental, and social risk factors
- Identification of healthcare provider follow-up visit arranged for 24-48 hours post discharge
  - Assessment of hydration, weight, jaundice

The Ideal

- Mother and infant remain together following birth
- All assessments are done at mother’s bedside
- Mother and are discharged home together
- If feeding is not well establish, both mother and baby remain in the postpartum unit together
- Lactation support is readily available during the immediate postpartum period
- Lactation follow up is arranged prior to discharge
- A home visit is made within the first 48-72 hours at home
Home Visits Reduce ED Visits and Hospital Readmissions

ED visits and readmissions from discharge to 10 days

<table>
<thead>
<tr>
<th>Home Visit</th>
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<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n(%)</td>
<td>n(%)</td>
<td></td>
</tr>
<tr>
<td>Total patients</td>
<td>326 (11.0)</td>
<td>2641 (89.0)</td>
</tr>
<tr>
<td>Readmissions</td>
<td>2 (0.6)</td>
<td>73 (2.8)</td>
</tr>
<tr>
<td>ED Visits</td>
<td>0 (0)</td>
<td>92 (3.5)</td>
</tr>
<tr>
<td>Readmission or ED visit</td>
<td>2 (0.6)</td>
<td>144 (5.5)*</td>
</tr>
</tbody>
</table>

* 21 infants were readmitted from the ED and were counted only once

Paul, Pediatrics 2004;114:1015

A Multidisciplinary Collaborative Project

- November 3, 2010: Summit held in Washington, DC
- Representatives invited from all major organizations involved in the care of the late preterm infant
- 29 summit participants attended from 18 organizations
  - All with experience and expertise in the care of late-preterm infants
  - MD, RN, NNP, CNM, MPH, MBA, PhD, LCSW, OTR/L

18 Organizations Represented Many Disciplines

- Academy of Neonatal Nursing (ANN)
- American Academy of Pediatrics (AAP)
- American College of Nurse-Midwives (ACNM)
- Association of Maternal and Child Health Programs (AMCHP)
- Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN)
- Case Management Society of America (CMSA)
- Council of International Neonatal Nurses (CINN)
- National Association of Neonatal Nurses (NANP)
- National Association of Neonatal Therapists (NANT)
- National Association of Pediatric Nurse Practitioners (NAPNAP)
- National Association of Perinatal Social Workers (NAPSW)
- National Black Nurses Association (NBNA)
- National Healthy Mothers, Healthy Babies Coalition (NMHBC)
- National Institutes of Health/National Institute of Child Health and Human Development (NIH/NICHD)
- National Medical Association (NMA)
- Nurse-Family Partnership (NFP)
- Oklahoma Infant Alliance (OIA)
- Pediatric Medical Group

The Purpose

- To create a multidisciplinary consensus on the special needs of late preterm infants in order to:
  - Promote more uniformity of care
  - Lead to decreased morbidity and mortality
  - Improving survival and quality of life for late preterm infants and their families
  - Evidenced-based, useful, practical, relevant

Steering Committee

- Raylene Phillips, MD, FAAP, IBCLC – Loma Linda University Children’s Hospital
- Mitchell Goldstein, MD, FAAP – Loma Linda University Children’s Hospital
- Kristen Hougland, MD, FAAP – Loma Linda University Children’s Hospital
- Al Pizzica, MD, FAAP – Neonatologist, Philadelphia
- Raja Nadyal, MD - Oklahoma Infant Alliance/Medical Director of the Preemie Clinic and Oklahoma Infant Transition Clinic, Oklahoma University Health Sciences
- Ann Stark, MD - American Academy of Pediatrics, March of Dimes
- Sharon Chesna, MPA - Mothers & Babies Perinatal Network of SCNY
- Karen D’Apollito, PhD, APRN, NNP-BC - Neonatal Nurse Practitioner Program, Vanderbilt Univ. School of Nursing
- Anne Santa-Donato, RNC, MSN, LNC - Association of Women's Health, Obstetric and Neonatal Nurses
- Elly Yost, RN, PNP, MSN, MBA - Nurse-Family Partnership
- Suzanne Staebler, DNP, APRN, NNP-BC - National Association of Neonatal Nurses
- Tzili Treiger, RN-C, MA, CCM, CCP - Case Management Society of America

Multidisciplinary Guidelines for the Care of Late Preterm Infants

A collaborative project facilitated by The National Perinatal Association

Available for Free Download at www.nationalperinatal.org
Steering Committee

- Worked together for 2 years to:
  - Organize the material from existing guidelines
  - Synthesize the input from Summit participants
  - Fill in gaps with evidence-based recommendations
  - Create a user-friendly design and format
  - Edit, edit, edit
- Final draft submitted to all Summit participants
- New suggestions incorporated into document
- More editing
- PDF on NPA website – November 2012
- Supplement to Journal of Perinatology – June 2013

Collaborating Partners

- American Academy of Neonatal Nursing
- American Academy of Pediatrics
- American College of Nurse-Midwives
- Association of Women’s Health, Obstetric and Neonatal Nurses
- Case Management Society of America
- Council of International Neonatal Nurses, Inc.
- Health Mothers, Healthy Babies Coalition
- March of Dimes
- Mothers & Babies Perinatal Network of South Central New York
- National Association of Neonatal Nurses
- National Association of Neonatal Therapists
- National Association of Pediatric Nurse Practitioners
- National Association of Perinatal Social Workers
- NBNA
- Nurse-Family Partnerships
- Oklahoma Infant Alliance

Endorsing Organizations

- Academy of Neonatal Nursing
- American Academy of Pediatrics
- American College of Nurse-Midwives
- Association of Women’s Health, Obstetric and Neonatal Nurses
- Council of International Neonatal Nurses, Inc.
- Hand to Hold
- Healthy Mothers, Healthy Babies Coalition
- Mothers & Babies Perinatal Network of South Central New York
- National Association of Neonatal Nurses
- National Association of Neonatal Therapists
- National Association of Pediatric Nurse Practitioners
- National Association of Perinatal Social Workers
- Nurse-Family Partnership
- Oklahoma Infant Alliance
- Zoe’s New Beginnings

Multidisciplinary Guidelines for the Care of Late Preterm Infants

Introduction

Infants born at 34 0/7 through 36 6/7 weeks gestational age (299-299 days) from the first day of the last menstrual period are referred to as “late preterm infants” (LOI). According to the National Institute of Child Health and Human Development (NICHD), late preterm infants are physiologically and metabolically immature, often lacking the suck, respiratory ability to respond appropriately to the extrauterine environment. Despite their appearance as small as “normal” babies, these infants have higher rates of mortality and morbidity than their term counterparts during birth hospitalization.

In late preterm infants, NICU survival for infants 34 0/0 to 35 6/7 weeks gestational age is approximately 97% (Integrated Network for Perinatal Quality Improvement, 2013). However, the degree of prematurity in these infants is often not appreciated by the medical staff at the time of birth. The degree of prematurity can impact the clinical decision-making process, leading to delayed interventions and higher morbidity. Therefore, it is crucial to identify late preterm infants at birth and provide appropriate care to improve their outcomes.

To improve outcomes, multidisciplinary guidelines for the care of late preterm infants are necessary. These guidelines provide evidence-based recommendations for the care of late preterm infants, including monitoring, feeding, and pain management. By following these guidelines, healthcare providers can ensure that late preterm infants receive the best possible care and have the best possible outcomes.

References

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In-Hospital Assessment and Care

Safeguard patients from harm caused by acute changes in their condition. Assess mental status, vital signs, physical examination, laboratory results, and signs and symptoms. Identify potential signs of infection, and proactively intervene to prevent complications. Implement preventative measures to address identified needs. Document assessments and interventions in the medical record. Coordinate care with other healthcare providers to ensure comprehensive care. Monitor patients for signs of complications, and adjust care plan as needed.

Long-Term Follow-Up Care

Long-Term Follow-Up Care

Transition to Outpatient Care

Transition to Outpatient Care

Treatment of sepsis uses a multi-step approach to improve outcomes for patients. Early identification and prompt initiation of appropriate antibiotic therapy are critical. Other treatments may include fluid resuscitation, ventilation support, and renal replacement therapy. Follow-up care should be provided to monitor response to treatment and ensure long-term recovery.

Short-Term Follow-Up Care

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Conclusions

- The late preterm infant is NOT just a “tiny term infant.”
- All organ systems may be significantly immature.
- By understanding the risks for infants who are born 4-6 weeks too soon, healthcare providers will be better able to
  - Identify problems early
  - Prevent many serious consequences
  - Support parents in caring for their late preterm infants
  - Optimize follow-up screening and therapeutic interventions if needed

Finding
Multidisciplinary Guidelines
for the Care of Late Preterm Infants

www.nationalperinatal.org
http://www.nature.com/jp/journal/v33/n2s/index.html

Facilitated by
The National Perinatal Association
Sponsored by
Philips Mother & Child Care
GE Healthcare Maternal-Infant Care

“Multidisciplinary Guidelines for the Care of Late Preterm Infants”
- Is a tool to help improve outcomes for this vulnerable group of infants
- Is endorsed by multiple organizations and experts
- Is downloadable in several user-friendly formats
- Is free!

Thank you