BREASTFEEDING THE LATE PRETERM INFANT

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Disclosure

None

of the faculty or planning committee has any relevant financial relationships with commercial interests.
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OUTLINE

- Definition / Epidemiology
- What we know – Selected Literature Review
- Inpatient Care / Discharge
- Outpatient Care
- Summary
LATE-PRETERM INFANT DEFINITION

July 2005 panel of NICHHD agreed on this term

PRETERM BIRTHS IN US

- 500,000 / year

<34 wks

LPI
## OUTCOMES (NEAR TERM)
### MASSACHUSETTS (1997-2000)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Near-term (90)</th>
<th>Term (95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp instability</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>15.6%</td>
<td>5.3%</td>
</tr>
<tr>
<td>IV fluids</td>
<td>26.7%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Resp distress</td>
<td>28.9%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Clinical Jaundice</td>
<td>54.4%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Sepsis eval</td>
<td>36.7%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Discharge delay</td>
<td>55%</td>
<td>7%</td>
</tr>
</tbody>
</table>

## OUTCOMES

**UNIVERSITY OF UTAH (2002-2007)**

<table>
<thead>
<tr>
<th>GA</th>
<th>34wk</th>
<th>35 wk</th>
<th>36 wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH</td>
<td>75%</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>O2</td>
<td>50%</td>
<td>39%</td>
<td>27%</td>
</tr>
<tr>
<td>Photo</td>
<td>47%</td>
<td>47%</td>
<td>17%</td>
</tr>
<tr>
<td>IVF</td>
<td>47%</td>
<td>35%</td>
<td>16%</td>
</tr>
<tr>
<td>Incub</td>
<td>59%</td>
<td>41%</td>
<td>19%</td>
</tr>
<tr>
<td>NGT</td>
<td>47%</td>
<td>27%</td>
<td>9%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>25%</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>No int</td>
<td>17%</td>
<td>25%</td>
<td>52%</td>
</tr>
</tbody>
</table>

## OUTCOMES
### SWITZERLAND (2006-2007)

<table>
<thead>
<tr>
<th></th>
<th>LPI (n=550)</th>
<th>Full term (1686)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperbili</td>
<td>47.7 %</td>
<td>3.4%</td>
<td>42.5-52.1</td>
</tr>
<tr>
<td>Respiratory Distr</td>
<td>34.7%</td>
<td>4.6%</td>
<td>30.8-38.9</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>14.3%</td>
<td>0.6%</td>
<td>11.7-17.5</td>
</tr>
<tr>
<td>Feeding Problems</td>
<td>8.3%</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>Apnoea/brady</td>
<td>7.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypothermia</td>
<td>2.5%</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>Hospital Stay</td>
<td>9.9 days</td>
<td>5.2 days</td>
<td></td>
</tr>
</tbody>
</table>

Complication 7.6 times higher among LPI vs FT (70.8% vs 9.3%)

OUTCOMES

% morbidity

- 34 wks: 51.8%
- 35 wks: 25.8%
- 36 wks: 12.1%
- 37 wks: 5.9%
- 34-36 wks: 25.8%
- 37-41 wks: 3.0%

LATE PRETERM

CHARACTERISTICS

- Premature
- Small / Poorly grown
- Sick or stressed
- Non-fetal determinant of delivery
- Multiples
- Some may be large and appear deceptively vigorous are but still immature

VULNERABILITIES

- Low energy stores
- Impaired thermoregulation
- Poor feeding
- Immature or wet lungs
- Impaired bilirubin metabolism
- Increased infection rate
- Immature brain
HOW SHOULD LPI BE MANAGED?

• ABM Protocol # 10 Breastfeeding the Late Preterm Infant
  www.bfmed.org

• Multidisciplinary Guidelines for the Care of Late Preterm Infants

• UCSD SPIN PROGRAM:
  http://spinprogram.ucsd.edu/Document/SPINlatepreterminfantpolicy1208.pdf

• CPQCC LATE PRETERM FEEDING 2012 UPDATE: In press.
ACADEMY OF BREASTFEEDING MEDICINE

PROTOCOL #10:

- Assessment / reassessment
- Avoid or minimize separation of mother and infant
- Optimal communication
- Timely lactation support
- Prevent frequently encountered problems
- Education
- Discharge / follow-up

http://www.bfmed.org/Media/Files/Protocols/Protocol%2010
ASSESSMENT/ REASSESSMENT

- Gestational age assignment
- VS q 30 min until stable then q 4 hr for 24 hr
- Include temperature checks
- Glucose monitoring
- Bilirubin monitoring
AVOID OR MINIMIZE SEPARATION OF MOTHER AND INFANT

• “When ever possible mother and infant should remain together, rooming in 24 hours/day”
• Skin to skin
• If an infant is not maintaining stability in the postpartum unit, the healthcare provider should consult with the next level of perinatal care provider to arrange transfer to a higher level of care.
• 34 weeker (???) probably not a good candidate to room in with mom.
Congratulations on the birth of your new baby.

You may be surprised that your baby delivered before your due date but the doctors, nurses, and staff at UCSD will help your family get off to a great start. Your baby is a late preterm infant because she was born 3-6 weeks early, at 34 to 37 weeks gestation. She may look like a full-term baby but she is premature and has special needs.

This booklet will talk about five challenges premature babies encounter: breathing, feeding, temperature, infection, and jaundice. How your baby can be assisted in these areas while in the hospital and at home will also be discussed.

Breastfeeding Log

Keep this record and a pencil near you during the first week of your baby's life.
- Circle the hour closest to each time your baby starts breastfeeding.
- Circle the ✓ whenever your baby has a wet diaper.
- Circle the ✓ whenever your baby has a stool.
- Make a ✓ for additional wet diapers and stools.

Keeping a record of your baby's feedings and dirty diapers will help you know that your baby is doing well. If your baby has less than the goals for the day, contact your baby's medical provider or breastfeeding specialist.

<table>
<thead>
<tr>
<th>Time</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>p.m. 10 MDT</td>
<td></td>
</tr>
<tr>
<td>p.m. 12 MDT</td>
<td></td>
</tr>
<tr>
<td>p.m. 12 MDT</td>
<td></td>
</tr>
</tbody>
</table>

Late Preterm Infant Care Plan

My name is:

Help me stay warm by:
- Keeping my hat on at all times
- Holding me skin-to-skin OR
- Swaddling me in several dry blankets
- Check my temperature before each feed

My feeding plan:
- Breastfeed me every 2-3 hrs for_______min on each breast. I need at least 8-10 feedings in 24 hours!
- My mom pumps after I eat.
- Pump both breasts at the same time for______min
- Also give me breast milk and/or___________ml every_______hours
- By: ✓ tube at breast ✓ tube with finger ✓
- No pacifiers please!

Other:
- My mother prefers to Bottle feed me___________ml every_______hours

Completed by ___________________________

Date ____________

UC SAN DIEGO MEDICAL CENTER
LACTATION SUPPORT
FEEDING IMMATURE

- Immature
- Hypotonic
- Poor stamina
- Weak suction pressure
- Flow sensitive
- Poor coordination
- Poor state control

- Missed feedings
- Hard to position
- Short feedings
- Poor latch
- Low milk transfer
- Choking/gagging
- May give mom mixed messages
CAUTION

• Big does not necessarily mean competent BF

• 7 # baby born at 35 weeks would have been ~ 9# at 40 weeks

• Some are great imposters
LACTATION SUPPORT

- BFHI 10 Steps
- Identify risk factors
- Lactation competent nursing staff
- IBCLC if at all possible
- Assessment of milk volume
- Positioning and latch assistance
- Nipple shield if needed
- Feeding plan initiated
- Initiate pumping (almost everyone)
- Judicious use of supplementation
INDICATIONS FOR SUPPLEMENTATION

- Baby judged to have low reserve
- Baby <36 weeks
- Excessive wt loss / poor wt gain
- Poor feeding
- Hypothermia
- Hypoglycemia
- Maternal delayed/low milk production
- Jaundice (and low milk volume)
- Maternal insistence
SUPPLEMENTATION METHODS
TRIPLE FEEDS PROTOCOL

- Small volumes every 3 hours after breastfeeding:
  - day 1: 5-10 ml
  - day 2: 10-20 ml
  - day 3: 20-30 ml
- Breastmilk then formula
- Consider use of partially or fully hydrolyzed formula
- Give supplement at breast if possible
- Cup or finger feed if SNS not working
- Mother should be pumping if baby is getting supplement
- Crib card with feeding plan/volumes of milk
DISCHARGE BREASTFEEDING PLAN

- Assess milk production
- Consider pre-post weight
- Individualize d/c feeding plan
- Discuss supplement and progression to exclusive BF
- Assess maternal coping skills, rest, and how to simplify regimen

- Pump rental
- Lactation follow-up
- Vit D and iron supplement
DISCHARGE CRITERIA

- Weight gain (15-30 grams/day)
- Weight gain for 2 days if IUGR, <2250 gms, or other risk factors
- Feeding plan in place
- Baby medically stable
- Acceptable bilirubin status
- Car seat test passed
- Safe sleep discussion
- F/U in 24-48 hours

Never before 48 hrs.

The task of the outpatient health care provider is not merely to ensure appropriate growth, and development, but to support breastmilk feeding to the extent this is possible.
BRAIN DEVELOPMENT: 35 VS. 40 WEEKS GESTATION

35 weeks

40 weeks

BREASTFEEDING TRAGEDIES

- 12 case reports 1978-1998
- 28 infants (profound hypernatremia & azotemia)
- 2 cerebral venous thrombosis
- 7 seizures
- 2 deaths
- 2 coagulopathy
- 1 renal failure


- 120 infants discharged as healthy & 5 home births → acute bilirubin encephalopathy
- LPI over represented
- Discharged < 48 hours
- Almost all were BF with little support and suboptimal milk intake and were scheduled for follow-up appointment two weeks d/c
OFFICE VISIT - HISTORY

- 1 – 2 days after discharge
- History
- Feeding since discharge
- Mom’s health
- Culturally sensitive approach

PROBLEM LIST
1. Late preterm (1225 grams)
2. IDM
3. Mom on thyroid meds
4. ................................................
EVIDENCE FOR ADEQUATE INTAKE

- Established maternal milk supply
- Signs of milk transfer
- Satisfied after 20-30 minutes of nursing
- Adequate voiding/stooling
  - DOL 1: minimum 1 void/1 stool
  - DOL 2: 2/2
  - DOL 3: 3/3
  - DOL 4: 4/6-8
- Signs adequate infant hydration/intake
  - < 8% weight loss from birth weight
  - gain 25-30 grams/day
MOTHERS
(MORE LIKELY TO HAVE ISSUES)

- Multiple pregnancies
- Advanced maternal age
- Assisted reproductive technology
- Induced or operative delivery
- Placental abnormalities
- Hypertension
- Diabetes
- Infection/PPROM
OFFICE VISIT: ASSESSMENT

BABY
- Weight change since discharge and % ↓ from birth
- Hydration - mucus membranes, skin turgor
- Jaundice - √ bilirubin
- Oral anatomy - ankyloglossia, retrognathia

MOTHER
- Exhaustion
- Breast anatomy
- Nipple trauma
- Fullness of breasts
- Engorgement
- Mastitis
- History of breast surgery
OFFICE VISIT:
ASSESSMENT OF BREASTFEEDING

- Observe Mom and Baby Breastfeeding

- Maternal / Paternal exhaustion and ability to carry out discharge feeding plan

- Test weights on accurate digital scale

\[
\text{Weight of baby after feed with diaper on} - \text{Weight of baby before feed with dry diaper on} = \text{Intake of breastmilk in mls.}
\]
ASSESSMENT - INFANT

- **At Risk:** 8-10% below birth weight. May need supplementation if mother’s milk not coming in. If ill appearing needs medical evaluation.

- **Ill:** 10-12% below birth weight. Needs to be evaluated by physician. May need labs.

- **In trouble:** ≥ 13% below birth weight. Needs care emergently for full medical evaluation.
POOR WEIGHT GAIN

• Baby problem? i.e. not able to empty breast

• Mom problem?

• Combination of both?
OFFICE BREASTFEEDING SUPPORT

- Assess reason for poor weight gain
- Lactation aids (nipple shields, breast compressions, pump, supplement)
- Reevaluate mother’s health (thyroid, galactogogues)
- Exhaustion (modify plan)
- Help for mom
- Sleep for parents and baby
MULTIPLES

- Tandem Feeding LPI twins
- Expressed breastmilk in a bottle often becomes the feeding method of choice
- Needs support
- Lots of encouragement
- Often older moms
ANTICIPATE AND PREVENT PROBLEMS-
HYPERBILIRUBINEMIA

- Bilirubin of LPI peaks DOL 5-7
- Low threshold for checking bilirubin (transcutaneous bilirubin is only a screen)
- Plot level on nomogram at appropriate age in hours
- Assess for additional risk factors
- Maximize oral intake with breastmilk preferably or formula if necessary
FOLLOW-UP

- Weekly appointments until term or adequate weight gain
- May even need to be seen twice in the first week
- Phone follow-up
- Iron supplementation in addition to Vitamin D
HOW CAN THE PCP MANAGE THE BF LPI AND MOTHER WITH PROBLEMS?

- Schedule extra time for visits
- Work with knowledgeable LC in or outside of office
- Refer to special clinic (UCSD Premature Infant Nutrition Clinic)
- Work with obstetrician in care of mother
More Late Preterm Infants
Physiologically vulnerable
Specific hospital policies and procedures for LPI
Timely and aggressive breastfeeding support
Lack of breastfeeding support after d/c may result in morbidity or mortality
Less likely to successfully BF
Don’t forget mother issues
Anticipate and prevent problems