TRANSITION TO HOME AND FOLLOW-UP

PRETERM INFANT
Definition of Premature Birth

- The WHO, AAP, and ACOG define premature birth as the delivery of an infant before 37 weeks of gestation.

- The NCHS of the CDC generally reports data on three categories of preterm birth:
  1. Overall preterm, less than 37 weeks
  2. Moderately preterm, 32 and 36 weeks
  3. Very preterm births, less than 32 weeks
Other Definitions

- LBW infants, less than 2500 grams
- VLBW infants, 1500-2500 grams
- ELBW infants, less than 1000 grams
- Micro premies, less than 750 grams
- Late preterm infants, born between 34 and 37 weeks of gestation
Other Definition

- Early term infants, between 37-39 weeks
- Morbidity rates doubles for each gestational week earlier than 38 weeks
- At 38 weeks, 3.3%
- At 37 weeks, 6%
- At 36 weeks, 12%
- At 35 weeks, 25%
- At 34 weeks, 52%
In the United States in 2006 12.8% infants were born prematurely, ie. 1 in 8 babies.

- Annual birth in the US is about 4.2 million
- About 540,000 infants were born prematurely
- Healthy people 2010 US objective was to reduce the preterm birth rate to 7.6%
Epidemiology and causes of preterm birth

- Labor induction or C/S for maternal or fetal indications (30-35%)
- Spontaneous preterm labor with intact membranes (40-45%)
- Preterm premature rupture of membranes (PPROM) (25-30%)
- Preterm birth causes one-third of all infant deaths
Risk factors for premature birth

- Women with previous premature birth
- Women with twins, triplets or more
- Women with certain uterine or cervical abnormalities
- Women with late or no prenatal care
- Women with behavioral risk factors, smoking, drinking alcohol, using drugs
- Domestic violence, and lack of social support
- Long working hours and high levels of stress
Risk factors for premature birth

- Certain medical conditions during pregnancy,
  Infections
  High blood pressure
  Diabetes
  Obesity
  Being underweight before pregnancy
  Short time period between pregnancies (less than 18 months)
  Birth defects in the baby
Other Risk Factors

- Certain demographic factors
  - Non-Hispanic black race
  - Younger than age 17 or older than age 35
  - Poverty or low socioeconomic status
  - Fertility treatments resulting in twins or triplets or more
Medical Complications in Premature Infants

- Respiratory distress syndrome (RDS)
- Chronic lung disease (BPD)
- Clinical sepsis/infection
- Hyperbilirubinemia
- Intraventricular hemorrhage (IVH)
- Gastresophageal reflux
- Apnea of prematurity
- Anemia of prematurity
- Patent ductus arteriosus (PDA)
- Necrotizing entercolitis (NEC)
- Retinopathy of prematurity (ROP)
Societal costs of Preterm birth

- High rate of preterm births in the US, costs the society at least $26 billion a year
- That means about $51,600 every premature infant
- For healthy infant the cost is $4,551
Limits of Viability

- In the United States, 500 grams or 23-24 weeks
- Other Western Nations, 600 grams
- In Britain and Sweden, 750 grams
Survival Rates

- At 23 weeks, 17% chance of survival
- At 24 weeks, 39% chance of survival
- At 25 weeks, 50% chance of survival
- At 26 weeks, 80% chance of survival
- At 27 weeks, 90% chance of survival
- At 28-31 weeks, 90-95% chance of survival
- At 32 weeks or above, most babies survive
Infant Mortality Rate

- Infant mortality rate, the number of infant deaths, less than one year of age per 1000 live births.
- Perinatal mortality, includes deaths between fetal viability, 23 weeks gestation and at the end of 7th day after delivery.
- Neonatal mortality, includes deaths in the first 28 days of life.
# Global Infant Mortality Rate
(Deaths per 1000 live births)

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<tr>
<th>Highest infant mortality</th>
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Infant Mortality Rates in the US
(Deaths per 1000 live births)

- District of Columbia: 14.10
- Mississippi: 10.74
- Louisiana: 9.79
- Massachusetts: 4.89
- Utah: 4.92
- California: 5.22
- Nevada: 5.86
Transition to Home
AAP Recommendations

- Parental education
- Implementation of Primary care
- Evaluation of unresolved medical problems
- Development of the home care plan
- Identification and mobilization of surveillance and support services
- Determination and designation of follow up care
Key Components of Follow up Care

- Multidisciplinary graduate preemie clinic
- Discharge planning coordinator
- Medical social worker
- Primary care provider
- Speech therapist
- Occupational therapist
- Physical therapist
- Developmental psychologist
- Public health nurse
Transition to Home

- Having an infant in the NICU by itself is very stressful for parents
- NICU infants often have numerous health issues making it difficult for parents to bond
- Transition to home is often a difficult time for parents and families
- Transition may continue for months and even years as the infant and family try to recover
Role of the Neonatal Nurse

- Nurses should develop partnerships with families and recognize and accept their role in the discharge management.
- Work collaboratively with families in facilitating the transition to home from admission onward.
- Develop evidence-based practice guidelines consistent with current knowledge and research.
Family-centered Approach

- Involve parents as collaborative partners and essential members of the high risk NICU team
- Parenting is a developmental process in which parents learn to care for their infant
- This will enhance the development of parental competence and empower families to care for their infants in the NICU and at home
Promoting Parenting in the NICU

- Provide support to parents and help them identify and use of other support systems
- Collaborate with families in planning and providing care
- Enhance the role of parents as advocates for their infant
- Cope,(Creating opportunities for parent empowerment). Empower parents to care for their infant, participate in rounds, ask questions, meet with care team, etc.
Characteristics of Family-centered Care

- Communicating openly and honestly with parents on medical and ethical issues
- Sharing information and the meaning of information with parents
- Involving parents in decision making
- Partnering with parents in providing care
- Developing policies and programs to promote parenting skills and family involvement
Family-centered Care in Nursing Practice

- The goal and focus of all NICU’s should be implementation of family-centered care
- However, family-centered care is not always consistently implemented during hospitalization or the transition to home
- Nurses must reexamine their current processes and move from a traditional approach to a family-centered approach
Approaches to the Discharge Process

- Family participation in care giving throughout the hospital stay will increase parental confidence and competence.
- Staff involves family into care giving as early as possible, and family advisors help determine family learning needs.
- Families partners with staff to determine discharge goals and timing through rounds and other processes.
Continuum of Discharge Process

- Discharge timing is determined by infant’s medical status and family readiness
- Continuity of care for infants and families can facilitate smooth transition and positively affect outcomes
- Efforts focus on communication, information, policies and practices
- Nurses prepare families for the next phase of care and communicate with providers involved in the current and next phases
Immunization

- Preterm infants are immunized with full doses based on their chronologic age, not PMA.
- Immunization should begin when infants reach 2 months chronologic age, regardless of whether they are hospitalized or discharged.
- Preterm infants are at increased risk of apnea in the 48 hours after immunization, should be monitored closely.
Clinical Indicators of Readiness for Discharge to Home

- Physiological and physical signs of infant readiness
- Demonstration of parental competence and preparedness
- Preparation of the home environment
Readiness for Discharge

Infant Factors

- Full nipple feedings, bottle or breast
- Progressive weight gain of 15 to 30 grams per day over several days
- Successful weaning from a thermoregulated environment and maintenance of body temperature in an open crib
- This usually occurs by 35 to 37 weeks post menstrual age (PMA)
Parent Readiness and Education

- The nurse ensures that parents have the knowledge and skills they need for the infant’s transition to home
- Nurse individualizes teaching content for each family based on the family’s needs and priorities.
- Each family preferably needs at least two caregivers
Parent Education Topics

- Choosing a primary care provider
- Hand washing
- Behavioral cues
- Basic infant care
- Feeding
- Sleep and wake cycles
- Sleeping position
- Stool and urine patterns
- Signs of illness
- Medication and equipment
- Home and car safety
- Visitors and outings
Choosing a primary Care Provider

- This can reduce anxiety in the parents and ensure that a provider is in place at the time of discharge
- Allow provider involvement during the discharge process
- Nurses should encourage parents to meet with potential providers to help make their selection
When to Follow up

- First follow up visit within 2 to 3 days
- Subsequent visit, 2 to 3 times weekly depending on the clinical status of infant
- Neuro developmental assessment is done at term (corrected age) at the high risk clinic
- Then at 6 weeks, 3 months, 6 months, 9 months, 12 months, 2 years, and 3 years
- Then at 4 and 5 years
How to Follow up

- Each regular visit should include
- Monitoring of growth and nutrition
- Neurological examination including milestones
- Management of medical problems
- Advice on breast feeding, complementary feeding, immunization and neonatal care
- Anticipatory guidance to parents
Follow up at the early interventional services

- Early intervention consist of identifying a baby who already has or is at potential risk for developing a handicap condition.
- Compensatory mechanisms exists for all cerebral functions and this plasticity of brain is encouraged by stimulation and early intervention.
- Also modifiability of the brain at the molecular level forms the basis of early intervention in high risk infants.
Readiness for Oral Feeding

- Transition from tube feeding to breast feeding or bottle feeding
- Assessment of the infant before each feeding to be sure that the infant is ready to feed
- Both nursing and parental assessments are important
Assessing Readiness for Oral Feeding

- Post conceptional age.
- Respiratory status
- Gag reflex
- Suck-swallow –breathe pattern
- Infant behavioral cues
- Hunger and satiation cues
- Duration and volume of feedings
- Correct preparation of formula
Breast Feeding

- Kangaroo care promotes earlier breast feeding and maternal milk supply, and increases the number of mothers breast feeding at NICU discharge, and the duration of breast feeding
- In the first few weeks, regular and frequent pumping is important to establish milk supply
- Latching on and letting down
Engagement Cues

- Relaxed tone with smooth movements
- Quite alert state with flexed extremeties
- Animated face with bright eyes
- Periodic eye contact with caregiver
- Hand-to-mouth movements
- Turning toward a voice
- Well-perfused, oxygenated appearance
Disengagement Cues

- Averted gaze
- Falling asleep
- Yawning
- Frowning or grimacing
- Arching
- Gagging, grunting or sneezing

- Hiccupping, spitting or gagging
- Splayed fingers
- Crying
- Becoming pale, mottled or red
Response to Disengagement Cues

- Provide a rest or time out with minimal or no sensory input
- Swaddle or contain the infant
- Position the infant with blanket rolls
- Use the infants cues to determine when to engage again
Sleeping Guidelines for Preterm Infants

- Position the infant supine to reduce the risk of SIDS
- Use a firm tight-fitting mattress in a crib covered only by a fitted sheet
- Don’t cover the baby with sheets, blankets or other covers
- Don’t put soft objects under the infant
- Keep the infant’s head uncovered
Signs and Symptoms of Infection

- Cyanosis
- Pallor and mottled
- Refusal to eat
- Increased irritability
- Lethargy
- Vomiting
- Abnormal respiration
- Diarrhea
- Fever
- Hypothermia
Transportation Safety for Preterm Infants

- Before discharge, observe the infant in the car seat for 90 minutes to monitor for apnea, bradycardia or oxygen desaturation
- Minimize travel for infants at risk for respiratory compromise
- Maintain home cardio-respiratory monitors during travel
- Secure oxygen tanks, monitors and other equipment
Emergency Plan

- CPR and first aid training for parents
- Emergency phone list
- Child care arrangements for other children
- Back up telephone service
- Identification of the nearest 24 hour pharmacy and emergency room services
Pre-discharge Home Visit

- Nurse assesses the infant’s planned physical environment
- Reviews the cleanliness, status of utilities and appliances and the family’s general preparedness for the infant’s care
- Helps the family prepare for the homecoming and reviews discharge teaching
Discharge Summary Forms

- Copy of the discharge summary
- Any significant physical findings at discharge
- Medical problems for follow-up
- Immunization record
- Family issues for follow-up
- Home health nursing follow-up
- Appointments with primary and specialty care providers
Technology-dependent Infants

- Infants with BPD requiring home oxygen or home ventilator
- Infants with short bowel syndrome requiring home TPN
- Infants with feeding issues requiring GT feedings
- Infants with metabolic disorders requiring special diet at home
Technology-dependent Infants

- Appropriate education and teaching for parents
- Appropriate home environment
- Ongoing support and respite for parents
- A plan for home health nurse follow up
- Appropriate resources and contacts identified and known to parents
- Safe transport to attend the follow up clinics
- Access to 24 hour emergency and support services
Family Transitions

- Could be exciting but potentially stressful for the parents
- Parents may be anxious but sometimes unsure about their ability to care for NICU graduate
- Physical and emotional tolls of caring for the infant at home
- Impact of the infant on the family and siblings
- Sibling’s response to the homecoming baby
SUMMARY

- Transition to home requires appropriate, individualized interventions and multidisciplinary programs to optimize infant recovery and health outcomes for NICU graduates.
- These programs are absolutely essential, so that small, fragile survivors of NICU can achieve their maximum developmental potential.
SUMMARY, continued

- If these services are not provided, then the whole purpose of having these expensive high technology NICU will be defeated
- Follow up clinical outcomes of these NICU graduates is also a way to measure the quality of care and to provide feedback for improvement of care in the NICU
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