Safer Sleep for Babies (Part 2): Initiatives & Challenges in the NICU

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Presenters

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Presenters

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Presenters

• Geri Gillen, SNC, BSN, CLC
  – Neonatal Regional Perinatal Center Coordinator
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The presenters have nothing to disclose.
Presentation Objectives

• Provide an overview of infant mortality in New York State, and those deaths specifically related to an unsafe sleep environment

• Describe the work taking place in New York State, led by the Department of Health, to improve infant safe sleep practices and reduce infant mortality, including the New York State Perinatal Quality Collaborative (NYSPQCC) Safe Sleep Project
Presentation Objectives

• Discuss safe sleep challenges specific to the NICU identified by NYSPQC Safe Sleep Project participants
• Describe safe sleep strategies implemented at NYSPQC participating NICU sites, University of Rochester Medical Center and New York University Medical Center
• Respond to audience questions and facilitate discussion regarding NICU related concerns and challenges
Infant Mortality in NYS
Infant Mortality in NYS

- Infant mortality, or the death of infants under one year of age, is a fundamental indicator for the overall health and wellbeing of a community.

- NYS has made progress by reducing its infant mortality rate from:
  - 6.0 deaths per 1,000 live births in 2002, to
  - 4.5 deaths per 1,000 live births in 2014.
Infant Mortality in NYS

• Sudden unexpected infant death (SUID) is the death of an infant less than one year of age that occurs suddenly and unexpectedly where the cause of death is not immediately apparent prior to the investigation.

• SUID includes deaths resulting from:
  • Sudden Infant Death Syndrome (SIDS);
  • Sleep-related causes of infant death including accidents related to where or how the infant slept, such as suffocation, entrapment, or strangulation; or
  • Unknown causes of death.
Infant Mortality in NYS

- The ~100 infants who died suddenly and unexpectedly in New York State during 2014, are enough to fill five kindergarten classrooms.
New York State Focus on Infant Safe Sleep
NYS Infant Mortality CoIIN

• Since 2015, the NYSDOH has participated in a national Infant Mortality Collaborative Improvement and Innovative Network (IM-CoIIN).

• The NYS IM-CoIIN addresses infant mortality reduction through the improvement of safe sleep practices and the promotion of optimal health for women before, after and in between pregnancies.
The NYSDOH is working to prevent infant deaths caused by an unsafe sleep environment using several strategies, including:

- A New York State Perinatal Quality Collaborative (NYSPQC) initiative focused on safe sleep modeling and education programs in NYS birthing hospitals;
- Community-based organizations facilitating home-based visits to support and educate mothers and caregivers during the prenatal and postpartum periods; and
- A robust public awareness campaign regarding the American Academy of Pediatrics’ recommended ABCs of Safe Sleep.
Collaborating for Success
New York State Perinatal Quality Collaborative (NYSPQC) Safe Sleep Project
NYSPQC Safe Sleep Project

• Project began in September 2015
• 78 out of 124 (63%) NYS birthing hospitals participating in the initiative:
  – 16 Regional Perinatal Centers (RPCs)
  – 28 Level III birthing hospitals
  – 15 Level II birthing hospitals
  – 19 Level I birthing hospitals
• 59 of the participating hospitals implemented the initiative within their hospital’s NICU
NYSPQC Safe Sleep Project

• Improvements in safe sleep practices are being achieved by:
  – Ensuring all infant caregivers (i.e., new moms or guardians) have documentation of safe sleep education documented in the medical record;
  – Establishing consistent modeling of a safe sleep environment for all infants without a medical contraindication during the birth hospitalization; and
  – Discussing caregiver (i.e., new moms or guardians) understanding of infant safe sleep education prior to discharge from the birth hospitalization.
Percent of infants, sleeping or awake-and-unattended in crib, in a safe sleep environment, by unit type

Increase from baseline:
44% for Level II/III NICUs
94% for RPC NICUs

Note: All other units is defined as infants residing in any unit other than the NICU, including: well baby, rooming-in, and other units.
Percent of primary caregivers indicating they understand safe sleep practices, by unit type

Increase from baseline:
14% for Level II/III NICUs
10% for RPC NICUs

Note: All other units is defined as infants discharged from any unit other than the NICU, including: well baby, rooming-in, and other units.
NYSPQC Project Data Summary

• RPC NICUs started off the project much lower on all project measures than other units, including Level II/III NICUs, and have improved significantly.

• In recent months, Level II/III and RPC NICUs were the same or better on all measures than all other unit types.
Safe Sleep Challenges
In the NICU
What are the risks?

• Preterm (PT) or low birth weight (LBW) infants are at 2x the risk of SIDS compared w/ healthy term infant
  – Preterm infant is:
    • 85 x higher risk for SIDS if placed prone for sleep
    • 40x more likely to die of SIDS if sidelying
  – LBW infant is:
    • 83 x higher risk for SIDS if placed prone for sleep
    • 36 x more likely to die of SIDS if sidelying
  – SGA infant is:
    • > 24 x risk if placed prone
    • 15 x risk if placed side lying

• Prone positioning and maternal smoking/passive smoke exposure are most significant risks for SIDS

Oyen, 1997; Fleming, 2003; Blair, 2006
Triple Risk Model

Critical Developmental Period

Intrinsic risk factors
- Smoking
- Prematurity
- Alcohol and illicit drugs
- Hypoxia
- Growth restriction

Extrinsic risk factors
- Prone/Side Sleep Position
- Soft Bedding
- Overbundling/Overheating
- Bed sharing
- Bed sharing + Smoking and/or Alcohol

Modifiable Risk Factors

Adapted from Filiano and Kinney, 199
An Example of SIDS Pathogenesis

Adapted from Kinney and Thach, NEJM, 2009
High alert!

- LBW and preterm infants at highest risk for SIDS and accidental suffocation
- These infants are more likely to be placed sidelying or prone at 2-4 months, during peak incidence of SIDS
- Reasons parents place infants to sleep side or prone
  - Infant’s “sleep preference”
  - Advice from health professionals
  - Observed care in the NICU
A day in the life of a recovering NICU patient
What you do makes a difference

• Parents copy at home what is demonstrated in the hospital
  – Stable preterm infants should be placed supine for sleep by 32 weeks’ PMA

• Demonstrate proper practice
  – No stuffed animals
  – No blankets over crib
  – Avoid over-bundling, quilts and comforters
  – Tummy time when awake and observed
  – Car seats, swings, boopies and infant seats are not for sleeping and should never be placed on elevated surfaces (beds, cribs, counters)
Seeing is believing!

Parents need to see their baby sleeping safely on his or her back before discharge

Courtesy: The Children’s Hospital at Dartmouth
Best practice in the NICU before going home!

**Supine** sleep position

**Wearable** blanket or swaddle **below** nipple line

Be careful not to do anything in the ICN that you don’t want parents doing at home

**Flat** crib position

**Firm** mattress

**No** loose bedding or soft toys in crib

Courtesy: The Children’s Hospital at Dartmouth
Challenge: Timeline for Safe Sleep

Very confusing timeline for when safe sleep should begin. Developmental care with prone positioning is important, as are rolls in a supine position. Older, full term babies in isolettes (SGA, phototherapy, etc.), should safe sleep be done on them or only when they are in a crib?
Challenge

There is a short amount of time between when an infant becomes eligible for safe sleep and is discharged home. How do we educate parents and model safe sleep effectively in this short time frame?
Algorithm to Initiate Safe Sleep Practice

Is the infant > 32 weeks’ gestational age?

YES

IS THE INFANT MEDICALLY STABLE?

NO

Continue routine intensive care positioning & reassess safe sleep when infant is more stable

NO

Continue routine intensive care positioning & reassess safe sleep when infant is more stable & 32 weeks

YES

Is the infant in a crib or bassinette?

YES

Evaluate if Infant can transition to crib & begin Safe Sleep Practices

BEGIN SAFE SLEEP PRACTICES!

NO

SAFE SLEEP INCLUDES:
- Head of bed flat
- Infant sleeping on their back
- Toys, clothes, diapers, sleeping aids removed from crib
- One flat sheet on mattress
- Blanket positioned so it stays below the shoulders or use HALO Sleep Sack

Medically Stable Infant
- On room air or nasal cannula
- Tolerating full enteral feedings (PO/NG/GT)

*Infants with congenital anomalies (Myelomeningocele, Pierre Robin syndrome, etc.) do not qualify as medically stable
FIGURE 1
Algorithm to determine when an infant is ready to begin SSPs. BPD, bronchopulmonary dysplasia.
NICU Therapeutic Positioning

Examples of when NICU Therapeutic Positioning is appropriate:

- Respiratory symptoms such as tachypnea, retractions, grunting and oxygen dependency
- Nasal CPAP
- Nasal Cannula requirements other than home oxygen requirements
- Phototherapy
- Scalp IV or central lines
- Neonatal Abstinence Syndrome
- Lack of handling due to social reasons (please address with primary team)
- Any medical condition that requires prone or side lying positioning
- If tummy time cannot be implemented due to inability to be positioned prone (such as ostomy/surgical site)

Continue to evaluate infant for readiness to start Back to Sleep positioning

## Assessment of Safe Sleep Readiness

<table>
<thead>
<tr>
<th>State: Stability of level of consciousness when expected to be arousing</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Sleeping/drowsy throughout</td>
<td>Quiet fuss/weak cry/Irritable/hyperalert - any diffuse or disorganized arousal</td>
<td>Drowsy but has intermittent alertness</td>
<td>Waking/calmly alert with care/cry is consoled easily</td>
<td></td>
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| Motor: Posture/tone stability | Low tone/limp at any time | Extends limbs, frantic and/or tense | Holds tucked posture briefly on own or with light containment/needs some support due to cong. anomaly | Keeps/returns to tucked posture on own |

| Autonomic: Hi/low HR/RR/Sats during care, visceral and color responses | Significant color Δ, twitches, emesis and/or vitals Δ +/- >30 beats from baseline, servo temp control | Moderate color Δ, visceral upset and/or vitals Δ +/- 20-30 beats from baseline, incubator | Mild to mod color Δ, visceral upset, &/or vitals Δ +/- 10-20 beats from baseline, open crib | Stable color/no visceral upset and/or vitals Δ +/- <10 beats from baseline, open crib |

| Regulation: Response to support | Self-regulatory strategies may be absent, difficult to co-regulate | With caregiver support, shows some regulatory strategies (suck, grasp, tuck) | Has brief success on own using self-regulatory strategies or sustains with light/intermittent support | Uses own self-regulatory strategies successfully, minimum to no support necessary |

| Respiratory support | Oscillator | Vent | CPAP/HFNC | NC/room air |

### Scoring Guide:
- **90 - 100**: Full SSP in place
- **80 - 90**: Supine only and positioning aids PRN
- **65 - 75**: Supine and sidelying with positioning aids PRN
- **25 - 60**: Developmental positioning required

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**Courtesy of:**
Jennifer Hofherr, MS, OTR/L, C/NDT & Roberta Thomas, MPT
Ready for Back to Sleep

- Back to Sleep is recommended by the AAP and should be implemented prior to discharge.
- Arms in or arms out are both acceptable ways to swaddle an infant based on its needs.
- Cold infants are not happy infants. Dress infants appropriately and use extra blankets if necessary.
- Keep unnecessary blankets, toys, and soft objects out of the infant’s bed space.
- Tummy time should be encouraged when alert and should be supervised by a parent or caregiver.
- Opportunities for tummy time are during an assessment or when a nurse is warming a feed.
- Swaddling is safe. Keep the blankets from going above the infant’s shoulder line.
- Look through the guideline located on SharePoint for more detailed information on Back to Sleep.
- Educate parents on a safe sleep environment and practice with the parent crib card, DVD, and discussion.
- Encourage the use of a pacifier.
- Prevent plagiocephaly by encouraging tummy time when the infant is awake.

Challenge: Reflux

After feedings, babies with reflux should be held in an upright position for 20-30 minutes. Our staff to patient ratio may not allow a nurse to do this and they instead, raise the head for that allotted timeframe and then put the head down. While this is not considered ‘safe sleep’ this is reality in our environment.
Supine sleep position is safest for reflux...

- When positioned prone, a baby could be more likely to aspirate as gravity allows emesis to flow down into the trachea.
- When supine, the emesis stays in the esophagus decreasing the risk of aspiration.

(Cote A. Back to sleep…for life, Montreal Children’s Hospital, Montreal, Canada, Copyright 2002)
Challenge

The nurses feel that the way the isolettes’ are constructed, it is difficult to maintain safe sleep with the babies who are medically stable, >32 weeks and active despite being swaddled/or with a bendy positioner towards the bottom of the isolette. There is a gap between the mattress and they find babies roll to the side and hit their face against the door, etc. We can’t put anything in this gap. The staff feels they see less of this when the baby is in the prone position. What is the function of safe sleep while the neonate is in the isolette?
Challenge

Infants accustomed to therapeutic positioning become irritable and experience interruption of sleep states when transitioned to safe sleep.
Barriers

Perceived infant comfort

• Arousal from sleep is an important protective reflex

Perceived conflicts

• Physiologic benefits on non-supine positioning during ACUTE phases of illness
  – Improved oxygenation, decreased WOB

• Developmental support: promoting flexed midline positioning

• Positional plagiocephaly
  – Absence supervised tummy time

There is lack of evidence on when and how to transition preterm infants to supine
Successes in NYS NICUs
Golisano Children’s Hospital – University of Rochester
Safe Sleep

Kathryn Shapiro, MS, RN
Krystal Carson, BSN, RN
RPC located in Rochester, NY (Monroe County)

Serving a 13 county area in Western NY and the Southern Tier

Birth Center, High Risk OB, 68 bed level IV NICU

• NICU has two physical locations

In 2016:

• There were 2808 live births at SMH
• Admissions to the NICU
  • 788 inborn and 255 outborn
Safe Sleep Hospital Certification

• Mission is to educate parents and caregivers about unsafe sleeping conditions
• Provide portable cribs to families who are in need of a bed for their baby
• Certification for those who are champions of safe sleep
Our NICU Safe Sleep Guidelines

Begin transitioning the infant to a supine sleep position at 32 weeks gestational age as clinical status warrants:

- 32 weeks PMA
- Taking 50% PO feeds (if appropriate)
- Nasal Cannula 1 LPM or less

- Need for order for positioning outside of these guidelines
- Rationale for alternate positioning must be documented
  - Notes from OT or providers
- Education for parents must be documented
Wearable Blanket Program

Wearable blankets are a commercial product designed for infants up to 9 months of age. They provide containment and warmth, come in fleece and cotton, for infants while also promoting safety while sleeping.
Every infant is discharged with their own wearable blanket (has UR logo). Hospitals get wearable blankets at a reduced cost; currently using a grant.

**Birth Center**
- Own wearable blanket after first bath

**NICU**
- Unit wearable blankets until discharged
  - Separate laundry
- Own wearable blanket to take home
Preparing for Discharge

Staff nurse created “Project Launching Pad”

• Improve parent education and comfort

• Each day of week focused on particular topic
  • Made a poster to display publically in units
  • Safe Sleep Tuesdays
Preparing for Discharge Cont.

At 32 weeks PMA post a discharge checklist in the infant’s room

My Patient Education has been updated, including Parents have watched: Shaken Baby, Safe Sleep, Car Seat

I have passed a ______day countdown with the HOB flat - or -

I have passed a ___day countdown with HOB up because that is how I will be at home

  My Parents have the HOB Up Handout and know how to do this at home
Decreasing Elevated HOB

An elevated HOB puts infants at risk for suffocating:
  • Sliding down in the bed
    • obstructs airway
  • Rolling over to prone

Positioning devices are just as dangerous

For infants with reflux consider elevating HOB for a limited time period after feeding.
Our Initiative

Reduce elevated HOB

1. Started monthly audits this year
2. Surveyed staff
3. Piloting new algorithm

116 patients (Jan-May)
- HOB elevated - 54%
- HOB up order - 25%

Clinically significant aspiration- 5%
When to Initiate Safe Sleep

- 30 wks: 3
- 32 wks: 46
- 34 wks: 22
- 36 wks: 22
- 72 hrs before dc: 11
Why elevate the HOB

- Reflux: 100
- Feeding: 24
- Improv: 46
- Comfort: 19
Who Initiates HOB Elevation?

Attending aware of HOB elevation – 50%
Safe Sleep Algorithm

Is the infant >32 weeks?

Yes

Does infant have medical condition precluding him/her from starting safe sleep practice?
- Reflux with aspiration concern
- Surgical patient (on Surgical team)
- Receiving phototherapy

No

Continue with therapeutic positioning and re-evaluate when >32 weeks

No

Does infant have respiratory symptoms: tachypnea, retractions, grunting, or oxygen requirement >2L?

Yes

Continue with therapeutic positioning and re-evaluate periodically for initiation of safe sleep practice
- Write order for HOB elevation

No

Initiate safe sleep practice
- Supine sleep position
- Head of bed flat
- Remove unnecessary objects from bed
- Write order for HOB flat
Piloted the algorithm with infants on green team.

Safe sleep algorithm given to:
- Attending
- Advanced practice provider – Patient care binder

Posted in nursing break areas

Sent weekly audit results to Green team attending
Safe Sleep Algorithm Impact

Thus far...

20% reduction in HOB Elevation occurrence
NYU Langone Medical Center
We have been keeping our babies in Safe Sleep positioning since 2008 based on the original Back to Sleep initiative from the NIH.

Since then we have accomplished:

1. Increased safe sleep positioning in the NICU.
2. Educated parents more effectively about Safe Sleep
3. Consistently documented Safe Sleep in the EMR.

Team Leader – Geri Cillo-Gillen, Geraldine.Cillo-Gillen@nyumc.org, 212-263-5790
BARRIERS

- **Reflux** - we now elevate HOB for 30 min after feed. Teach parents to hold infant for 30 min after feed.

- **Culture** - We explore with families their own beliefs and help them understand the importance of Safe Sleep positioning.

- **Transition of premature infants** - Safe Sleep rounding incorporates developmental care and helps caregivers transition to home sleeping.
Educated staff through annual competency’s utilizing the NIH safe sleep module and frequent simulated education around safe sleep.

Revised our Safe Sleep standard as per updated AAP guidelines.

Engaged all disciplines in promoting safe sleep.

Established safe sleep rounding 3X/week on all shifts to support staff in providing proper positioning for discharge.

Using sleep sacks for all eligible infants (full oral feeds, no oxygen requirements, nearing discharge.)

Utilized NYS ABC pamphlet and video for parent education.

Provide sleep sack giveaway at discharge.
PROTOCOL: Safe to Sleep Campaign, Management of the Infant in the

PURPOSES:

1. To provide education for staff and parents of proper infant positioning to reduce the risk of Sudden Infant Death Syndrome (SIDS)
2. To promote safe infant positioning in preparation for discharge.
3. To prevent positional plagiocephaly (abnormal head shape) by practicing “Tummy Time for Play”.
4. To educate families by modeling Safe Sleep practices.

LEVEL: Interdependent

SUPPORTIVE DATA:

Sudden infant death syndrome (SIDS) remains the third leading cause of infant death in the United States and the leading cause of death beyond 1 month of age, responsible for a death rate that has remained static since 2001 (Barsman, 2015).

SIDS remains the most frequent cause of infant death beyond the neonatal period, with peak incidence between 2 and 4 months of age (Fowler, 2013).

In 2011, the American Academy of Pediatrics (AAP) released new recommendations for safe sleep. In addition to SIDS, these recommendations include for the first time the larger umbrella category of sudden unexpected infant deaths that occur during sleep and collectively aim to “reduce the risk of all sleep-related infant deaths.” Healthy People 2020 has targeted both SIDS and sudden unexpected infant death mortality rates, aiming at a 10% decrease in both over the next several years, thus making sleep-related infant death prevention a national priority (Barsman).

CONTENT:

PATIENT ASSESSMENT/INTERVENTION:

1. Use “Safe Sleep” recommendations for every sleep.
2. Use a firm crib mattress covered by a fitted sheet.
3. Swaddle infant with arms out or use Sleep Sack
4. Keep bassinette and crib flat.
5. Always position a Safe to Sleep ready infant supine
6. Place the following infants in safe sleep positioning:
a. All feedings by mouth, no feeding tube in place  
b. No oxygen or respiratory support  
c. Self-regulation of temperature, no external heat.

1. Model safe sleep for the above infants at all times.  
2. Keep soft objects and loose bedding out of the crib.  
3. Breastfeed if possible.  
4. Consider offering a pacifier at naptime and at bedtime.  
5. Avoid overheating.  
6. Immunize infant in accordance with recommendations from the American Academy of Pediatrics and the Centers for Disease Control and Prevention.  
7. Model the SIDS risk-reduction recommendations from birth (health care professionals, staff in the NICU and newborn nurseries, and child care providers).

FAMILY EDUCATION  
1. Teach Family about the importance of room sharing and not bed sharing.  
2. Avoid parental smoking and use of alcohol.  
3. Do not use home cardiorespiratory monitors as a strategy to reduce SIDS  
4. Avoid commercial marketing devices, such as wedges and positioners, to reduce SIDS.  
5. Use supervised, awake tummy time to facilitate development and to minimize developmental plagiocephaly  
6. Start safe sleep education as soon as possible  
7. Provide safe sleep literature prior to discharge.

SAFETY/CORRECTIVE ACTIONS:  
1. If the baby has GE reflux. Then hold the infant upright in prone position, for 20min after the feed.  
a. Do not use blankets to elevate crib mattress  
b. Return the infant to supine 20 min after the feed.

DOCUMENTATION:  
1. Document safe sleep in the NICU Patient Care Summery in the EMR  
   Under Safety
INFECTION CONTROL

1. Handwashing before and after patient contact

REFERENCES:


DEVELOPED BY

Margot Condon BSN, CCRN, CLC
COMMUNITY OUTREACH

- We had our first interview on NYU Sirius radio. It was two hours with two different NICU teams talking about NICU care and Safe Sleep.
- We will be on the radio every month talking about Safe Sleep and the host of the show will make a Safe Sleep promotional statement every two weeks on her show.
- Our application is in for Gold Level Safe Sleep hospital certification from Cribs for Kids
Contact

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Questions / Discussion