Evolving patterns of mother/baby care; risks and benefits of rooming in

Improving Maternal and Neonatal Outcomes: 2016 Birth Conference

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Division of Neonatology
I have a relevant financial relationship to disclose:
Medela: speaker
Evolving patterns of mother/baby care; risks and benefits of rooming in

- Evolution of rooming in
- Extinction of newborn nursery
- Practical aspects
- Benefits
- Risks
- Future of rooming in
Evolution of rooming in

- Hospital births led to development of the nursery during the 1900’s
- Moving baby back to mother’s side was called ‘rooming-in’
- The first wave:
  - 1930’s “Natural Childbirth” Grantly Dick-Read
  - 1940’s Dr. Edith Jackson at Yale
  - 1940-60’s Lamaze method
  - 1946 Dr. Benjamin Spock
  - 1956 La Leche League
- Regression post WW2 back to nursery care
- The second wave:
  - 1960’s Kaiser hospitals ‘baby in the drawer’
  - 1976 Klaus and Kennell: mother infant bonding
  - Slow rise of breastfeeding rates
  - 1991 Baby Friendly Hospital Initiative
Extinction of the nursery
Baby Friendly Hospital Initiative

- UNICEF/WHO program to support Breastfeeding in healthy babies and mothers
- Started at UCSD in 1980’s
- 10 steps include:
  - Skin to skin
  - Rooming in
  - Unrestricted breastfeeding
- UCSD has had rooming in for 30+ years
- Little guidance provided about how to close the nursery or how to make it safe
- Supported by AAP, ACOG (2016)
- Perinatal Guidelines 7th edition: “Rooming-in facilitates breastfeeding. From the time of delivery to discharge from the hospital, the mother and her healthy infant should be together continuously”
Maternity wards are moving away from nurseries

Nelsy Avendano of East Boston cradled her newborn son, Kevin Loaiza-Avendano, in her hospital room at Boston Medical Center last month.

By Liz Kowalczyk | GLOBE STAFF | FEBRUARY 07, 2016
<table>
<thead>
<tr>
<th>Institution</th>
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<td>Gov’t hospital</td>
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<td>2000-4999</td>
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<td>5000 or more</td>
<td>90</td>
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CDC National Survey of Maternity Practices in Infant Nutrition and Care (mPINC) -- 2013

http://www.cdc.gov/breastfeeding/data/mpinc/results-tables.htm
Closing the nursery

- Mass General Hospital 1998-2015
- UCSD 1990-2006
- Roadblocks
  - Administration
  - Physicians
  - Nursing staff
  - Parents
  - Physical space
- What worked:
  - Close the nursery completely
  - Hospitalist physician staff model
  - All couplet RN staff
  - Address parental fatigue
  - Address all procedures done in nursery
Practical issues with rooming in:

- Provider teams must coordinate care of couplet
- Where does baby go?
  - Resuscitation
  - Define vulnerable infants
  - Gestational age/weight cut off
  - Medical conditions that require observation
  - If mother too ill to care for infant
  - Post C section
  - Security risk mother
- What can be done in mother’s room
- When should baby be taken out of the room
- Where does baby go when mom is showering/etc.
Practical issues with rooming in:

- Where does baby go? UCSD version
  - Resuscitation ‘code pink’ location identified
  - Define vulnerable infants
    - 12 observation (minimum) in NICU
  - Gestational age/weight cut off
    - < 37 weeks
    - < 2500 grams
  - Medical conditions that require observation
    - Trisomy 21
    - Known potential ductal dependent lesion
    - Cleft lip and palate
    - Potential Care and Comfort baby
    - NAS baby with non-compliant mother
    - Hypoglycemia not responsive to feeding
    - Rh sensitized baby
    - Sepsis risk with symptoms
    - Incarcerated mother/CWS hold
Multidisciplinary teams caring for mother/baby

- Monthly meetings:
  - Perinatal Practice meeting
  - Newborn Service Meeting
  - NICU Core Group
  - NICU faculty meetings
  - OB Management
  - CNM Meeting
  - Family Med staff meeting
  - Lactation Committee
  - Sub groups for QI, NAS, Baby Friendly, Antibiotic use, etc.
What medical therapy can be safely done in the mother’s room?

- Nursing assessment
- Physician rounds/exam
- Weight checks
- Vital signs
- Hearing testing
- CCHD screening
- Phototherapy
- IV antibiotics
- Routine labs
- Hep B vaccine
- Bathing if indicated
When does infant need to leave mothers room?

- X-rays
- Cardiac echo
- Procedures that need good lighting (frenotony, circumcision)
- IV start
- Car seat testing
- Observation if needs CR monitor
- Transfer to NICU if sick

Newborn procedure room UCSD
Benefits of rooming in

- Improved infant transition
- Better bonding and breastfeeding
- Improved family education and experience with their infant
- Safety issues
Improved infant transition

• Infant at delivery is quite stressed - all stress hormones very high
• Infant in more protected environment
• Allows for more skin to skin
• Less hypothermia
• Less hypoglycemia
• Allows for frequent, unscheduled feeds
• But this all relies on good parental preparation!
Improved breastfeeding when mother and baby are together (of course!)

- Exclusive BF possible
- Early feedings facilitated
- Improves feeding frequency
- Removes scheduled feeds
- Mother gets practice latching
- Hunger cues very important concept to teach ahead of time!
- Family becomes expert in their baby
- Rooming in may increase chance of exclusive BF
- Studies show higher BF rates and longer BF duration with increased number of BFHI steps
- Rooming in alone not enough

Cox K. J Human Lact. 2014
Your Baby Night Owl

Newborns sleep for most of their first 24 hours as they recover from the delivery. (There are always exceptions.) During the second and third nights, most babies will wake up and cry more often. They may seem to be hungry constantly.

This normal behavior is displayed by both breastfed and formula-fed babies. Newborns cry more during the night to make sure they receive adequate care and nutrition during a time when their mothers and caregivers are sleepy. (Smart babies!) If your newborn displays hunger cues (sticking out tongue, lip-smacking, rooting), then latch her on to breastfeed. Call your nurse if you need assistance. If your newborn has recently completed a great feeding and still seems unhappy, then try the soothing techniques listed below.

How to Soothe Your Baby

Hold your undressed baby next to your bare chest. Babies stay warm and are calmed by your heartbeat when held “skin to skin.” Make sure his nose is not covered and his skin stays pink. If you are sleepy or asleep, your baby will be safer when placed in the bassinet.

Swaddle her snugly (but not too tightly). Most babies will stay calmer longer and sleep better if their arms are swaddled straight down along their body. If you can slip two fingers between the blanket and your baby’s chest, then she has enough room to breathe. Allow your baby to be un-swaddled during some times during the day when she is awake and happy, and limit swaddling to brief sessions after 2 months of age.

Hold him in your arms so he is on his side or tummy. When a baby is upset, holding or placing him on his back can make him more upset. Babies should always be placed on their backs for sleep or when left unsupervised.
Family centered care

- View family involvement and learning is key to success of mother and baby
- **Encourage 24 hour stay for mother’s support person- ahead of time**
- Rounding and exam in front of parent is a golden opportunity to teach
- Intended parents (Surrogacy) or adoptive parents given room to care for baby
- Family needs advice about visitor limits
- Father or partner have an important role
  - Diapering
  - Swaddling
  - Feeding or pumping preparation
  - Medical needs
  - Safe sleep watchdog role
Unexpected benefits of rooming in

- Family centered care teaching for our students/residents
- Most infants are with family 100% of the time
- Complete rooming in removes some risk of baby mix up
- No babies in the hallways
- Less exposure to other families/babies/staff in nursery
- Elimination of unnecessary procedures
Risks and complications of rooming in

- Poor physical assessment due to dark room
- Families who are observing baby are not trained in assessment
- Fatigue/interruptions
- Infants are at risk of events in the first days after birth:
  - ALTE
  - SUPC
- In-hospital falls
Interruptions and fatigue when two patients share a room

- Video study found interruptions of 80 to 120 a day
- Work to cut it down has been very tough
  - Nap time (2-4 pm)
  - Diet trays
  - Housecleaning
  - Birth certificates
  - Medical teams
  - Couplet RN should have mother her baby
  - RN rounding
- Eliminate unnecessary procedures
  - Bath
  - Circumcision
  - Photos
  - Footprints
Nap time and restricting visitors
How to protect baby during vulnerable time from delivery to discharge?

- Risk assessment
  - High risk time period
  - High risk mother
  - High risk baby
- Low RN to couplet ratio
- Frequent rounding
- Parent education
- Safe sleep environment modeling
- UCSD experience in 2006
Sudden Unexpected Postnatal Collapse

- Survey in Germany first in 2009-17 cases of infants who needed CPR, intubation, PPV after ALTE in first 24 hours of life (estimate 2.6/100,000 deliveries)
  - 13/17 were primiparous
  - 12/17 found lifeless on mothers breast/abdomen, facing her
  - 2 in crib, 1 next to mother, 2 in father’s arms
  - Typically within 2 hours of delivery
  - 7 died, 6 neurologically abnormal at discharge
- Survey extended to 2010; additional 31 cases found and then case matched with controls for further delineation of risk factors
  - Median age was 90 minutes
  - Primiparous mother
  - Potentially asphyxiating position

Sudden Unexpected Postnatal Collapse Risk Factors:

- Obesity in mother
- Inexperienced primiparous mother
- Analgesia or sedative use in mother
- Post-natal fatigue in mother
- Possible decrease in sympathetic nervous system activity in infant
- Head totally covered
- Occluded position of mouth and nose/bent neck
- Side-lying breastfeeding position
- Unsupervised breastfeeding/sleeping
- Prone position in SSC or up against breast
- Maternal/parental distractions
- Bed sharing
- PPHN*
Safe positioning checklist for skin to skin:

- Infant’s face can be seen
- Infant’s head is in “sniffing” position
- Infant’s nose and mouth are not covered
- Infant’s head is turned to one side
- Infant’s neck is straight, not bent
- Infant’s shoulders are flat against holder’s chest
- Infant chest-to-chest with person holding infant
- Infant legs are flexed
- Cover infant’s back with blankets
- Person holding infant is awake and positioned a little upright, not flat on a bed/chair

Ludington-Hoe and Morgan. Newborn and Infant Nursing Reviews 2014
The RAPP Assessment
Infant Assessment and Reduction of Sudden Unexpected Postnatal Collapse Risk During Skin-to-Skin Contact

“Skin-to-Skin is an intervention in which the unclothed, diapered infant is placed in an upright position on the mother’s bare chest to promote thermoregulation, physiologic stability, breastfeeding and bonding.”

W&IS Policy: Safe Sleep, Positioning and Skin to Skin for Unmonitored Infants “When infant is skin to skin, the nurse will evaluate and document infant’s respiratory, activity, perfusion and position using the RAPP Assessment in EPIC Flowsheets with routine assessments and prn.”

Routine Assessments After Delivery: 15 minutes, 30 minutes, 60 minutes, 90 minutes, 2 hours, 3 hours, 4 hours, then twice a shift and prn

R: respiratory effort
A: activity
P: perfusion
P: position
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<thead>
<tr>
<th>Criteria</th>
<th>Date</th>
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<td>Into SSC</td>
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<td><strong>Respirations</strong></td>
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<td>Easy</td>
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<td>Grunting/Flaring</td>
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<td>Quiet Alert</td>
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<td><strong>Position/Tone</strong></td>
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<td>Head turned to one side</td>
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<tr>
<td>Neck straight</td>
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<td>Nares/mouth visible</td>
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<td>Limp/flaccid</td>
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**Duration of SSC**

| RN | RN | RN | RN | RN | RN | RN | RN |
Safety from delivery to discharge

- Safe breastfeeding practice
- Safe skin to skin and sleep rules
- RAPP assessment
- Reduce risk of entrapment/suffocation/falls
- Educate family and assign partner role as watchdog
- Manage parental fatigue
- Model safe to sleep environment
- No propping of crib
- Assure safe bed at home
- Safe clothing
I was born at UC San Diego Medical Center.

My name is ______________________________

I was born on _________________________ at ____________

I was delivered by ________________________________

I weighed _______ lbs _________ oz. and measured ________ inches long

Help keep me safe.

- Hold me skin-to-skin when you are awake, it helps me stay calm, warm, and feed better.
- When you are tired or asleep, I should be flat on my back in my crib without extra blankets or pillows.
- If you are having difficulty moving, ask for help to put me in my crib.
- Keep a light on in the room when you hold me so we can see each other.
- If you walk in the hallways, I must ride in my crib.
- Remember that babies sleep safer on their backs!
Keep your baby safe!

Mantenga su bebé seguro!

Hold your baby skin to skin but when you are tired put your baby safely back to sleep in the crib.

Abraze su bebé piel con piel pero cuando tenga sueño ponga su bebé en la cuna boca arriba.
Develop safe sleep practices for hospital/home

UC San Diego Health
Women and Infant Services

<table>
<thead>
<tr>
<th>Title: Safe Sleep, Positioning and Skin to Skin for Unmonitored Infants</th>
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<tbody>
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<td>Patient Population:</td>
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<tr>
<td>Unit(s) Affected:</td>
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<tr>
<td>Effective Date:</td>
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<td>Revision/Review Date(s):</td>
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POLICY STATEMENT/SCOPE:
The AAP has expanded its recommendations from being only SIDS-focused to focusing on a safe sleep environment that can reduce the risk of all sleep-related infant deaths including SIDS. Many of the modifiable and non-modifiable risk factors for SIDS and suffocation are similar. This policy will reduce the risk of SIDS and sleep-related suffocation, asphyxia, and entrapment among infants. Nurses, physicians, and other care providers can assist in reducing the number of infants who die each year by educating parents and caregivers about risk factors for SIDS and safe sleep practices.

The many benefits of skin to skin care are well documented in medical and nursing literature including but not limited to: state regulation, temperature stabilization, heart rate and breathing regularity, and decreased pain during procedures in the infant, maternal infant bonding and increased milk production in the mother. Skin to skin is encouraged with all healthy term infant during the first few hours of life and throughout their mothers postpartum stay. Care needs to be taken to ensure skin to skin is done in a safe, supervised manner to decrease the risk of Sudden Unexpected Postnatal Collapse (SUPC).

RELATED POLICIES:
Women and Infant Services Policies and Procedures
Skin to Skin: NICU
Safe Sleep for Monitored Infants
Fall: Infant
Delivery, Transition and Admission of Infant
COLD Baby Guidelines

I. DEFINITIONS
AAP: American Academy of Pediatrics

Skin to Skin (S2S): when infant is placed chest down on parent’s chest with or without a daper and hat

Sudden Infant Death Syndrome (SIDS): the death of an infant younger than one year of age that remains unexplained after a complete investigation

Sudden Unexpected Postnatal Collapse (SUPC): a condition in which a previously vigorous, spontaneously breathing infant becomes apneic, often necessitating full resuscitation
Do I need to worry about SIDS (crib death) after we go home?

- It is important to always practice “Safe to Sleep” rules after you go home.
- Babies who were exposed to maternal opioids may have a slightly higher risk of SIDS once they go home, but most babies will be fine.
- Baby should ALWAYS sleep on her back.
- Baby must ALWAYS sleep in his own crib or bassinet and NEVER on a sofa or adult bed. **Let us know if you do not have a crib.**
- The crib should have a firm surface and no extras: no bumpers, loose or rolled blankets, stuffed animals, pillows, positioners, etc.
- Swaddling for sleep is fine but only until two months of age.
- Baby should NEVER sleep on the stomach.
- Breastfeeding reduces the risk of crib death by half.
- Avoiding smoke (cigarette, marijuana, etc.) in baby’s environment is very important.
- Back to sleep for every sleep
- No co-sleeping
- Safe bed surface
- Safe sleep clothing
- Room share 6 months
- Breastfeed
- Avoid smoke, alcohol & illicit drugs
- Vaccinate baby
- No sleeping in seats/swings
- No sleeping on sofa/chairs-safer to bring baby into bed to feed
- No sleep positioners
- Avoid overheating
- Pacifier at 1 month
- Swaddling 2 months only

SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. Task Force on Sudden Infant Death Syndrome, Moon RY. Pediatrics. 2011
Model safe bed options in hospital
In hospital falls of newborn infant

- Recent increase in infant falls; estimated 1-4 per 10,000 newborn infants
- UCSD had 5 in the last 18 months
- Risk factors of maternal fatigue, co-sleeping, obesity, night-time or early am hours, partner fatigue
- Falls in-hospital generally occur on tile-on-cement flooring, from a height of approximately 3 feet
- Infants may suffer intracranial hemorrhage or skull fracture without outward signs of trauma

Matteson T et al. MCN. 2013:38;359-366
Preventing newborn falls while supporting family bonding

• Recognition of relatively rare event, increasing recently
• Pennsylvania Patient Safety Authority System data 2004-2013 revealed 272 newborn falls
• Rate of 0.4-3.8 per 10,000 births
• 85% of falls were in first 4 days
• 43% on day 1
• 33% on day 2
• Reported risk factors: high level of fatigue, C section delivery, pain meds within 2-4 hours, night time.
• Families often reluctant to report

Wallace S. AJN. 2015;115:58-61
Newborn Falls (#272)

- Family fell asleep
- Newborn slipped out of family arms
- Newborn rolled out of bed/incubator
- Newborn dropped by family when transferred
- Newborn rolled off family lap
- Unknown

Wallace S. AJN. 2015;115:58-61
Fall prevention

- Parent contract
- Crib card
- Safe sleep written and verbal education
- No co-sleeping in hospital
- Frequent rounding (every 1 hour)
- Physical suggestions (bed height, floor surface)
- Nap time to decrease adult fatigue
- Need better bassinet design!
Infant fall policy - what to do after baby has fallen

• If the baby is compromised; call a Code Pink.
• Call NICU provider to assess baby
• Staff obtains details of fall
• If infant fall was trivial e.g.; from only 1 foot or onto soft surface, and appears completely well, infant will be assessed by NICU team and may remain with family
• The infant who has a significant fall will be taken to the NICU for a minimum of 4-6 hours of observation
• MRI examination to rule out intracranial hemorrhage is recommended, if not available CT scan may be performed.
• After observation, assess infant readiness for transfer back to mother
• Family will be given handout
Develop prevention strategies, and policy for fall management

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<td>High Risk Obst/Labor, Delivery and Recovery</td>
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<td>Unit(s) Affected:</td>
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<td>Ancillary Services:</td>
<td>Pharmacy, Nutrition, Respiratory, Social Work, Lactation</td>
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<td>Effective Date:</td>
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<td>Revision/Review Date(s):</td>
<td>7/13, 7/15</td>
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**POLICY STATEMENT/SOPE:**

There has been an increase in infant falls across the country; some estimates have them as high as 1-4 per 10,000 newborn infants. Falls in hospital generally occur on tile-on-cement flooring, from a height of approximately 3 feet and fall within the category of a “short fall” which is less than 4.7 feet high.

The characteristics surrounding newborn falls as reported in the literature include:

- Occur in the right or early morning
- Mother recently received pain medication
- Mother, partner or other support person has fallen asleep with infant in their arms
- Cesarean section delivery.
- Maternal obesity (risk factor seen at UC San Diego).

The neonatal skull characteristics and open sutures may lead to more deformation on impact than the adult skull and may predispose an infant to intracranial hemorrhage rather than fracture after a short fall. Linear skull fractures may occur after short falls, these are usually parietal in location, and may not be accompanied by scalp swelling or hematoma. Rarely an infant may suffer an intracranial hemorrhage as the result of a short fall (3-6%). Predictors of intracranial hemorrhage in young children are: young age, any LOC or abnormal exam/symptoms, scalp swelling, fall from more than 3-4 feet, fall onto hard surface, or unintentional fall. Skull radiographs have not been found to be predictive of intracranial hemorrhage.

**RELATED POLICIES:**

None

**I. DEFINITIONS**

None

**II. POLICY**

1. Infant fall prevention is important for safety of our newborns.

2. All babies that experience a ‘short fall’ will be evaluated in the same manner to improve care and optimize communication with and understanding of family members about the treatment.

**When a Baby Falls**

Luckily, most babies who fall onto a hard surface do not have serious injuries. But we want to be sure. Baby’s little heads are soft, and if they land on a hard floor, they can have bleeding in their brain.

We will watch your baby closely for a few hours in the NICU to be sure he/she is not having any problems. Please feel free to come to the NICU to sit with your baby during this time; this will be good for you and the baby.

It is recommended that after a baby falls imaging of the baby’s head be done to be sure there is no brain bleeding. We prefer to do an MRI because this test gives us a great picture of the brain without radiation, but it does not look at skull bones very well. (A broken skull bone without bleeding in the brain is not usually a problem for a newborn because they heal small breaks very fast) If the doctor feels that looking at the brain AND the skull is important, or if a MRI is not available, a CT scan may be done instead.

When a baby falls to the floor we all feel bad, parents and hospital staff alike. No matter how hard we try, sometimes accidents happen. Please discuss any emotions you are having with our staff.
Intersection of mother-baby medical issues as we expand rooming in to high risk mother/baby pairs

- Diabetes
- Hypertension/ Pre-eclampsia
- Obesity
- Multiple birth
- Illicit drug use
- Opioid maintenance
- Cardiac disease
- Cancer
- Genetic syndromes
- Infections (Hepatitis, CMV, HIV, Zika, influenza)
- Malpositioned fetus
Diabetes

Mother
• Obesity
• Medication
• Hypertension
• Poor compliance
• Fatty liver
• Metabolic syndrome
• CS delivery
• Induction at 37 weeks
• Delayed milk production

Baby
• Macrosomia
• Birth trauma
• Early delivery
• IUGR
• Hypoglycemia
• Cardiac malformation
• Poor feeding
• Hyperbilirubinemia
• Pulmonary Hypertension
Opioid Maintenance

**Mother**
- Medication
- Illicit drug history
- STD
- Hepatitis
- Poor social support
- Lack of prenatal care
- Lack of trust in medical system
- Low rate of BF

**Baby**
- NAS
- Risk of infection transmission
- Low rate of BF
- Elevated risk of SIDS
- Poor social support
- Long hospital stay
Future of rooming in

- Need a better term!
- Incorporation of medical therapies of infant into couplet care
- Family centered rounds
- Length of stay determined by both mother and baby
- Better sleep options for baby
- How to minimize interruptions
- How to deal with fatigue
- Eliminate unneeded procedures
- A better microbiome?
Thank you! Questions?
References

- Perrine CG. Baby-Friendly Hospital practices and meeting exclusive breastfeeding intention. Pediatrics. 2012;130:54-60.
- Wallace S. Preventing newborn falls while supporting family bonding. AJN. 2015;115:58-61.