Spin Mommas Volunteer Training
Lesson #2
Making Milk, Pumping, and Milk Handling
Objectives

• Breast anatomy (structure) and lactation hormones
• How do breasts make milk?
• How does a breast pump work?
  • What kind is best?
• Preemie Plus Card
• Cleaning the pump equipment
• Milk storage and transport (to hospital)
Breast Anatomy: External

- Breast size and shape varies
  - Breast size has little to do with milk production
- The colored skin around the nipple is called the areola
- Nipples come in all shapes or sizes and are all fine for pumping milk
  - Nipples can sometimes become tender with pumping if the flange does not fit well
Breast Anatomy: External (Continued)

- Some women have breast tissue that extends into the armpit, and may become firm or swollen when the milk first comes in.

- As the breast fills with milk, glands can be felt as small grape-like bumps.

- Extreme fullness, swelling, redness or warmth can be a sign that the milk is not draining well (and can shut off milk production).

- Mastitis (a bacterial infection of the breast) causes fever, chills, and a sore red breast (women think they have the flu).
Breast Anatomy: Internal

- The breast is a milk-making factory.

- Fat and ligaments provide support and metabolic fuel for milk production.

- Small glands make milk, starting soon after delivery
  - As the glands fill with milk, the breast becomes firmer, larger, heavier

- Milk ducts are also vital to milk production (see next slide)
Internal Breast Anatomy (continued)

- Milk ducts deliver the milk from the glands to the nipple
  - Ducts are only a few millimeters in diameter and easily compressed or blocked by pressure (pump flange or bra)

- Contractile fibers surround the ducts and glands, and respond to pumping with contraction and milk ejection (let-down response)

Tell mom not to push too hard!
A hormone is a chemical released by the body; it sends out messages to other parts of the body.

Pregnancy hormones (Estrogen and Progesterone) prepare the breasts to make milk.

Lactation hormones Oxytocin, Prolactin, Serotonin regulate milk production after delivery.

Some medications can interfere with these hormones (such as birth control pills).
How the Breast Makes Milk

• **Hormones** prepare breast for milk production (cause breast growth in pregnancy)
• Many women make small amounts of milk (colostrum) during end of pregnancy
• After **placenta** is delivered, the breasts get the message to make more milk
  • If part of placenta does not come out after delivery, milk production may be delayed (often indicated by too much vaginal bleeding post delivery).
• **Pumping** right after delivery and regularly thereafter helps stimulate the breasts
• When **baby suck**s on nipple or breast pump is used, body is signaled to release milk
  • If the body thinks there is not a baby suckling, it won’t make milk

**Stimulating the breasts to make milk by pumping right after delivery and then on a regular basis is the most important part of making enough milk.**
Pumping to make more milk

• Pumping stimulates the brain to make **Prolactin** -- tells the breast to make milk

• If mom doesn’t pump enough, she won’t produce enough **Prolactin** to make a good milk supply

• Pumping also releases **oxytocin**, which contracts the glands and ducts to cause the let down of milk

• Oxytocin release may make mom feel **uterine contractions** - this is a good sign (although a bit uncomfortable at first)

• If breast is not emptied well, **Serotonin** builds up and shuts off milk production

• Once the breast stops making milk, it can be hard (but not impossible) to get things going again

We encourage all moms to build a good milk supply in the first 2 weeks. After that, depending on production, they can increase or decrease pumping.
The First Milk: Colostrum

• This ‘first milk’ is nature’s way to prepare baby for feeding and prevent infection

• Mom should expect that colostrum won’t look like milk for a few days - it may look like water (it only has protein and sugar, no fat yet).

• Colostrum contains protein and sugar to nourish baby

• Colostrum is an immunologic protection for baby: it contains lots of antibodies to coat baby’s mouth and intestinal tract to prevent infection

• Probiotic bacteria and short sugars (oligosaccharides) in the milk make sure baby gets the right bacteria balance in the intestines (and not just hospital germs!)

• Colostrum can be a number of different colors; it is ok if it is clear, yellow, blue-ish, orange or green
More on Colostrum...

• We believe that early colostrum feedings are of utmost important to the premature or sick infant – almost like a vaccine from mom!

• Reassure Mom that with early pumping, she may see no milk or just a drop. Not to worry, she is just “calling in her order” for milk.
Now the milk comes in!

- Milk ‘comes in’ about the 3\textsuperscript{rd} or 4\textsuperscript{th} day after delivery

- Mother may feel her breasts getting larger and fuller, and may notice lumps in her breasts (the glands are filling with milk)

- Pumping will start to produce more milk

- If swelling is extreme, it can block the ducts and the milk can’t get out

- Taking Ibuprofen (anti-inflammatory) or using ice to decrease the swelling and frequent pumping will help relieve the pressure

- If breasts are full, it is really important to keep pumping, and pumping every few hours to avoid the full breast!

It is important to tell mothers that ‘a full breast will shut off your milk supply’
How much milk does a preemie need?

- Feedings start in 1st days (when baby is stable enough to tolerate milk in stomach)
- First feedings for the micro-preemies will be only 1 ml of milk every 3-6 hours
- Although the baby doesn’t need much now, soon baby will drink 300-400 mls/day
- Encourage mom to make enough milk to feed a typical 4 month old preemie (about 500 mls a day); to keep plenty of milk stored and to avoid running out.
- By the time baby goes home, s/he will need 500mls (1/2 quart) per day

Although a preemie does not need a lot of milk at the very beginning, the baby will quickly start using milk at a much faster rate.

It is imperative to pump early and often to ensure that mom will be able to keep up with baby’s growing needs and to store for future use.
Keeping Milk Production Up: Good Rules for Pumping

- Convince your body that you have a baby that feeds every 3 hours
- Try and empty your breasts every 3 hours, just as a baby would
- Make sure your pump is working well
- Avoid the full breast (which dries up the milk)
- More pumping = more milk
- Be sure to get adequate rest and nutrition

Consistent and regular pumping is critical during this emotional time

Almost all women that pump regularly make enough milk
How does the breast pump work?

- **Suction** pulls nipple into flange and stimulates the nipple
- **Cycling** of suction causes hormones to stimulate milk let-down
- **Suction + milk let-down** removes milk from the breast
- Using mother’s maximum vacuum pressure will yield more milk, but it should be comfortable
- Most milk is pumped in the first 5-10 minutes
- If using the Symphony pump, mother can push the ‘drops’ button to either switch to quicker expression if she lets down well, or to do additional stimulation cycles if she desires more milk production
Different Kinds of Pumps

• Hand expression can be used, but mother may get tired doing this every 3 hours…!

• Manual pumps are not sufficient for a pumping-only mother

• A hospital-grade pump has the strongest motor and is best for a NICU mom

• An electric pump (e.g., Medela Pump in Style, WIC in style, Ameda Purely Yours) is okay once you have a full milk supply.

• Mom may want to get a back-up pump (manual or electric) for times when she is away from her pump or for emergencies
Preemie Plus Card

• The Symphony pump has a computer card (this card is inserted in the pump) which can be modified to help mom make more milk.

• The ‘Preemie Plus Card’ creates an aggressive, faster pumping pattern.

• Moms that start pumping with this pattern may make more milk (this likely helps moms with low milk production).

• We have these cards on the postpartum floor, and one in the NICU.

• Mom can simulate this card with other pumps by ‘power pumping’ (pump for an entire 1-2 hour TV show; pump during commercials, and rest when the show is on).
Using Your Hands to Increase Milk Production

- [http://newborns.stanford.edu/Breastfeeding/MaxProduction.html](http://newborns.stanford.edu/Breastfeeding/MaxProduction.html)

- Mothers that use their hands to fully empty the breast during pumping may make more milk
- These videos by Dr. Jane Morton demonstrate how easily hand expression can be taught to mothers
Pumping and breast milk related information and materials we will provide to mom before discharge:

• The Lactation Nurse or Educator will meet with mom and give her:
  • Spin education
  • Log book
  • Pump or rental information
  • Pumping education
  • Cleaning instruction
  • Cooler and ice block
• Baby’s nurse will give mother:
  • Containers and labels
Cleaning and Sterilizing Pump Kit

• To provide the best milk, it is important to keep mom’s equipment clean.

• **Bacteria** do grow in milk, we just don’t want too many in there.

• Mom’s instructions for cleaning pump kit:
  
  • Wash after each use with warm water and soap - dry well!
  
  • Microwave or dishwasher once per day to sterilize.
  
  • Keep your hospital kit clean by doing the same as above (our hospital bacteria are worse than those you have at home)!
  
• Symphony pump tubing can get water inside, and bacteria love moisture!

  • Keep tubing clean by disconnecting bottles after pumping and leaving machine on a few minutes, pumping just air, to dry out tubing (tubing can be sterilized every week in microwave bags).
Sterilization Options

- There are several options for sterilization of pump parts:
  - Dishwasher or in the microwave with Medela steam bags or other microwave steamer
  - Medela bags can be used up to 20 times
  - Be careful of the hot water and steam!
  - We have these in the NICU now for cleaning mom’s hospital kit
Microwave Steamer

- Mom can buy a bottle sterilizer and use this to clean her pump kit (cost ≈ about $25)
- As with other methods, wash parts and bottles prior to sterilizing
- Place water in the bottom of container
- Put the pump parts in the sterilizer first and then the lid
- Steam according to directions
- Can continue to be used and can be cleaned in the dishwasher or with warm soapy water
Milk Storage Rules; Rule of 3’s

- Keeping milk cold will discourage bacterial growth and preserve nutritional factors for baby

- Rule of 3’s for milk storage:
  - 3 hours at room temperature
  - 3 days in the refrigerator
  - 3 months in the freezer
  - 12 months in the deep freezer

- Once thawed, milk should be used in 24 hours
More on Storage

• Moms should use sterile containers & sticky MOMS labels
• Put date the milk was pumped and the volume on the label
• Milk expands when frozen, so fill container 3/4 full.
• Place milk in fridge or freezer
  • The freezer/fridge is coldest near the back, so it is best not to use the freezer or fridge door
• If mom is on a new medication or made a diet change for baby, she should write that on the label so she knows what the milk contains
• Rarely, moms can have an enzyme called lipase that can lead milk to have a rancid taste/smell. If mom notices this, she should discuss with the lactation nurse

Keeping milk clean and properly identified and stored is especially important in a busy place where so many moms pump milk for their babies
Fresh Pooled Milk

• Fresh milk has live cells that help baby fight infection

• Freezing milk may deplete some the vitamins and nutritional elements

• Mothers milk varies throughout the day in caloric content

• Storing milk in individual cups after pumping means that each cup may have a different calorie count

• If mom pools her milk in a large container (coming soon) and keeps it cold but not frozen, it may be a better milk for baby

• Mom would then bring in a fresh pooled milk collection each day

• This may also help her see exactly how much she pumps every day!

Pooling fresh milk throughout the day ensures best milk for baby
Bringing milk to the hospital

• Always keep milk cold or frozen until you get to the NICU
• The blue SPIN cooler or any other cooler will work with a cold gel pack
• You may want to use multiple gel packs to keep it really cold
• If milk is frozen, keep it frozen
• Give the milk to the nurse, concierge, or the milk tech
• If milk is pumped while visiting, give it to your baby’s nurse
• We may ask mom to bring only fresh milk every day - we think it is a better milk for the baby and will give her instructions on how to do this

It is imperative that milk remain cold (or frozen, if it is initially frozen) at all times and that moms are given proper instruction for milk transport and delivery.
Pumping Milk; It takes a Village...