Lesson 4.2
Flat Head Syndrome
(Positional Plagiocephaly)

Note
This lesson was developed in conjunction with the added feature of tracking the length of time in a non-prone position (car seat/carrier) on the RealCare® Baby. This tracking feature exists in the car seat/carrier sold by Realityworks. Car seat/carrier detection kits are also available. If you do not have either the Realityworks car seat/carrier for use with your RealCare® Baby or the detection kit, no data on this issue will be tracked by the RealCare® Baby.

Lesson Overview
In this lesson participants learn about positional plagiocephaly, or flat head syndrome, a condition that can develop when an infant spends too much time on its back.

Lesson Objectives
After completing this lesson, participants will be able to:
- Define positional plagiocephaly
- Describe the causes of positional plagiocephaly
- Identify steps to prevent positional plagiocephaly

Lesson at a Glance

<table>
<thead>
<tr>
<th>Activity</th>
<th>Materials</th>
<th>Preparation</th>
<th>Approximate Class Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOCUS: The Need to Reposition</td>
<td>NA</td>
<td>NA</td>
<td>3 minutes</td>
</tr>
<tr>
<td>LEARN: Positional Plagiocephaly</td>
<td>* Slide presentation: Positional Plagiocephaly</td>
<td>* Prepare slide presentation for viewing</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>
| SUMMARY: Simulation Report | * Handout: Simulation Report- Baby Temperature and Clothing  
* Review questions  
* SIDS Facts handout | * Print/copy the Simulation Report- Baby Temperature and Clothing  
* Print/copy the SIDS Facts handout for distribution | 10 minutes |

National FACS Education Standards Supported: Reasoning for Action – 4; 4.2, 4.4; 12.1-3; 15.2

National Health Education Standards Supported: 1.12.2-3, 7, 9; 2.12.6; 5.12.1; 7.12.1-3; 8.12.3-4
Focus: The Need to Reposition

3 minutes

Purpose:
This activity introduces the condition of positional plagiocephaly (flat head syndrome).

Facilitation Steps:

1. Ask participants to think about how they sleep – do they lie still on their back all night? Do they turn, move, and sleep on their side sometimes? Do they sleep on their stomach sometimes? Ask them to think about how difficult it would be if they had to lay in the same position for hours at a time.

2. Write the following term on the board: positional plagiocephaly. Explain that this is also known as flat head syndrome. Ask if anyone has a guess as to what this condition is. Explain that they will learn about this condition today, its causes, and means of prevention.

Materials:

NA
LEARN: Positional Plagiocephaly
10 minutes

Purpose:
Participants learn about positional plagiocephaly, its causes, and means of prevention.

Facilitation Steps:
1. Show slide presentation, Positional Plagiocephaly, and use the following information as you present:

   **Slide 2: Positional plagiocephaly.** We know that “cephaly” in this word refers to the head, so we can conclude that this has something to do with the head. *Positional plagiocephaly* (which means “oblique head” in Greek), also known as *flat head syndrome*, is a condition most commonly found in infants. It is characterized by a flat spot on the back or one side of the head caused by remaining in one position for too long.

   **Slide 3: Recognizing flat head syndrome.** Point out the flat surface on the infant’s head.

   **Slide 4: What causes flat head syndrome?** Everyone’s skull is a bit asymmetrical. Many vaginally delivered infants are born with an oddly shaped head caused by the pressure of passing through the birth canal. Infant’s skulls are soft and made up of movable plates (which are necessary for an infant to make it through the birth canal). In between these plates are spaces, which allow the skull to expand so that the brain can grow. If the infant’s head always rests on the same spot, the skull plates move in a way that leaves a flat spot, according to the National Institutes of Health.

   Infants spend a great deal of their time on their back. The longer they do that during the first 2 to 4 months of life, the more likely they are to develop a flattening of the head, depending on how the infant sleeps. This generally doesn’t cause developmental delays; it is typically cosmetic, and can usually be corrected. Infants that have unusually large heads, or who are born prematurely and have weaker than normal muscle tone are typically the more likely candidates for this condition.

   **Slide 5: Torticollis.** Another cause of flat head syndrome is *torticollis*. Torticollis occurs when a tight or shortened muscle on one side of the neck causes the head to tilt to the other side, resulting in the infant favoring one side over the other to rest his head.

   **Slide 6: Back to sleep.** Since 1992, when the American Academy of Pediatrics began recommending that infants sleep on their backs, the number of deaths due to Sudden Infant Death Syndrome or SIDS (the number one cause of death among infants younger than 1 year of age) has been cut in half, according to the CDC.

   However, as the number of SIDS deaths has gone down, pediatricians have seen a dramatic increase in infants having flat head syndrome. About 13% of healthy infants have some form of positional plagiocephaly. This is a good trade-off for the reduction in SIDS.

   Therefore, even though having your infant sleep on its back can lead to a flattened head, you should not stop placing your infant on its back to sleep, according to the American Association of Pediatrics and the National Institute of Health.

   **Slide 7: Prevention.** Some ways to help prevent flat head syndrome are:

     - Alternate turning the infant’s head to the left and right when you put him down to sleep.
     - Put the infant to sleep at alternate ends of the crib.
     - Change the position of the crib in the room or alternate the position of decorations (mobiles, pictures, etc.) as infants tend to turn their head to look toward the center of the room, the doorway, a window, or interesting objects.

Materials:
- Slide presentation: Positional Plagiocephaly
4. Limit time in infant seats/car seats and swings. (Although these things don’t place as much pressure on an infant’s head as lying down, enough pressure is produced to create small deformities.)

- Cuddle, holding the infant upright or over your shoulder often during the day.
- Provide supervised tummy time [next slide].

**Slide 8: Tummy time.** (NOTE: Click on the picture to begin the film clip) Place the infant on his stomach for supervised play. Tummy time relieves pressure on the infant’s skull and helps him to build muscles in his neck and upper body. Note that the infant in this scene does not like tummy time – this is typical as the infant is working to be able to look up. Tummy time should be limited to a few minutes at a time, but several times per day. The infant should not be left unsupervised in this position.

*Ask participants why this would be the case. Answer: because their neck and upper body muscles are not developed, they are not able to keep their head up. This could reduce their ability to keep the nose and mouth unobstructed – the same reason it is not recommended to put an infant to bed on his/her stomach.*

2. Explain that newborn infants sleep an average of 16-20 hours per day (not all at once), and since we know that they should sleep on their backs to possibly help reduce the possibility of Sudden Infant Death Syndrome (SIDS), the majority of an infant’s day is spent on his back. Infants aren’t able to turn themselves over until about 5-6 months of age. This occurs as they develop stronger neck and arm muscles. In the meantime, they are at the mercy of their caregiver to move them and get them off of their back for periods of time.

3. *Ask the following:*

- What are some typical times a caregiver would move an infant off his/her back?

Answers: When burping, holding (in football/side hold position), carrying, feeding (infant’s head is not on flat mattress surface during this time), or after changing their diaper.

Note that there is another time you can intentionally move an infant off his back, and help the infant develop the skills needed to turn over, crawl, and build the neck and arm muscles needed for these activities. *Ask if anyone can remember what this is called: tummy time.* Tummy time is placing an infant on her tummy while being supervised by an adult. A good time to have the infant do a few minutes of tummy time is after changing the infant’s diaper, because it’s done several times a day and the parent/caregiver is holding/repositioning the infant. It’s easier to remember to do the tummy time when you have a regular routine with which you can combine it.

**References:**

- CNN Health: [http://www.flatheadsyndrome.info/](http://www.flatheadsyndrome.info/)
- [http://www.babycenter.com/0_plagiocephaly-flat-head-syndrome_1187981.bc](http://www.babycenter.com/0_plagiocephaly-flat-head-syndrome_1187981.bc)
SUMMARY: RealCare Baby Report
10 minutes

Purpose:
This activity discusses how the RealCare Baby tracks the amount of time in a non-prone position (car seat/carrier) and how the data is displayed on the Simulation Report. Review questions help participants remember what they learned.

Facilitation Steps:
1. Hand out the *Simulation Report – Baby Temperature and Clothing* handout to each participant. Point out the area on the report that shows length of time the RealCare Baby spent in the car seat/carrier. Note that if Baby has spent most of its time in the carrier, this is an indication that a real infant would likely need more attention and more time off its back, being held, rocked, tummy time, etc.  (See sample Simulation Report and explanation at end of this lesson.)

2. As a review conduct a class discussion by asking the following questions:
   - What is the more common term for positional plagiocephaly? Flat head syndrome
   - What does SIDS stand for? Sudden Infant Death Syndrome
   - What is the name of the campaign to reduce SIDS? Back to Sleep
   - Why has there been an increase in flat head syndrome in recent years? Because infants are spending more time on their backs to avoid SIDS
   - What are some other possible causes of flat head syndrome? Preemie – (possible weaker neck muscles), torticollis
   - What is torticollis? Occurs when a tight or shortened muscle on one side of the neck causes the head to tilt to the other side
   - What are some recommended ways to help prevent flat head syndrome? tummy time, cuddle, lay infant on different end of crib for sleep, turn infant’s head to other side for sleep, place interesting objects in different locations in infant’s room, move crib to different location in room.

3. Hand out the *SIDS Facts* handout. (Note: This Fact Sheet is also located in the Basic Infant Care curriculum, Lesson 2.6: Schedule and Tracking.)

Materials:
- *Simulation Report – Baby Temperature and Clothing* handout
- Review questions (below)
- *SIDS Facts* handout
Parenting—Lesson 4.2
Flat Head Syndrome (Positional Plagiocephaly)
Baby Temperature and Clothing

Baby detects temperature, clothing, and length of time in car seat/carrier to address flathead syndrome. Missing clothing only appears if Baby detects no clothing during a significant period of time.

Look for spikes in temperature on the graph below to determine mishandling. Baby’s temperature should fall inside the comfort range (in green – mid section of report). If Baby’s temperature falls above or below the comfort range, Baby has been exposed to extreme temperatures for an extended period of time.

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<th>12a</th>
<th>3a</th>
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<th>9a</th>
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<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
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<tr>
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<td>80°</td>
</tr>
<tr>
<td>Low temp</td>
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<td>Time out of safe temp range</td>
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<td>0</td>
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<tr>
<td>Max time between change of clothes</td>
<td>4 hours</td>
<td>11 hours</td>
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<tr>
<td>Time in car seat/carrier</td>
<td>3 hours</td>
<td>13 hours</td>
<td>17 hours</td>
</tr>
</tbody>
</table>
Parenting — Lesson 4.2
Flat Head Syndrome (Positional Plagiocephaly)
SIDS Facts

What we know about SIDS:
1. It occurs in all kinds of families.
2. It occurs in seemingly healthy infants.
3. It has nothing to do with race or economic status.
4. It occurs most often in fall and winter months.
5. Most deaths happen before six months of age, and especially between one and four months of age.
6. It is the leading cause of death in infants between one month and one year of age.
7. It often happens quickly during sleep, and the infant shows no signs of suffering.
8. It occurs most often among boys, premature and low-birth weight infants, twins, and triplets.
9. It is determined as the cause of death only after all other causes have been eliminated through an autopsy, a thorough investigation of the death scene, and a review of the family history.
10. No one knows its cause.

Safe sleep top 10:
1. Always place the infant on his or her back to sleep, for naps and at night; it is the safest.
2. Always place the infant on a firm sleep surface, such as on a safety-approved crib mattress, covered by a fitted sheet. Never place the infant to sleep on pillows, quilts, sheepskins, or other soft surfaces.
3. Always keep soft objects, toys, and loose bedding out of the infant’s sleep area. Do not use pillows, blankets, quilts, sheepskins, and pillow-like crib bumpers in the infant’s sleep area, and keep any other items away from the infant’s face.
4. Never allow smoking around the infant.
5. Keep the infant’s sleep area close to, but separate from, where you and others sleep. The infant should not sleep in a bed or on a couch or armchair with adults or other children, but he or she can sleep in the same room as you. If you bring the infant into bed with you to breastfeed, put him or her back in a separate sleep area, such as a bassinet, crib, cradle, or a bedside co-sleeper (infant bed that attaches to an adult bed) when finished.
6. Think about using a clean, dry pacifier when placing the infant down to sleep, but do not force the infant to take it. (If you are breastfeeding, wait until the infant is one month old or is used to breastfeeding before using a pacifier.)
7. Do not let the infant overheat during sleep. Dress the infant in light sleep clothing, and keep the room at a temperature that is comfortable for an adult.
8. Avoid products that claim to reduce the risk of SIDS because most have not been tested for effectiveness or safety.
9. Do not use home monitors to reduce the risk of SIDS. If you have questions about using monitors for other conditions, talk to your health care provider.
10. To reduce the chance that flat spots will develop on the infant’s head from too much time on his or her back, provide “tummy time” when the infant is awake and someone is watching; change the direction that the infant lies in the crib from one week to the next; and avoid too much time in car seats, carriers, and bouncers.
Parenting—Lesson 4.2
Flat Head Syndrome (Positional Plagiocephaly)
Positional Plagiocephaly

Flat Head Syndrome
Positional Plagiocephaly

• Also known as *flat head syndrome*
• Most commonly found in infants
• Characterized by a flat spot on the back or one side of the head
• Caused by remaining in one position for too long
Recognizing Flat Head Syndrome

Photos courtesy of Junior League of Erie, PA, Inc. – http://www.flatheadprevention.org/
What Causes Flat Head Syndrome?

• Passing through the birth canal – usually corrects within six months
• Primary cause: Laying in one position for too long, over extended periods of time
• Infants with a larger than normal head
• Premature infants with weaker than normal neck muscles
• Torticollis
Torticollis occurs when a tight or shortened muscle on one side of the neck causes the head to tilt to the other side, resulting in the infant favoring one side over the other to rest his head.
“Back to Sleep”

- 1992 campaign to reduce Sudden Infant Death Syndrome
- Recommends infant sleep on back rather than tummy
- Incidents of SIDS have decreased 50% since the campaign began
- Incidents of positional plagiocephaly have increased 13% since the campaign began
Prevention

- Alternate turning the infant’s head to right or left when you put him to sleep
- Put the infant to sleep on alternate ends of the crib
- Alternate positions of crib or decorations
- Limit time in infant seat/car seat, swings
- Cuddle!
- Provide supervised tummy time
Tummy Time