Date: June 6, 2012

Title: Use of Care Giver Education to Prevent Positional Plagiocephaly

Clinical Question:
- **P** (population) Among infants less than two months of age
- **I** (intervention) does infant positioning education given to their care givers
- **C** (comparison) vs. no education
- **O** (outcome) increase the amount of time the infant spends in positions other than supine and decrease the incidence of positional plagiocephaly?

Target Population: Infants less than two months of age and premature infants with adjusted age less than two months

Exclusion Criteria: Infants who have a medical condition where varying infant position may increase or cause health risk.

Recommendation:

Discussion/Summary of Evidence related to the recommendation:
Prevention Education and Timing of Preventative Education

Early caregiver education regarding unlimited restriction of movement, infant positioning, and safe infant environment reduces the incidence of positional plagiocephaly (PP) (Cavalier et al., 2011[3a]; Lennartson, (2011[4b]) and has a positive effect on reduction of diagnosed cases of PP during the first 12 months (Wen at al., 2011[2b]; Hutchison et al., 2010[2b]) and infants less than 6 months of age (vanVimmeren et al., (2008[2a]); Hutchison et al., (2010[2b]).

Three studies demonstrated that positioning education given to caregivers decreased the amount of time infants spent in bouncers, carriers and other infant furniture and increased the amount of time spent in positions other than supine (Wen et al., 2011[2b], Cavalier et al., 2011[3a]; Jennings et al., 2005[4b].

Education given to caregivers was effective in decreasing the incidence of PP or increasing the amount of time infants spent in positions other than supine when provided during pregnancy (Wen et al. 2011[2b]), in the immediate postpartum period (Wen et al., 2011[2b]; Cavalier et al., 2011[3a]; Lennartson, 2011[4b]; Jennings et al., 2005[4b]) and during the first months (Wen et al., 2011[2b]; Hutchison et al., 2010[2b]).

Reference List:  [Evidence Level in ]; See Table of Evidence Levels


**SUPPORTING INFORMATION**

**Background/Purpose of BESt Development:**

Pershing, Swanson, & Kattwinkel identified a significant increase in diagnosis of positional plagiocephaly beginning in 1992 related to the change to back sleeping position for infants (2003 [5a]). At that time a six-fold increase in cases of positional plagiocephaly were reported from 1992 through 1994. Recommendations included parental counseling during the newborn period (2-4 weeks of age) when the skull is maximally deformable) regarding infant positioning (Pershing et al., 2003 [5a]). Despite this recommendation there continues to be an increase in the diagnosis of positional plagiocephaly. Callahan & Sisler (1997 [4a]) found the average young infant (less than 5 months of age) spent 5.7 hours daily in a car seat or other sitting device. The American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome (Moon, 2011 [5a]) expanded the recommendations for safe infant sleep environment to include parent education regarding “supervised awake tummy time on a daily basis”, rotating the infant’s head position when placed supine and reduction in the use of car seats and other sitting devices when not traveling.

**Definitions:**

Positioning or Tummy Time (TT) Education: Education given to the primary care givers of infant(s) which includes importance of supine position education while the infant is asleep or unsupervised with equal weight to the importance of prone positioning, freedom of mobility (decreased use of infant furniture), and placing the infant in a variety of positions while awake and supervised.
Primary Care Giver is the person who takes primary responsibility for someone who cannot care fully for themselves. It may be a parent, family member, guardian, medical professional or another trained professional. Depending on culture there may be other members of the family engaged in care. The primary care giver is responsible for positional education given to all others involved in care.

Positional Plagiocephaly (PP) is an asymmetric head shape caused by positioning, as opposed to an asymmetric head shape caused by craniosynostosis. Positional Plagiocephaly is also called deformational plagiocephaly (DP) and may be referred to as non-synostotic plagiocephaly (NSP).

**Applicability Issues:**
Identification of correct person(s) to consistently provide the education
Caregiver practice adherence to recommendations
Additional time needed for the nurse and/or primary care physician to address the issue during clinic visits.
Availability of education materials for caregivers and parents
Parental anxiety over intolerance of *tummy time*
Strategies to follow for care givers (i.e. how to build tolerance of infant tummy time)

**Outcome or Process Measures:**
Decrease in number of referrals to plagiocephaly clinic.
Increased number of infants with documentation of education provided.

**Search Strategy:**
Key words: positional plagiocephaly; plagiocephaly; infant positioning; non-syndromic plagiocephaly; deformational plagiocephaly
Databases: Cinahl, Pub Med
End date of retrieval: 12-30-11

**Relevant CCHMC Evidence-Based Documents:**
Growing Through Knowing: Plagiocephaly, Prevention Begins at Birth

Health Topic: Plagiocephaly

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**Conflicts of Interest were declared for each team member:**
☒ No financial conflicts of interest were found.
Table of Evidence Levels (see note above):

<table>
<thead>
<tr>
<th>Quality level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a† or 1b†</td>
<td>Systematic review, meta-analysis, or meta-synthesis of multiple studies</td>
</tr>
<tr>
<td>2a or 2b</td>
<td>Best study design for domain</td>
</tr>
<tr>
<td>3a or 3b</td>
<td>Fair study design for domain</td>
</tr>
<tr>
<td>4a or 4b</td>
<td>Weak study design for domain</td>
</tr>
<tr>
<td>5a or 5b</td>
<td>General review, expert opinion, case report, consensus report, or guideline</td>
</tr>
<tr>
<td>5</td>
<td>Local Consensus</td>
</tr>
</tbody>
</table>

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength (see note above):

<table>
<thead>
<tr>
<th>Language for Strength</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is strongly recommended that...</td>
<td>When the dimensions for judging the strength of the evidence are applied, there is strong evidence that benefits clearly outweigh risks and burdens.</td>
</tr>
<tr>
<td>It is strongly recommended that... not...</td>
<td>When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens. (or visa-verso for negative recommendations)</td>
</tr>
<tr>
<td>It is recommended that...</td>
<td>When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.</td>
</tr>
<tr>
<td>It is recommended that... not...</td>
<td>When the dimensions for judging the strength of the evidence are applied, there is insufficient evidence and a lack of consensus to make a recommendation.</td>
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</table>

Given the dimensions below and that more answers to the left of the scales indicate support for a stronger recommendation, the recommendation statement above reflects the strength of the recommendation as judged by the development group. (Note that for negative recommendations, the left/right logic may be reversed for one or more dimensions.)

1. Grade of the Body of Evidence
   - High
   - Moderate
   - Low

2. Safety/Harm (Side Effects and Risks)
   - Minimal
   - Moderate
   - Serious

3. Health benefit to patient
   - Significant
   - Moderate
   - Minimal

4. Burden on patient to adhere to recommendation
   - Low
   - Unable to determine
   - High

5. Cost-effectiveness to healthcare system
   - Cost-effective
   - Inconclusive
   - Not cost-effective

6. Directness of the evidence for this target population
   - Directly relates
   - Some concern of directness
   - Indirectly relates

7. Impact on morbidity/mortality or quality of life
   - High
   - Medium
   - Low

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