

## Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines for the Management of Patients With Positional Plagiocephaly: Executive Summary

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**Congress of  
Neurological  
Surgeons**

# **GUIDELINES**

## **SUMMARY: *EVIDENCE BASED GUIDELINES FOR THE TREATMENT OF PEDIATRIC POSITIONAL PLAGIOCEPHALY***

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The guidelines included in this evidence based review are arranged by the clinical management protocol, commonly used by physicians once patients are diagnosed with positional plagiocephaly.

**RECOMMENDATIONS**

1. Clinical examination is recommended for the diagnosis of plagiocephaly and imaging is rarely necessary, except in cases where clinical diagnosis is equivocal.  
Strength of recommendation: Level III – low clinical certainty
2. In cases where the clinical examination is equivocal, 3D surface imaging or stereophotogrammetry is recommended for the assessment of infants with plagiocephaly without synostosis.  
Strength of recommendation: Level II – moderate clinical certainty
3. In cases where the clinical examination is equivocal, surface imaging (computer-based topographical scans) or stereophotogrammetry is recommended for the assessment of infants with plagiocephaly without synostosis.

Strength of recommendation: Level III – low clinical certainty

4. Only for infants where x-rays or ultrasound are non-diagnostic, a CT scan is recommended for definitive diagnosis.

Strength of recommendation: Level III – low clinical certainty

Diagnosis of positional plagiocephaly can be made by physical exam alone in the vast majority of cases. When an experienced physician is unable to make a definitive diagnosis, additional resources may be used to help to determine the diagnosis. These guidelines emphasize the fact that studies requiring ionizing radiation are generally not necessary. Elaborate studies such as MRI scans are also generally unnecessary.

## **RECOMMENDATION**

1. Repositioning is an effective treatment for deformational plagiocephaly. However, there is Class I evidence from a single study and Class II evidence from several studies that repositioning is inferior to physical therapy and to use of a helmet, respectively.

Strength of recommendation: Level I – high clinical certainty (repositioning is inferior to physical therapy); Level II – moderate clinical certainty

Guidelines for repositioning are most relevant to very young infants, usually 4 months or younger, although these recommendations are relevant for any age group. Three randomized trials comparing different pairs of treatments showed that repositioning therapy or devices may be effective as sole therapy, improving cranial asymmetry, particularly for mild to moderate deformity. Based on the task force's evaluation of available literature, helmets should be the preferred treatment for severe positional deformity.

## **RECOMMENDATION**

1. Physical therapy is recommended over repositioning education alone for reducing prevalence of infantile positional plagiocephaly in infants 7 weeks of age.

Strength of recommendation: Level I (high clinical certainty)

2. Physical therapy is as effective for the treatment of positional plagiocephaly and recommended over the use of a positioning pillow in order to ensure a safe sleeping environment and comply with AAP recommendations.

Strength of recommendation: Level II (moderate clinical certainty)

Moderate evidence (Class II) shows that physical therapy is a more effective treatment modality than repositioning in cases of severe plagiocephaly, and an equivalent treatment modality to a positioning pillow. In congruence with the AAP's recommends against the use of soft positioning pillows in the sleeping environment of an infant, this guideline task force recommends physical therapy over positioning devices. Class III evidence suggests that physical therapy performed by a professional physical therapist can yield better results over a shorter treatment time, and thus be more appropriate in the setting of severe plagiocephaly. The ideal timing for initiation of therapy, duration of treatment and type of physical therapy stretches and/or exercises cannot be determined from the literature available at the time of this systematic review.

## **RECOMMENDATIONS**

1. Physical therapy is recommended over repositioning education alone for reducing prevalence of infantile positional plagiocephaly in infants 7 weeks of age.
2. Physical therapy is as effective for the treatment of positional plagiocephaly and recommended over the use of a positioning pillow in order to ensure a safe sleeping environment and comply with AAP recommendations.

Strength of recommendation: Level I (high clinical certainty)

Physical therapy is an additional intervention that is often utilized for patients with more significant deformity and/or torticollis to speed the rate of correction. Torticollis is commonly associated with the more severe cases of plagiocephaly due to even longer periods of time spent laying in the same position with pressure on the flattened skull surface. Physical therapy serves to treat both the torticollis and the resultant positional plagiocephaly.

## RECOMMENDATIONS

1. Helmet therapy is recommended for infants with persistent moderate to severe plagiocephaly after a course of conservative treatment (repositioning and/or physical therapy).

Strength of Recommendation: Level II – uncertain clinical certainty

2. Helmet therapy is recommended for infants with moderate to severe plagiocephaly presenting at an advanced age.

Strength of Recommendation: Level II – uncertain clinical certainty

Finally, for the infant who presents either at an advanced age (usually over 8 months of age) with a significant deformity or an infant who presents at a younger age, (usually around 6 months of age) who has failed to respond to repositioning or physical therapy, a cranial orthosis (molding helmet) is more effective, compared to conservative therapy, especially if the asymmetry is severe, and provided that helmet therapy is applied during the appropriate period of infancy. In general, infants with a more severe presenting deformity, and infants who are helmeted early in infancy, tend to yield better outcomes (such as correction and even normalization) of head shape.

The task force for guidelines for the treatment of positional plagiocephaly envisions that these guidelines, built upon the evidence presented, will aid physicians in the management of this very common disorder.