

Information Statement

BABY'S HEAD SHAPE

To Reduce the Risk of Sudden Unexpected Deaths in Infancy (SUDI), including SIDS and Fatal Sleep Accidents

1. Sleep baby on the back from birth, **not on the tummy or side**
2. Sleep baby with face uncovered (no doonas, pillows, lambs wool, bumpers or soft toys)
3. Avoid exposing babies to tobacco smoke before birth and after
4. Provide a safe sleeping environment (safe cot, safe mattress, safe bedding)
5. Sleep baby in their own safe sleeping environment next to the parent's bed for the first six to twelve months of life

- Positional plagiocephaly is a flattened spot on the head that can develop if a baby lies with their head in one position for long periods of time
- There is no evidence to suggest that plagiocephaly affects brain development
- For the majority of children, plagiocephaly is preventable. Ways to prevent or treat plagiocephaly include:
 - Always place baby to **sleep on the back**. Alternate baby's head position (left or right) when placed to sleep
 - Do not place baby in the seated position for long periods
 - From birth, offer baby increasing amounts of time playing on the tummy while **awake** and **watched** by an **adult**
 - Alternate the holding position when feeding baby i.e. hold in left arm for one feed and the right arm for the next feed

Flattened spots that develop on a baby's head, particularly to the side and back of the head, occur as a result of prolonged mechanical forces on the baby's rapidly growing skull. The term used to describe this type of misshapen head is positional plagiocephaly.^{1,2}

Plagiocephaly may occur before or during birth (eg. breech position or multiple fetuses)¹⁻³, although it tends to occur more often in the postnatal period, particularly if the baby has a positional preference (baby favours placing their head to one side) and/or the baby spends long periods of time with their head in a constant resting position.¹⁻⁴

RISK FACTORS

Positional plagiocephaly is a relatively common condition, with an estimated prevalence between 10-30%.^{1,4} Studies^{1,4-8} have demonstrated that risk factors associated with the development of plagiocephaly after birth include:

- Male gender
- Prematurity
- First born babies
- Multiple births
- Positional preference (baby's head to one side during sleep/changing)
- Babies who have a difficult or assisted delivery (eg forceps or vacuum extraction)
- Limited neck rotation at birth
- Only bottle feeding & positioning baby to same side when bottle-feeding
- Lack of supervised tummy time when awake: < 3 times per day
- Slow achievement of motor milestones
- >20hrs spent on back both awake and asleep

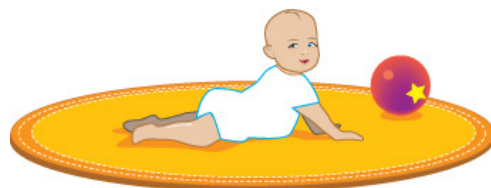
Positional plagiocephaly is more common in younger babies, with rates increasing from 6 weeks of age to a peak at 4 months.^{1,2,4} Providing that the baby does not constantly rest his or her head on the flattened area, the vast majority of babies with positional plagiocephaly improve spontaneously without any treatment as the baby gains head control and a full range of neck motion.⁹⁻¹¹

Currently there is no evidence to suggest that positional plagiocephaly affects the development of the baby's brain, although babies who have slow achievement of motor milestones are more likely to develop positional plagiocephaly due to reduced head and neck control.^{1,11-13} For the very small number of babies who experience persistent and uncorrected positional plagiocephaly, uneven growth of the face and head may alter the baby's physical appearance and may cause problems with chewing or eating. Parent counselling and education, mechanical adjustments using positioning strategies, and physiotherapy are recommended, with only severe cases resorting to the use of specially designed helmets to correct the deformity.¹⁴⁻¹⁶ Currently there are few studies demonstrating the efficacy of helmet therapy, and there are considerable costs, inconvenience, possible complications and problems with compliance associated with their use.^{2,14-17}

For the majority of children, positional plagiocephaly is a preventable condition.^{2,16} Studies have demonstrated that if positional plagiocephaly is not present at birth it is unlikely to occur at all^{1,3} and plagiocephaly at birth is not a predictor for positional plagiocephaly at 7 weeks of age.^{1,3,6}

A recent study has also demonstrated that there was no significant relationship between supine sleeping and the development of plagiocephaly; the babies' positional preference and infant care practices used by parents including the frequency of supervised tummy time, played a greater role.³

Tummy time, while awake and supervised, is very important for a baby's motor development.¹³



PREVENTION AND TREATMENT

Positional plagiocephaly may be prevented or treated by simple repositioning techniques and by minimising pressure on the head when baby is awake.^{2,3,17} These simple measures are most effective if implemented from birth. For most babies, regular repositioning of the baby's head before the baby is 4 months old will result in optimal outcomes^{1,2,9,16}

- Always **sleep** baby on the back, not on the tummy or side.^{18,19}
- Alternate the head position each time the baby is put down to sleep (left and right).^{2,17,20}
- As babies become more alert and interested in the environment they like to look at certain objects before falling asleep, sleeping baby at alternate ends of the cot will encourage him or her to look in different directions. Changing the position of the cot in the room may also have the same effect.^{17,20}
- When the baby is awake, minimise the time that the baby spends lying down with pressure on the same part of the head by carrying and cuddling baby in upright positions, or use a sling.^{1,2,5,17,20}
- Avoid prolonged periods in car seats, strollers, swings and bouncers as this places additional pressure on the back of the head.^{1,2,5,9,17}
- From birth, give baby increasing amounts of side lying⁶ and tummy time to play^{1,2,9,17,20} on a firm surface when **awake** and being **observed** by an adult but never put baby on the side or tummy to sleep.
- Alternate the holding position when feeding baby i.e. hold in left arm for one feed and the right arm for the next feed.^{1,2,5}
- Devices that restrict the movement of a baby or the baby's head are not recommended.^{16,19}
- Do not use the side sleep position to prevent positional plagiocephaly. The side position is unstable and unsafe; the babies are at a greater risk of rolling on to the tummy.^{18,19}

A small number of babies may develop positional plagiocephaly as a result of tight muscles on one side of the neck, a condition known as torticollis or wryneck.^{1,17,21} These tight muscles can make it difficult for the baby to turn their head, so that the head rests in the same position.^{1,17,21} If the baby has a strong preference for turning the head to one side, or has difficulty turning their head please consult a doctor or community child health nurse who can arrange for appropriate physiotherapy treatment and follow-up care for the baby.^{1,11,17,21}

Place baby on the back to sleep

Babies should be placed on their tummy to play several times per day, from birth, as tummy time is important for a baby's motor development and is one of the most effective strategies for reducing the risk of positional plagiocephaly. Tummy time should only occur when baby is awake and observed by an adult to ensure that the baby maintains a clear airway and does not fall asleep.

The SIDS and Kids Safe Sleeping program is based on scientific evidence and was developed by Australian SIDS researchers, paediatricians, pathologists, and child health experts with input from overseas experts in the field. The 87% drop in SIDS deaths and the 5,000 lives that have been saved is testament to the effectiveness of the program.

For further information visit the SIDS and Kids website at www.sidsandkids.org or phone us on 1300 308 307.

References

1. Bialocerkowski AE, Vladusic SL, Choong WN. (2008) Prevalence, risk factors, and natural history of positional plagiocephaly: a systematic review. *Developmental Medicine and Child Neurology* 50(8): 577-586.
2. Bialocerkowski AE, Vladusic SL, Howell SM. (2005) Conservative interventions for positional plagiocephaly: a systematic review. *Developmental Medicine and Child Neurology* 47(8): 563-570.
3. van Vlimmeren LA, van der Graff Y, Boere-Boonekamp MM, L'Hoir MP, PJM Helders, RHH Engelbert. (2007) Risk Factors for Deformational Plagiocephaly at Birth and at 7 Weeks of Age: A Prospective Cohort Study. *Pediatrics* 119(2): e408-e418.
4. Hutchison BL, Mitchell EA, Thompson JM. (2006) Non-synostic plagiocephaly and brachycephaly: an overview. *Current Pediatric Reviews* 2(1): 33-39.
5. Hutchison BL, Thompson JM, Mitchell EA. (2003) Determinants of non-synostotic plagiocephaly: A case-control study. *Pediatrics* 112(4): 316-322.
6. Hutchison BL, Hutchison LA, Thomson JM, Mitchell EA. (2004) Plagiocephaly and brachycephaly in the first two years of life: A prospective cohort study. *Pediatrics* 114(4): 970-980.
7. Lima D. (2004) The management of deformational plagiocephaly: A review of the literature. *Journal of Prosthetics and Orthotics* 16(4) Supplement: S9-S14.
8. McKinney CM, Cunningham ML, Holt VL, Leroux B, Staff JR. (2009) A case-control study of infant, maternal and perinatal characteristics associated with deformational plagiocephaly. *Paediatric and Perinatal Epidemiology* 23(4): 332-345.
9. Persing JA, James H, Swanson J, Kattwinkel J. (2003) Prevention and management of positional skull deformities in infants – American Academy of Pediatrics Clinical Report. *Pediatrics* 112(1): 199-202.
10. Peitsch WK, Keefer CH, LaBrie RA, Mulliken JB. (2002) Incidence of cranial asymmetry in healthy newborns. *Pediatrics* 110(6): 72-79.
11. Miller RI, Clarren SK. (2000) Long-term developmental outcomes in patients with deformational plagiocephaly. *Pediatrics* 105(2): e26.
12. Kordestani RK, Patel S, Bard DE, Gurwitsch R, Panchal J. (2006) Neurodevelopmental delays in children with deformational plagiocephaly. *American Society of Plastic Surgeons: Plastic and reconstructive surgery* 117(1): 207-218.
13. Majnemer A, Barr RG. (2006) Association between sleep position and early motor development. *The Journal of Pediatrics* 149(5):623-629.
14. Gill D, Walsh J. (2008) Is there scientific evidence to support physiotherapy, CODs or surgical intervention? *Archives of Disease in Childhood* 93(9): 807.
15. Singh A, Wacogne I. (2008) What is the role of helmet therapy in positional plagiocephaly? *Archives of Disease in Childhood* 93(9): 807-809.
16. American Academy of Pediatrics, Task Force on Sudden Infant Death Syndrome. (2005) The changing concepts of Sudden Infant Death Syndrome: Diagnostic coding shifts, controversies regarding the sleeping environment, and new variables to consider in reducing the risk. Implications for infant sleeping environment and sleep position. *Pediatrics* 116(5): 1245-1255.
17. Saeed NR, Wall SA, Dhariwal DK. (2008) Management of positional plagiocephaly. *Archives of Disease in Childhood* 93(1): 82-84.
18. Mitchell, EA. (2000) SIDS: facts and controversies. *Medical Journal of Australia* 173(4): 175-6.
19. Moon RY, Horne RS, Hauck FR (2007) Sudden infant death syndrome. *Lancet* 370(9598): 1578-87.
20. Australian Physiotherapy Association (2005) *How to protect the head shape of your baby*. Pamphlet: Melbourne, APA. Endorsed by SIDS & Kids and Royal Children's Hospital, Melbourne.
21. Golden KA, Beals SP, Littlefield TR, Pomatto JK. (1999) Sternocleidomastoid imbalance versus congenital muscular torticollis: their relationship to positional plagiocephaly. *The Cleft Palate-Craniofacial Journal: Official Journal of the American Cleft Palate-Craniofacial Association* 36(3): 256-261.

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