

Positioning and Handling for Preterm Baby

Anas Mustafa Kitana*

Neuro Paediatric Physical Therapist, Latifa Hospital, Dubai, UAE

***Corresponding Author:** Anas Mustafa Kitana, Neuro Paediatric Physical Therapist, Latifa Hospital, Dubai, UAE.

Received: September 25, 2017; **Published:** October 10, 2017

Aims of positioning in NICU

To minimise the effects of immobilisation and provide interventions that will support optimal development for premature and sick infants.

Goals of positioning

- Promote neurobehavioral organization of babies by decreasing stress and agitation that lead to physiological instability.
- Provide postural and structural alignment to the babies to prevent the development of abnormal postures.
- To enhance midline orientation and facilitate smooth antigravity limb movement.
- To facilitate the critical components of normal movement by conscientiously placing the infant in the correct developmental positions.
- Promote appropriate positioning recommendations to parents of those infants being prepared for discharge so as to prevent SIDS.

Key Points

- Choice of position and positional supports should be on an individual basis taking into account gestation, clinical condition and physiological, behavioural signs and state.
- Once placed in the chosen position whether prone, supine or side lying, the baby's comfort should be assessed regularly.
- Position should be changed when baby is showing signs of discomfort and as frequently as condition allows.
- The general rule of thumb is to not leave the child for more than three hours in one position or to change position after each procedure.
- Boundaries are critical for self- calming, sensory awareness and the development of muscle control.
- Avoid rolls in front of the face: occlusion and distortion of nares could occur in ventilated/unventilated infants.
- Explain to parents why positioning aids are used and why they should not mimic these positions at home.

Positions and Strategies

Supine

Supine allows for maximal observation and access to infant by caregivers. However, it is biomechanically, organizationally and physiologically a challenging position as compared to prone/ side lying. The forces of gravity pull the baby into neck extension, trunk extension, scapular retraction, anterior pelvic tilt, external hip rotation and abduction.

Since supine is the most challenging position for the preterm infant, infant should be well supported as follows:

- Head should be in line with the trunk and in midline to promote head shape.
- Prevent shoulder retraction and allow hand to chest/mouth.
- Support legs into flexion and prevent excessive hip abduction and external rotation.

Supported supine position allows the opportunity for weight bearing on the posterior skull and for older babies it promote visual exploration.

The healthy preterm infants should be positioned in supine during sleep while in the neonatal intensive care unit. The supine sleeping position for discharge of the maturing infant should be applied in the NICU at least a few days prior to discharge while the infant is under monitoring and observation. This trial will also facilitate the infant's supervised adaptation to this position.

The change in body position from horizontal to head-up tilt should be induced smoothly in very immature and unstable infants, because this intervention may affect cerebral perfusion.

Prone

Prone positioning has been shown to have many advantages for prematurely born infants, however the preterm infant is at risk for postural abnormalities and there is a strong association between the prone sleep position and SIDS, with preterm infants accounting for 10% and 20% of SIDS cases and hence there is increasing pressure to avoid the prone sleep position in all infants.

However, symptomatic preterm infants with signs of respiratory distress, very low birth weight and severe gastroesophageal reflux may benefit from the prone position. Prone and left lateral position significantly reduce the number and severity of episodes of reflux, duration of episodes and amount of gastric residue after 1 hour after feeding.

Due to the association of the prone position with SIDS, it is recommended that all preterm infants placed in the prone position should have continuous cardiorespiratory and oxygen saturation monitoring.

The unsupported prone position causes shoulder retraction, neck hyperextension truncal flattening and hip abduction and external rotation. This can cause many musculoskeletal problems and delay the gross motor development if left uncorrected.

Recommendations for prone positioning:

- Promote Posterior pelvic tilt and hip flexion.
- Lateral support to legs required to prevent foot eversion.
- Every hour, alternate the side to which the head is turned.
- Hypotonic infants should have roll under chest from surface which allow shoulder protraction and more neutral neck alignment.

Side Lying

This position promotes symmetry and midline orientation of trunk and extremities. It reduces the work of breathing since diaphragm is placed in gravity-eliminated plane. GER is reduced in left side lying.

Unsupported side lying can be stressful for the baby as it provide the least amount of postural support. The preterm baby, in his/her effort to seek boundaries for postural control is likely to extend head and trunk to end range. These hyper extended postures are counter-productive as it affects self-regulation.

Positioning strategies:

- Promote neutral head-trunk alignment.
- Provide adequate back support.
- Allow hands to engage in midline and reach towards mouth.
- If shoulder retraction of the top arm persists use swaddling/ cloth strap to stabilise the arm to midline.

Positioning for the very medically fragile infant

They may be limited in positioning options due to chest tubes/umbilical arterial or venous lines, ventilator support, medical conditions like gastroschisis, omphalocele, abdominal surgeries, arthrogyrosis etc. Under these circumstances, positioning supports to obtain the most optimal alignment available are implemented. The goal is to promote physiological stability and infant comfort rather than perfect biomechanical alignment. As the condition improves, the infant can be assessed for tolerance to positioning in better alignment.

Volume 5 Issue 6 October 2017

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