Neurodevelopmental Positioning: Cause and Effect

Good neurodevelopmental care has a lasting impact on the growth and maturation of babies in the NICU. Did you know that proper positioning is a key component of promoting optimal outcomes for NICU babies? Suboptimal positioning contributes not only to negative changes in an infant's physical growth, but can also increase stress and agitation, increase energy needs, and disrupt formation of healthy neuronal pathways, thus affecting the interaction between the infant and the caregiving environment. The table below lists some of the physical consequences of improper positioning during a NICU stay.

At-A-Glance Guide

Neurodevelopmental positioning aids should facilitate:

✔ *Head and neck in midline*

✔ *Shoulders rounded*

✔ *Support for trunk in "C" curve with rounded lower back*

✔ *Symmetrical hips and legs; flexed and neutral*

✔ *Foot support for bracing*

✔ *Hips in posterior pelvic tilt*

✔ *Flexed, midline & contained position*

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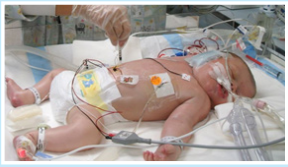
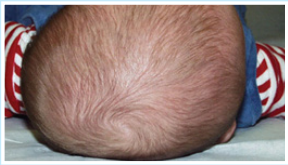
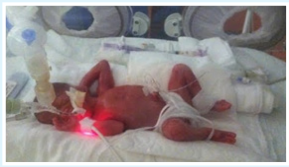
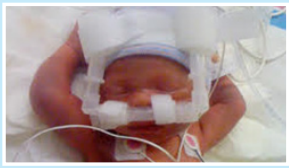
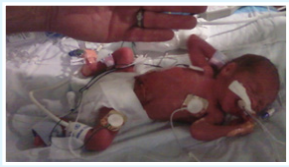
CAUSE	EXAMPLE	EFFECT	PREVENTION MEASURE
Prolonged Inactivity		Bone Demineralization	Constant foot bracing ——— Stretching of extremities with recoil
Forces of gravity before musculoskeletal maturation		Flat, extended and asymmetrical resting posture	Containment and changes in posture and position
Restrictive positions due to surgery, ECMO, or HFOV		Constant joint compression Skeletal deformation Muscle shortening Restricted joint mobility Long-term effects on developmental milestones such as rolling over and sitting up	Regular changes in position promoting physiologic flexion
Consistent side-to-side or prone positioning		Scaphocephaly (narrowing or elongation of the anteroposterior axis of the skull)	Alternating head positions, to include resting on the back of the head
Consistent supine positioning, or supine positioning with head to one side		Plagiocephaly (asymmetric flattening of the occiput) Torticollis	Alternating head positions, to include facing both sides while supine and prone
Head positioned side to side in early post-birth period, rather than in midline		Possible venule leak from occlusion of the jugular vein, increasing the risk of intraventricular hemorrhage	Maintenance of head in midline position in early days
Arms in “W” position when supine		Scapular adduction with shoulder elevation and external rotation	Containment with arms brought to midline flexion Shoulders rounded Arms allowed to move freely
Legs in “M” position when supine		Iliotibial band shortening and ankle eversion	Pelvis in posterior tilt (lower back in “c” curve) Hips flexed and in neutral rotation
Restrictive swaddling with legs extended and wrapped together		Hip subluxation and increased risk of hip dysplasia	Hips allowed to remain flexed and abducted Legs able to move freely
Oversized or backward diapers Oversized leg rolls placed between legs		External rotation of the hips	Use of appropriately sized diapers Less bulk between the legs