Neurodevelopmentally supportive positioning promotes both neuroprotective age-appropriate developmental care and trauma informed care. It positively influences physiologic function and stability, sensory development, neurobehavioral organization, skin integrity, thermoregulation, bone density, and sleep, optimizing growth, brain development and neonatal developmental outcomes. Based on a synthesis of available evidence, including work by the National Association of Neonatal Therapists, DandleLION Medical has created the 5 Key Tenets of Neurodevelopmentally Supportive Positioning™ (5 Tenets™). The 5 Tenets™ can be viewed as the gold standard for positioning – flexion, midline alignment, containment, 360 degrees of proprioception, and free movement with recoil.

Based on the 5 Tenets, the Positioning Competency Toolkit was developed to support standardization of best practice. The tool kit includes an introductory Neurodevelopmentally Supportive Positioning educational video, a visual overview of the 5 Tenets, the Positioning Competency Tool to assess caregiver skill, and the NeoNAPP assessment of positioning equipment effectiveness. Applications of the Positioning Competency Toolkit may include, but are not limited to:

1. Unit based clinical orientation
2. Clinical skills competency training
3. Quality improvement projects designed to improve positioning practices

Aim or Intent

The Positioning Competency Toolkit, created by the multi-disciplinary Dandle•LION Clinical Education team, is a multimedia resource designed to enhance positioning practice that can be used with any positioning system or device.
THE POSITIONING COMPETENCY TOOLKIT

How to Use the Toolkit

Begin by watching **Neurodevelopmentally Supportive Positioning** discussing the principles of the 5 Tenets™. The video should ideally accompany more in-depth education on neurodevelopmentally supportive care and serves as a just-in-time in-service training prior to use of the NeoNAPP. The **5 Key Tenets Overview** document serves as a visual aid and ongoing refresher about the importance of each Tenet.

The **Positioning Competency Tool** is a pre- and/or post-educational **assessment of caregiver skill**. The tool examines positioning techniques and encourages proper flow of care to promote neurodevelopmental integrity. A total of 16 care parameters are presented. Clinicians are scored between zero and four on each parameter, reflecting novice to expert-level proficiency.

The **NeoNAPP** is used to **assess a baby’s position** based on the 5 Tenets, by comparing the baby’s position to pictorial examples. Scores on each tenet can range from 0 (absence of the tenet) to 2 (successful attainment of the tenet). Clinical implications for the total score are listed at the bottom of the tool.

**Note:** It may not be clinically feasible to completely provide all 5 Tenets due to clinical acuity, medical equipment, or lack of available positioning tools. Clinicians should aim to provide as many of the 5 Tenets as possible, as completely as possible given the baby’s specific clinical circumstances. This tool can be used to measure practice at a specific point in time, or on an ongoing basis to continually evaluate positioning practice. (e.g., during developmental care rounds).

---


© 2022 Dandle•LION Medical
www.DandleLionMedical.com
This library was created to equip NICU clinicians with evidence-based positioning strategies to support babies during specific clinical scenarios. Each video utilizes the 5 Key Tenets of Neurodevelopmentally Supportive Positioning™

https://vimeo.com/showcase/positioningpearls

NEURODEVELOPMENTALLY SUPPORTIVE POSITIONING
This video introduces clinicians to the 5 Key Tenets of Neurodevelopmentally Supportive Positioning™ as the foundation for evidence-based positioning strategies in the NICU.

POSITIONING THE NEWLY ADMITTED PRETERM INFANT
This video will provide clinicians with neurodevelopmentally-supportive positioning strategies for preterm infants on admission and during early hospitalization.

POSITIONING DURING PHOTOTHERAPY
This video will provide NICU clinicians with neurodevelopmentally-supportive positioning strategies for babies undergoing phototherapy.

POSTOPERATIVE POSITIONING
This video will provide clinicians with neurodevelopmentally-supportive positioning strategies for babies in the postoperative period.

POSITIONING ON ECMO AND HFOV
This video will provide clinicians with neurodevelopmentally-supportive positioning strategies for babies on ECMO and HFOV.

POSITIONING DURING CPAP
This video will provide clinicians with neurodevelopmentally-supportive positioning strategies for babies on non-invasive ventilation, like CPAP.

POSITIONING SUPPORT FOR NAS
This video will provide clinicians with neurodevelopmentally-supportive positioning strategies for babies with Neonatal Abstinence Syndrome (NAS) or Neonatal Opioid-Withdrawal Syndrome (NOWS).

© 2022 Dandle·LION Medical
www.DandleLionMedical.com
Infant positioning that mimics the intrauterine position positively impacts healthy development of future motor milestones, while having a substantial effect on neurodevelopment of preterm infants. The DandleLION positioning system promotes healthy development of the brain and body by more closely mimicking the womb, using 5 Key Tenets of Neurodevelopmentally Supportive Positioning™.

<table>
<thead>
<tr>
<th>Tenet</th>
<th>Description</th>
<th>Womb</th>
<th>Traditional Positioning Aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 FLEXION</td>
<td>Arms And Legs Flexed, With Spinal Flexion From Head To Hips</td>
<td>🌟🌟🌟</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>At rest inside the womb, babies are flexed. During activity they demonstrate continued flexion of the spine with intermittent extension of the arms and legs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 CONTAINMENT</td>
<td>Supportive Boundaries Surrounding The Infant On All Sides</td>
<td>🌟🌟🌟</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>The immature muscular development of the preterm infant makes them unable to independently perpetuate the flexion bias. Containment promotes a flexed posture.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 MIDLINE ALIGNMENT</td>
<td>Symmetrical Posture Oriented To Midline Including Head &amp; Neck</td>
<td>🌟🌟🌟</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>Reducing asymmetry in the premature infant is essential, as symmetrical movement and responses are crucial for early development and later milestone accomplishment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 360° OF PROPRIOCEPTION</td>
<td>Responsive Boundaries That Resist Excessive Extension</td>
<td>🌟🌟🌟</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>The muscular uterus creates a consistent proprioceptive feedback loop, promoting a flexed posture while allowing nearly full extension of the arms and legs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 FREE MOVEMENT &amp; RECOIL</td>
<td>Unrestricted Movement Guided Back To Flexion And Midline</td>
<td>🌟🌟🌟</td>
<td>🌟🌟🌟</td>
</tr>
<tr>
<td>The womb provides freedom of movement within defined boundaries, facilitating development of proprioception. Normal skeletal and motor development require a flexed resting posture with extension toward dynamic boundaries, which promote recoil back to a flexed, self-regulating state.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A baby undergoes phototherapy with positioning support from two Dandle PALs, promoting a flexed, contained, midline posture while providing proprioceptive input. The baby’s posture closely aligns with the position in the womb.
BENEFITS OF THE DANDLE•LION POSITIONING SYSTEM

FRONTLINE CLINICIANS REPORT IMPROVED DURATION AND QUALITY OF SLEEP, WHICH HAS BEEN SHOWN TO RESULT IN:

- Caloric preservation and improved linear growth
- Protected brain development
- Decreased procedural touch time spent repositioning babies to achieve state organization and sleep
- Decreased respiratory support
- Increased parent satisfaction

ADDITIONAL CLINICAL BENEFITS MAY INCLUDE:

- Decreased nuisance alarms caused by movement, discomfort, or agitation

HOSPITALS REPORT A VARIETY OF BENEFITS, INCLUDING:

- Range of sizes and products that can be individualized to meet each baby’s unique needs
- Versatility allowing for customization to each unit’s census, acuity, and culture
- Washable, reusable, and disposable options to accommodate each facility’s laundry capabilities

REFERENCES


REFERENCES


Positioning Competency Tool

Clinician Name: ___________________________ Date: ___________________________

Assessed by: ___________________________

**KEY TO COMPETENCY LEVELS:**

0 – Minimal experience
1 – Minimal experience, can describe related principles
2 – Comfortable performing with resource available
3 – Competent to perform independently
4 – Expert, able to act as resource to others

**Prior to caregiving activities:**

- 0 1 2 3 4
- Protect eyes from direct light or changes in environmental lighting
- Provide a tactile cue to indicate initiation of cares (e.g., hand hug)

**After caregiving activities, position baby using the 5 Tenets:**

**FLEXION**

- Round the shoulders forward
- Facilitate spinal flexion from head to hips (‘C’ curve)
- Flex the hips into posterior pelvic tilt with slight abduction
- Flex the knees and ankles, supporting foot bracing and alignment

**CONTAINMENT**

- Provide circumferential boundaries around all sides of the baby
- Ensure positioners are nestled against the baby to reduce startling/waking

**MIDLINE ALIGNMENT**

- Ensure head is in less than 45 degrees of lateral rotation (or less than 75 degrees in prone)
- Move hands to chest or face
- Bring elbows and knees toward the midline of the body
- Bring feet together

**PROPRIOCEPTIVE INPUT**

- Provide proprioceptive feedback with a fabric pouch or covering when clinically appropriate (goal is 360 degrees of proprioception)

**FREE MOVEMENT WITH RECOIL**

- Ensure positioners allow extension and promote a return to flexion
- After positioning is complete:
  - Provide a tactile cue to indicate conclusion of touch time (e.g., hand hug)

Independent performance according to this tool indicates successful competency in providing the 5 Key Tenets of Neurodevelopmentally Supportive Positioning™:

- Flexion · Containment · Midline Alignment · 360 degrees of proprioceptive input · Free movement with recoil

Provided as a courtesy by DandleLION Medical.

© 2022 Dandle•LION Medical
### Key Tenets

<table>
<thead>
<tr>
<th>Flexion</th>
<th>Containment</th>
<th>Midline Alignment</th>
<th>360º of Proprioception</th>
<th>Free Movement with Recoil</th>
<th>Clinical Implications for NeoNAPP Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arms and legs flexed, spinal flexion in a “C” Curve from head to hips</td>
<td>Supportive circumferential boundaries surrounding the infant on all sides</td>
<td>Posture oriented symmetrically to midline of body, including head and neck</td>
<td>Responsive covering that gently resists excessive extension</td>
<td>Baby able to extend extremities against gentle pressure that encourages a return to flexion</td>
<td></td>
</tr>
</tbody>
</table>

### Gestational Age at Birth: ________  Corrected Gestational Age: ________  DOL: ________  Prone  Supine  Side-Lying

<table>
<thead>
<tr>
<th>Key Tenets</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td><img src="extremities-in-extension.jpg" alt="Image" /></td>
<td><img src="extremities-partially-flexed.jpg" alt="Image" /></td>
<td><img src="extremities-flexed-hands-face-chest.jpg" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>Containment</td>
<td><img src="boundary-absent-or-in-bed-but-away-from-baby.jpg" alt="Image" /></td>
<td><img src="boundary-partially-in-contact-with-baby.jpg" alt="Image" /></td>
<td><img src="boundary-present-and-in-contact-with-baby-on-all-sides.jpg" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>Midline Alignment</td>
<td><img src="extremities-extended-away-from-midline-asymmetry-of-extremities-head-turned-more-than-45-in-supine.jpg" alt="Image" /></td>
<td><img src="extremities-partially-toward-midline-asymmetry-of-extremities-head-turned-less-than-45-in-supine.jpg" alt="Image" /></td>
<td><img src="head-neck-and-extremities-at-midline-of-body-symmetry-of-extremities.jpg" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>360º of Proprioception</td>
<td><img src="proprioceptive-input-absent-or-misplaced.jpg" alt="Image" /></td>
<td><img src="partial-proprioceptive-input-provided.jpg" alt="Image" /></td>
<td><img src="proprioceptive-input-encases-baby-mimicking-the-womb.jpg" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>Free Movement with Recoil</td>
<td><img src="baby-unable-to-move-freely-due-to-static-boundaries-such-as-tight-hospital-blankets.jpg" alt="Image" /></td>
<td><img src="baby-can-move-freely-but-no-recoil-provided-e.g.-straps-that-easily-loosen-with-movement.jpg" alt="Image" /></td>
<td><img src="baby-can-move-freely-with-recoil-provided-by-3-way-stretch-fabric.jpg" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>

#### Clinical Implications for NeoNAPP Score:

- **< 7** Needs Improvement - Increase positional support.
- **7 - 9** Good - Ensure midline alignment, flexion and containment.
- **10** Optimal - Maintain and document position.

**TOTAL SCORE:**