Hanger Spine Rx® Suite
Nocturnal Bending Brace
NBB BACKGROUND AND PRINCIPLES
Nocturnal Bending Brace (NBB)

- Benchmark for nighttime, scoliosis management for more 30+ years.
- Manufactured by Hanger Inc. for 30+ years
- 25+ research papers published on this design.
NBB Goals

1. Maintain the patient’s scoliotic curvature at, or near, pre-brace values throughout the growth period and on to skeletal maturity.

2. Promote better brace wear compliance through the nocturnal wear.

3. Promote positive self-image & reduce burden of treatment
NBB Principles

• Growth Modulation (unbending)
  – The rate of the epiphyseal growth plate is affected by pressure applied to its axes.
  – An area of increased pressure inhibits growth and an area of decreased pressure accelerates growth.

• In Brace Correction (overcorrection)
  – The amount of in brace correction is a predictor of long-term outcome of treatment.
  – CCB principles overcorrect a spinal curve in accordance with the spine flexibility and
  – Maintain the patient's scoliotic curvatures at, or near, pre-brace values throughout the growth period and on to skeletal maturity.

• Patient Compliance (comfort)
  – Patient comfort and compliance is promoted through nocturnal wear.
  – Compliance is measured by a compliance monitor embedded into the device.
Theory: Growth Modulation
Gravity vs. Growth

• IF scoliosis is a disorder of GRAVITY then daytime support is necessary.

• IF scoliosis is a disorder of GROWTH then nighttime bracing may be all that’s required.
Melatonin

- Levels are high at **night** - minimal levels during the day
- Levels are low in patients with progressive AIS
Growth Hormone is only present and active at night

“...at least 90% of bone elongation occurs during recumbency and almost no growth occurs during standing or locomotion. The authors hypothesize that growth may also occur in children during rest or sleep.”

EVIDENCE-Spinal growth modulation by compression


2. Newton PO, et.al. Spine. 30:2608, 2005

In Brace Correction Correlates to biomechanical effectiveness of Brace treatment in AIS

“In the framework of the Hueter-Volkmann principle...in brace correction predicts long-term outcome of the treatment and provides insights in the understanding of brace biomechanics.”

Growth Modulation

- Bending increases pressure on convex vertebral growth centers to reduce growth

- Can be used for high thoracic curves

- Double curves are difficult to brace but can be treated by bending brace
NBB OPTIONS:

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<th>NBB-II</th>
<th>NBB-Lite</th>
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<tr>
<td>• Nighttime scoliosis management</td>
<td>• Nighttime dynamic treatment for Thoracolumbar Type II curves</td>
<td>• Nighttime wear for early intervention</td>
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<tr>
<td>• Benchmark for 35+ years</td>
<td>• Dynamic alignment strap</td>
<td>• Cobb angles &gt; 25°</td>
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<td>• Long single curves.</td>
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<td>• Neuromuscular patients</td>
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Now available: Calculate wearing compliance % with iO™ Compliance Monitor.

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NBB
Nocturnal BENDING Brace

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