Neonatal Massage in our NICU

Evidence Base

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The following is a resource guide, synopsis, of collected data presented at the Synapse-One Conference by Kara Ann Waitzman in February 2018.

Benefits of Neonatal Massage

- Increase Weight Gain
- Insulin-Like Growth Factor 1
- Improved Digestion
- Acceleration of Brain Maturation
- Increased Elimination of Waste Products
- Improved Bone Density
Improved Neurological Development
Reduced Stress Behaviors & Secretion of Stress Hormones
Improved Muscle Tone
Decreased Pain Response
Accelerated Maturation of the Autonomic Nervous System
Improved Sleep
Improved Circulation
Enhanced Feeding Outcomes
Improved Immune Function
Improved Temperature Stability
Decreased Length of Stay
Improved Sleep-Wake Cycle
Benefits to the Parent
Enhanced Infant-Parent Bonding

Benefit of Massage: Increased Weight Gain


Research results: Statistically significant improved weight gain and shortened length of stay


Research results: Improved weight gain with massage and kinesthetic stimulation

Insulin-Like Growth Factor 1

Research results: After 5 days of massage babies had increases in:

- Weight gain
- Serum levels of insulin
- IGF-1

Research by:

Research findings: Increase in IGF-1 and IGFBP3 (protective against ROP) and Increase in vagal activity leading to improved weight gain

Improved Digestion


Research results: premature infant massage significantly increases height, head circumference and number of bowel movement

Pre-feeding residuals were significantly decrease

Acceleration of Brain Maturation

Guzetta et al (2009)

A small study of low-risk preterm infants without brain abnormalities who were massaged 3 times daily in 5-day blocks with 2-day separation x 2 found massaged infants had higher behavioral visual acuity
**Increased Elimination of Waste Products**


Research results: Massaged infants had a significantly higher number of bowel movements than control subjects.


Research results: Bowel movement frequency was significantly higher in massaged babies compared to controls and transcutaneous bilirubin levels on days 2 to 5 and serum total bilirubin levels on the 4th day were significantly decreased in the massage group.

**Improved Bone Density**


Research results: Four trials demonstrated short-term benefits. Meta-analysis of four trials demonstrated positive effect on weight gain. Four trials showed a positive effect on linear growth but not head growth.

**Improved Neurological Development**


Research results: Intervention group had borderline higher Psychomotor Development Index and significantly higher Mental Development Index scores at 2-year corrected age.


Research results: Intervention group had significantly higher cognitive scores on the BSID at 12 months corrected age and lower scores on PIPP.

Research results: Global spectral power was significantly improved in the massage group

**Reduced Stress Behaviors and Secretion of Stress Hormones**


Research results: Statistically significant differences in cortisol levels between GHT and controls and Massage and controls.

**Improved Muscle Tone**


Research results: Infants in the intervention group who had lower TIMP scores at the beginning of the intervention had significantly higher TIMP scores following intervention and earlier discharge.


Research results: Intervention group had greater gains in fine motor and gross motor functioning and less severe limb hypotonicity

**Decreased Pain Response**


Research results: Infants who received moderate pressure massage prior to tape removal had lower increases in HR and returned to baseline 27 seconds faster than the heart rates of the other two groups.

**Accelerated Maturation of the Autonomic Nervous System**


Research results: Controls demonstrated significant decline in LF:HF ratio from baseline to second caregiving periods. Test subjects demonstrated increased LF:HF ratio during caregiving and decreased LF:HF ratio during sleep.

**Improved Sleep**


Research results: The modification in global EEG spectral power between the first and second EEG was significantly different comparing massaged and non-massaged infants.

**Enhanced Feeding Outcomes**


Research results: Infants who received oral and/or tactile and/or kinesthetic interventions achieved independent oral feeding 9 to 10 days early than those infants who did not (controls) and infants received all three attained independent oral feeding at a significantly younger PMA than controls and had greater proficiency than the other intervention groups.

**Improved Immune Function**


Research results: Massage group had a significantly lower rate of sepsis and earlier discharge.
**Improved Temperature Stability**


Research results: Infants receiving massage demonstrated greater temperature stability

**Decreased Length of Stay**


Research results: Length of stay among very low birthweight infant who received massage was shortened by 7 days compared with controls