Summary:
The VestibuGLIDE System represents a new medical device designed to provide therapeutic stimulation of the vestibular system in premature infants.

Overview:
Respiratory complications are one of the most common and immediate problems with premature infants. These complications range from a mild oxygen need to an immense oxygen dependency that can result in the scarring of the lung tissue. Respiratory complications not only prolong the time spent in the neonatal intensive care unit (NICU), but can also hinder lung and brain development. Therapies designed to reduce respiratory needs and increase the ability for premature infants to breathe independently are vital for this fragile population. In utero, the mother is the ‘engine of motion’ that provides the fetus with a near continuous stream of important vestibular stimulation daily through routine motor activities such as walking, driving a car, sitting, sleeping, rolling over, postural changes, breathing, etc.

Application:
Promote healthy development of premature infants.

How It Works:
The VestibuGLIDE System is compatible with the NICU environment and can replace the vestibular experiences that are lost due to prematurity. It features a customized glider chair, an integrated position-servo motor and a digital controller to generate physiologically appropriate sinusoidal displacements of the glider chair in the horizontal plane at salient rates and accelerations.

Benefits:
- Stabilize and accelerate chest wall (rib cage and abdomen) motor patterning during respiration
- Improve neonate behavioral state control (sleep-wake cycling)
- Reduce the neonate’s length of stay in the hospital
- Overcomes one form of sensory deprivation in the NICU by providing the newborn with needed vestibular stimulation to promote neurologic development (e.g., improved postural control, modulation of reticular formation via premotor inputs, lung and brain development, etc.)

Why It Is Better:
The development of a device that can systematically introduce physiologically salient vestibular stimulation to the newborn that is otherwise faced with the prospect of lying stationary for extended periods of time in a crib or an isolette in the NICU can influence the reticular formation with indirect neural pathways that may influence postural motor control, state control, and respiratory patterning.

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