University Hospitals Ventures

Technology for License Summary

The Unicorn Hat is a wearable, endotracheal and ventilator tube securing device that ensures safe movement, transport and care of ventilated infants

Unicorn Hat - Tubing Securement Device

Background

Neonates requiring mechanical ventilation, particularly those who are extremely low birthweight or medically complex, critically benefit from kangaroo care for physiological stability and neurodevelopment. Despite its importance, safely securing endotracheal tubes during essential skin-to-skin contact and infant transport presents a significant challenge, as tube displacement or accidental extubation can lead to life-threatening events. Current approaches, such as taping or clipping ventilator tubing to external fixed points like parents' garments or chairs, fail to accommodate natural infant or caregiver movements, causing tension and increasing the risk of tube dislodgement. Similarly, existing commercial securement devices, often utilizing adhesives and plastic arches, frequently do not move cohesively with the infant, thereby also increasing the risk of unplanned extubations during crucial care activities.

Technology

The Unicorn Hat - Tubing Securement Device is a modified CPAP hat designed to stabilize an endotracheal tube (ETT) in neonates, particularly during kangaroo care and transport. It incorporates hook and loop closures, foam bumpers, and unique cheek straps that wrap around the ETT to secure it without adhesives. This design secures the ventilator tubing to the crown of the infant's head, allowing the baby and tubing to move as a single unit. This proximal securement system reduces tension on the ETT and minimizes the risk of tube displacement or accidental extubation, thereby enhancing safety during transfers and skin-to-skin holding.

Advantages

- Enhances tube stability during kangaroo care
- Eliminates skin related issues from adhesive contact
- Simplifies set-up, assembly and attaching system to patients
- Facilitates longer and more frequent skin-to-skin contact sessions

Clinical Citing

- Bembich, S, Castelpietra, E, Cont, G, Travan, L, Cavasin, J, Dolliani, M, et al. Cortical activation andoxygen perfusion in preterm newborns during kangaroo mother care: A pilot study. *ActaPaediatr. 2023; 00: 1– 9.* https://doi.org/10.1111/apa.16695

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Market

In a US 2008-2018 study, about 18.5% of preterm infants received mechanical ventilation. This equates to roughly 75,000 patients annually, requiring unintended extubation.

Stage of Development

Drawings only / Provisional patent application

For More Information Contact

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Images of the latest iteration of the device available upon serious inquiry.

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