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Promoting Technology and Collaboration

A Mixed Reality Trainer for Simulating Intravenous Infusion into the Long Saphenous Vein of Infants

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Background: There is a lack of consistency and frequency in the training of medical professionals in intravenous (IV) infusion into the long saphenous vein of neonatal infants. The small nature of neonatal blood vessels creates inherent technical difficulty in IV insertion. This difficulty combined with the inherent risk and ethical issues of practicing IV insertion on infants leaves a lot to be desired in terms of procedural training. As a result, simulated training methods, in the forms of 3D printed and artificially cast limbs and virtual reality environments, have been developed as supplementary training mediums.

Technology Overview: The aim of this abstract is to outline the development of a novel training model which combines a 3D printed and cast leg with mixed reality to yield a well-rounded training tool for IV infusions into the long saphenous vein of neonatal infants. Metrics to evaluate user performance include accuracy of entry angle and needle insertion depth compared to acceptable standards.

Potential Application in Surgical Simulation and Education: This training model could be used to increase the training frequency of neonatal medical professionals in infantile IV insertion. This model has the capacity to both teach and grade medical professionals' handiwork as it relates to IV insertion.

Potential Opportunities to Collaborate: This infantile IV insertion training model can be used at teaching hospitals and universities across the country. Furthermore, this model presents a great opportunity to cater to a number of medical professionals, including paramedics, nurses, and surgeons.