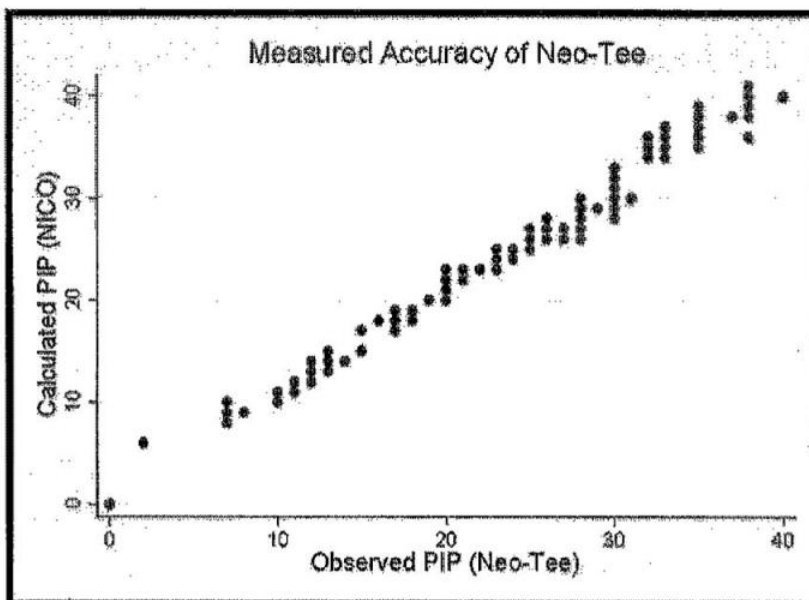


### EVALUATION OF ACCURACY AND RELIABILITY OF THE NEO-TEE DISPOSABLE T-PIECE RESUSCITATOR.

John T. Gallagher, Kathleen M. Deakins, Timothy R. Myers; Rainbow Babies & Children's Hospital, Cleveland, OH

Background: T-piece resuscitators have gained popularity as devices used for both neonatal resuscitation and intermittent manual ventilation. Until recently, a substantial expense for the purchase of hardware was required to obtain reusable t-piece resuscitators. The Neo-Tee t-piece resuscitator (Mercury Medical, Clearwater, FL) incorporates the mechanical device into a disposable circuit. There is now a potential for more caregivers to adopt the practice of t-piece resuscitation courtesy of a technology that was formerly not available or affordable. The purpose of this bench study is to determine if a disposable resuscitator accurately and reliably delivers ventilating pressures at selected settings. Methods: Five Neo-Tee t-piece resuscitators were randomly chosen from a standard shipment supplied by the manufacturer. Resuscitators were adjusted to maintain the PEEP valve in a fully-closed position. Each circuit was independently attached to a flow sensor of the NICO 2 breath monitor (Respironics, Wellington, CT) and then to an infant test lung (Infracor, San Diego, CA) with known compliance of 1 mL/cmH<sub>2</sub>O. Manual ventilation was then simulated using this model. All five devices were evaluated at 12 predetermined levels of controlled pressure set within three color-coded zones on the Adjustable PIP Controller and at commonly-used flow rates of 5, 8, and 10 Lpm. Pressure readings on the built-in manometer were estimated by the investigator during simulated ventilation and were compared to calculated readings recorded simultaneously on the NICO 2 monitor using the Wilcoxon rank sum test. Reliability between circuits was evaluated using the ANOVA test. Results: There was no significant difference between the observed PIP ( $p = 0.38$ ) or PEEP ( $p = 0.22$ ) on the Neo-Tee when compared to the calculated pressures on the NICO 2. In addition, there was no significant difference in performance among disposable resuscitators when compared to one another ( $p = 0.54$ ). Conclusions: In the laboratory setting, accuracy of delivered pressures and the reliability of circuit performance for the Neo-Tee resuscitators are consistent with the manufacturer's specifications.

Sponsored Research - None



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