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Use of self-inflating bags for neonatal resuscitation☆

SamOddieaJonathanWylliebAndrewScally

Results:
Use of a 240-ml self-inflating bag was associated with shorter initial inflations of 1.8 s mean (95% CI 1.60–1.99 s), compared with 2.42 s (2.24–2.61 s), 2.40 s (2.08–2.71 s) for 500-ml self-inflating bags and “Tom Thumb” T piece, respectively. Delivery of breaths within a target pressure range of 30 ± 5 cm H2O was significantly better using a T piece than either self-inflating bag (proportion within target range 0.05 (95% CI 0–0.11), 0.17 (95% CI 0.12–0.23), 0.89 (95% CI 0.83–0.94) for 240-ml and 500-ml self-inflating bags and “Tom Thumb” T piece, respectively. Excessive pressure delivery with both sizes of self-inflating bag was frequent.

Conclusions:
These data do not support use of 240-ml or 500-ml self-inflating bags for resuscitation of newborn term infants. A variable pressure T piece blow-off system may be the easiest device to use for newborn resuscitation and the most reliable at delivering desired pressures for set times.

Comparison of the T-piece resuscitator with other neonatal manual ventilation devices: A qualitative review

Colin PatrickHawkesabC. AnthonyRyanabEugene MichaelDempsey

Data sources
The Medline, EMBASE, Cochrane databases were searched in April 2011. Ongoing trials were identified using www.clinicaltrials.gov and www.controlled-trials.com. Additional studies from reference lists of eligible articles were considered. All studies including T-piece resuscitator use were eligible for inclusion.

Results
Thirty studies were included. There were two randomised controlled trials in newborn infants comparing the devices, one of which addressed short and intermediate term morbidity and mortality outcomes and found no difference between the T-piece resuscitator and self inflating bag. From manikin studies, advantages to the T-piece resuscitator include the delivery of inflating pressures closer to predetermined target pressures with least variation, the ability to provide prolonged inflation breaths and more consistent tidal volumes. Disadvantages include a technically more difficult setup, more time required to adjust pressures during resuscitation, a larger mask leak and less ability to detect changes in compliance.

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Conclusions

There is a need for appropriately designed randomised controlled trials in neonates to highlight the efficacy of one device over another. Until these are performed, healthcare providers should be appropriately trained in the use of the device available in their departments, and be aware of its own limitations.