

T-Piece Resuscitation Key References

Neonatal resuscitation: 2010 NRP Resuscitation Guidelines

Neonatal resuscitation: 2010 ILCOR Guidelines



Study used the
Fisher & Paykel Healthcare
Neopuff™

THERAPY OVERVIEW

1. Vento M, Saugstad OD. Resuscitation of the term and preterm infant. *Semin Fetal Neonatal Med.* 2010 Aug;15(4):216-22. Epub 2010 May 6.

RESUSCITATION MASK SEAL AND TRAINING

2. Wood FE, Morley CJ, Dawson JA, Kamlin CO, Owen LS, Donath S, Davis PG. Improved techniques reduce face mask leak during simulated neonatal resuscitation: study 2. *Arch Dis Child Fetal Neonatal Ed.* 2008 May;93(3):F230-4. Epub 2007 Nov 26.
3. Schilleman K, Witlox RS, Lopriore E, Morley CJ, Walther FJ, Te Pas AB. Leak and obstruction with mask ventilation during simulated neonatal resuscitation. *Arch Dis Child Fetal Neonatal Ed.* 2010 Jun 30. [Epub ahead of print]

COMPARISON WITH COMPETITORS

4. Hussey SG, Ryan CA, Murphy BP. Comparison of three manual ventilation devices using an intubated mannequin. *Arch Dis Child Fetal Neonatal Ed.* 2004 Nov;89(6):F490-3.
5. Roehr CC, Kelm M, Fischer HS, Bühner C, Schmalisch G, Proquitté H. Manual ventilation devices in neonatal resuscitation: tidal volume and positive pressure-provision. *Resuscitation.* 2010 Feb;81(2):202-5. Epub 2009 Nov 17.
6. Roehr CC, Kelm M, Proquitté H, Schmalisch G. Equipment and operator training denote manual ventilation performance in neonatal resuscitation. *Am J Perinatol.* 2010 Oct;27(9):753-8. Epub 2010 May 10.

HUMIDIFIED RESUSCITATION

7. Te Pas AB, Lopriore E, Dito I, Morley CJ, Walther FJ. Humidified and heated air during stabilization at birth improves temperature in preterm infants. *Pediatrics.* 2010 Jun;125(6):e1427-32. Epub 2010 May 10.

SUSTAINED INFLATION

8. Te Pas AB, Walther FJ. A randomized, controlled trial of delivery-room respiratory management in very preterm infants. *Pediatrics.* 2007 Aug;120(2):322-9. Erratum in: *Pediatrics.* 2007 Oct;120(4):936.
9. Lista G, Fontana P, Castoldi F, Caviglioli F, Dani C. Does sustained lung inflation at birth improve outcome of preterm infants at risk for respiratory distress syndrome? *Neonatology.* 2011;99(1):45-50. Epub 2010 Jul 9.
10. Klingenberg C, Dawson JA, Gerber A, Kamlin CO, Davis PG, Morley CJ. Sustained inflations: comparing three neonatal resuscitation devices. *Neonatology.* 2011;100(1):78-84. Epub 2011 Jan 26.
11. Te Pas AB, Siew M, Wallace MJ, Kitchen MJ, Fouras A, Lewis RA, Yagi N, Uesugi K, Donath S, Davis PG, Morley CJ, Hooper SB. Establishing functional residual capacity at birth: the effect of sustained inflation and positive end-expiratory pressure in a preterm rabbit model. *Pediatr Res.* 2009 May;65(5):537-41.
12. Te Pas AB, Siew M, Wallace MJ, Kitchen MJ, Fouras A, Lewis RA, Yagi N, Uesugi K, Donath S, Davis PG, Morley CJ, Hooper SB. Effect of sustained inflation length on establishing functional residual capacity at birth in ventilated premature rabbits. *Pediatr Res.* 2009 Sep;66(3):295-300.

BENEFITS OF PEEP

13. Siew ML, Te Pas AB, Wallace MJ, Kitchen MJ, Lewis RA, Fouras A, Morley CJ, Davis PG, Yagi N, Uesugi K, Hooper SB. Positive end-expiratory pressure enhances development of a functional residual capacity in preterm rabbits ventilated from birth. *J Appl Physiol.* 2009 May;106(5):1487-93. Epub 2009 Mar 26. *Am J Physiol Lung Cell Mol Physiol.*
14. Hillman NH, Nitsos I, Berry C, Pillow JJ, Kallapur SG, Jobe AH. Positive end-expiratory pressure and surfactant decrease lung injury during initiation of ventilation in fetal sheep. 2011 Nov;301(5):L712-20. Epub 2011 Aug 19.

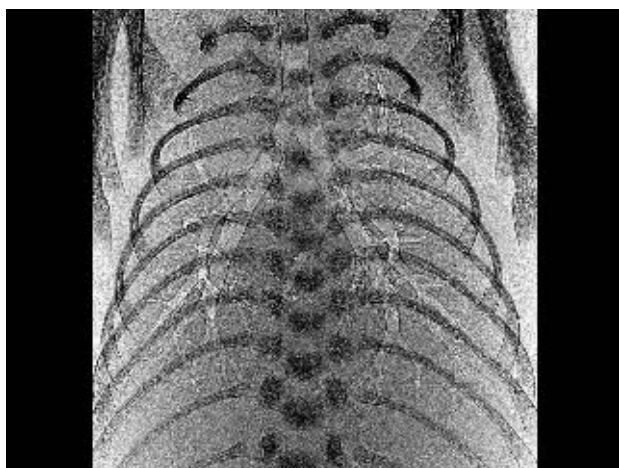
* References 11 and 13 have supporting videos on the next page.

Click on references to obtain the abstract or full paper.

Videos show preterm rabbit pups delivered by caesarean section which were imaged with phase-contrast X-ray imaging. This technique allows the visualisation of air entering the lungs.

Click on images to play each video.

VENTILATION WITHOUT PEEP^{1,3}



VENTILATION WITH PEEP (5 cmH₂O)^{1,3}



VENTILATION WITH A SUSTAINED
INFLATION (20 s) + PEEP (5 cmH₂O)^{2,3}



Videos have been kindly provided by Professor Stuart Hooper, Monash University, Melbourne, Australia.

References:

1. Siew ML, te Pas AB, Wallace MJ, et al. Positive end-expiratory pressure enhances development of a functional residual capacity in preterm rabbits ventilated from birth. *Journal of Applied Physiology*. May 2009;106(5):1487-1493.
2. Te Pas AB, Siew M, Wallace MJ, et al. Establishing Functional Residual Capacity at Birth: The Effect of Sustained Inflation and Positive End-Expiratory Pressure in a Preterm Rabbit Model. *Pediatric Research*. 2009;65(5):537-541 510.1203/PDR.1200b1013e31819da31821b.
3. The SPring-8 synchrotron in Japan