The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynyk and Fineout-Overholt (2011).

I Evidence obtained from a systematic review of all relevant randomised control trials.

II Evidence obtained from at least one well designed randomised control trial.

III Evidence obtained from well-designed controlled trials without randomisation.

IV Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case- series

V Evidence obtained from systematic reviews of descriptive and qualitative studies

VI Evidence obtained from single descriptive and qualitative studies

VII Expert opinion from clinicians, authorities and/or reports of expert committees or based on physiology

Melynyk, B. & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice (2nd ed.).* Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins.

National Health and Medical Research Council (2009). *NHMRC levels of evidence and grades for recommendations for developers of guidelines* (2009). Australian Government: NHMRC. http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/evidence_statement_form.pdf

OCEBM Levels of Evidence Working Group Oxford (2011). *The Oxford 2011 Levels of Evidence*. Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=1025

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Reference *(include title, author, journal title, year of publication, volume and issue, pages)*	Evidence level (I-VII)	Key findings, outcomes or recommendations
McCormack, K. (2003). Endotracheal suctioning: A review and study into practice. *Journal of Neonatal Nursing*. 9(2):48-54.	V	• Study to review suction practices of 226 nurses from 22 neonatal units • Factors covered: frequency of suctioning, number of practitioners and gloves, size and type of catheters, depth of suctionduration of sucking, hypoxaemia during suction, suction pressure, saline installation • Above factors related to available research regarding best practice for each factor
Wallace,.J. (1998). Suctioning – a two edged sword: Reducing the theory-practice gap. *Journal of Neonatal Nursing*. 4(6)12, 14-17.	V	• Review of literature and assessment of reliable literature related to ETT suction • Discussion includes adverse effects, optimal duration of suction, negative vacuum pressure, depth suction catheter should be passed, necessity of instillation of saline, necessity to pre-oxygenate
Young, J. (1995). To help or hinder: Endotracheal suction and the intubated neonate. *Journal of Neonatal Nursing*. 1(3): 23-28.	V	• Establishment of guideline for safe and effective suction practice based on literature review • Factors discussed include complications, frequency, oxygen saturation, mucosal trauma, appropriate vacuum pressure, duration of suction, risk of infection, instillation of saline
Daugherty Wrightson, D. (1999). Suctioning smarter: Answers to eight common questions about endotracheal suctioning in neonates. *Neonatal Network*. 18(1):51-55.	V	• Addresses common questions about suction, using research findings. Issues addressed: indications for suction, depth of suction, number of catheter passes, necessity of saline instillation, necessity of chest physiotherapy, ways to minimize hypoxia and destauration, time required for recovery post suction

Pritchard, M.A., Flenady, V., & Woodgate, P. (2003). Systematic review of the role of pre-oxygenation for tracheal suctioning in ventilated newborn infants. *Journal of Paediatrics and Child Health*. 39(3): 163-165.	**IV**	• **Review of evidence related to short term pre-oxygenation benefits versus long term morbidity** • **The decision whether to pre-oxygenate for tracheal suction in preterm ventilated neonates cannot be answered by this review**
St John, R.E. (2004). Protocols for Practice. Airway management. *Critical Care Nurse*. 24(2): 93.	**VII**	• **Discussion of clinical indications for ETT suction, amount of suction pressure required, suction catheter size, necessity for normal saline instillation**
Tingay, D.G., Copnell, B., Grant, C. A., Dargaville, P.A., Dunster, K.R. & Schibler, A (2010). The effect of endotracheal suction on regional tidal ventilation and end-expiratory lung volume. *Intensive Care Medicine.* 36: 888-896.	**III**	• **Examines impact of different ETT suction techniques on regional and end-expiratory lung volume and tidal volume in an animal model of surfactant-deficient lung injury** • **Suction catheter size exerted a greater influence than suction method alone on lung volume loss** • **Recovery of regional lung volume and tidal ventilation after suction was rapid and uniform in this animal model, regardless of the suction method and catheter size**
Copnell. B., Dargaville, P.A., Ryan, E.M., Kiraly, N.J., Chin, L.O.F., Mills, J.F., & Tingay, D.G. (2009). The Effect of Suction Method, Catheter Size, and Suction Pressure on Lung Volume Changes During Endotracheal Suction in Piglets. *Pediatric Research*: 66 (4): 405-410.	**III**	• **Suction pressure and catheter size effects on lung volume during open and closed endotracheal suction** • **Individual and combined effects of suction variables on lung volume were examined** • **Three suction methods used: open, closed in-line and closed with side-port adapter** • **Closed suction has no advantage in the prevention of volume loss in this animal model**