

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>

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
<ul style="list-style-type: none"> Charnock, Y and Evans,D. (2001). Nursing management of chest drains: a systematic review. <i>Australian Critical Care</i>. 14(4):156-160 	I	<ul style="list-style-type: none"> Highlights the lack of research on most aspects of the management of patients with chest drains Very little evidence for method of dressing, positioning of drainage unit, clamping of chest drains, patient position & breathing during tube removal. Milking and stripping of chest drains did not make a difference to drain patency or drainage volume in 3 out of 4 studies, no difference in haemodynamic complications in groups that had milking compared to groups with no milking Chest drain removal is very painful and patients require adequate analgesia and preparation time
<ul style="list-style-type: none"> Curley, M.A. & Moloney-Harmon, P.(2001). <i>Critical care nursing of infants & children</i>. (2nd ed.). Philadelphia: W.B. Saunders Company. 	VII	<ul style="list-style-type: none"> Nursing management of chest drains Troubleshooting of underwater seal drains Avoidance of milking of drains Avoidance of clamping drains Description of the purpose of the 3 chambers of the underwater seal drain
<ul style="list-style-type: none"> Durai R; Hoque H; and Davies T. (2010). Managing a chest tube and drainage system. <i>AORN Journal</i>. 91(2):275-280 	VII	<ul style="list-style-type: none"> Indication for chest drainage Care for chest drain during transport Positioning of chest drain below level of chest at all times Indications for changing drain Procedure for drain removal, including importance of analgesia Complications of chest drains and nursing management & trouble shooting 'Milking' of the chest drain is not recommended due to the high negative pressure & potential tissue damage it causes
<ul style="list-style-type: none"> Laws, D; Neville, E; & Duffy,J. (2003) BTS guidelines for the insertion of a chest drain. <i>Thorax</i>. 58(suppl1):ii53-ii59. 	VII	<ul style="list-style-type: none"> Indications for chest drainage Securing of chest drains using sutures and a 'omental tag' of tape Danger of clamping chest drains; and ensuring if patient respiratory status deteriorates that the drain is checked to ensure it is unclamped Suction on chest drains depends on reason for chest drain insertion No evidence that disconnecting suction briefly to allow for mobilization is harmful Timing of drain removal during expiration Daily observations required of drain tube

<ul style="list-style-type: none"> Newcomb, A; Alphonso N; Norgaard M; Cochrane A; Karl T; Brizard C. (2005) High-vacuum drains rival conventional underwater-seal drains after pediatric heart surgery. <i>European Journal of Cardiothoracic Surgery</i>. 27:395-400 	II	<ul style="list-style-type: none"> Randomized controlled trial in children undergoing cardiac surgery comparing underwater seal (UWSD) versus high vacuum drains performed at RCH. Redivac drains were as safe as UWSD, and had lower incidence of residual pleural effusion requiring drainage. Identifies why the majority children at RCH undergoing cardiac surgery have a redivac drain rather than UWSD for their management
<ul style="list-style-type: none"> Pacharn,P; Hellar,D; Kammen,B; Bryce,T; Reddy,M; Baily,R and Brasch,R. (2002). Are chest radiographs routinely necessary following thoracostomy tube removal? <i>Pediatric Radiology</i>. 32:138-142 	VI	<ul style="list-style-type: none"> Importance of clinical signs and symptoms to identify nearly all patients with significant pneumothorax post chest drain removal in children post cardiac surgery Currently chest x-ray should still be performed post chest drain removal
<ul style="list-style-type: none"> Tang, A; Velissaris,T; and Weedon,D. (2002). An evidence based approach to drainage of the pleural cavity: evaluation of best practice. <i>Journal of Evaluation in Clinical Practice</i>. 8(3):333-340 	VII	<ul style="list-style-type: none"> Observations and daily assessment required of chest drains Safe positioning of chest drains Danger of clamping chest drains (except during bottle change) including during transport Chest drain removal: timing with respiration & two person procedure with defined roles
<ul style="list-style-type: none"> Van den Boom J; and Battin B. (2007).Chest radiographs after removal of chest drains in neonates: Clinical benefit or common practice? <i>Archives of Disease in Childhood (Neonatal edition)</i>. 92:46-48 	VI	<ul style="list-style-type: none"> Close clinical monitoring post chest drain removal for infants with a chest drain for pneumothorax identified all clinically relevant pneumothorax In this study no asymptomatic infant had a clinically undetected pneumothorax on chest x-ray