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**
• Balough Z, Jones B, Amours S, Parr M and Sugrue M (2004) *Continuous intra-abdominal pressure measurement technique.* The American Journal of Surgery.188(6):679-684	VI	• Prospective trial comparing continuous versus intermittent intra abdominal pressure monitoring • Continuous monitoring found to be equally accurate to intermittent but requires special 18G triple lumen urinary catheter to be inserted on admission
• Cheatham M, Malbrain M, Kirkpatric A, Sugrue M, Parr M et al (2007). *Results from the international conference of experts on intra-abdominal hypertension and abdominal compartment syndrome. II Recommendations*. Intensive Care Medicine. 33:951-962.	VII	• International consensus group of critical care specialists who have developed consensus definitions and evidence based guidelines for recognition and management of intra abdominal hypertension (IAH) & abdominal compartment syndrome (ACS) • Risk factors for IAH & ACS identified • Positioning of patient when measuring intra abdominal pressure(IAP) needs to be consistent with each subsequent measurement taken. Elevated head of bed elevates IAP • Reduction of maximum fluid volume used during measurement to 25ml • Reference point for zeroing should be mid axilla rather than symphasis pubis as easier for staff to identify
• Davis P, Koottayi S, Taylor A, Butt W. (2005) *Comparison of indirect methods of measuring intra-abdominal pressure in children.* Intensive Care Medicine. 31:471-475	IV	• Prospective study in an Australian PICU (RCH) comparing methods of measuring intra abdominal pressure. • Compared measuring pressure via PD catheter, nasogastic tube or urinary catheter. Also compared volume of saline to instill when performing measure • Most accurate method was intra vesicular measuring bladder pressure via transducer after instilling 1ml/kg of normal saline. Higher levels of fluid instillation led to overestimation of IAP

• Ejike J, Bahjri K, Mathur M. (2008). *What is the normal intra-abdominal pressure in critically ill children and how should we measure it?* Critical Care Medicine. 36(7):2157-2162	IV	• Prospective observational study of 96 mechanically ventilated children in a PICU with aim to identify normal IAP in critically ill children • IAP measured by intra-vesical technique. Normal saline of pre determined volume instilled via urinary catheter & pressure transduced • Mean IAP in critically ill children is 7± 3mmHg. • IAP> 10mmHg should be observed very closely for development of IAH & ACS • Procedure was safe and no increase in nosocomial bacteriuria with the addition of the measurement system to the urinary catheter
• Ejike J, Kadry J, Bahjri K, Mathur M. (2010). Semi recumbent position and body mass percentiles: effects on intra-abdominal pressure measurements in critically ill children.	IV	• Prospective observational study in a PICU of 77 mechanically ventilated children with a range of diagnosis. Aim to determine effect of position and BMI on intra-abdominal pressure(IAP) • IAP measured by intra-vesical technique. Normal saline of pre determined volume instilled via urinary catheter & pressure transduced • Intra abdominal pressure increases significantly when head of bed is elevated from 0° to 30°. BMI has no correlation with IAP
• Gallagher JJ (2000) *Ask the Experts* Critical Care Nurse, 20, 1 p:87.	VII	• Description of procedure for measuring IAP including equipment required and how to assemble • Timing of measurement for end expiration
• Iberti TJ, Lieber CE, Benjamin E. (1989*) Determination on intra-abdominal pressure using a transurethral bladder catheter: clinical validation of the technique.* Anesthesiology, 70 (1): 47-50	IV	• Prospective study of 16 adults with urethral catheters and abdominal drain/parancentesis. Compared measuring IAP via bladder catheter & direct abdominal pressure • Clinical validation of bladder pressure monitoring of intra abdominal pressure as simple, minimally invasive method of measurement
• Kirkpatrick A, Roberts D, Waele J, Jaeschke R, Malbrain M, et al (2013). *Intra-abdominal hypertension and the abdominal compartment syndrome: updated consensus definitions and clinical practice guidelines from the World Society of the Abdominal Compartment Syndrome*. Intensive Care Medicine 39:1190-1206	VII	• Update guidelines & recommendations from 2007 • International consensus group of critical care specialists who have developed consensus definitions and evidence based guidelines for recognition and management of intra abdominal hypertension (IAH) & abdominal compartment syndrome (ACS) • Pediatric sub committee established and some pediatric specific definitions have been developed.

• LCP Rao, CR Chaudhry, LCS Kumar (2006) *Abdominal Compartment Pressure Monitoring - a simple techniques.* MJAFI,Vol. 62, No. 3.	VII	• Description of a simple bedside method of measuring IAP via urinary catheter
• Ravishankar N, Hunter J (2005) *Measurement of Intra-abdominal hypertension in intensive care units in the United Kingdom.* British Journal of Anaesthesia Volume 94, Number 6 Pp. 763-766.	VII	• Questionnaire to all ICUs in the UK regarding practices around IAP monitoring & recognition of IAH and ACS • Demonstrated more than half of ICUs don't measure IAP despite acknowledging high IAP is a serious problem, as they don't know how to (27.2%) or don't know how to interpret result (33.3%)