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**
Australian Commission on Safety and Quality in Healthcare (2011). *National Safety and Quality Health Service Standards*. Sydney: ACSQHC.	*V11*	• Recommend 8 elements that are essential features of systems of care for recognising & responding to clinical deterioration • Four elements relate to clinical processes: measurement & documentation of observations, escalation of care, rapid response systems and clinical communication
Bonafide CP, Brady PW, Keren R, Conway PH, Marsolo K, Daymont C. (2013). Development of heart and respiratory rate percentile curves for hospitalized children. *Pediatrics*,131 (4), e1150-e1157).	IV	• Large cross-sectional study 14014 hospitalised children • Heart Rate and Respiratory Rate percentiles established • ViCTOR charts: Purple zone either 1st or 99th percentile according to the upper or lower limit of parameter. Orange zone 5th & 95th percentiles.
Dionne, J., Abitbol, C., & Flynn, J. (2012). Hypertension in infancy: diagnosis, management and outcome. Pediatric Nephrology, 27(1), 17-32. Dionne, J., Abitbol, C., & Flynn, J. (2012). Erratum to: Hypertension in infancy: diagnosis, management and outcome. Pediatric Nephrology, 27(1), 159-160.	IV	• Estimated BP values, after 2 weeks of age in infants from 26 to 44 weeks postconceptional age • ViCTOR charts: High BP – (orange zone only) 99th centile +5mmHg
Graham, K. C., & Cvach, M. (2010). Monitor alarm fatigue: Standardizing use of physiological monitors and decreasing nuisance alarms. *American Journal of Critical Care*. 19(1), 28-34.	1V	• QI initiative to improve management of monitor alarms in an adult HDU environment, including revision of monitor alarm defaults, careful assessment of monitor alarm parameters limits each shift & implementation of a monitor policy • Critical monitor alarms were reduced 43%
Haque, I., & Zaritsky, A. (2007). Analysis of the evidence for the lower limit of systolic and mean arterial pressure in children. Pediatric Critical Care Medicine, 8(2), 138-144.	1V	• Developed new estimates of the fifth percentile SBP for children 1–17 yrs of age from analysis of published blood pressure data from the Task Force on Hypertension. • SBP is significantly affected by height • ViCTOR charts: Low BP (Purple zone only) based on 5th percentile for Systolic BP and 50th height percentile
McKay, H., Mitchell, I. A., Sinn, K., Mugridge, H., Lafferty, T., Van Leuvan, C., Mamootil, S. & Abdel-Latif, M. E. (2013). Effect of a multifaceted intervention on documentation of vital signs and staff communication regarding deteriorating paediatric patients. *Journal of Paediatrics & Child Health. 49*(1), 48-56.	1V	• Prospective controlled before and after study evaluating introduction of newly designed age specific paediatric observation charts (colour coded vital signs resulting in estimation of Paediatric Early Warning Score) and education intervention • Significant improvement in documentation of vital signs, communication from nurses to doctors following clinical instability and time to medical review

Reference ***(include title, author, journal title, year of publication, volume and issue, pages)***	**Evidence level (I-VII)**	**Key findings, outcomes or recommendations**
National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents (2004). *Pediatrics*, *114* (2 suppl 4th report), *555*– 576.	V	• Tables determining normal and abnormal BP values based on gender, age and height percentiles. Values derived from normal healthy children. • ViCTOR charts: High systolic BP limits (Orange zone) were based on the 99th percentile of height + 5mmHg for respective ages groups (equivalent to cut-off for stage 2 hypertension)
Royal College of Nursing (2007). Standards for assessing, measuring and monitoring vital signs in infants, children and young people. RCN: London .	*V11*	• Describes 5 standards and criteria to help guide local procedures in relation to vital sign monitoring which included: • Education and training, teaching children, young people and parents and carers, assessing & measuring vital signs, medical devices & equipment, record keeping
Teasdale, D. (2009). Physiological monitoring. In, Dixon, M., Crawford, D., Teasdale, D., & Murphy, J. *Nursing the highly dependent child or infant*. Chichester: Blackwell Publishing Ltd.	VII	• Clinical guide about caring for children receiving high dependency care • Identifies indications for continuous cardio-respiratory monitoring and continuous pulse oximetry
Tibballs, J., Kinney, S., Duke, T., Oakley, E., & Hennessy, M. (2005). Reduction of paediatric in-patient cardiac arrest and death with a medical emergency team: Preliminary results. *Archives of Disease in Childhood, 90*(11), 1148-1152.	IV	• Evaluating introduction of paediatric MET service including establishment of paediatric MET criteria at RCH • Significant reductions in cardiac arrest and unexpected death for the subgroup of patients that had fulfilled the MET call criteria • ViCTOR charts: Some Orange and Purple response criteria based on MET criteria (eg Staff or family member worried, SpO_2, Apnoea or cyanosis)
Townley, C., Theisen, E., Stanzel, B., Chang, C., Goddard, J. & Kinney, S. *An investigation into the use of MET criteria in setting cardiac monitors and the effect on the rate of false alarms.* Master of Nursing Science Presentation Day (27th May, 2011), The University of Melbourne.	VI	• Investigating the role of MET criteria for alarm setting in cardiac monitors and rate of false alarms in a paediatric cardiac ward at RCH (n=201 monitors hours observed) • 2.83 alarms per monitor per observed hour and 82 % of the alarms were false • Significant reductions in false alarms for Heart Rate ($p=0.01$) and SpO_2 ($p=0.004$) for alarm settings that at MET criteria.