Safe system framework for children at risk of deterioration

Clinical Standards and Quality Improvement team
This framework aims to improve recognising and responding to children at risk of deterioration. A safer system can work in partnership with families and patients, develop a patient safety culture and support ongoing learning.
Status
Partnership

Last modified
20 November 2019

Post date
30 April 2018

Table of contents

Introduction

RCPCH and NHS Improvement developed this framework with clinicians and experts. It provides a ‘state of the nation view’ that drives action and local services for infants, children and young people.

Four groups

1. Infants, children and young people, and their families
2. Clinicians and the wider team - including doctors, nurses, pathologists, pharmacists, radiologists
3. Local organisations and service providers
4. National organisations with leadership roles - such as NHS Improvement, NHS

England, RCPCH and Royal College of Nursing

Six core elements

1. **Patient safety culture** - A large and challenging element covering many aspects that all groups are now trying to define and develop, including a commitment to overall improvement in patient safety, prioritising safety, leadership and executive accountability, and monitoring and measuring patient safety
2. **Partnerships with patients and families** - While all of the core elements focus on the patient and family, this partnership is an area of increased growth and central to supporting all the others
3. **Recognising deterioration** - The ability to spot physiological deviations before significant changes in care are needed or harm occurs is a fundamental working element which is central to the system
4. **Responding to deterioration** - Ensuring a timely and accurate response encompassing all necessary support and treatment from all those involved in the care of the patient is the vital element that is often the key change required
5. **Open and consistent learning** - Consideration of the system errors and individual responsibility, recording, investigating and evaluating incidents as well as best practice in order to learn and effect change will drive forward continual improvements in all elements
6. **Education and training** - Consistently building clinical knowledge and capability as well as patient safety and improvement methods will provide the foundation for all elements to be enhanced

Background

Research shows that failure to recognise and treat patients whose condition is deteriorating is a cause of significant unintended harm in healthcare environments.

There are multi-factorial reasons why deterioration in children is missed. We can cluster these into themes:

- systems failure
- not responding to physiological changes (recognising and responding to deterioration)
- parent and carer engagement (and working in partnership with patients and their families)
- healthcare professionals training and education.

In 2015, NHS England created and collated resources based on these themes. The ReACT (Respond to Ailing Children Tool) aims to improve outcomes and reduce the incidence of deterioration in the acutely ill infant, child or young person.

Why an early warning system is needed

The National Reporting and Learning System (NRLS) receives information about patient safety incidents. This evidence suggests that the greatest potential for improvement lies within the whole system of recognition and response to deterioration, and not simply the measurement of a child’s observations.

In other words, it is about an early warning system rather than an early warning score.

There have been recent moves towards the development and spread of a single Paediatric Early Warning System (PEWS) in Scotland, Northern Ireland and Republic of Ireland. These programmes should be closely looked at - to share learning and to consider what might be possible in the much larger healthcare system in England.

The PEWS Utilisation and Mortality Avoidance (PUMA) study is ongoing at the National Institute for Health Research (NIHR). This examines the features of both scores and systems and of other factors that may be implemented to improve the outcomes of harm, morbidity and mortality in children who deteriorate while they are inpatients.

Patient safety culture

This core element is challenging, but crucial. It addresses a commitment to an overall improvement in patient safety: to prioritise safety, to ensure leadership and executive accountability and to monitor and measure impact.

Responsibilities for patient safety culture

Children, families and carers

- Patient, parent and family engagement in delivering improvement activities
- Patient and parent experience/feedback surveys
- Open and supported disclosure

Clinicians and wider team

- Patient safety leadership
- Open and robust communication model, such as routine safety briefings; structured communication for escalation; open disclosure and comprehensive investigations for patient safety incidents
- Identifying positive case scenarios and ‘learning from excellence’

Service or organisation

- Broad leadership for patient safety, such as strategic priorities and goals and executive accountability
- Deliver improvement in patient safety, such as monitoring progress and driving the execution of plans; Establishing and monitoring explicit system level measures; and building patient safety and improvement knowledge and capability
- Safe staffing levels, skill mix and resources

Regional, national, networks

- Leadership for patient safety, such as the provision and clarity of data and evidence for change, recommendations and support for improvement

Resources for patient safety culture

NHS England Improving Patient Experience

- Patient Centred Outcome Measures (PCOMs) involves putting patients, and their families and carers, at the heart of deciding which goals are most valuable for individuals with a range of health
- Always Events provide a strategy to help health care providers identify, develop, and achieve reliability in person- and family-centred care delivery processes
- Shared Decision Making - range of tools and resources
- NHS England Youth Forum

Children and young people's survey (2014) - the first national children's survey conducted by Care Quality Commission (CQC)

Being Open framework - being open about what happened and discussing patient safety incidents promptly, fully and compassionately

Duty of Candour regulation - to ensure that providers are open and transparent with people who use services

Manchester Patient Safety Framework (MaPSaF) - a tool to help NHS organisations and healthcare teams assess their progress in developing a safety culture

Reducing term admissions to neonatal units - a programme to reduce harm and reduce separation of mother and baby

How to guide for leadership for safety, Patient Safety First (2008)

Learning from Excellence - resources and ideas on peer-reported excellence in healthcare

Patient safety in the NHS – NHS Choices website including patient safety data on NHS organisations

Sign up to Safety - a national initiative to help NHS organisations and their staff achieve their patient safety aspirations

References for patient safety culture

A promise to learn – A commitment to act: Improving the Safety of Patients in England (Berwick review, 2013). National Advisory Group on the Safety of Patients in England

National Patient Safety Agency (2004) Seven steps to patient safety

Monitor (2010) Improving patient safety: the role of NHS foundation trust boards

Partnership with families

This partnership is an area of increased growth. It is central to supporting the other core elements.

Responsibilities for partnership with families

Children, families and carers

- Involvement in individualised care decisions
- Family-led/patient–led care activities, such as regular family-centred/parent-focused times (rounding); key periods for family to remain with the patient
- Uniqueness of young people's needs, contribution and concerns

Clinicians and wider team

- Involvement in individualised care decisions
- Family-led/patient–led care activities, such as regular family-centred/parent-focused times (rounding); key periods for family to remain with the patient
- Uniqueness of young people's needs, contribution and concerns
- Appropriate transfer and discharge communications including specific safety netting advice

Service or organisation

- Patient, parent and family focused information and resources
- Patient, parent and family engagement in delivering improvement activities
- Patient and parent experience/feedback surveys
- Open and supported disclosure

Regional, national, networks

- Support and resources to highlight and share good examples of patient and family partnership working for safe care

Resources for partnership with families

ReACT parent films ("If you see something, say something") created for parents, and for staff supporting and empowering parents and families

Reducing Term admissions to Neonatal Units programme working to reduce harm and reduce separation of mother and baby

ASK SNIFF develop video based information resources to help families with young children understand signs and symptoms of acute illness so that they can spot when their child is sick

NHS England Improving Patient Experience:

- Patient Centred Outcome Measures (PCOMs) involves putting patients, and their families and carers, at the heart of deciding which goals are most valuable for individuals with a range of health
- Always Events will provide a strategy to help health care providers identify, develop, and achieve reliability in person- and family-centred care delivery processes
- Shared Decision Making range of tools and resources

- NHS England Youth Forum

Being Open about what happened and discussing patient safety incidents promptly, fully and compassionately – the original framework

Duty of Candour regulation is to ensure that providers are open and transparent with people who use services

Me First – Information, tools and resources aimed at improving communication between healthcare professionals and children and young people.

Fixers – includes video resources of patient and parent stories, such as Kiatipat Tongyotha and Shelley Marsh

Guide to producing health information for children & young people published by the Patient Information Forum

References for partnership with families

DA Micalizzi, T Dahlborg and H Zhu (2015) Partnering with Parents and Families to Provide Safer Care: Seeing and Achieving Safer Care through the Lens of Patients and Families Current Treatment Options in Pediatrics. December 2015, Volume 1, Issue 4, pp 298-308

NHS England (2015) Improving Experience of Care through people who use services How patient and carer leaders can make a difference

Recognising deterioration

The ability to spot physiological deviations before significant changes in care are needed or harm occurs is a fundamental working element and central to the system.

Responsibilities for recognising deterioration

Children, families and carers

- Involvement in individualised care decisions
- Opportunities to contribute to the recognition of the deteriorating child such as: safety netting; being taught what matters with regard to the patient's condition and empowering families to express concerns (for example-family members being able to activate a system of escalation to senior staff as part of PEW charts)

Clinicians and wider team

- PEW charts/track and trigger tool including clarity on the frequency of observations, triggers for escalation (chart trigger/staff concerns) and clear protocols for graded response
- Structured communication for escalation, such as Situation, Background, Assessment and Recommendation tool (SBAR)
- Systems and processes regarding the assessment and monitoring of patients such as clinical handover, safety briefings, multi-disciplinary rounds and ward rounds

- Knowledge and practice of the use of situational awareness to improve safety
- Good clinical pathways for the identification of clinical conditions requiring urgent care such as sepsis

Service or organisation

- Leadership at all levels to support the responsibilities of the clinicians and wider team in recognising the deteriorating child including evidence/examples of good practice and actions for improvement
- Knowledge of the use of situational awareness to improve safety in the senior leadership team

Regional, national, networks

- System wide knowledge and thinking on the gaps, research and debate in this area including support for the publication and recommendations for action when evidence becomes available

Resources for recognising deterioration

ReACT parent films - “If you see something, say something”, these films are created for parents, and for staff supporting and empowering parents and families

Reducing term admissions to neonatal units - a programme working to reduce harm and reduce separation of mother and baby

Standards for assessing, measuring and monitoring vital signs in infants, children and young people (2017)

Emergency life support guidelines and courses – Paediatric Basic Life Support (BLS), Advanced Paediatric Life Support (APLS),European Paediatric Life Support (EPLS) and Newborn Life Support (NLS)

SAFE resource pack - a toolkit to help develop situation awareness locally, and with examples of clinical escalation and SBAR document - especially see sections on using structured communication and the huddle

Resources to support the prompt recognition of sepsis and the rapid initiation of treatment (including Paediatric Sepsis Six and other UK Sepsis Trust resources)

Peadiatric Care Online (PCO UK) - supports daily clinical practice by providing immediate, accessible information to inform decisions at point of care

MedsIQ - brings together tools and improvement projects that have been developed to address medication errors affecting children and young people

Spotting the Sick Child – an interactive tool to support health professionals in the assessment of the acutely sick child

References for recognising deterioration

The Irish Paediatric Early Warning System (PEWS): National Clinical Guideline

A systematic literature review to support the development of a National Clinical Guideline – Paediatric Early Warning System (PEWS). Fianl Report (2014) School of Nursing and Human Sciences, Dublin City University

S Nahdi Pediatric Early Warning System (PEWS) Summary of literature review

'High Dependency Care for Children – Time to Move on'

Mari Akre, Marsha Finkelstein, Mary Erickson, Meixia Liu, Laurel Vanderbilt and Glenn Billman (2010) Sensitivity of the Pediatric Early Warning Score to Identify Patient Deterioration. Pediatrics 2010;125;e763; originally published online March 22, 2010; DOI: 10.1542/peds.2009-0338

Bonafide CP, Holmes JH, Nadkarni VM, Lin R, Landis JR, Keren R. (2012) Development of a score to predict clinical deterioration in hospitalized children. J Hosp Med. 2012 Apr;7(4):345-9. doi: 10.1002/jhm.971. Epub 2011 Nov 17.

Brady PW & Goldenhar LM (2013) A qualitative study examining the influences on situation awareness and the identification, mitigation and escalation of recognised patient risk. BMJ Quality and Safety. 0:1-9.

Brady PW, Muething S, Kotagal U, Ashby M, Gallagher R, Hall D, Goodfriend M, White C, Bracke TM, DeCastro V, Geiser M, Simon J, Tucker KM, Olivea J, Conway PH, Wheeler DS. (2013) Improving situation awareness to reduce unrecognised clinical deterioration and serious safety events. Pediatrics. 131(1):e298-e308.

Chapman S.M, Grocott M.P.W, Franck L.S. (2010) Systematic review of paediatric alert criteria for identifying hospitalised children at risk of clinical deterioration. Intensive Care Medicine. 36:600-611.

Edwards DE et al (2008) Prospective cohort study to rest the predictability of the Cardiff and Vale Paediatric Early Warning System (C and VPEWS). Archives of Diseases in Childhood. 1–4.

Egdell, P. Finlay, L. Pedley, D. (2008) The PAWS score: validation of an early warning scoring system for the initial assessment of children in the emergency department Emergency Medicine Journal 25:745-749

Harriet Holme, Reena Bhatt, Marita Koumettou, Mark A.S. Griffin and Lucinda C. Winckworth (2013) Retrospective Evaluation of a New Neonatal Trigger Score. Pediatrics 2013;131;e837; originally published online February 18, 2013; DOI: 10.1542/peds.2012-0640

McCabe A, Duncan H, Heward Y. (2009) Paediatric early warning systems: where do we go from here? Paediatr Nurs. 2009 Feb;21(1):14-7.

Mandy Odell, Karin Gerber, Melanie Gager (2010) Call 4 Concern: patient and relative activated critical care outreach. British Journal of Nursing, 2010, Vol 19, No 00

Christopher S Parshuram, James Hutchison and Kristen Middaugh (2009) Development and

initial validation of the Bedside Paediatric Early Warning System score. Critical Care 2009, 13:R135 (doi:10.1186/cc7998)

Parahuram, C. (2011) Multicentre validation of the bedside paediatric early warning system score: a severity of illness score to detect evolving critical illness in hospitalised children. Critical Care .15(4), pp. 184.

Roberts KE, Bonafide CP, Paine CW, Paciotti B, Tibbetts KM, Keren R, Barg FK, Holmes JH. (2014) Barriers to calling for urgent assistance despite a comprehensive pediatric rapid response system. American Journal of Critical care. 23(3): 223-229.

Roland D, Oliver A, Edwards ED, Mason BW, Powell CVE. (2014) Use of paediatric early warning systems in Great Britain: has there been a change of practice in the last 7 years? Archives of Disease in Childhood. 99:26–29.

Roland D. (2013) Paediatric early warning scores: Holy Grail and Achilles' heel. Postgraduate Medical Journal. 89: 358-365.

Roland D, Madar J, Connolly G. (2010) The Newborn Early Warning (NEW) system: development of an at-risk infant intervention system. Infant. 6(4):116-120.

L Sinitsky and A Reece (2015) Can paediatric early warning systems predict serious clinical deterioration in paediatric inpatients? Arch Dis Child 2016 101: 109-113 doi: 10.1136/archdischild-2015-309304

M Thompson, N Coad, A Harnden, R Mayon-White, R Perera, and D Mant (2009) How well do vital signs identify children with serious infections in paediatric emergency care? Arch Dis Child 2009 94: 888-893 originally published online July 15, 2009

Karen M. Tucker, Tracy L. Brewer, Rachel B. Baker, Brenda Demeritt, and Michael T. Vossmeyer (2009) Prospective Evaluation of a Pediatric Inpatient Early Warning Scoring System JSPN Vol. 14, No. 2, April 2009

Tume L. (2012) The deterioration of children in ward areas in a specialist children's hospital. Nurs Crit Care. 2007 Jan-Feb;12(1):12-9.

Responding to deterioriation

A timely and accurate response - encompassing all necessary support and treatment - from all those involved in the care of the patient is vital. It is often the key change that is needed.

Responsibilities for responding to deterioration

Children, families and carers

- Involvement in individualised care decisions
- Communication protocols, standards or principles with patients and families

Clinicians and wider team

- Structured communication model for escalation, such as SBAR, and local response protocols (such as review, rapid response teams, medical emergency teams and transfer)
- Awareness of negative attitudes towards escalation that may be downgraded on review
- Clear plans for treatment/clinical monitoring and review
- Knowledge and use of situational awareness
- Good clinical pathways for condition specific responses such as mental health needs and children with complex medical needs
- Discharge/ transfer protocols

Service or organisation

- Availability of working equipment for taking physical observations
- Leadership at all levels to support the responsibilities of the clinicians and wider team in recognising the deteriorating child, including evidence of good practice and actions for improvement

Regional, national, networks

- System-wide knowledge and thinking on the gaps, research and debate in this area including support for the publication and recommendations for action when evidence becomes available

Resources for responding to deterioration

SAFE resource pack - especially sections on using structured communication and the huddle; examples of clinical escalation and SBAR documentation

Resources to support the prompt recognition of sepsis and the rapid initiation of treatment (including Paediatric Sepsis Six and other UK Sepsis Trust resources)

Peadiatric Care Online (PCO UK) supports daily clinical practice by providing immediate, accessible information to inform decisions at point of care

MedsIQ brings together tools and improvement projects that have been developed to address medication errors affecting children and young people

References for responding to deterioration

Just Say Sepsis! (2015) National Confidential Enquiry into Patient Outcome and Death (NCEPOD)

NHS England Improving outcomes for patients with sepsis: a cross-system action plan - see sepsis policy on NHS England website

NHS England Patient Safety Alert – resources to support the prompt recognition of sepsis and the rapid initiation of treatment

UK Sepsis Trust clinical toolkits

CP Bonafide, A Localio, KE Roberts, VM. Nadkarni, CM Weirich and R Keren (2014). Impact of Rapid Response System Implementation on Critical Deterioration Events in Children. JAMA Pediatr; 168(1):25-33. doi:10.1001/jamapediatrics.2013.3266. Published online November 11, 2013.

PE Schmidt,P Meredith, DR Prytherch, D Watson,V Watson, RM Killen, P Greengross, MA Mohammed, GB Smith (2014) Impact of introducing an electronic physiological surveillance system on hospital mortality. BMJ Qual Saf 2014;0:1–11. doi:10.1136/bmjqs-2014-003073

G Sefton, C. McGrath, L. Tume, S. Lane, P.J.G. Lisboa, E.D. Carrol (2014) PICU, What impact did a Paediatric Early Warning system have on emergency admissions to the paediatric intensive care unit? An observational cohort study. Intensive Crit Care Nurs (2014)

Open and consistent learning

How to learn and effect change that drives continuous improvement?

You need to consider system errors and individual responsibility. And, you need to record, investigate and evaluate incidents as well as best practice.

Responsibilities for open and consistent learning

Children, families and carers

- Open and supported disclosure
- Feedback to patients and families on learning from incidents and surveys

Clinicians and wider team

- Appropriate skills and updates on taking and recording physiological observations accurately
- Support for patients, families and staff involved or witnessing a patient safety incident, including the use of de-briefing and follow up
- Carrying out thorough, timely investigations with actions for learning
- Regular activities to measure, monitor and report on the processes and outcomes around spotting and treating deterioration
- Knowledge of improvement methods

Service or organisation

- Support for patients, families and staff involved or witnessing a patient safety incident
- Enabling and supporting investigations; ensuring data and information is triangulated and collective learning is endorsed across patient safety issues
- Commitment to continuous improvement
- Identifying positive case scenarios and learning from success
- Awareness of medication errors including knowledge of patient safety incidents, investigations and formation of improvement plans

Regional, national, networks

- Guidance and resources to support good quality investigations
- National learning on patient safety incidents and issues related to deterioration in infants, children and young people, such as the National Reporting and Learning System, Child Death Overview Panels and Retrospective Case Note Reviews

Resources for open and consistent learning

Serious incident framework - a systematic process for responding to serious incidents including conducting investigations

Root cause analysis investigation toolkit - when incidents do happen it is important that lessons are learned to prevent the same incident occurring elsewhere

Children and young people's services safety thermometer - a national tool to measure commonly occurring harms, prompts immediate actions by healthcare staff and integrates measurement for improvement into daily routines

National Patient Safety Alerts - such as the National Safety Standards for Invasive Procedures (NatSSIPs)

MedsIQ - brings together tools and improvement projects that have been developed to address medication errors affecting children and young people

NHS England patient safety - including information and guidance; Patient Safety Alerts, Patient Safety Collaboratives, Serious Incident Framework and Root Cause Analysis

NHS Improvement – patient safety information and resources now on this site, after the patient safety function was moved from NHS England to NHS Improvement in April 2016

Healthcare Safety Investigation Branch (HSIB) expert advisory group – the new HSIB website will be added as soon as available

NHS Litigation Authority –not-for-profit part of the NHS managing negligence and other claims against the NHS in England on behalf of member organisations, all of whom are provided with NHSLA score cards with their last five years claims data. This can be helpful in triangulating data alongside incident reports and complaints

References for open and consistent learning

The Health Foundation (2013) The measurement and monitoring of safety. Drawing together academic evidence and practical experience to produce a framework for safety measurement and monitoring

The Health Foundation (2015) Evaluation: what to consider. This guide is intended to assist those new to evaluation by suggesting methodological and practical considerations and providing resources to support further learning.

The Health Foundation (2015) Using Communications approaches to spread improvement. This resource is intended for those actively engaged in health care improvement work and

who want to explore how to best engage the right people to spread and share their findings.

Healthcare Quality Improvement Partnership (HQIP, 2016) Using root cause analysis techniques in clinical audit

CM Fernandez-Llamazares et al. Impact of clinical pharmacist interventions in reducing paediatric prescribing errors. Archives of Disease in Childhood Jun 2012;97(6):564-568

PD Hibbert, F Healey, T Lamont, WM. Marela, B Warner and WB Runciman (2015) Patient safety's missing link: using clinical expertise to recognize, respond to and reduce risks at a population level. International Journal for Quality in Health Care, 2015, 1–8 doi: 10.1093/intqhc/mzv091

Hogan H, Healey F, Neale G, Thomson R, Vincent C, Black N. (2012) Preventable deaths due to problems in care in English acute hospitals: a retrospective case record review study. BMJ Qual Saf 2012; Sep;21(9):737-45.

Jani YH, Barber N, Wong ICK. Paediatric dosing errors before and after electronic prescribing. Qual Saf Health Care 2010;19:337–40

ICK Wong, S Conroy, J Collier, et al. Paediatric medication errors – the COSMIC study. Co-operative of Safety of Medicines In Children: scoping study to analyse interventions used to reduce errors in calculation of paediatric drug doses. : Department of Health report, Oct 2007, p. 276pp

Education and training

Consistently building clinical knowledge and capability as well as patient safety and improvement methods will provide the foundation for all elements to be enhanced.

Responsibilities for education and training

Children, families and carers

Encouragement and awareness of the challenges of families to speak up

Involvement of patients and families in training and education, such as development of content, vignettes, videos or interactive sessions

Clinicians and wider team

Personal and team plans for development and learning on the components of the safe system, including induction requirements for new staff

Training and learning as a team (immediate and cross-boundary team)

Clear clinical handover protocol and expectations (such as handover bundle, online training, e-handover system, assessment-based structure)

Service or organisation

Knowledge of training needs and opportunities for staff in the recognition and response to children at risk of deterioration

A range of training and education methods such as simulation and multi-disciplinary learning opportunities

Regional, national, networks

System-wide awareness of gaps and collaborative working to address issues

Resources for education and training

Emergency life support guidelines and courses – Paediatric Basic Life Support (BLS), Advanced Paediatric Life Support (APLS), European Paediatric Life Support (EPLS) and Newborn Life Support (NLS)

ReACT parent films ("If you see something, say something") created for parents, and for staff supporting and empowering parents and families

Films for parents and families, expert talks (including on sepsis and children with complex needs), webinars and documents and presentations.

Reducing Term admissions to Neonatal Units programme working to reduce harm and reduce separation of mother and baby, including jaundice and hypoglycaemia

SAFE resource pack - especially sections on quality improvement and patient safety culture

RCPCH e-learning resources - support paediatricians and other child health professionals to achieve the essential competences in a number of important areas.

Spotting the Sick Child – An interactive tool to support health professionals in the assessment of the acutely sick child

Parent stories for learning such as those told in text and short videos by Mothers Instinct, The Fixers,Meningitis Now, Meningitis Research Foundation and The UK Sepsis Trust

Human Factors resources for learning – there are many good resources available such as Child Deterioration: Human Factors ReACT talk, Clinical Human Factors group website, Risky Business talks

NHS England patient safety webpages including information and guidance; Patient Safety Alerts, Patient Safety Collaboratives, Serious Incident Framework and Root Cause Analysis

NHS Improvement – patient safety information and resources now on this site, after the patient safety function was moved from NHS England to NHS Improvement in April 2016

NHS Improvement website – The Patient Safety function moved from NHS England to NHS Improvement on 1st April 2016 – patient safety pages will be added to the site for all new patient safety information and resources from this date

References for education and training

NHS Connecting for Health. (2009) Electronic Prescribing in hospitals. Challenges and lessons learned.

RJ McArtneyet al. An evaluation of clinical pharmacist contributions in paediatrics. Archives of Disease in Childhood Apr 2011;96(4):e1

Murdoch LJ, Cameron VL. Smart infusion technology: a minimum safety standard for intensive care? British journal of nursing. 2008; 17:630636

Tume LN, Sefton G, Arrowsmith P. (2013) Teaching paediatric ward teams to recognise and manage the deteriorating child. British Association of Critical Care Nurses. 19 (4): 196-203