

# PEWS Chart Review

**An analysis of 18 sites in England, Scotland  
Wales & Australia**

Updated: 19<sup>th</sup> September 2019



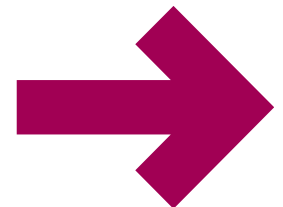
# 1. Background

- **Increase in use of PEWS:** A survey of organisations providing services to children in ED, assessment or in-patient settings in 2011 showed that the implementation of PEWS, in the UK, had increased from 21% in 2005 to 85% [*based on preliminary data*].
- **Mortality is low:** Increasingly there has been a realisation the mortality is only a small facet of the benefits that a PEWS may provide to children within an in-patient setting.
- **Avoidable mortality:** However, of those cases, some reports suggest that approximately 50% of deaths in hospitalised children are associated with avoidable factors
- **Managing acutely ill children:** Local and national case reviews demonstrate some persistent errors in the management of acutely unwell children.



## 2. Purpose of this review:

- As part of the National PEWS programme, we agreed to undertake a review of PEWS (Paediatric Early Warning Score) charts currently in use within England.
- Feedback from coroners, the CQC and CEMACH as well variations noted in evidence-based reviews on existing scores and systems suggested a national PEWS chart would provide safer care.
- The purpose of this presentation is to illustrate the **similarities and differences within the charts** with a view to seeking agreement on core elements of a national PEWS chart.



# 3. RCN standards for measuring CYP vital signs

- The vital signs include:
  - Heart/pulse rate,
  - Respiratory rate and effort,
  - Blood pressure,
  - Oxygen saturations,
  - Capillary refill time,
  - Level of consciousness
  - Temperature.
  - Weight & height
- ***“Standards for Assessing, Measuring and Monitoring Vital Signs in Infants, Children and Young People”*** <https://www.rcn.org.uk/professional-development/publications/pub-005942>



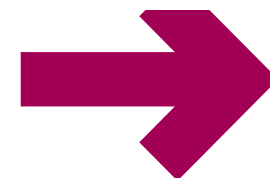
# 3. Chart review findings

**We reviewed 18 charts from across England but also Scotland and Australia and found:**

- **Age:** The most common split for ages is 0-1 year, 1-4 years, 5-12 years, 12+ years – with most variation for infants as some sites further divide the 0-1 age group.
- **Score make-up:** There was wide variation in how many values make up the score with fewest values 0-4 and the most 0-19. The average was approximately 1-7.
- **Severity score:** An area of potential confusion highlighted is that not all scores had the higher value representing greater concern.
- **Observations measured:** Parameters measured were remarkably similar although there was variation around whether the BP is part of the score and how behavioural change and parental/nurse concern are scored.

## 3. Chart review findings (continued)

- **Additional features:** The most frequent additional features were a recognition and management of sepsis and tools for escalation when there is concern or a score that requires a response.
- **Areas that would have to be hospital specific:** The only area of the chart that would have to be specific is the contact details for bleeps and ward extensions.
- **Overall format:** The format could be generic with contact details in the same place on each chart with just the actual ward/on call numbers varying between hospitals. This would still provide continuity for where to find escalation numbers when staff work across different hospitals. Hospital name could also be printed on the form in a standardised format and location.



# 4. Example parameter: Heart Rate

- High heart rate score in pre-teenage school children

Site and score	1	2	3	4	5	6	7	Score
Barts	110	130		150				0 - >8
Brighton	120	150	160	170	180	190	200	1-6
Bristol	120	130		150				0 - >16
Scotland	130		140					0 - >5
Wales	110	130		150				0 - >8
Barnsley	120	140		160				1- >9
Birmingham	120	140		160				1 - >9
Chelsea & Westminster	120	130	140	150	160	170	180	1 - 6
Gloucestershire	120	130	140	150	160	170	180	0 - 6
GOSH	120	140		160				1 - 9
Manchester	120			150				0 - >4
Nottingham	120	130	140					1- >12
Poole	120	130	140	150	160	170	180	0-7
Portsmouth	120	130	140	150	160	170	180	1-5
St Georges	121	150						0 - >8
SW England	120	140		160				0-19

# 5. Example parameter: Resp Rate

High resp rate score in pre-school children

Site and score	1	2	3	4	Score
Barts	40	60		70	0 - >8
Brighton	50	60	70	80	1-6
Bristol	40	60		70	0 - >16
Scotland	35		50		0 - >5
Wales	40	60		70	0 - >8
Barnsley	40	60		70	1- >9
Birmingham	40	60		70	1 - >9
Chelsea & Westminster	40	50	60	70	1 - 6
Gloucestershire	35	40	50	60	0 - 6
GOSH	40	60		70	
Manchester	30			45	0 - >4
Nottingham	30	40	50		1- >12
Poole	30	40	50	60	0-7
Portsmouth	40	50	60	70	1-5
St Georges	30	40			0 - >8
SW England	40	60		70	0-19



# 6. Example parameter: Blood pressure

- Low blood pressure (systolic) score in pre-school children

Site and score	1	2	3	4	Score
Barts		80		70	0 - >8
Brighton	BP	doesn't	score		1-6
Bristol		80		70	0 - >16
Scotland	80		70		0 - >5
Wales	90	80		70	0 - >8
Barnsley	80	60		50	1- >9
Birmingham	80	60		50	1 - >9
Chelsea & Westminster	BP	doesn't	score		1 - 6
Gloucestershire	BP	doesn't	score		0 - 6
GOSH	80	60		50	1 - 9
Manchester	84			70	0 - >4
Nottingham	85	75	65		1- >12
Poole	BP	doesn't	score		0-7
Portsmouth	80	70	60	50	1-5
St Georges			70		0 - >8
SW England		80		70	0-19

# 7. Example parameter: Saturation

- Sats score in pre-school children

Site and score	1	2	3	4	Score
Barts	94	90			0 - >8
Brighton	Sats	don't	score		1-6
Bristol	94			91	0 - >16
Scotland	93		91		0 - >5
Wales	94	89			0 - >8
Barnsley	94			90	1 - >9
Birmingham	94			91	1 - >9
Chelsea & Westminster	Sats	don't	score		1 - 6
Gloucestershire	Sats	don't	score		0 - 6
GOSH	94			91	1 - 9
Manchester	Sats	don't	score		0 - >4
Nottingham	93		89		1 - >12
Poole	91				0-7
Portsmouth	Sats	don't	score		1-5
St Georges (POPS)	94	89			0 - >8
SW England	94			91	0-19

# 8. Conclusion: The middle of the bell curve chart

**Age:** 0-1, 1-4, 5-12, 12+ (with some splitting the 0-1 age group)

**Score:** Nearly all were around 1-7 or 8 with one 1-4 and on 1-19

## Observations:

- Resp rate and Heart rate always included
- Then a mix of BP, Sats, Needing oxygen, CRT, Behaviour, Nurse/parental concern, Resp distress, Temp, Conscious level, Pain score, Pupils
- *NB. Higher score charts tended to look at more parameters*

**Additional features:** Sepsis 6, Escalation tool eg. SBAR, Urine output, phlebitis score, GCS, On call bleeps, Epidural/block record chart, blood gas

