

Supplemental data table 1: Data extraction criteria

Variable	Descriptor	Value
Abnormal airway (not tracheostomy)	Documented structural abnormality or admission for investigation of persistent stridor.	0 (No), 1 (Yes)
Acquired or congenital heart disease	Documented diagnosis	0 (No), 1 (Yes)
Apnoea	Documentation of the terms 'apnoea', 'breath holding', 'respiratory arrest'	0 (No), 1 (Yes)
AVPU	Documented value	Continuous value
Blood gas values	Documented value	Continuous value
Capillary refill time	Documented value	Continuous value
Cardiac arrest	Requirement for cardiac compressions and/or defibrillation.	0 (No), 1 (Yes)
Central Venous line	Presence of any central venous line	0 (No), 1 (Yes)
Clinically tiring/impending complete airway obstruction	Documentation of exhaustion, tiring, or outreach review for severe respiratory distress.	0 (No), 1 (Yes)
Convulsion	Documented convulsion +/- administration of rescue anticonvulsants	0 (No), 1 (Yes)
Cyanotic heart disease	Diagnosis of cyanotic heart lesion which had not been corrected	0 (No), 1 (Yes)
Diabetic ketoacidosis	Documented actual or differential diagnosis	0 (No), 1 (Yes)

Variable	Descriptor	Value
Gastrostomy	Excludes oro- or naso-gastric tube	0 (No), 1 (Yes)
Heart rate	Documented value	Continuous value
Home oxygen	Evidence of home oxygen therapy immediately before admission	0 (No), 1 (Yes)
Hyperkalaemia>6.0	Documented potassium value of greater than 6	0 (No), 1 (Yes)
Long term ventilation	Diagnosis of long term ventilation/CPAP or admission to LTV ward	0 (No), 1 (Yes)
Medication sub-score	Number of prescribed medications, not individual doses	Continuous value
Meningococcus	Documented actual or differential diagnosis of meningococcus or presence of purpuric rash	0 (No), 1 (Yes)
Nebulised adrenaline	Administration of adrenaline nebuliser	0 (No), 1 (Yes)
Nebulisers	Documentary evidence of continuous nebulisers or greater than 3 nebulisers in 1 hour	0 (No), 1 (Yes)
Number of specialities	Documentary evidence of review by differing speciality during data extraction period.	0 (No), 1 (Yes)
Oxygen therapy	Documented value as fraction of inspired oxygen or percentage	Continuous value
Oxygen saturation	Documented value	Continuous value

Variable	Descriptor	Value
Parental concern	Documentary evidence of parental concern/anxiety/worry	0 (No), 1 (Yes)
Persistent vomiting post-surgery	3 or more vomits in the 4 hours post-surgery	0 (No), 1 (Yes)
Pre-transplant	Evidence of presence on transplant list or pre-transplant work-up	0 (No), 1 (Yes)
Pulses	Documentary evidence of poor peripheral pulses	0 (No), 1 (Yes)
Respiratory arrest	Requirement for bag-value-mask or intubation on the ward	0 (No), 1 (Yes)
Respiratory effort	Documentary evidence of increased respiratory effort classified according to adapted WHO criteria [10]	Mild=1, Moderate =2, Severe/apnoea=3
Respiratory rate	Documented value	Continuous value
Severe cerebral palsy	Documented diagnosis	0 (No), 1 (Yes)
Severe developmental delay, neuro/neuromuscular	Documented diagnosis. Excludes mild developmental delay.	0 (No), 1 (Yes)
Signs of shock	Documentation of the terms 'shocked', 'mottled', 'poor perfusion',	0 (No), 1 (Yes)
Staff concern	Documentary evidence of healthcare professional concern/anxiety/worry, or request to review by nurse in charge or medical staff	0 (No), 1 (Yes)

Variable	Descriptor	Value
Stridor/airway threat	Any documentation of stridor or threatened airway	0 (No), 1 (Yes)
Systolic blood pressure	Documented value	Continuous value
Temperature	Documented value	Continuous value
Tracheostomy	Presence of tracheostomy	0 (No), 1 (Yes)
Transplant	Any organ transplant, bone marrow or stem cell transplant	0 (No), 1 (Yes)
Unresolved pain	Persistent pain requiring referral to acute pain service	0 (No), 1 (Yes)

If unclear, scored as 0

Supplemental data table 2: Published age –ranges for each Paediatric Early Warning System and modifications of overlapping boundaries to facilitate comparative analysis

Paediatric Early Warning System Name, first citation	Published age ranges	Age-ranges used in the comparative analysis
Bedside PEWS[18]	0 - 3 months 3 - 12 months 1-4 years 4-12 years >12 years	<i>0 - <3 months</i> <i>3 - <12 months</i> <i>1-4 years</i> <i>> 4-12 years</i> <i>>12 years</i>
Bristol PEW tool [19]	<6 months 6-12 months 1-5 years 5-12 years >12 years	<6 months 6-12 months <i>1-<5 years</i> 5-12 years >12 years
Cardiff and Vale PEWS [20]	<1 years 1-2 years 2-5 years 5-12 years >12 years	<1 years <i>1-<2 years</i> <i>2-<5 years</i> 5-12 years >12 years
Children’s Early Warning System	<1 year 1 – 4 years 5-11 years ≥ 12 years	<1 year 1 – 4 years 5-11 years ≥ 12 years
Children’s Early Warning Tool [21]	<1 years 1-4 years 5-11 years >12 years	<1 years 1-4 years 5-11 years ≥ <i>12 years</i>
ITAT [22]	<3 months 3-12months 1-4 years 4-12 years	<3 months 3-12months <i>1-<4 years</i> 4-12 years

Paediatric Early Warning System Name, first citation	Published age ranges	Age-ranges used in the comparative analysis
	>12 years	>12 years
MET activation criteria I [23]	Term-3 months 4-12 months 1-4 years 5-12 y >12 years	Term-3 months <i>4-<12 months</i> 1-4 years 5-12 years >12 years
MET activation criteria II [24]	Term-3 months 4-12 months 1-4 years 5-12 years >12 years	Term-3 months <i>4-<12 months</i> 1-4 years 5-12 years >12 years
Modified Bristol PEWS [25]	<3 months 3-6 months 6-12 months 1-5 years 5-12 years >12 years	<3 months <i>3-<6 months</i> 6-12 months <i>1-<5 years</i> 5-12 years >12 years
Modified PEWS I [26]	Newborn – 3 months 3 months – 2 years 2 years- 10 years > 10 years	<i>0 – <3 months</i> <i>3 months – <2 years</i> 2 years- 10 years > 10 years
Modified PEWS II [27]	<3 months 3-<12 months 1-<4 years 4-<12 years >/=12 years	<3 months 3-12 months 1-<4 years 4-<12 years ≥12 years

Paediatric Early Warning System Name, first citation	Published age ranges	Age-ranges used in the comparative analysis
Modified PEWS III [28]	0 - 3 months 3 - 12 months 1-4 years 4-12 years >12 years	<i>0 - <3 months</i> <i>3 - <12 months</i> <i>1-4 years</i> <i>> 4-12 years</i> <i>>12 years</i>
NHSI PEWS [29]	0-11 months 1-4 years 5-12 years 13-18 years	0-11 months 1-4 years 5-12 years 13-18 years
PEW score I [30]	Neonate 1-11 months 1-2 years 3-4 years 5-7 years 8-11 years 12-15 years male 12-15 years female >15 years male >15 years female	Neonate 1-11 months 1-2 years 3-4 years 5-7 years 8-11 years 12-15 years male 12-15 years female >15 years male >15 years female
PEW score II [16]	0 – 1 month 1-12 months 13 months – 3 years 4-6 years 7-12 years 13-19 years	0 – 1 month <i><1-12 months</i> 13 months – 3 years 4-6 years 7-12 years 13-19 years
PEW system score [15]	<3 months 3-12 months 1-4 years 4-12 years >12 years	<3 months <i>3-<12 months</i> <i>1-<4 years</i> 4-12 years >12 years

Paediatric Early Warning System Name, first citation	Published age ranges	Age-ranges used in the comparative analysis
PMET triggers [31]	Term-3 months 4-12 months 1-4 years 5-12 years >12 years	Term-3 months <i>4-<12 months</i> 1-4 years 5-12 years >12 years
THCS MET calling criteria [32]	Term-3 months 4-12 months 1-4 years 5-12 years >12 years	Term-3 months <i>4-<12 months</i> 1-4 years 5-12 years >12 years

Key: Age-ranges that were modified are presented in *italics*

Supplemental data Table 3: Children's Early Warning Score (CEWS)

	Age range	Score								
		4	3	2	1	0	1	2	3	4
Heart rate	<1 year	<60	60-79	80-89		90-160	161-170	171-190	>190	
	1 – 4 years	<70	70-79		80-89	90-140	141-160	161-180	>180	
	5-11 years	<60		60-69	70-89	90-130	131-150	151-170	>170	
	≥ 12 years	<50		50-59	60-69	70-120	121-130	131-160	161-190	>190
Respiratory rate	<1 year	<10		10-14	15-19	20-45	46-50	51-55	> 55	
	1 – 4 years	<5		5-9	10-14	15-35	36-40	41-50	>50	
	5-11 years	<5		5-9	10-14	15-30	31-40	41-50	>50	
	≥ 12 years	<5		5-9	10-14	15-25	26-30	31-40	41-50	>50
Systolic blood pressure	<1 year	<40	40-49	50-59	60-69	≥0-8				
	1 – 4 years	<50	50-59	60-69	70-79	≥ 80				
	5-11 years	<50	50-59	60-69	70-89	≥ 90				
	≥ 12 years	<60	60-69	70-79	80-89	≥ 90				
Temperature	All				<36.0	36.0-38.0	38.1-39.0	>39.0		
Oxygen saturation	All					94-100%	90-93%	85-89%	<85%	
AVPU	All					A	V		P	U