Identifying Patients At Risk For Decomposition Earlier With PEWS

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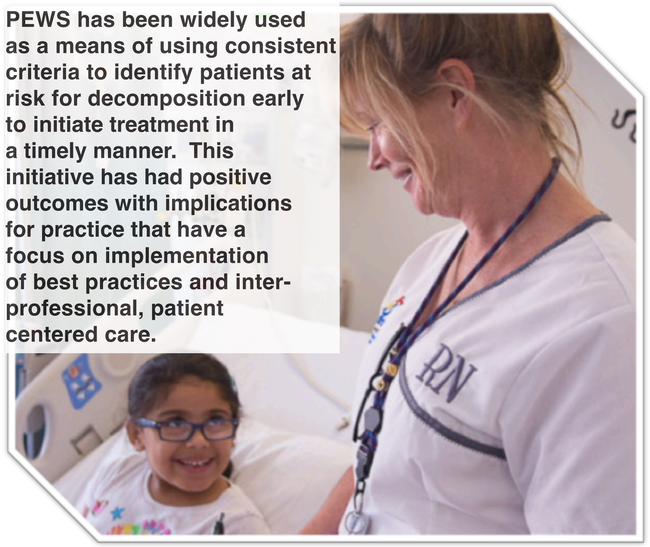
Purpose

To increase rapid response team (RRT) notifications on the inpatient units using the Pediatric Early Warning Score (PEWS) tools to guide assessment, provide interventions earlier, and prevent the need for transfer to the pediatric intensive care unit (PICU).

Significance

PEWS has been widely used as a means of using consistent criteria to identify patients at risk for decomposition early to initiate treatment in a timely manner. This initiative has had positive outcomes with implications for practice that have a focus on implementation of best practices and inter-professional, patient centered care.



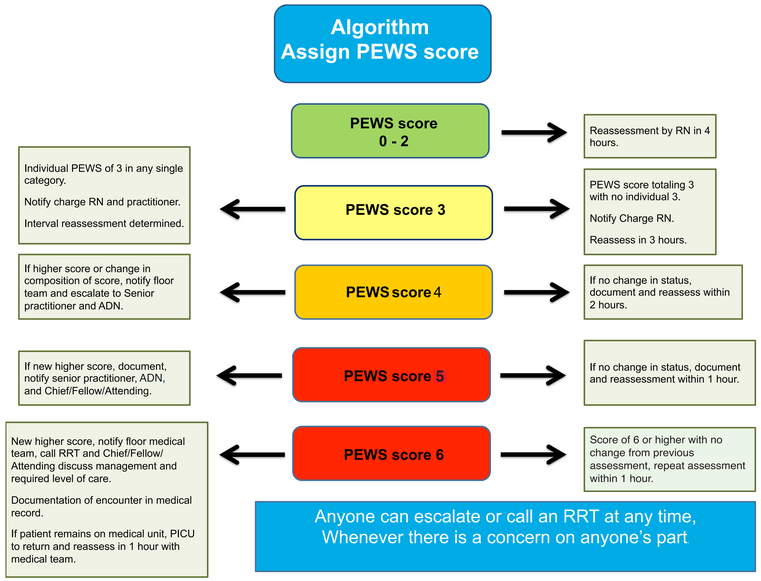
Tools

Age Range	AHA Normal Heart Rate Range (count for 1 min)	PEWS Score 0	PEWS Score 1	PEWS Score 2	PEWS Score 3
Newborn -<6months	90-150	90-170	----------	171-181	182 and above 89 and below
6months -<1year	80-120	80-140	----------	141-151	152 and above 79 and below
1 year- < 3 years	70-110	70-130	----------	131-141	142 and above 69 and below
3years- <6years	65-110	65-130	----------	131-141	142 and above 64 and below
6years- <12years	60-95	60-115	----------	116-125	126 and above 59 and below
>=12years	55-85	55-105	----------	106-116	117 and above 54 and below

Age Range	AHA Normal Respiratory Rate Range (count for 1 min)	PEWS Score 0	PEWS Score 1	PEWS Score 2	PEWS Score 3
Newborn - 6mon.	30-60	30-70	71-80	81 and above	29 and below with retractions and/or grunting
6mon.-<1yr	25-45	25-55	55-65	65 and above	24 and below with retractions and/or grunting
1yr-<3yr	20-35	20-45	46-55	56 and above	19 and below with retractions and/or grunting
3yrs-<6yrs	20-30	20-40	41-50	51 and above	19 and below with retractions and/or grunting
6-<12yrs	14-22	14-30	31-40	41 and above	13 and below with retractions and/or grunting
>=12yrs	12-18	12-26	27-37	38 and above	11 and below with retractions and/or grunting
Oxygen requirements FiO2- N/C Conversions		Room air (1 LPM= 24% 2 LPM = 28%)	30-35% FiO2 (3 LPM = 32% 4 LPM = 36%)	40%FiO2 (5 LPM = 40% 6 LPM = 44%)	>or = 50% FiO2

Strategy/Implementation

The PEWS team consisting of an interdisciplinary staff of physicians and nurses worked to revise the tool and escalation algorithm to better reflect practice.



A Plan Do Study Act (PDSA) cycle was conducted and changes included adjusting the escalation algorithm to include an automatic rapid response at a PEWS score of 6 or higher. A thorough education for all staff on the tools, scoring system, and proper escalation was conducted using case scenarios and simulated experiences. Frequency of performing PEWS was based on the patient's condition and documented in the algorithm.

REFERENCES

Tucker, K. et al. (2009). Perspective Evaluation of a Pediatric Inpatient Early Warning Scoring System. Journal for Specialist in Pediatric Nursing. v 14(2). 79-85.

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PEWS Scorecard

Category	Items	0	1	2	3	Ind. Item score	Highest Category score
Neuro-Behavioral		Appropriate	Sleeping Irritable/ consolable	Irritable/ inconsolable	Lethargic Confused or reduced response to pain		
Cardio-Vascular	Heart Rate See appendix #1						
	Color	Pink	Pale	Mottled	Gray		
	Capillary Refill	<2 seconds	3 seconds	4 seconds	>=5 seconds		
Respiratory	Respiratory Rate See appendix #2						
	Work of Breathing	WDL	Nasal Flaring	Retractions	Grunting		
	Oxygen Requirement	Room Air N/C conversion (1LPM=24%) (2LPM=28%)	30% FiO2 N/C conversion (3LPM=32%) (4LPM=36%)	40%FiO2 N/C conversion (5LPM=40%) (6LPM=44%)	50% FiO2 or greater		
Suctioning requirements : Additional points 0-2 hrs =2 points 2-4hrs = 1 point >4hrs = 0 points							
Add 1 points for a Tracheostomy patient							
						Total PEWS →	

PEWS = 0 – 2 GREEN = at least 4 hours
PEWS = 3 YELLOW = at least every 3 hours
PEWS = 4 Orange = at least every 2 hours
PEWS = 5 or > Red = at least every 1 hour

CH - 0182 Revised 11/2012

Evaluation

Pre-Intervention Baseline Data: During the pre-intervention timeframe, an average of 83% of RRT activations resulted in patient transfer to a higher level of care (the PICU).
Post-Intervention Data: During the post-intervention timeframe, an average of 41% of RRT activations resulted in patient transfer to a higher level of care (the PICU). This represents a 51% decrease in patients being transferred to a higher level of care, which translates to a minimum of 21 PICU days saved and an associated cost savings of roughly $52,500 - $84,000.