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Identifying Medically Complex Pediatric Patients at Risk for Decompensation at a Post-Acute Care Facility

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INTRODUCTION

When clinical decompensation arises in medically complex pediatric patients at a post-acute care facility, the transfer of a patient to a higher level of care often occurs. The Pediatric Early Warning Sign (PEWS) tool was adapted to meet the needs of medically complex patients. The goal of this quality improvement project was early recognition of patient decompensation to decrease patient transfers to higher level of care. The Franciscan Early Warning Sign (FEWS) tool was developed and implemented on the inpatient medical units. An algorithm was constructed to standardize escalation of care and a plan of action dependent on patient scores.

IMPLEMENTATION STRATEGIES

After researching the PEWS tool used by multiple different acute pediatric hospitals, the tool was adapted for the post-acute, medically complex pediatric population at Franciscan Children's. Bedside staff nurses and medical providers were given in-depth education on use of the tool and the escalation algorithm.

METHODS

This quality improvement project occurred at a pediatric post-acute care facility specializing in medically complex patients who require pulmonary rehabilitation, medication weaning, and physical, occupational, and speech therapy. An interdisciplinary team including medical providers, respiratory therapy, nurses, quality and safety, and informatics developed the FEWS tool using the Plan-Do-Study-Act cycle. A total of 5 versions of the tool were created and trialed on the inpatient medical units. Adjustments to the tool were made to meet the needs of the patient population, incorporate patient baseline status, and decrease fatigue of high FEWS scores. The validity of the tool was tested by scoring a small population of patients at varying times of the day by different nurses. Reliability was tested by reviewing the correlation between FEWS scores and clinical presentation. Data analysis of scores influenced the development of the escalation algorithm.

October 2023
-Version 1
-Data collection for analysis of scores vs. clinical presentation
-Trial 2-3 patients per unit with small pool of trained staff

February/March 2024
-Versions 2 & 3
-Built into EMR
-Adjusted times of scoring
-Added patient baseline questions
-Trained all bedside nurses
-Implemented for all patients

May 2024
-Version 4
-Change name to FEWS
-Escalation algorithm created and implemented
-Education provided to staff about escalation algorithm

August 2024
-Version 5 (current)
-Patient scores audited for proper use of escalation algorithm and action

OBJECTIVES

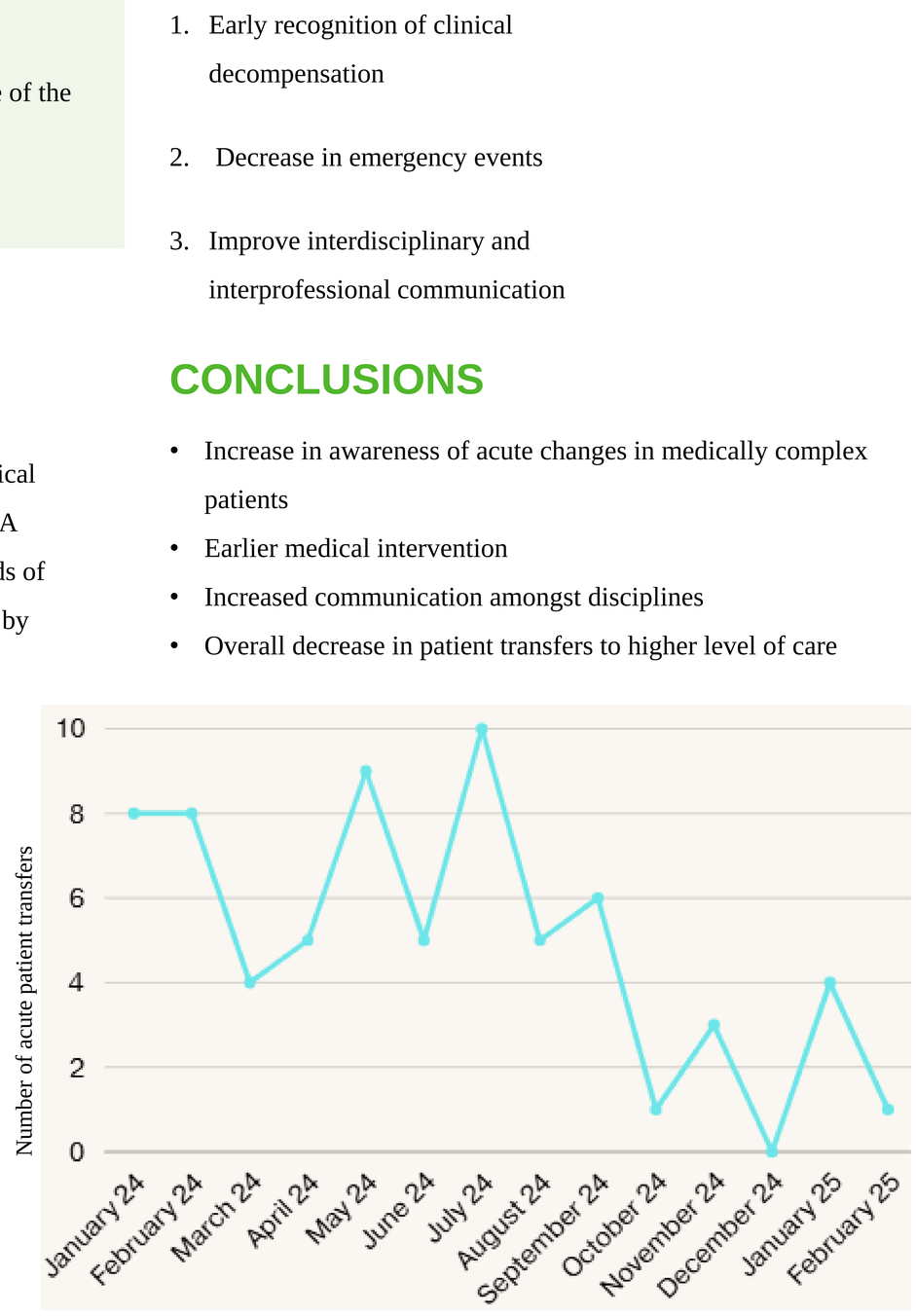
1. To identify and respond to early signs of clinical decompensation in medically complex pediatric patients
2. To decrease the transfer of patients to a higher level of care

IMPLICATIONS

1. Early recognition of clinical decompensation
2. Decrease in emergency events
3. Improve interdisciplinary and interprofessional communication

CONCLUSIONS

- Increase in awareness of acute changes in medically complex patients
- Earlier medical intervention
- Increased communication amongst disciplines
- Overall decrease in patient transfers to higher level of care



FRANCISCAN EARLY WARNING SIGN (FEWS) TOOL

Is the patient's PEEP > 12?	Yes (1)	No (0)		
Is the patient's baseline FiO2 > 40%?	Yes (1)	No (0)		
	0	**1**	**2**	**3**
RESPIRATORY	• Baseline respiratory status • Baseline vent settings & fiO2 • No PRNs • Tolerating vent wean • Baseline CPT/suction needs • No desaturations	• 0-5 increase in FiO2 percentage • PRNS q4-6hrs • Ending vent wean early • Mild increased WOB (retracting, tachypnea) • CPT/suction q3-4hr • Desat frequency 1-5 occurrences below low limit	• 6-10 increase in FiO2 percentage • PRNs q2-4hrs • Change to 1 vent setting *or* vent wean on hold • Moderate increased WOB (retracting, use of accessory muscles, tachypnea) • CPT/suction q2-3hrs • Desat frequency > 5 occurrences below low limit	• 11-15 increase in FiO2 percentage • PRNs q1hr • Change to 2 or more vent settings • Severe increased WOB (flare, grunt, head bobbing, paradoxical breathing, tachypnea) • CPT/suction q1hr • Desat frequency > 10 occurrences below low limit
NEURO	• Baseline status • Playing or sleeping appropriately	• Mild increase/decrease in neuro status • Sleepy *or* irritable, but consolable • >2 PRN meds **or** requires 2nd line of neuro specific protocol • Seizure activity, resolved with 1st PRN	• Lethargic *or* irritable, difficult to console • > 3 PRN meds **or** requires 3rd line of neuro specific protocol • Seizure activity requiring more than 1 PRN	• Reduced response to pain/stimuli, limp, *or* severe irritability • No response to PRN meds • Prolonged, frequent, or uncontrolled seizure activity requiring more than 2 PRNs • New seizure w/out prior hx
CARDIOVASCULAR	• Baseline color and warmth • Baseline capillary refill • Afebrile	• Mild change HR and/or BP • Pale, capillary refill 3-4 sec • Low-grade fever (37.5-38 °C) • Mild hypothermia (35.5 °C), no Bair hugger needed • No need for fluid repletion	• Moderate change HR and/or BP • Grey, capillary refill 4-5 sec • Febrile (38-40 °C) • Hypothermia (< 35 °C) requiring Bair hugger *<1 hr.* • Need for fluid repletion above GI replacement orders	• Severe change HR and/or BP • Grey and mottled, cap refill >5 sec • Febrile >40°C • Severe hypothermia (< 35 °C) requiring Bair hugger *>1 hr.* • Needs IV fluid repletion
STAFF CONCERN	No Concern	Mild	Moderate	Severe

Overall score: _____ / 14

ESCALATION ALGORITHM

Total Score (out of 14)	**Escalation Plan**	**Action to Consider**
0-3	• Bedside RN notifies Charge RN & Charge RT to assess patient **If two consecutive scores are a 3, the Charge RN notifies LIP and an acuity huddle is called**	• Discuss if there is a need to change POC or continue with current POC • Consider escalation to LIP • Continue FEWS assessment Q4H
4-8	• Bedside RN notifies Charge RN and LIP about change in status • Call Acuity Huddle • LIP/attending MD assess patient with bedside RN, Charge RN & Charge RT (within 30 minutes of notification)	• Acuity huddle • Consider work-up (i.e. labs, CXR, UA/UCx, viral panel…) • Increase frequency of vital signs & FEWS assessment Q2H • Create contingency plan
> 8	• Bedside RN notifies Charge RN and LIP • Consider code PURPLE • Charge RN notifies acuity huddle team, LIP & attending MD assess patient with (within 15 minutes of notification)	• Consider reduction of RN assignment (i.e. 1:1 ratio) • Increase frequency of vital signs & FEWS assessment Q1H • Consider transfer to higher level of care

For immediate provider/team response at any time, call code BLUE or PURPLE. x4000

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