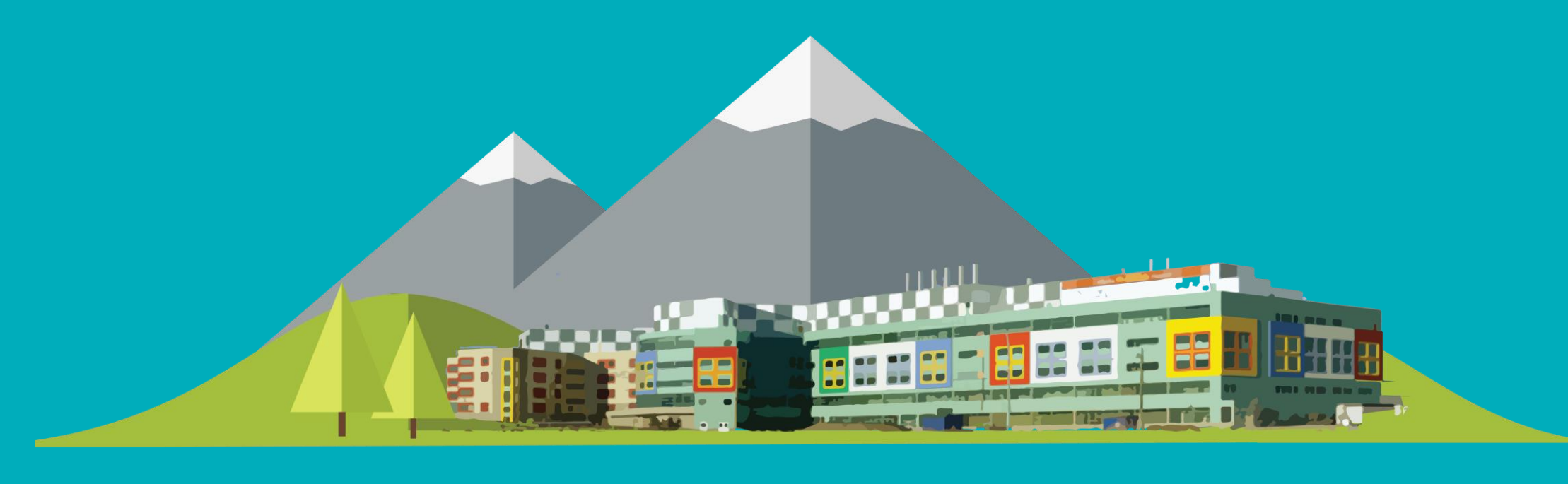


Optimizing Acute Asthma Care at the Alberta Children's Hospital



JA Michelle Bailey, MD MSc FRCP(C); Suzanne Libbey, RRT BHSc; Gemma Vomiero, MD FRCP (C); Brent Seefried, RRT; Kari Pistore, RRT; Mary O'Gorman, RN BScN; Jill Woodward, RN BSc (Hons) MA; Erin Pols, RN BScN; and Kathy Courtney, RRT

BACKGROUND

- Asthma is one of the most common reasons for pediatric hospitalization in Canada.
- Since 2006, the Alberta Children's Hospital (ACH) has utilized a comprehensive Pediatric Asthma Pathway for emergency department (ED) and inpatient asthma care. An asthma clinical score (PRAM score) is used in the pathway to aid in care decisions.
- Optimal provision of the highest acuity asthma care in the ED and inpatient units (Phase I) is critical to ensuring medical stabilization and smooth progression through the subsequent phases (Phases II and III) toward discharge to home.

Opportunity for Improvement: Clinical staff identified suboptimal adherence to the pathway, suboptimal transitions between phases within the pathway and delays in the admission process for moderate to severe patients.

IMPROVEMENT GOALS

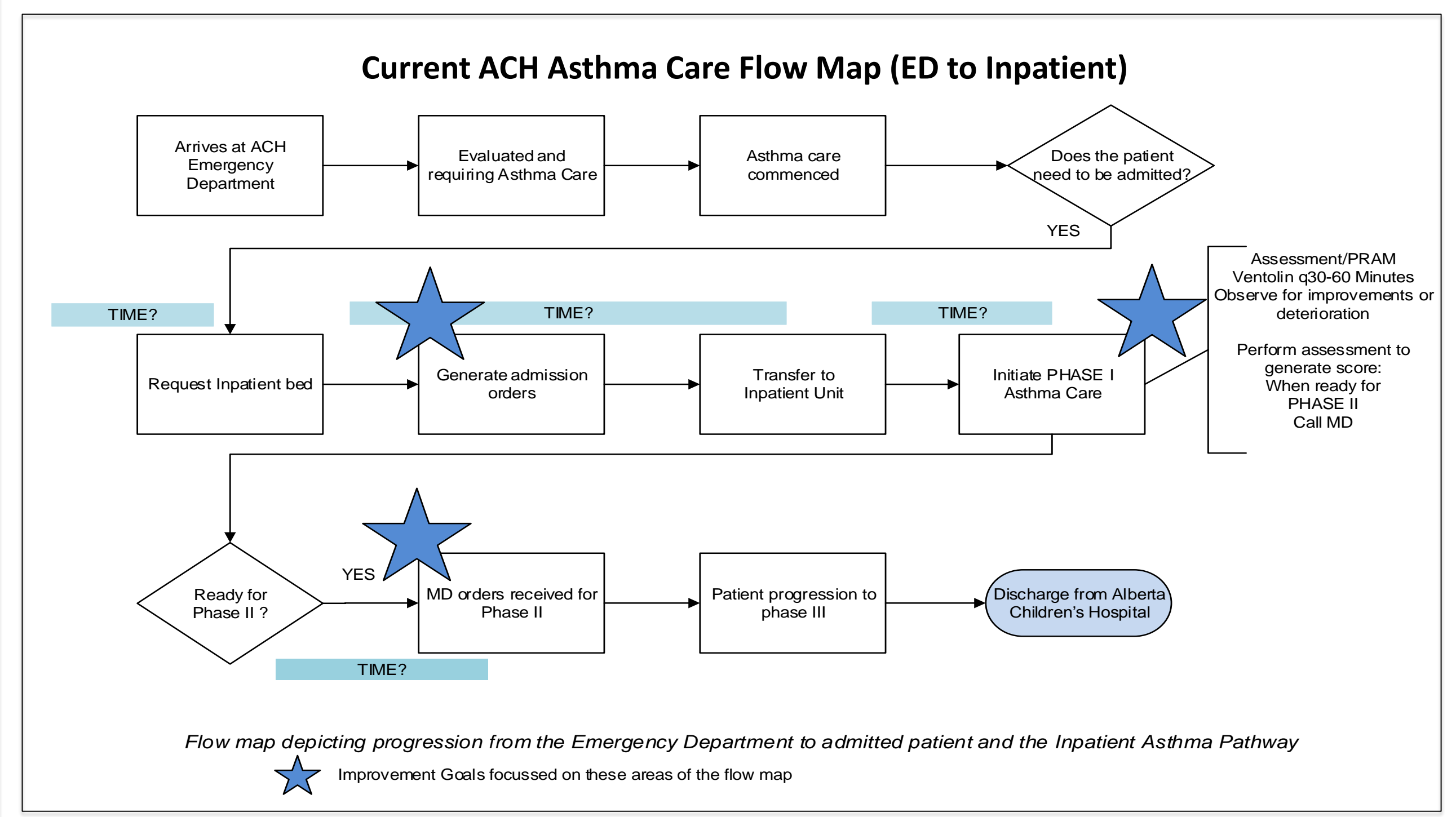
- Optimize Phase I care:**
 - Improve transitions from ED to inpatient units
 - Improve transitions from Phase I to Phase II asthma care.
- Optimize admission process** for moderate/severe asthma patients.
- Explore family perceptions** of providing Ventolin to their child while in hospital and the education they receive.

METHODS

An ACH Asthma Collaborative (nurses, physicians, respiratory therapists (RT), and managers) created an Asthma Care Flow Map (see below) and used fishbone diagrams to identify contributing factors for suboptimal asthma pathway transitions and delays in admission of asthma patients.

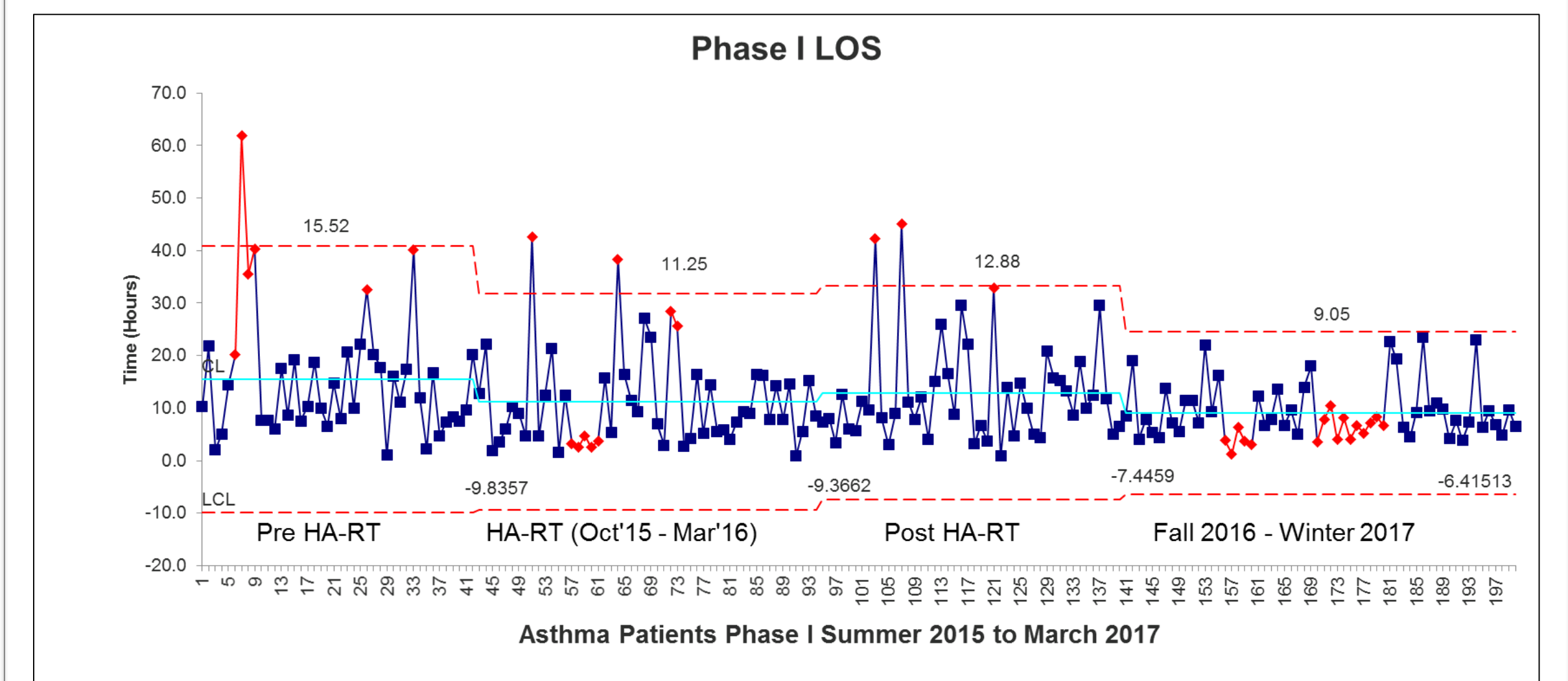
The cause-and-effect diagrams led to two interventions:

- Designating a current RT role as the High Acuity Respiratory Therapist (HA-RT) to promote pathway adherence, improve care consistency, and reduce delays in pathway progression.
- Development of an Emergency Department (ED) admission algorithm to optimize decision-making and reduce delays associated with the admission process.



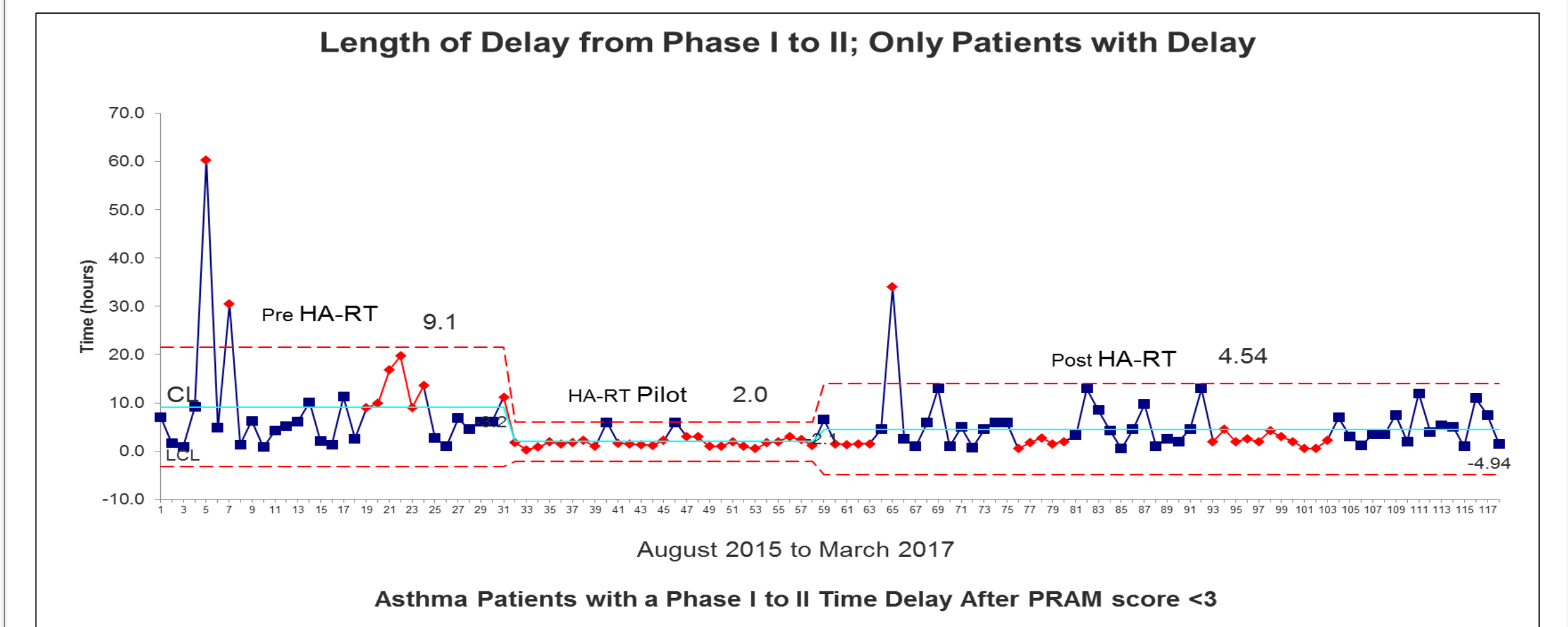
OUTCOMES

Goal #1: Optimize Phase I Care
Reduced Phase I length of stay (LOS) from 15 hours to 9 hours.

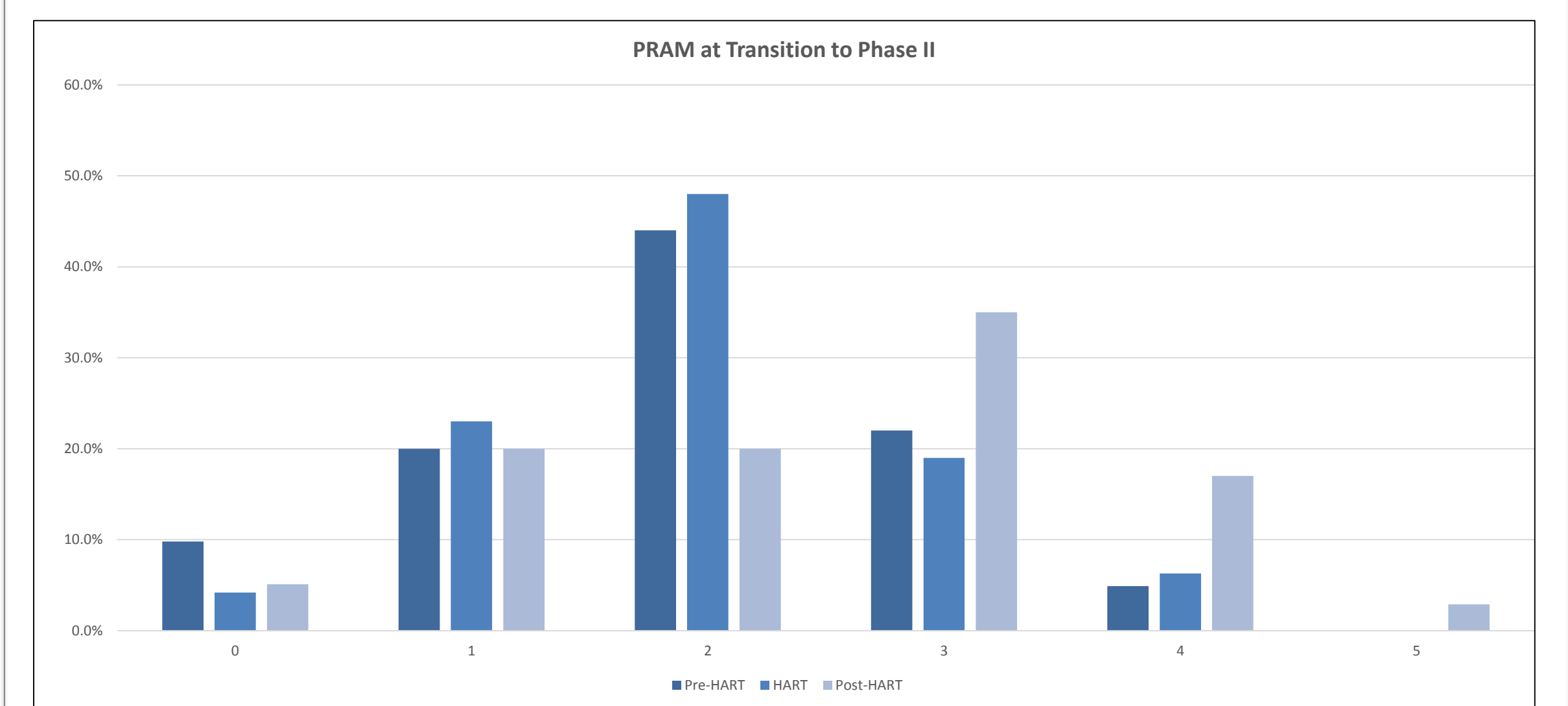


Reduced Delays in Phase I to Phase II Transition:

- 50% reduction (76% to 50%) in the proportion of patients with Phase I to II transition delayed after achieving the pathway asthma score that indicates readiness to transition: PRAM <3.
- For patients with a delay from Phase I to II: The length of delay was 50% shorter.



Patients transitioned from Phase I to II with higher PRAM scores; shift continued after the HA-RT pilot.

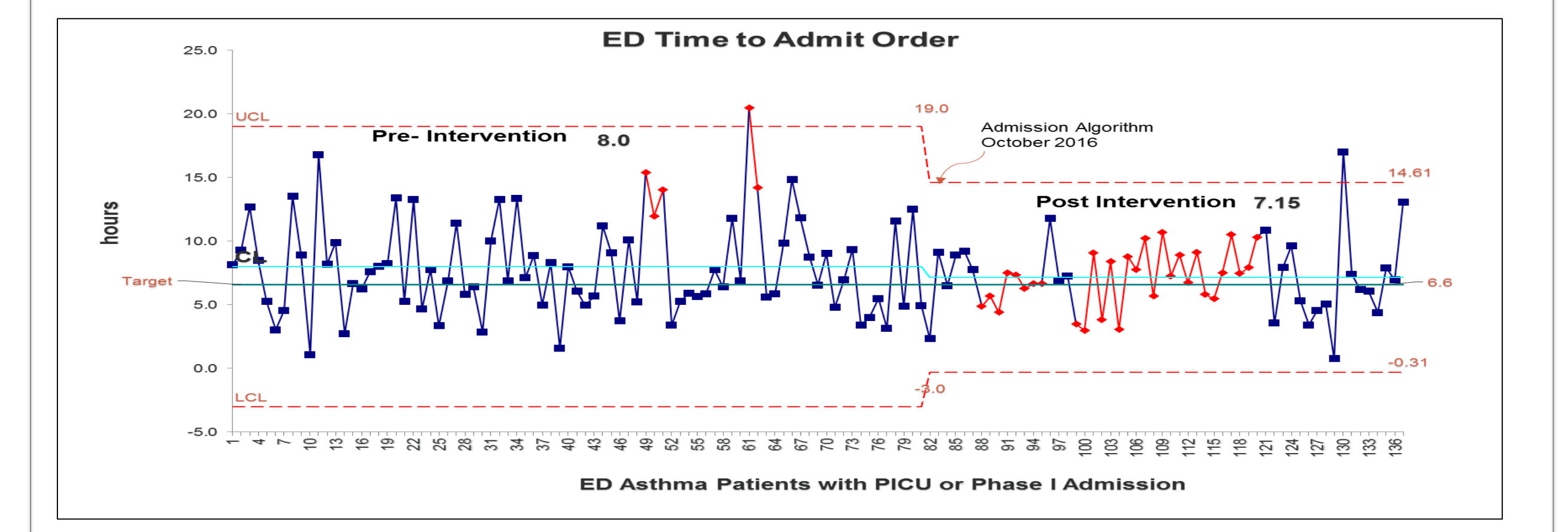


Balancing Measures:
 No increase in Phase I acuity or deterioration post intervention.

	PRE HA-RT	HA-RT	Post HA-RT
N	71	60	137
Q 30 min or back to back Ventolin	20 (28%)	15 (25%)	8 (6%)
Mag Sulphate	3 (7%)	3 (5%)	5 (4%)
PICU consult	0	5 (8%)	0
PICU admission from phase I inpatient	1 (2%)	4 (7%)	1 (1%)
Phase II to Phase I	2 (3%)	3 (5%)	6 (4%)

OUTCOMES

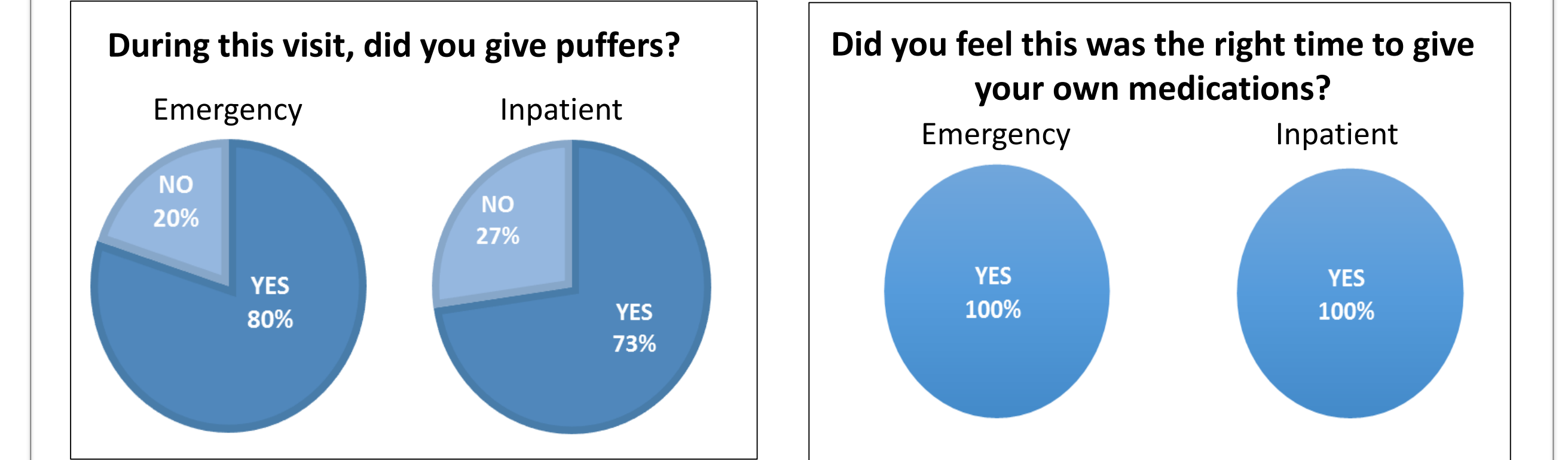
Goal #2: Optimize Admission Process - new admission algorithm
Reduced time to admission order from 8 to 7.1 hours (mean)



Reduction in long admission delays. The percentage of patients with time to admission order of 11 hours or greater reduced from 24% to 5%.

Balancing Measures:
 No increase in PICU Consults from ED (35% pre, 30% post).
 No increase in PICU Admissions from ED (20% pre, 16% post).
 Phase I severity measures unchanged.

Goal #3: Explore Family Perceptions



- Families want to deliver Ventolin to their child in the acute phase of asthma.
- Overall, the family experience is positive.
- To support families, we need consistent education of puffer technique, including consistent observation of family technique.

LESSONS LEARNED

Using Plan-Do-Study-Act (PDSA) cycles, this quality improvement initiative achieved:

- Reduced time in the most intensive phase of asthma care by improved progression of care;
- Improved admission process efficiency; and,
- Understanding that families want to participate in care and appreciate the asthma education received in hospital.

SUSTAINING RESULTS

- HA-RT discontinued, role is part of Unit RT responsibilities;
- Culture change supported by tools (key messaging cards), education and audit feedback to care providers;
- Regular data reporting through an Asthma Dashboard (Tableau);
- Seasonal 'Asthma Blitz'; and,
- Continue Asthma Collaborative with meetings 3-4 times per year.

ACKNOWLEDGEMENTS

The Asthma Collaborative wish to thank families, nurses, RTs, pediatricians and residents for their participation in this project and for supporting change to improve care. We are grateful for funding support from the Chief Medical Officer QI Innovation Grant.