Reducing Golden Hour Admission Times for Extremely Preterm Infants: An Improvement Science Initiative

Nicholas Heitkamp, MD, MSc, Hannah Fox, RN, Jonathan Swanson, MD, MSc, MBA, Sarah Lepore, MSN, NNP-BC, Santina A. Zanelli, MD, Jaclyn B. Wiggins, MD

University of Virginia, Charlottesville, VA

Introduction

Extremely preterm infants (<28 weeks) are at high risk for morbidity, and rapid, coordinated stabilization during the Golden Hour (first 60 minutes) is critical. At UVA NICU, prolonged admission times (>60 min) prompted a QI initiative to reduce birth-to-incubator closure time by 25% within one year.

Methods

Using the Institute for Healthcare Improvement model, a multidisciplinary team mapped the Golden Hour process and identified key delays, including umbilical line placement and x-ray confirmation. Two PDSA cycles targeted team awareness (via an admission timer and coordinator) and streamlined line placement using time-based cues and earlier isolette closure. Outcomes were analyzed using SPC charts, with balancing measures including temperature, glucose, and severe IVH rates.

Results

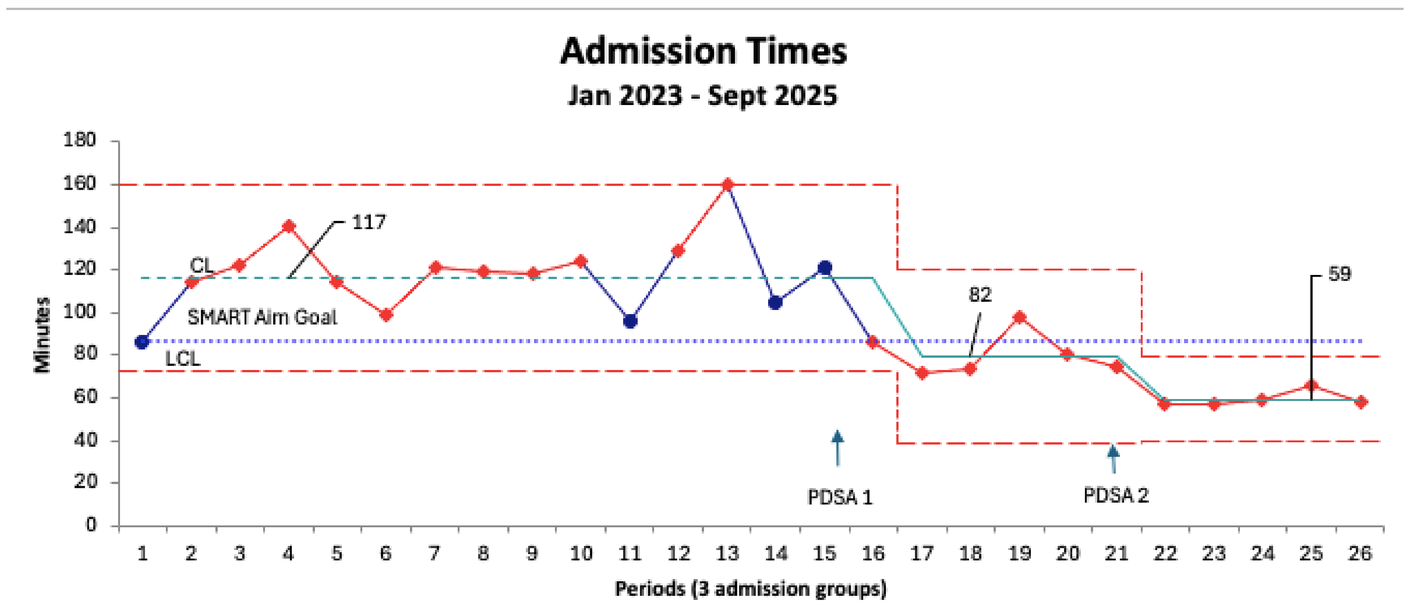
Seventy-four infants <28 weeks GA were included. Average admission time decreased by 50% (117 → 58 minutes), with sustained improvement and reduced variability. Balancing measures showed no change in admission temperature, glucose, or severe IVH rates.

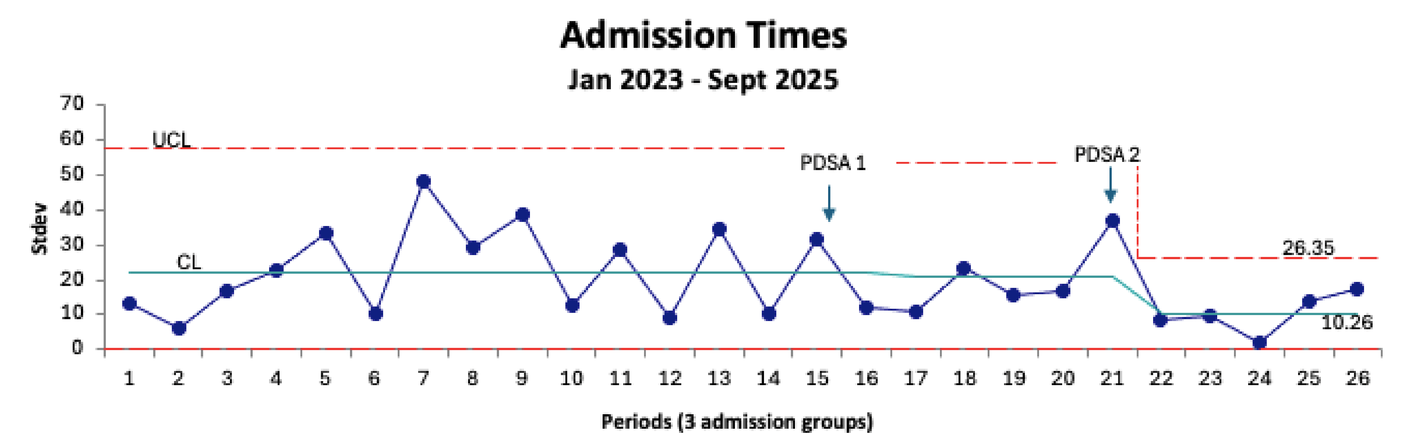
Discussion

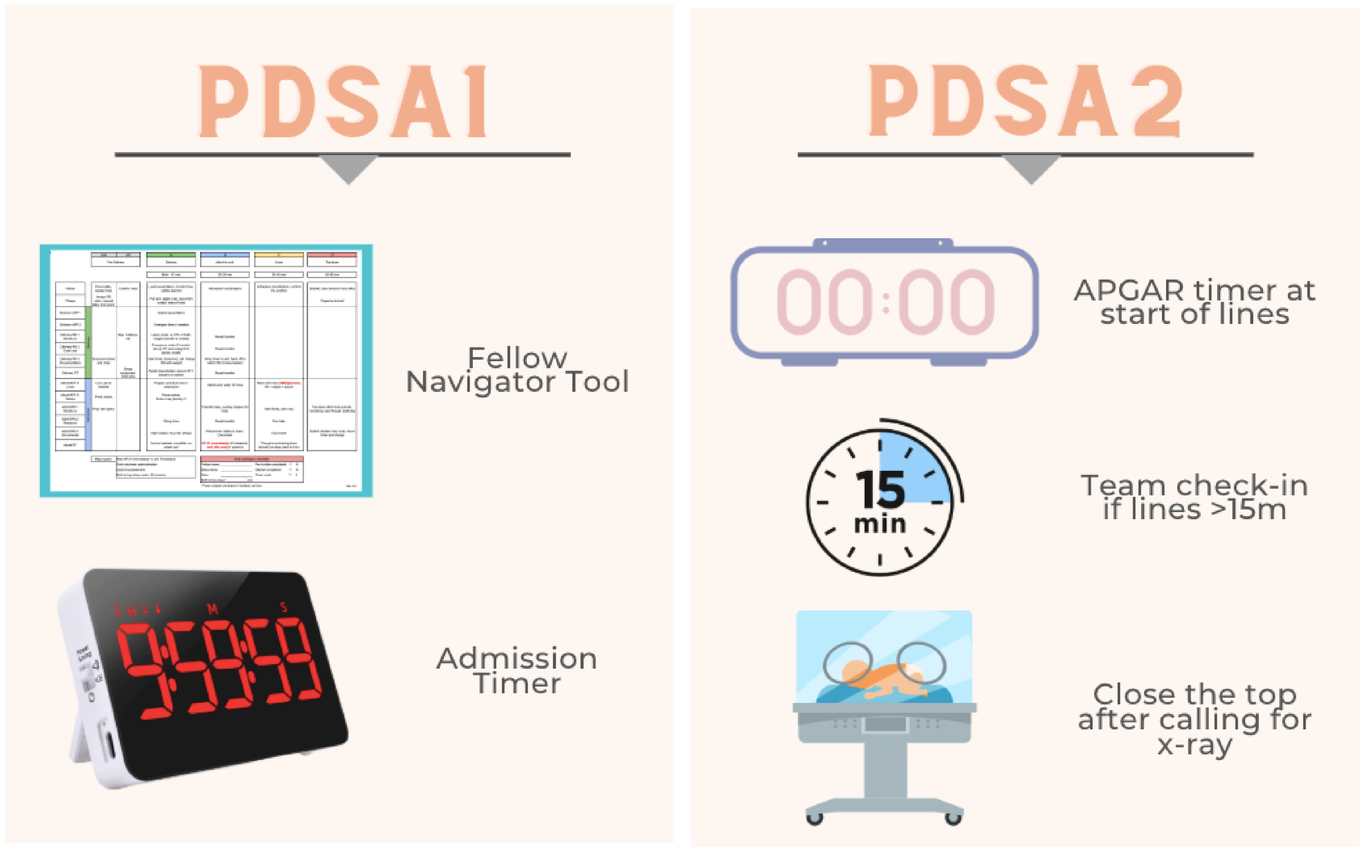
Designating an admission leader, adding visual and auditory cues, and standardizing line placement significantly improved efficiency without compromising safety. Success was driven by strong multidisciplinary engagement and shared team ownership. Redefining admission completion at isolette closure improved thermoregulation and reflects a meaningful clinical process change.

Conclusion

Structured QI interventions achieved and sustained a 50% reduction in Golden Hour admission time for extremely preterm infants. Future cycles will integrate point-of-care ultrasound and role-specific checklists to further streamline care and support replication across NICUs.







	Measure	Baseline (n=74)	PDSA 1 (n=15)	PDSA 2 (n=17)
	Gestational age (weeks)	25.6 (± 1.5)	26.0 (± 1.9)	25.4 (± 1.3)
	Birth weight (grams)	767 (± 215)	817 (± 213)	785 (± 207)
Process	Total admission time (min)	117 (± 26)	82 (± 23) *	59 (± 12) **
Process	Time to Glucose (min)	68 (± 24)	66 (± 24)	49 (± 15)
Process	Time to IV Dextrose (min)	49 (± 30)	38 (± 28)	38 (± 31)
Process	Time to X-Ray (min)	43 (± 16)	39 (± 13)	43 (± 18)
Process	Time to Surfactant (min)	51 (± 18)	47 (± 13)	56 (± 34)
Balancing	Temperature (°C)	36.9 (± 0.6)	36.9 (± 0.4)	37.1 (± 0.4)
Balancing	Glucose (mg/dL)	66 (± 34)	77 (± 22)	92 (± 45)
Balancing	Severe IVH (Grade ≥3), %	0.2 (± 0.4)	0.3 (± 0.5)	0.1 (± 0.3)