Improving Rates of Delayed Umbilical Cord Clamping for Premature Infants Through Quality Improvement

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Background

- Delayed cord clamping (DCC): The practice of allowing continued blood transfer from the placenta to the newborn for 30–60 seconds before clamping the umbilical cord.
- Neonatal Resuscitation Program guidelines recommend DCC for most vigorous term and preterm infants.
- DCC reduces morbidity and mortality in preterm infants, with links to many documented benefits:
  - Smoother transition to extrauterine life
  - Reduced use of inotropes in the first 24 hours of life
  - Decreased need for blood transfusions
  - Lower rates of necrotizing enterocolitis and intraventricular hemorrhage
  - Improved developmental outcomes
  - Higher rates of survival to discharge
- DCC remains underutilized in preterm infants, often due to provider discomfort and concerns about neonatal stability.

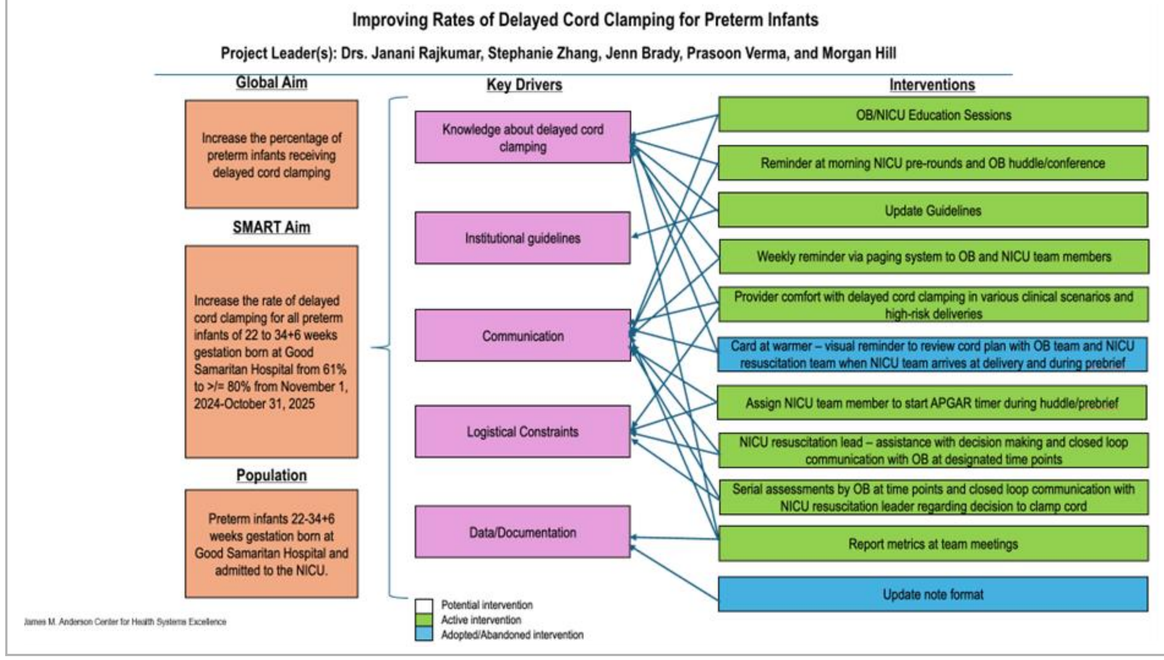
Objective

- Our SMART aim is to increase the rate of DCC for preterm infants <35 weeks delivered at and admitted to the Good Samaritan Hospital NICU from a median of 61% in November 2024 to 80% by October 2025 through targeted quality improvement efforts.

Methods

- A multidisciplinary and interprofessional team mapped existing processes and created a key driver diagram to guide our proposed interventions.
- Primary outcome measure:
  - Rate of DCC in preterm infants born between 22 weeks + 0 days and 34 weeks + 6 days gestation and admitted to the NICU.
- Balancing measures included:
  - Delivery room intubation rates
  - Infant admission temperatures

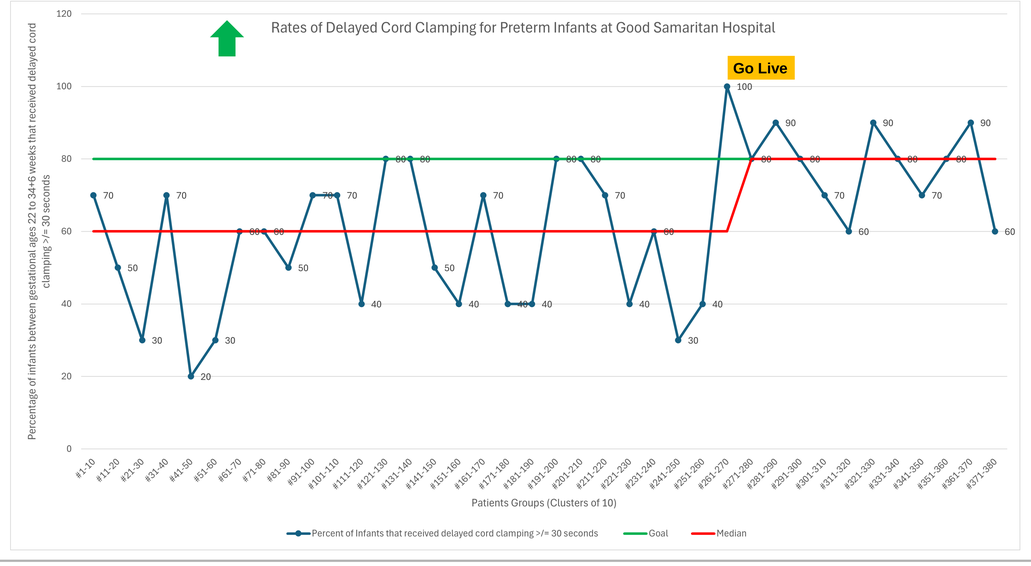
Key Drivers and Interventions



- Interventions implemented included:
  - Revising unit guidelines to establish clear inclusion and exclusion criteria and outline absolute and relative contraindications for DCC
  - Conducting educational sessions for OB and NICU delivery teams
  - Standardizing cord clamp planning during pre-delivery huddles, including delineating primary communicators on the NICU and OB teams to streamline communication about DCC during delivery
  - Implementing visual reminders in delivery rooms/ORs to prompt DCC discussion
  - Enhancing documentation of cord clamping practices
  - Implementing regular reminders for on-duty delivery room staff
- Key outcome and process measures were tracked using run charts for 380 preterm infants born between November 1, 2024, and February 28, 2025.

Results

- Since November, the rate of DCC increased from a baseline median of 61% to 80%
- Balancing measures remained stable within common cause variation:
  - Delivery room intubation rate decreased from 17% to 15%.
  - Hypothermia rate decreased from 23% to 18% .



Conclusions

- Our single-center quality improvement initiative successfully increased the rate of DCC for preterm infants.
- Importantly, balancing measures, including intubation rates and admission temperatures, remained stable, suggesting no adverse impact on neonatal stability.
- These findings highlight the effectiveness of targeted, multidisciplinary, and interprofessional collaboration in improving DCC implementation, thereby enhancing outcomes for preterm infants.

Future Directions

- Future efforts will focus on expanding this quality improvement initiative across the Perinatal Institute at Cincinnati Children's Hospital Medical Center, including the Special Delivery Unit of the Fetal Care Center.