

Improving Cord Management in Preterm Neonates at Birth

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Background

- Umbilical cord management is a critical aspect of neonatal care, impacting both immediate and long-term health outcomes for newborns.
- The timing of cord clamping and the methods used can significantly influence the infant's adaptation to extra-uterine life, affecting parameters such as blood volume, iron status, and respiratory transition.
- Current guidelines and practices vary widely, necessitating optimizing these procedures based on the latest evidence.

Description of the Project

- Our setting is the University of California, San Diego Neonatal Intensive Care Unit (NICU), a 52-bed Level 3 NICU with a birthing center that delivers approximately 40 infants with gestational age < 30 weeks per year.
- Recently, our unit adopted an innovative approach involving trolley deliveries (Figure 1) for 90-second delayed cord clamping (DCC) as part of a multicenter randomized clinical trial.
- This method facilitates the initiation of ventilation while the infant remains attached to the umbilical cord (Figure 1).

Lessons Learned/ Expected Outcomes

- Recent CPQCC data show that DCC > 60 seconds improved in 2024 after the initiation of the trolley.
- It increased from annual averages of 10-15% to 39 % (Figure 2).
- We seek to impact more of our < 30 week infant population.
- **With the initiation of the QI project, we aim to increase the duration of delayed cord clamping (DCC) to 90 seconds in preterm infants (<30 weeks gestational age) by 20% within six months, from July 2025 to December 2025.**
- Process measures include: % compliance with trolley use in infants < 30 weeks, % time when a neonatal provider was in the field involved in DCC intervention.
- Balancing measures will track intubation rates and initial hypothermia upon admission to the NICU in the setting of DCC.

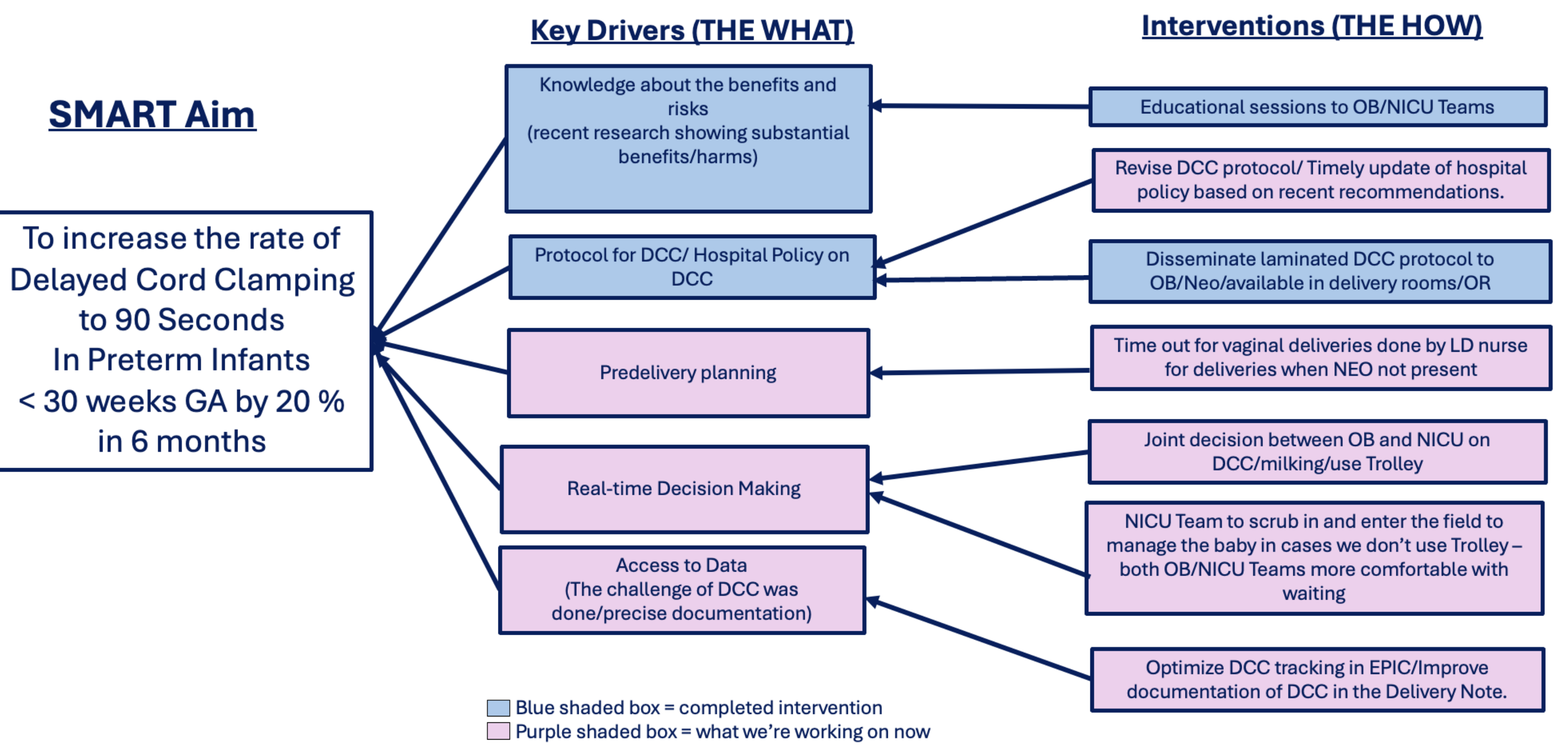


Figure 4. Key Driver Diagram outlining the aim, key drivers, and interventions thus far completed (blue shaded boxes) and in process (purple shaded boxes) to achieve delayed cord clamping by trolley approach.

Cord Clamping Delayed 61+ Seconds (add.2019), UCSD Hlth La Jolla - Jacobs MC

VON Small Babies Born in 2019-2025
This chart is final for years 2023 and earlier. The chart is preliminary for 2024 and 2025 as the data collection is on-going.
UCSD Health La Jolla - Jacobs Medical Center

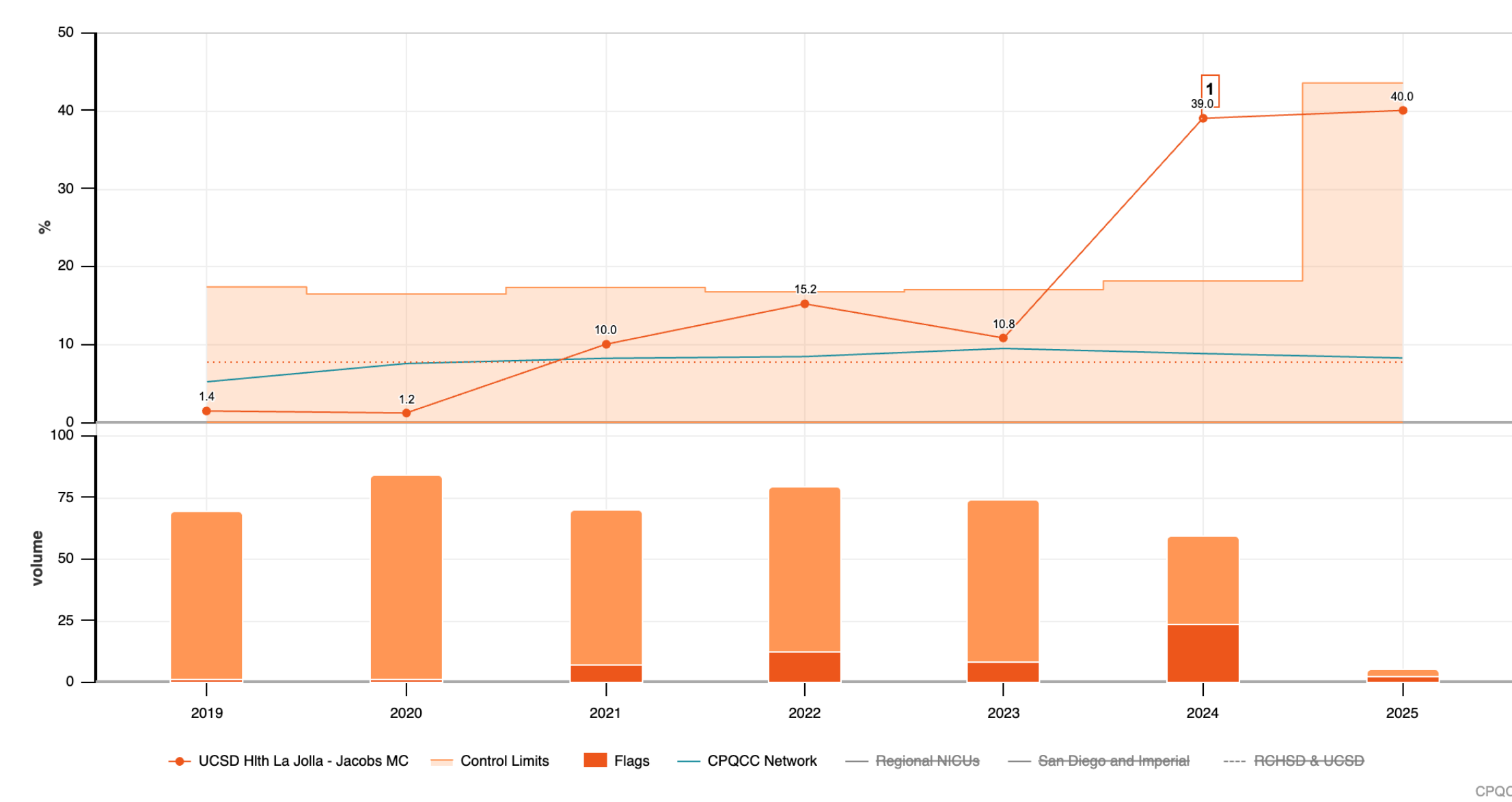


Figure 2. Graph showing the % increase from 10-15% to 39%.

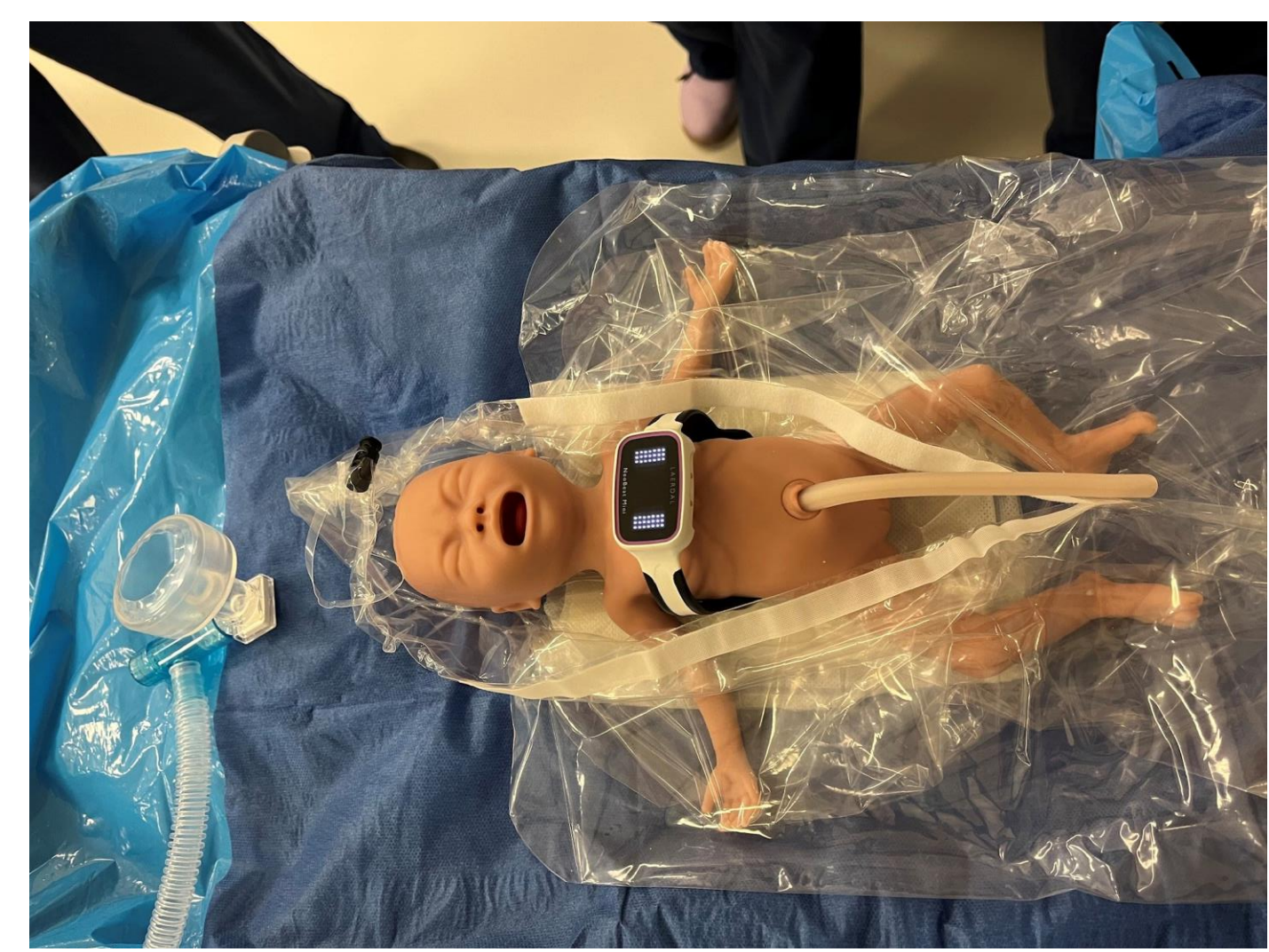


Figure 3. Neonate placed on a trolley with a chemical mattress to prevent hypothermia during delayed cord clamping.

Recommendations/ Next Steps

- We are establishing a multidisciplinary team comprised of obstetrics and neonatal team members. Key drivers (Figure 4) have been identified to develop targeted interventions to enhance DCC rates.
- Baseline monthly data from 2022 to 2024 will be collected and analyzed on a statistical process control chart.
- DCC process will be further explored and discussed with our multidisciplinary team through fishbone diagrams and process mapping.
- We anticipate that these measures will result in us achieving our aim and primary outcome measure of increasing the duration of DCC to 90 seconds in infants < 30 weeks, with a global objective of improving health outcomes for our smallest infants.
- The DCC process will be further explored.

References

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[2] Deferred cord clamping, cord milking, and immediate cord clamping at preterm birth: a systematic review and individual participant data meta-analysis. Seidler, Anna Lene Seidler, Anna Lene et al. *The Lancet*, Volume 402, Issue 10418, 2209 – 2222.

[3] Peterson, C., Ferrer, L., Sanjay, S. et al. Oxygenation associated with cord management strategies among preterm infants <32 weeks gestation during the transition period. *J Perinatol* 45, 55–62 (2025). <https://doi.org/10.1038/s41372-024-02127-7>.

Figure 1. The use of trolley delivery enables the initiation of ventilation while ensuring the infant continues to benefit from placental blood flow