

EVALUATING NEONATAL MONITORING WORKFLOWS DURING STABILISATION AND RESUSCITATION

Simulation study - Royal Hospital for Children, Glasgow, December 2025



EXECUTIVE SUMMARY

Early neonatal stabilisation requires rapid assessment of an infant's physiological status while supporting best practice such as delayed cord clamping (DCC), respiratory support and early parent-infant bonding. Conventional monitoring systems often rely on multiple wired devices, which can introduce delays and workflow interruptions during this critical period.

A simulation study conducted at the Royal Hospital for Children, Glasgow compared standard-of-care neonatal monitoring with the SurePulse NeoPatch, a wireless single-use monitoring system providing continuous heart rate and skin temperature monitoring immediately after birth. The project was supported financially by the Nottingham City Council Shared Prosperity Fund (SPF) 2023-2025 and SurePulse Medical Ltd. Clinicians reported faster monitoring application with the SurePulse NeoPatch, improved ease of use and reduced cognitive load, with potentially better support for delayed cord clamping and early skin-to-skin care. Further clinical studies are underway to evaluate the performance of the SurePulse NeoPatch in real-world settings.

STUDY OVERVIEW

Participants

6 experienced neonatal clinicians participated:

- 2 Consultant Neonatologists
- 2 Senior Neonatal Clinical Fellows
- 1 Senior Neonatal Charge Nurse
- 1 Neonatal Nurse Educator
- 1 Project Manager (also took role of Mother)

Clinical environments simulated

Three delivery settings were evaluated:

- Delivery room (vaginal delivery) with bedside trolley (LifeStart™)
- Delivery room (vaginal delivery) with DCC before transfer to resuscitaire
- Operating theatre (caesarean delivery) with bedside trolley (LifeStart™)

Within each environment, teams completed paired scenarios using:

1. Standard monitoring (ECG, pulse oximetry, temperature probes)
2. SurePulse NeoPatch monitoring

Simulations included stimulation, respiratory support, delayed cord clamping and transfer to skin-to-skin care or the resuscitaire.

KEY OBSERVATIONS



100%
of participants found the NeoPatch quicker to apply than traditional monitoring

“

It almost cuts [application] down by 60% because instead of 3 different steps you just have the one.

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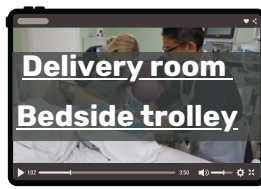


100%
of participants found the NeoPatch easier to use than traditional monitoring

Simulation videos



The accompanying videos provide visual context for the observations described in this paper. They can be accessed using the following links:



Consistent Observations

The following observations were consistently reported by clinical participants during the post-simulation debrief:

- Monitoring was quicker and easier to apply using the SurePulse NeoPatch compared with traditional monitoring systems.
- The wireless design reduced equipment crowding and cable management around the infant.
- Transfer of the baby to the mother for skin-to-skin care or to the resuscitaire was easier when using the SurePulse NeoPatch
- Wireless monitoring during delayed cord clamping increased clinician confidence to continue monitoring while maintaining intact-cord stabilisation.
- The simplified setup helped reduce cognitive load during neonatal resuscitation workflows.

Areas for development

Clinicians identified several areas for further development:

- Availability of a sterile patch (already in development) for caesarean section births
- Improved portability for transfer of the baby to the NICU or ward
- Smaller Patch for extremely preterm infants
- Integration of charging into a single system to reduce reliance on detachable modules. This would also mitigate against accidental module loss
- Availability of a smaller monitor option



Delivery room cuddle transfer during simulation using traditional monitoring



Delivery room cuddle transfer during simulation using SurePulse NeoPatch

Faster Monitoring Deployment

Observed monitoring application times during the simulation are shown in table 1.

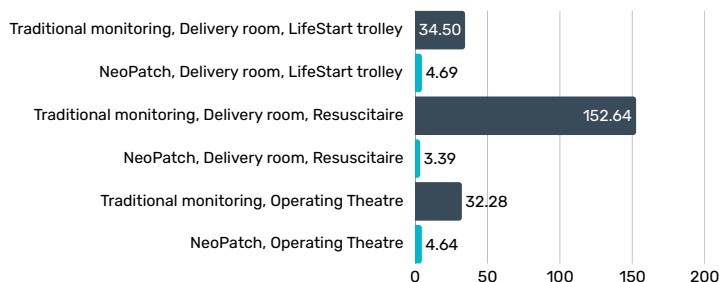


Table 1: Observed Simulation monitoring application times

CONCLUSION

This clinician-led simulation suggests that a wireless, single-patch monitoring approach may improve neonatal stabilisation workflows in the delivery room and operating theatre. Participants reported improved ease of use, faster monitoring initiation and better support for delayed cord clamping and early skin-to-skin care.

Further clinical evaluation is underway to assess performance and clinical impact across a wider range of gestational ages and delivery environments.

LIMITATIONS

This evaluation was conducted in a simulated environment using a neonatal manikin and therefore did not measure time to physiological signal acquisition or clinical decision-making outcomes. The clinicians involved were very experienced and the application times observed for Standard of Care monitoring may be underestimated. Clinical trials are currently underway to evaluate the accuracy, reliability and clinical impact of the SurePulse NeoPatch monitoring system in real-world neonatal care.