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Feasibility and acceptability of using the BabySaver resuscitation platform and NeoBeat together for neonatal resuscitation in a low-resource setting: A pre-post implementation study

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Background: BabySaver and NeoBeat devices have the potential to enable bedside neonatal resuscitation, with an intact cord in the presence of the mother. We assessed the feasibility and acceptability of using them together for neonatal resuscitation in a low-resource setting.

Methods: This was a mixed methods study conducted over a period of 11 months at Mbale Hospital in Uganda. We enrolled 150 mother-infant dyads into a pre-post study. During the pre-implementation phase, neonatal resuscitation was conducted based on the existing standard of care whilst in the post-implementation phase we evaluated the BabySaver and NeoBeat. Our primary outcome was the proportion of babies resuscitated at the bedside with an intact cord. Using in-depth interviews and an inductive thematic analysis approach, we also explored experiences of health workers and mothers with use of the BabySaver and NeoBeat.

Results: Bedside resuscitation increased significantly in the post-implementation period (9.3% versus 45.3%, $p < 0.001$ while early cord clamping decreased (26.7% versus 12.0%, $p = 0.042$). The median time to successful resuscitation was shorter post-implementation (8 versus 5 minutes, $p < 0.001$). Infants in the post-implementation phase had higher axillary temperatures at birth and at 0, 10, 20, and 30 minutes post-resuscitation. Neonatal morbidity was lower: APGAR score < 7 at 5 minutes (aPR: 0.36; 95%CI: 0.26-0.50), transfer to postnatal ward with mother (aPR: 9.27; 95%CI: 2.23-38.48), transfer to neonatal unit (aPR: 0.66; 95%CI: 0.56-0.78). Health workers found the devices easy to use, and bedside resuscitation reassured mothers, fostering trust and satisfaction. Barriers included misconceptions about delayed cord clamping, hypothermia concerns, cross-infection risks, and difficult use in theatre.

Conclusion: The BabySaver and NeoBeat improved bedside neonatal resuscitation and reduced morbidity. Bedside resuscitation was also acceptable to the health workers and mothers. Scaling up should address misconceptions about delayed cord clamping and optimize usability in theatre settings where many asphyxiated infants are delivered.

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