The Impact of Warming on Term NICU Admission Rates in Women Undergoing Scheduled Cesarean Delivery
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BACKGROUND
• Cold infants are at increased risk of morbidity and mortality
• In order to improve outcomes/reduce the incidence of neonatal hypothermia, a new “bundle” of care, multiple changes in practice instituted together, was instituted
• This included the pediatric caregiver receiving the infant at the Operating Room (OR) table with warm blankets, preheating the infant warmer, caregivers warming their hands, use of polyethylene covers for premature infants, and increasing the OR room temperature to 68°F
• The results of these changes have markedly reduced preterm neonatal hypothermia
• Initially, the goal was to reduce preterm hypothermia and mortality; however, we also wished to determine if there was a benefit to term infants
• Further, it was anecdotally noted that the mothers may also be receiving a benefit, as there seem to be fewer women who were hypothermic upon arrival to the OB PACU.
• Hypothermia, defined as temperature < 36°C, is an anticipated morbidity during a surgical procedure, contributing to:
  • Risk of coagulopathy
  • Increased surgical blood loss
  • Postoperative wound infection
  • Increases patient discomfort
  • Delays transfer from the post-anesthesia care unit (PACU)
• Women undergoing cesarean delivery have 2 risk factors which increase their chance of emerging newborns having hypothermia:
  • Increased surgical blood loss
  • Maternal and fetal demographic information was unchanged between the two time periods with the exception of a slight increase in maternal BMI
• Neonates who were born in the Post-intervention period tended to be less likely to be admitted to the NICU; though this did not reach statistical significance
• Secondary outcomes were all non-statistically significant, demonstrating no increase in adverse outcomes for the mothers after implementation.

METHODOLOGY
• We performed a retrospective pre-post analysis assessing the impact of the bundle upon term neonates and mothers
• Women were included if they were delivering a term (>37 week) singleton non-anomalous fetus by scheduled cesarean section.
• Our primary outcome was term NICU admission.
• We identified 1,280 term singleton live births before (Pre-intervention) and 1,411 (Post-intervention) after policy implementation.
• Secondary objectives were to determine if there has been a significant improvement in:
  • Maternal hypothermia
  • Maternal and fetal demographic information
  • Maternal and fetal demographic information
  • Maternal complications
  • Costs
• Secondary outcomes were a reduction in maternal complications and cost savings
• The use of increased ambient OR room temperature and warmed blankets for transfer from the OR field to a warmer was associated with a trend in decrease NICU admission at term
• The mothers did not demonstrate adverse outcomes as a result of the interventions, demonstrating non-inferiority of the intervention
• While not by a large amount, costs did decrease for warming equipment

DATA ANALYSIS / FINDINGS
• We identified 1,280 term singleton live births before (Pre-intervention) and 1,411 (Post-intervention) after policy implementation.
• Maternal and fetal demographic information was unchanged between the two time periods with the exception of a slight increase in maternal BMI
• Neonates who were born in the Post-intervention period tended to be less likely to be admitted to the NICU; though this did not reach statistical significance
• (Post intervention 33.82 vs. Pre-intervention 33.21; p-value=0.034).
• Maternal outcomes were all non-statistically significant, demonstrating no increase in maternal adverse outcomes for the mothers after implementation.

CONCLUSIONS / IMPLICATIONS
• The use of increased ambient OR room temperature and warmed blankets for transfer from the OR field to a warmer was associated with a trend in decrease NICU admission at term
• The mothers did not demonstrate adverse outcomes as a result of the interventions, demonstrating non-inferiority of the intervention
• While not by a large amount, costs did decrease for warming equipment

LIMITATIONS / STRENGTHS
• This was a retrospective study
• Chart reviews demonstrated poor documentation of use of warming equipment
• The contemporaneously maintained obstetrical database contains over 6000 deliveries per year

REFERENCE

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