Thermoregulation in the Golden Hour: Prevention of Hypothermia following Preterm Birth
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Background & Significance

- 10% of infants are born prematurely in the US each year
- Hypothermia is associated with increased risk of death in preterm infants, as well as chronic lung disease, intraventricular hemorrhage, and late onset sepsis
- The average rate of hypothermia at time of NICU admission in the US is 14.8%
- In the year 2021, 26.1% of preterm infants admitted to the NICU were moderately to severely hypothermic at this institution

Purpose & Aims

**Purpose:** Reduce hypothermia in preterm infants on admission to the NICU and increase knowledge of thermoregulation among NICU nurses

**Aims:**
1. Decrease hypothermia on admission to the NICU by 50% in infants less than 32 weeks gestation over a 12-week period by using a hypothermia prevention bundle in the first hour of life measuring knowledge pre and post implementation of a hypothermia prevention bundle
2. Increase knowledge among NICU nurses regarding the prevention of hypothermia

Methods

**Design:** Pretest/posttest intervention design

**Setting:** Tertiary care, level IV NICU in an academic medical center

**Sample patients:** Convenience sample of 30 infants < 32 weeks gestation pre-intervention, and 11 infants < 32 weeks gestation post intervention

**Sample nurses:** 65 NICU nurses with various levels of experience that work various shifts

**Exclusions:** Infants born outside of the institution; nurses who did not complete pre and posttests

**Timing of Intervention:** November 2022-January 2023

**Analysis:** Simple comparison of means for temperature measurements pre and post intervention; dependent t-test used to analyze pre and posttest summary scores

Evidence Based Bundle

<table>
<thead>
<tr>
<th>Evidence Based Bundle</th>
<th>NICU Nurse Education Intervention</th>
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<tbody>
<tr>
<td>Pretest</td>
<td>Pretest (10 questions)</td>
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<tr>
<td>Education Session</td>
<td>Education Session (13 minutes)</td>
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<tr>
<td>Bundle Implementation Results</td>
<td>Bundle implementation (12 weeks)</td>
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<tr>
<td>Posttest</td>
<td>Posttest (10 questions)</td>
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**Bundle Implementation Results**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Birth Weight (grams)</th>
<th>Admission Temperature (°C)</th>
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<tbody>
<tr>
<td>Pre-Intervention (n=30)</td>
<td>12.120.83 (SD=392.65)</td>
<td>36.26 (SD=0.70)</td>
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<tr>
<td>Post-Intervention (n=11)</td>
<td>11.25.64 (SD=351.13)</td>
<td>35.66 (SD=0.42)</td>
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53% hypothermia (pre-intervention) 30% hypothermia (post-intervention)

**Acknowledgments**

Thank you to all the faculty and staff at the Johns Hopkins School of Nursing who contributed knowledge and experience to the formation of this project, specifically my advisor Dr. Brigit VanGraafeiland. I would also like to acknowledge my mentor, Dr. Christy Cockfield as well as the incredible team of nursing staff in the NICU at the Children’s Hospital of Georgia.

References

**Conclusion**

- A bundled approach to thermoregulation following delivery showed a clinically significant reduction in hypothermia among preterm infants
- Statistically significant improvement in nursing education following the education session and bundle implementation

**Strengths/Limitations**

- Nurses who do not regularly attend deliveries still found value in the education and have applied concepts to NICU patients beyond delivery
- Post intervention infant sample was small due to a decrease in preterm deliveries during the project
- Resource constraints may have affected results in the post intervention group