Decreasing Neonatal Hypothermia in the Perioperative Period

Teresa Mingrone, MSN, RN, Doreen Soliman, MD, Darcie Opalko, MBA, MS, RN, Margaret Lamouree, MSN, RN, Karen Prilla, BSN, RN, Adrienne Marcinick, BSN, RN, Adrienne Farley, BSN, RN, Sara Angelilli, BSN, RN, Beverly Brozanski, MD
Children’s Hospital of Pittsburgh of UPMC

- Increase care provider awareness and attention to temperature during the perioperative period
- Decrease in post-operative hypothermia in the NICU
- Decrease in morbidity and mortality
- Decrease in health care costs

**Smart Aim**
To decrease the incidence of hypothermia (<36°C) by 50%, as measured on the first temperature within 30 minutes of return to NICU, by December 2014 and sustain over 12 months.

**Implementation**

**Tracking temperatures**
1. 30 min prior to surgery
2. Upon arrival to the OR
3. At the end of the case
4. Post-op temperature within 30 minutes of return to NICU from OR

**Compliance with**
1. Heat loss prevention NICU to the OR
2. Intraoperative warming
3. Target OR ambient temperature
4. Heat loss prevention OR to the NICU

**Purpose**
- Establish euthermia prior to transport
- Monitor temperature during transport
- Heat loss prevention during transport
  - warm hat and warm blanket
  - pre-warmed bed
  - chemical warming mattress
  - plastic wrap if needed
- Communicate temperature in handoff to OR

**Pre-op**
- Heat loss prevention NICU to the OR
- Intraoperative warming
- Target OR ambient temperature
- Heat loss prevention OR to the NICU

**Intraoperative**
- Pre warm OR to pre set temperature for all neonates >74 F
- Limit time period where baby is exposed (speedy prep)
- Keep hats on baby
- Use of devices to maintain temperature:
  - forced air device
  - chemical warming mattress
  - warming lights
  - warm intravenous fluids
  - warm irrigation fluids
- Keep NICU bed plugged in for post op transport
- Include patient temperature in handoffs during the surgical procedure

**Post-operative**
- Notify NICU nurse of current temp on the way out of OR
- Heat loss prevention for transport
  - warm hat and warm blanket
  - pre-warmed bed
  - chemical warming mattress
  - plastic wrap
- In handoff to NICU report first, last, and lowest OR temperature

**Compliance**
- Compliance goal is 80%
- 10 months data collection
- Monitor 10-20 surgeries/month

**Temperature Monitoring**
- Pre-operative temperatures were in range > 90% of the time
- There is a decrease in rate of hypothermia at first OR temperature by 40%
- There is a decrease in rate of hypothermia at last OR temperature by 47%

**Outcomes**
- The rate of post-operative hypothermia decreased by 61%
- ~43% of NICU patients become hypothermic at some point during the operative procedure
- Patients with select diagnoses are at higher risk for hypothermia

**Discussion**
- Progress has been made, but there are opportunities for improvement
- Collaboration between NICU, OR, anesthesia, & surgical services resulted in a decrease in post-operative hypothermia
- Processes to prevent perioperative hypothermia should be spread to other patient populations

**Acknowledgements**
- We would like to thank the entire staff of the NICU, OR, anesthesia, and surgical services
- This project was part of a multicenter collaborative with the Children’s Hospital Neonatal Consortium, Inc. and Children’s Hospital Association, Inc.