Worcestershire Acute Hospitals NHS Trust

Guideline for Environmental Humidity for Premature Babies

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Approved by:	Neonatal Guidelines Review Meeting	
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Key Amendments

Date	Amendments	Approved by
November 2022	Document approved for 3 years with no amendments	Dr Gregory/ Neonatal Guidelines Review Meeting
10th November 2025	Document extended for 6 months to allow for review and update	Susan Smith

Introduction

Premature babies below 30 weeks gestation have an underdeveloped epidermis and stratum corneum. Transepidermal water loss (TEWL) can be defined as the evaporative loss of water from the immature epidermal layer of the skin. Phototherapy can significantly increase the risk of TEWL up to 26% (Boxwell 2010). Transepidermal water loss (TEWL) through the immature skin results in temperature instability, dehydration, electrolyte imbalance and weight loss of up to 13% (Boxwell 2010). Introducing high levels of humidity in the surrounding environment during the first two weeks of life can significantly reduce these side effects from occurring (Turnbull and Petty 2013). The epidermis of premature babies matures very rapidly during the first two weeks of life and should be fully keratinised at the end of this period being similar in structure and function to a term baby therefore effectively stopping TEWL.

Details of Guideline

Equipment

- Giraffe Incubator with water reservoir for humidity
- Sterile water (1 litre bottle)
- Vital signs including temperature monitoring

Humidity Settings

- Any baby admitted 30 weeks gestation or under should be treated with 14 days of humidity.
- The baby should be nursed in 80% humidity for the first 7 days of life.
- After 7 days, humidity should be weaned 5% daily as follows. Day 8: 75%, Day 9: 70%, Day 10: 65%, Day 11: 60%, Day 12: 55%, Day 13: 50%, Day 14:45%
- Cease humidity on day 15
- **Humidification settings should not be altered to regulate temperature. Any variation in auxilla temperature should be treated by increasing or decreasing incubator temperature.**

NB - Humidity may need to be continued for longer than 14 days for babies born below 25 weeks gestation if serum sodium level is elevated

Nursing Care

- Commence humidity as soon after admission as possible.
- Monitor auxilla temperature neonate's temperature regularly, especially after the initial commencement of humidity: at least hourly until stable, then 4 hourly.
- Check water reservoir 4-6 hourly and fill when required. Use sterile water only, to prevent colonisation by bacteria
- Change all bed linen if it becomes moist or a minimum of every 12 hours.
- Nurse neonate naked with only a nappy to ensure humidity can reach skin
- Avoid excess rainout by wiping the inside of the incubator with clinell wipe, as rainout will impair visibility and ability to assess the neonate
- Change incubator and humidification chamber every 7 days
- Consider monitoring pulse from intra-arterial line or oxygen saturation probe instead of using chest leads
- Keep incubator doors and all access ports closed as much as possible
- Ensure minimal handling, clustering all care and procedures if tolerated
- Record set and actual delivered humidity level on observation chart
- Ensure regular monitoring of electrolytes daily or as per medical orders, especially blood sodium levels, and especially during weaning of humidity level
- Monitor for signs of sepsis or temperature imbalance, and report these to medical staff
- Document accurate fluid balance and assessment of hydration status including accurate urine output. Medical staff may need to review and increase the daily total fluid intake
- After use it is important to ensure that he humidity chamber is properly cleaned

When humidity stops change incubator or remove water tray to prevent microbial build up