St. Peter’s Hospital, Neonatal Unit
The use of polythene bags at the delivery of preterm infants

Purpose and aim:

*All babies born at less than 30 weeks gestation should be placed in a polythene bag*
Also consider for IUGR infants estimated <1500g
To minimise heat loss at birth in pre term infants. (<30 weeks gestation)
Aim infant to have a minimum axillary temperature above 36.0 ºC on admission to the NICU

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<th>Action</th>
<th>Rationale</th>
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<td>Pre warm radiant heater and warm towels. <strong>Observe the surrounding environment where the infant will be born. Is it cold? Is the air conditioning or fan blowing towards the resusciataire? Limit exposure to these breezes.</strong></td>
<td>Warm towels will reduce risk of conductive heat loss. <strong>Infant is at high risk of convective heat loss. The body temperature of an exposed 1 kg infant can fall at a rate of 1º C every 5 minutes. Limiting the cool air around the infant’s skin will reduce the evaporative and convective heat loss.</strong></td>
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<td><strong>Receive infant onto clean warm towels and place into polythene bag, feet first, without drying. Press the polythene next to the skin up to the level of the infants’ neck. Leave in bag.</strong></td>
<td><strong>Can observe infant closely if bag is in contact with infants’ skin. Hat will reduce evaporative and convective heat loss.</strong></td>
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<td><strong>Dry the head and immediately place the hat on to the infant. Observe the infant’s chest movement and colour through the polythene. Make a hole for a “foot” so the SaO2 monitor can be attached. The bag should not be removed.</strong> Only when the infant is stable should a small hole be cut in the bag, over the umbilicus. <strong>The infant must not be uncovered.</strong> Cut umbilical cord further, once infant is stable (which may not be until infant is in NICU), leaving at least 8cm length. Return surgical clamp and swab to the scrub nurse. <strong>Under no circumstances should anyone attempt to retrieve the clamp by removing the plastic bag or interfering with the resuscitation.</strong></td>
<td><strong>Leaving at least 8 cm length allows access for the insertion of UAC and UVC lines if necessary. When cutting a small hole in the bag, the infant is not exposed to convective and evaporative heat loss, and central access can be easily obtained. The infant’s colour and extremities can be observed, while retaining heat. All instruments and swabs that are used for surgical procedures can be returned to the nurse/midwife so the correct total can be achieved. Returning equipment is not the clinical priority, as counting of clamps can still be done safely.</strong></td>
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When stable, transfer to the NICU still in the polythene bag and wrapped in warm, dry towels. Perform weighing, X-rays and cannulation while still in the bag. Perform admission temperature.

Remove the polythene bag on the completion of X-rays and insertion of umbilical lines, or at 2 – 4 hours of age. The infant’s temperature should be maintained between 36.4 – 36.7°C. When removing the bag from the infant, observe for any meconium or urine that has been passed.

Infant not exposed to evaporative and convective heat loss during lengthy procedures. Polythene bag weighs very little; so accurate weight is still obtained.

Axilla temperature measured as per unit protocol. Pre warmed and humidified incubator should be set according to the gestation of the infant, so not to cool or over heat the infant. Infants less than 30 weeks gestation use up to 80% humidity. Very pre term infants born less than 25 weeks require humidification for longer. After 2 - 4 hours the incubator’s temperature and humidity should have been adjusted to maintain the infant’s temperature within a stable range. Observed urine and meconium can be recorded on fluid balance chart.

**Background:**

The maintenance of body temperature is important for the health and survival of the extremely low birth weight infant. Thermal stress in neonates is associated with increased morbidity and mortality. Hypothermia on admission to the neonatal unit and deficient early thermal care was observed more frequently in babies who died. Simple measures such as occlusion wrapping in the delivery room will improve temperature control in babies born at less than 28 weeks gestation. Correct environmental temperature is important; the delivery room temperature should be at least 25°C. Subcutaneous fat appears at 26 – 29/40 although it is extremely thin in pre term infants. This tissue insulation varies with weight: the smaller the infant, the poorer the insulation. These immature infants have insufficient brown adipose tissue leading to poor heat production. They have poor vasoconstriction, and a large surface area leading to heat loss. Polyethylene wrap applied immediately after birth reduces the postnatal fall in temperature of very immature infants by reducing evaporative and convective heat loss. This is more effective than conventional drying and exposure, when both methods are applied under radiant heat. Clinicians must be vigilant that in achieving a mean temperature of 37°C, that they are not causing some infants to be hyperthermic. Preterm infants are not immune from hypoxia/ischaemia, and therefore there may be an increased risk of neurological damage following hyperthermia in some infants.
References


Written by Sarah Morton, Senior Staff Nurse March 2006
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