

Unrestricted heat transfer and aeration through the AirNettress mesh prevent overheating of infants and sweating

The mesh of the AirNettress sleep surface enables unrestricted heat transfer between both sides of the mattress, thus preventing overheating, hyperthermia and sweating. Overheating and hyperthermia may be an additional factor in the etiology of SIDS. In 2005 the New South Wales Child Death Review Team reported that almost 60% of babies who died suddenly between 2000 -2002 were found with their heads or faces covered at the time of death.¹ Studies suggest that death could be attributed to mechanical occlusion of the airways, rebreathing of expired air or thermal stress (overheating).² Infants regulate their temperature through the head, particularly the face. In a heavily wrapped infant 85% of total heat loss is through the face.³ If this normal method of heat loss is restricted by bedding covering the face, wearing a hat or prone sleeping (partial face covering by mattress and/or bedding), a propensity for thermal stress occurs. Heat loss in infants sleeping in the prone position is 60% less effective than for infants lying in the non-prone position with the same insulation values for clothing and bedding.⁴ This may explain why researchers found that prone sleeping in combination with increased body insulation increased the risk of SIDS.⁵

The unrestricted heat transfer via the meshed surface of the AirNettress enables proper heat transfer via the face even when the infant's head is covered and is sleeping in the prone position.

The unlimited heat transfer raises a concern regarding the possibility of cold stress to an infant sleeping on this sleeping surface. In a study on a mattress that incorporates a meshed netting, with negligible thermal resistance, the thermal balance of infants, sleeping in sleeping bags whom were placed on a study mattress (Purflo mattress, Sleepsafe Ltd. Maideneia, UK) was compared to infants sleeping on conventional mattresses in two different room temperatures. The conclusion was that axillary temperatures were lower in infants sleeping on conventional mattresses than on the study mattress also when room temperature was lowered form 19-22°C to 15°C.⁶

¹ New South Wales Deat Review Team (2005) *Sudden Unexpected Deaths in Infancy: The New South Wales Eperience*. Report written for the NSW Child Death Review Team by the Commission for Children and Young People. Available at <http://www.kids.nsw.gov.au/uploads/documents/sudisection1.pdf>

² Kemp JS, Kowalski RM, Burch PM et al Unintentional suffocation by rebreathing: a death scene and physiological investigation of a possible cause of sudden infant death. *J of Ped* 1993; 122:874- 80.

³ Wailoo MP, Peterson SA, Whittaker H et al. The thermal environment in which 3-4 month old infants sleep at home. *Arch Dis Child* 1989; 64:600-4.

⁴ Tuffnel CS, Petersen SA, Wailoo MP. Prone sleeping infants have a reduced ability to lose heat. *Early Human Development* 1995; 43:858-9.

⁵ Ponsonby AL, Dwyer T, Gibbons LE et al. Factors potentiating the risk of sudden infant death associated with the prone position. *N Eng J Med* 1993; 329:377-382.

⁶ Arkell S, Blair P, Henderson J et al. Is the mattress important in helping babies keep warm? Paradoxical effects of a sleeping surface with negligible thermal resistance. *Acta Paediatrica* 2007; 96:199-205.