

**Short communication**

J. Perinat. Med.  
4 (1976) 131

**Further improvements in the transport of high-risk neonates**

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The need for continuous thermal protection of newborns, especially of premature infants [13, 15] has lead to the establishment of numerous transport arrangements between obstetric departments

and Children's Hospitals [3, 5, 6, 16, 17]. We reported on the mobile resuscitation and transport unit used by us since 1972 in this Journal [8]. This arrangement establishes a satellite newborn inten-

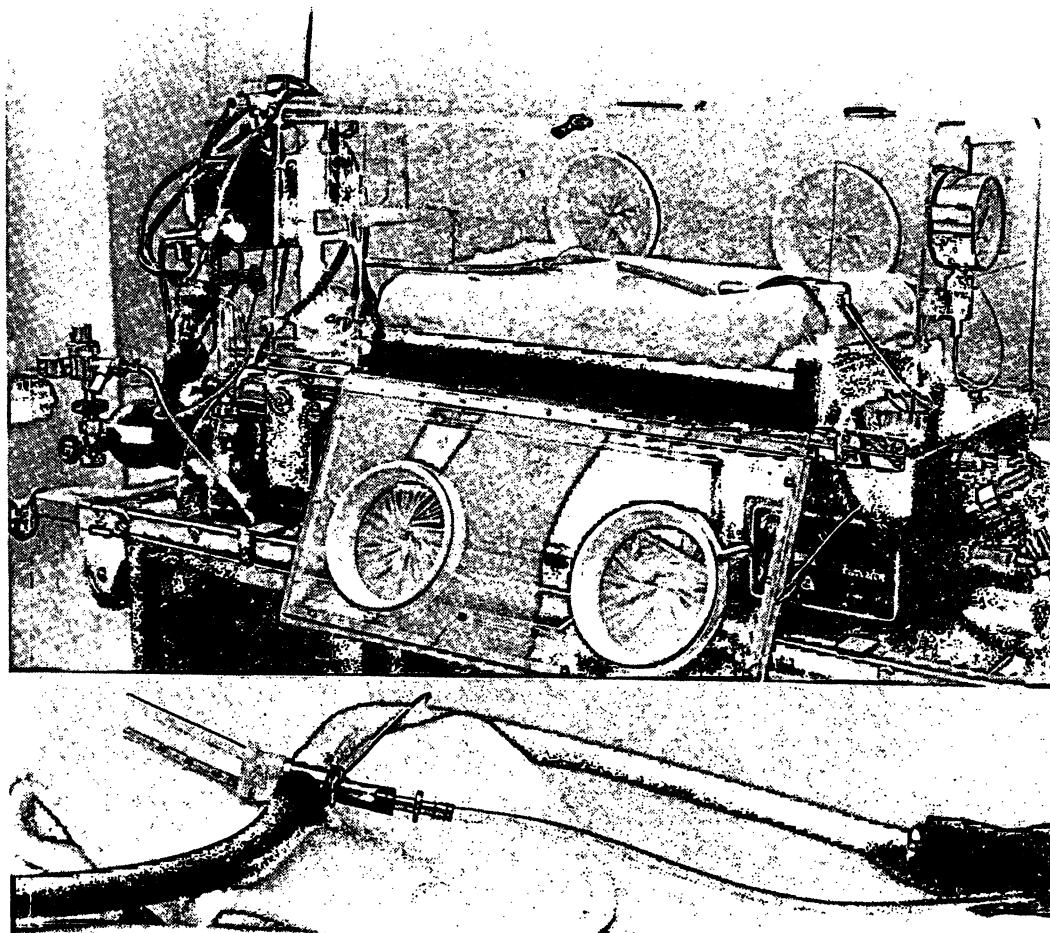


Fig. 1. Opened transport incubator. The tube system with the tube leading to and from the patient, the balloon, connection to the patient with short nasal tubes and an aneroid manometer is shown in the magnification below.

sive care unit with all its therapeutic possibilities. Mechanical ventilation or drainage of a pneumothorax and continued infusions are thus made possible.

Early in 1974 we began to use continuous positive airway pressure (CPAP) before or during the transport based on the good results with this method in various neonatal centers [1, 4, 9, 10, 12, 14].

Because the improved gas exchange with CPAP requires less oxygen in the respiratory gas [7, 9], it was necessary to equip the transport incubator with an oxygen blender in order to avoid damages from hyperoxia [2, 11]. The illustration demonstrates the tube system in the opened incubator. Two short nasal tubes which extend 1.5–2.0 cm into the nostrils and are fastened on the nose with a piece of tape or an endotracheal tube following intubation are connected with the tube system supplying the respiratory gas. The patient is thus

being supplied with an exactly defined air/oxygen mixture. Because our transports take usually not more than 20–30 minutes we have not humidified or warmed the respiratory gas. The tube leading from the patient ends in a balloon which can be inflated to a defined pressure and regulated with a clamp. The end-expiratory pressure is being measured at the level of the patient connection via a parallel connection with an aneroid manometer.

This method of ventilatory assistance has proven its value to us. The survival rate of small premature infants improved markedly. In 1974 and 1975 the survival rate of prematures below 1000 grams was 39,4% and between 1001 to 1500 grams it was 84,8%. We do, however, use the CPAP method very early at the least clinical signs of respiratory distress syndrome such as respiratory grunting and do not wait for a blood gas analysis or a chest radiogram.

### Summary

The transport incubator used since 1972 was modified for the CPAP method (continuous positive airway pressure). A very generous indication for the use of this ventilatory assistance in the presence of very early clinical signs of respiratory distress syndrome before or during the transport

into the Children's Hospital has contributed towards improving the survival rate of infants with a birth weight of 1001–1500 grams to 84,8% and for those below 1000 grams to 39,4%.

**Keywords:** Continuous positive airway pressure (CPAP), high-risk neonates, transport incubator.

### Zusammenfassung

Weitere Verbesserung des Transportes von Risikoneugeborenen

Der seit 1972 benutzte Transportinkubator wurde für die CPAP-Methode (continuous positive airway pressure) umgerüstet. Durch großzügige Anwendung dieser Atemhilfe

bei geringen klinischen Zeichen eines Atemnotsyndroms schon vor oder während des Transportes in die Kinderklinik konnte die Überlebensrate bei 1001–1500 g schweren Frühgeborenen auf 84,8% und bei den bis 1000 g schweren Frühgeborenen auf 39,4% verbessert werden.

**Schlüsselwörter:** CPAP-Verfahren (continuous positive airway pressure), Risikoneugeborene, Transportinkubator.

### Résumé

Nouvelle amélioration du transport des nouveaux-nés «à risques»

L'incubateur de transport utilisé depuis 1972 a été transformé au bénéfice de la méthode CPAP (pression positive continue de la voie aérienne). L'application élargie de cette méthode respiratoire dès avant ou pendant le trans-

port à l'hôpital d'enfants malades au moindre signe clinique d'un syndrome de dyspnée a déjà permis d'améliorer le taux de survie à 84,8% pour les prématurés pesant 1001–1500 g et à 39,4% pour ceux dont le poids ne dépassait pas 1000 g.

**Mots-clés:** CPAP (continuous positive airway pressure: pression continue positive de la voie aérienne.), incubateur de transport, nouveaux-nés «à risques»

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Received September 17, 1975. Accepted October 30, 1975.

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