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**[2222] Effective Reduction of the Discharge Margin of Safety (DMOS) with Home Cardiorespiratory Monitoring in Apnea of Prematurity**

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**BACKGROUND:** Two recent articles (Darnall, et al., *Pediatr.* 1997; 100:795) and Eichenwald, et al., *Pediatr.* 2001; 108:204) have proposed a discharge margin of safety (DMOS) for

premature infants with apnea of prematurity. In the first study, premature infants  32 wks gestation were evaluated and found to have an 8 day DMOS, following which it was believed that safe discharge could occur without the use of home monitoring. In the second paper, pre-term infants from 30-34 wks post-menstrual age at 15 Massachusetts NICUs were found to have a DMOS of 4.9-6.5 days from the time of last apnea, OG or NG feed, or transfer to a crib to the time of discharge. In that study, monitor use was low, with only 20/435 (5%) of infants treated with monitors at discharge.

**OBJECTIVE:** The purpose of this study was to examine the effectiveness of more extensive use of home monitoring in decreasing the discharge margin of safety and reducing the overall cost of premature infant care.

**DESIGN/METHODS:** The database of Paidos Health Management Service (PHMS, Deerfield, IL) was queried for infants 30-34 wks post-conceptional age, who met the same criteria outlined by Eichenwald, as noted above. The Paidos database is a detailed, prospectively collected database for patient review, with data entry by trained neonatal nurse case managers.

**RESULTS:** 3,014 30-34 wk gestation infants were identified, who fulfilled specific criteria as healthy premature infants (AGA, mech. vent. < 3 d, O<sub>2</sub> < 7d, no IVH, no sepsis or surgery), as defined by Eichenwald. 1023/3014 (34%) had observed or documented clinical apnea during hospitalization. Monitor use at discharge ranged from 37.1% at 30 wks to 18.7% at 34 wks in the Paidos database, with an overall use of 25% (765/3014), compared to the 5% noted above ( $p < .001$ ). DMOS ranged from  $4.4 \pm 3.8$  at 30 wks to  $3.4 \pm 2.9$  at 34 wks, a significant decrease from the range of 6.5-4.9 previously reported. DMOS reduction for the entire population was  $2.2 \pm 0.35$  days ( $p < .0003$ ) per patient, or a total of 6,630 patient days for the entire population of infants. Estimated cost savings was approximately \$8,000,000, or about 20,000 months of home care (6.6 mo/pt).

**CONCLUSIONS:** The cautious use of discharge cardiorespiratory monitoring may result in a significant reduction in discharge margin of safety and overall cost of premature infant care.

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