

METHYLNANTHINES AS A THERAPY FOR APNEA: USELESS OR VARIABLE?

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Objective: To describe the variation in methylxanthine therapy in a national cohort of patients representing multiple geographic regions.

Background: Apnea of prematurity is commonplace in the NICU for infants born less than 36 weeks gestation. Variation of practice exists with the use of methylxanthines on when to initiate treatment, and for how long. Paidos Health Management Services provides care management to infants in NICUs throughout the United States. Data on thousands of neonates has provided the opportunity to assess a variety of practice patterns. A review of the use of methylxanthines is the basis for the following report.

Methods: Data was collected concurrently on 1,616 infants managed by Paidos Health Management Services from July 1998 to June 2000. Included were infants born between 24 and 36 weeks gestation. The infants were divided into two groups: Group A had apnea and were treated with methylxanthines (Apnea-Meth) and Group B had apnea and were not treated (Apnea-NoMeth). Those treated with methylxanthines were then further analyzed by gestational age (GA), days from discontinuation of methylxanthine to discharge, and length of stay by region.

Results: Differences in Group A and B were noted in gestational age (GA) at birth. Those in Group A were born at a mean GA age of 29.4 weeks (± 3.0), versus 32.9 weeks (± 3.8) for Group B. The mean length of stay (LOS) was 54.2 days (± 29.80) and 28.6 days (± 25.9). There was a significant difference in length of time on ventilator (22.4 vs. 8.0 days) and number of days in oxygen (25.0 vs. 9.2 days). For infants treated with methylxanthines in 4 different geographic regions, the number of treatment days ranged between 41 and 67 percent of total LOS, with the National rate being 55%. At each GA between 26 and 32 weeks there were no differences in birthweight between regions. There were however differences (at each GA) between geographic regions in the number of days from end of methylxanthine therapy to discharge, as well as differences in the LOS. The overall results are as follows:

Group	N	Mean GA	Mean LOS	Mean days methylxanthine discontinuation to DC
Region 1	26	28.9	46.7	23.7
Region 2	44	29.5	36.2	16.7
Region 3	77	29.4	36.4	14.8
Region 4	48	29.5	36.2	21.1
All regions	571	29.4	39.5	19.6
p value*		0.92 NS	0.013*	0.10 NS

Conclusion: Among various NICUs across the United States, infants treated with methylxanthines are smaller, younger and sicker. The length of treatment, time from end of therapy to discharge and LOS were different indicating variations in medical practice. Those infants that were treated with methylxanthines longer had shorter hospitalizations. Although the diversity in practice exists by region, the use of methylxanthine therapy for the more immature infants has established itself as a common therapy. In addition, the use of home monitors has regional practice variation, which could be one explanation for this practice variation. For that reason, further studies to determine usefulness or not may be difficult to conduct.