

Is the Discharge Margin of Safety Really Safe? Alan R. Spitzer, Sharon Kirkby, Gary Cater, Michael Kornhauser, Paidos Health Management Services, Deerfield, IL, and the Division of Neonatology, Department of Pediatrics, the State University of New York at Stony Brook, Stony Brook, NY.

Background: In order to be discharged from the hospital, the prematurely born infant must attain several developmental milestones: the ability to feed orally, thermal stability, and adequate resolution of apnea and bradycardia. In addition, most neonatologists will allow an additional period of hospitalization for observation, which has been called the “discharge margin of safety (DMOS).” Several publications (Darnall, et al., *Pediatr.* 1997; 100: 795; Eichenwald, *Pediatr.* 2001; 108: 204) have attempted to define the DMOS by examining the discharge practices of neonatologists in different areas of the country. Unfortunately, none of these papers have studied the readmission rate for neonates during the subsequent two weeks after hospitalization in order to determine if the DMOS is truly safe or whether there is actually a readmission rate which can be expected, even under ideal circumstances.

Purpose: The purpose of this study was to determine if previously published criteria for the DMOS are safe or whether there is an expected readmission rate that the neonatologist must anticipate in the two weeks following hospital discharge.

Methods: The PROACT database of Paidos Health Management Services was queried for a patient population that fulfilled the criteria outlined by Eichenwald: Infants were between 30 and 34 6/7 weeks post-menstrual (PMA) age, and had the typical problems of this group of premature infants. Infants who had surgery were excluded from evaluation. Infants achieved physiological maturity, defined by full volume oral feeds, temperature maintenance in an open crib, and documentation of the last apnea episode by either observation or recording by the time of discharge. It was determined that the patient’s apnea had adequately resolved to permit home care with or without a home monitor. A DMOS of 3-6 days was seen in this group of infants, comparable to that described by Eichenwald.

Results: 4,981 infants were identified that met the above criteria. Mean birth weight was 1919 ± 432 gms., while mean discharge weight was 2173 ± 353 gms. Mean gestational age at discharge was 35.5 ± 1.1 weeks. Average LOS for the population was 20.0 ± 12.7 days (mean range = 11.7-38.6 days for infants between 30 and 34 weeks). 1355 infants (27.3%) were discharged on home monitors or monitors plus caffeine for continued management of apnea and bradycardia. Twenty-seven infants (0.54%) were readmitted during the first two weeks following hospital discharge. 5/489 (1.0%) of infants at 30 weeks gestation were readmitted compared to 5/1727 (0.3%) 34 week PMA infants. 21/27 (78%) of the infants were rehospitalized during the first week after discharge. Eight were readmitted for apnea and/or reflux, eight were readmitted for feeding problems and poor weight gain, six were readmitted for sepsis, three were readmitted for hyperbilirubinemia, one was readmitted for dehydration, and one was admitted for cardiac evaluation. Mean age at readmission was 5.2 ± 3.6 days. Mean subsequent duration of hospitalization was 7.8 ± 4.8 days. All infants subsequently recovered and were discharged again with no further readmissions within the following two weeks.

Discussion: There is a small, but significant, readmission rate for this reasonably healthy group of premature infants, even when an appropriate DMOS is utilized. The lower the original gestational age of the infant, the greater the likelihood of readmission. The neonatologist should understand that the DMOS may not always be completely “safe” and provide appropriate counseling to parents.