

ABSTRACT

Background and Aims: Inadequate nutrient provision causes neonatal growth failure and malnutrition. Therefore, this study aimed to 1) quantify infant growth velocity from birth to hospital discharge, 2) determine the incidence of neonatal malnutrition at the time of discharge from a government hospital newborn unit in Nakuru, Kenya. Methods: After ethical approval, data was collected for infants (n=104) hospitalized >14 days (June 2016 - December 2018) including: birth gestational age (GA), birth and discharge weight (grams, g) with z-scores (2013 Fenton Preterm or 2006 World Health Organization 0-2 Year growth chart), hospital length of stay (LOS) days. Growth during hospitalization was calculated in g/day [(discharge weight – birth weight)/LOS] and g/kilogram(kg)/day [1000xln(birth weight/discharge weight)/LOS]. Malnutrition was diagnosed by birth to discharge weight z-score change (decline): mild = 0.8-1.2 standard deviations (SD), moderate = >1.2-2.0 SD, severe = >2.0 SD. P-value <0.05 was significant. Results: 94/104 (90.4%) infants were preterm with median birth GA 32 weeks, weight 1500 g (z-score -0.33), LOS 21 days and discharge weight 1735 g (z-score -1.95). Median weight gain was 8.2 g/day or 5.2 g/kg/day with weight z-score change -1.34 SD. Linear regression predicted each hospital day decreased z-score by -0.031 (p<0.001). At discharge, 81.7% of infants met malnutrition criteria—27.1% mild, 49.4% moderate, 23.5% severe. Conclusions: Infants with LOS >14 days in a government hospital newborn unit in Nakuru, Kenya, experience growth rates below recommended velocities by the World Health Organization (23-34 grams/day from 0-4 months). Nutrition intervention is necessary to support appropriate growth.