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Preventing Loss of Weight in the Newborn.

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The newborn is markedly underdeveloped for the duration of human gestation. If birth weights are plotted against gestation times on double-log paper a straight line relationship is found except for a slight deviation in the case of the heaviest animals. The time required for the differentiation of man *in utero* is out of all proportion to all animal species. Yet the product is about one-fourth of the expected birth weight because of the adjustment to the human female. This high degree of underdevelopment makes the newborn's supervision all the more urgent to meet potential pathology with delicate desideratum.

The neonatal growth gradient continues unaltered during the postnatal period. Analysis of the growth of the body and its organs in the fetal period reveals that the course of the growth of all is essentially the same. If the prenatal growth be compared with the postnatal growth by bringing them together on an equivalent scale the characteristic form of growth of the fetal period continues for several months after birth. Therefore loss in weight is exogenous in nature.

Animal species of all sizes, of varied gestation periods, of all scales in evolution receiving no scientific supervision after birth or hatching appear to thrive either immediately or at the utmost after the second day of extrauterine life. Loss of weight in a newborn infant is therefore unnecessary when compared phylogenetically with similar processes in the entire animal kingdom.

Universality of loss of weight in the newborn without exception has glorified the phenomenon into a so-called physiologic law. A century of literature has led early investigators far afield until

recent metabolic studies have indicated that the loss of weight is a result of semi-starvation and dehydration.

The newborn's nutritional requirement can only be fulfilled once it has been alleviated of the symptoms consequent upon the physiologic trauma of birth. The colostrum intake is small and the ingestion of feeding formulas minimal under the most favorable conditions as a result of birth shock. We have therefore been able to prevent the initial loss in weight not by forcing feeding mixtures from the day of birth but rather by the administration of a solution suitable to the physiological needs postnatally. Daily blood studies from birth reveal a hypoglycemia of the newborn not infrequently paralleling a subnormal temperature, a compensated acidosis, a decreased blood volume, an elevated refractive index and serum viscosity and a diminished index of blood clotting function.

The solution, devised for preventing the loss of weight in newborns to the irreducible minimum, was used in 100 cases with an equal number of controls. It consisted of 6% neutral gelatine, 3% dextrose and 0.5% sodium chloride offered every 2 hours throughout the 24 hour cycle. This solution, isotonic and osmolar, has several physiological advantages for the newborn. The gelatine is markedly hydrating, well tolerated and easily assimilable. The sodium chloride favors retention of ingested water by virtue of hydration of the sodium ion as well as by the neutral salt effect. Dextrose raises the level of blood sugar to normal values.

Complemental feeding in 300 control infants merely reduced the loss of weight from the usual 10% anywhere from 6 to 9%. The hydrating solution offered at 2 hour intervals during the first day reduced the loss to 3.4% but when the same solution was offered throughout the 24 hour cycle at the same time intervals the percentage loss in body weight was the irreducible minimum, 1.7%. And these newborns, adequately hydrated, rapidly lost their so-called physiological apathy, somnolence and stupor.