

Thirteen children who were suffering from protein energy malnutrition were studied in an effort to determine their body composition on admission to hospital, while they were rapidly growing and when they had fully recovered. A review of the available methods for measuring body composition, the methods which are applicable to malnourished children, those used in this project, the results obtained and the difficulties encountered form the body of this report.

The main aims of this study were (i) to validate the use of simple anthropometric measurements in body composition studies, and (ii) to see whether the children who recovered from malnutrition were depositing tissue in normal proportions when fed on the high calorie dietary regime. The results are encouraging and have opened up new areas for future research.

The main findings can be summarised as follows:-

- (1) The values for total body fat calculated from anthropometric measurements are not significantly different from those calculated from total body water measurement. In the malnourished phase total body fat (TBF) was found to be 14.3% and 10.2% of body weight from TBW and skinfold measurements respectively. While values for

the rapidly growing stage were 16.7% and 15.9% and in the recovered stage these values were 22.8% and 22.5%.

- (2) The measurement of 24 hour urinary creatinine excretions is not a reliable indicator of muscle mass in malnourished children.
- (3) The serial measurements of TBW should be carried out at carefully timed intervals which relate to the energy intake on admission, during rapid growth and at recovery.
- (4) The faecal energy losses of the 5 children studied on nitrogen balance were variable. In the malnourished stage these values were 5.1%, 37.4% and 45.3% of the energy intake. In the rapidly growing phase the values ranged from 8.1% - 58.9% of the intake. In the recovered stage there was less variation but the values were higher than those reported in the literature (39.1% - 43.1% of the intake).
- (5) Simple anthropometric measurements (arm circumference, triceps skinfold) can be used to estimate the nutritional status of children, and as a measure of recovery from malnutrition.