

## Using the pattern of human growth and development to predict the consequences of over and under nutrition

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The pattern of human growth is used throughout pediatric science to establish the state of health and wellbeing of children. The pattern of normal growth is described by a decaying polynomial curve during infancy and childhood and a sigmoidal curve during adolescence. On an individual level this pattern may vary depending on environmental factors, the most important of which during infancy and early childhood, is nutrition. However, evidence has been accumulating for the last three decades to demonstrate the importance of growth rate during intrauterine life and the long term consequences of the magnitude of subsequent birth weight combined with infant growth rates. Low birth weights and rapid early growth, sometimes referred to as catch-up growth; result in increased risk for obesity, CVD, CHD and the metabolic syndrome. Considerable uncertainty exists about the timing, duration and magnitude of infant growth rates in weight and length that maximize later risk and the magnitude of risk in different ethnic groups. This paper reviews evidence from birth cohort studies in South Africa (Birth to Twenty) and the UK (ALSPAC and Born in Bradford) that relates size at birth to early, nutritionally dependent, infant growth rates and the subsequent appearance of risk factors for the metabolic syndrome and obesity. It stresses the importance of accurately assessing infant and child growth and the subsequent analysis of the pattern of growth in relation to appropriate growth charts, both references and standards, in order to accurately monitor child health and wellbeing.

### Biography

Noel Cameron completed his Ph.D. at the Institute of Child Health, UCL under the supervision of Professor James Tanner in 1978. He subsequently spent 15 years as Professor of Anatomy and Human Biology in South Africa before becoming Professor of Human Biology at Loughborough University UK in 1997. His research covers the growth and development of children with special reference to developing countries and to risk factors for obesity in transitional economies. He has been a Visiting Professor at the University of Pennsylvania and Princeton University and is currently Honorary Professor of Pediatrics at the University of the Witwatersrand, South Africa.