Diagnosis

Confusing terminology attempts to define the undefinable

I Hughes

Perspective on the papers by Olsen *et al* (see page 109) and Lucas *et al* (see page 120)

The diagnostic skills acquired by the physician has traditionally been regarded as the art of medicine. The emphasis later moved to focusing on the science of medicine, especially nowadays when imaging technology and molecular medicine are major players that pervade all facets of clinical practice. At least the importance of communication skills is afforded high priority in the training of doctors at both undergraduate and postgraduate levels. This Perspective is designed as an over-arching comment relating to a quartet of articles (two original papers linked with their cognate perspectives) in this issue of the journal which deal with failure to thrive (FTT).¹⁻⁴ We need to analyse qualitatively whether there is any art or science on offer when considering this clinical phenomenon which, until recently, was peculiar to paediatrics. At present, it is a term that is used in gerontology to describe an elderly patient who undergoes a process of functional decline, progressive apathy and a loss of willingness to eat and drink that culminates in death.⁵ The Institute of Medicine has defined FTT in this context in clear terms, including eliminating its usage in the normal consequence of ageing, or as a synonym for dementia or as a description of a terminal disease.⁶ Where is there such clarity that FTT is used as a label for problems at the beginning of the age span?

The word thrive has several connotations and generally equates with a flourishing and prosperous state; a thriving economy is a terminology that is unambiguous and clearly defines the state of health of a particular nation or state. In the context of infants and children, to thrive is generally accepted to be solely an anthropometric term referring to normal weight gain and growth.⁷ Adding the word failure implies that an abnormality has to be rectified through some intervention process. There is no difficulty in accepting that an infant with coeliac disease who is failing to gain weight or a child with hypothyroidism whose growth is static are both not “thriving”

in the general sense. In each case, there is effective treatment to rectify the problem. These two examples have a defined diagnosis for which there is clear scientific evidence to explain the pathophysiology. No such clear descriptions combining the art and science of medicine characterise the definition of FTT; non-organic FTT has entered the medical lexicon in an attempt to retain some clarity. This has resonance with another ill-understood common phenomenon of childhood, recurrent abdominal pain.

Reading the two papers on prevalence of FTT in a general population and the systematic review of how lay people perceive infant size, together with their respective Perspectives written by experts in the field, we cannot ignore the fact that there are two major problems with the concept of FTT: (1) absence of a clear diagnosis because it is too ill-defined and (2) profound blurring of the margins between a perceived abnormality (false positive) and a definite clinical problem, with the former overwhelmingly predominant in clinical practice. Imagine that a recognised screening programme had such a high false positive rate; this seems to be the outcome of a fixation that infants would gain weight at a predictable rate. How often is the mantra declared that the birth weight of an average healthy-term infant doubles and trebles by 4 and 12 months of age, respectively. It is not surprising that parents are concerned if such “normality” is not attained, especially if no explanation can be given for this apparent “failure” to thrive.² It is quite intriguing to consider the attempts made to define FTT, which range from the banal to almost the scientifically sophisticated. All that seems to have been achieved is a burgeoning list of descriptive terms such as conditional weight gain, regression to the mean, weight faltering, catch down and the thrive index in an attempt to define “normality”.^{8,9} Indeed, applying these criteria as definitions of FTT in a general population generated predictive values so low as to be uniformly unhelpful.¹ Is it

too heretical to suggest that throwing the baby scales out with the bath water would not be a major loss in the developed world? Clearly, that is unlikely to be acceptable by health professionals and carers alike. Nevertheless, the value of routinely weighing babies was seriously questioned more than 20 years ago.¹⁰ Furthermore, the systematic review by Lucas *et al*² highlights quotes that summarised the pros and cons of routine weighing. There is no doubt that having a baby measured is an opportunity for a “well-being” check which should include an explanation of the ranges of normality. It is salutary to note that weight monitoring does not meet standard biomedical screening criteria and a “label” of FTT is of little relevance to longer-term outcome.¹¹⁻¹³ In a recently completed prospective large cohort study of nearly 12 000 term infants representative of a British population,¹⁴ feeding difficulties (infant sucking problems, temporary infant illness and weaning “hiccups”) that were the preferential influences on growth faltering, the alternative FTT term used in the study, were easily identified. Short and older mothers were also factors, observations that hardly warrant serious screening for disease!

The concept of FTT as a clinical disorder arose in the early part of the past century when severe undernutrition and infections were common components of the ailments of childhood. Surely, at the beginning of the present century, we should be exercising our minds about how to define, screen for and manage a new form of malnutrition—obesity—about which there is a remarkable consensus that it is reaching epidemic proportions.¹⁵ Delegates attending the 10th International Congress on Obesity were told of an insidious pandemic of obesity which has resulted in a global excess of overweight versus undernourished humans.¹⁶ This can be perceived as a by-product of a thriving economy. The term thrive in this context hardly equates with a flourishing state. At least there is greater consensus about how obesity is defined as compared with FTT. Furthermore, there is evidence of prognostic relevance in the long term with respect to morbidity and mortality. The attempts to define FTT by anthropometric analytical acrobatics have at least provided a *modus operandi* to now screen for the “over-thriving” infant and child. Although there is evidence to indicate that the risk of childhood obesity can be predicted from dietary intake just in the first 4 months of life,¹⁷ there is also a “healthy” aspect to the rapid catch-up growth in some infants.¹⁸

So, has FTT as an acronym outlived its limited usefulness as a concept which defied definition? It has been

recommended that a discussion is needed to decide whether FTT still has any use to describe paediatric undernutrition of different types.⁷ The term is certainly not useful to define the range of normality in early growth. Professors Wright and Weaver in their Perspective suggest that the views of healthcare professionals should be systematically sought, now that we know the lay view on infant size and growth.⁴ As a starter, perhaps the readership can be encouraged to submit alternative terms to FTT to define what paediatricians recognise to be the healthy infant who is just regressing to the mean or is weight faltering. For my part, it may all just be a case of weight adjustment.

Arch Dis Child 2007;**92**:97–98.
doi: 10.1136/adc.2006.108423

Correspondence to: Professor I Hughes, Department of Paediatrics, University of Cambridge, Cambridge CB2 2QQ, UK; iah1000@cam.ac.uk

Competing interests: None declared.

REFERENCES

- 1 Olsen EM, Petersen J, Skorgaard AM, *et al*. Failure to thrive: the prevalence and concurrence of anthropometric criteria in a general population. *Arch Dis Child* 2007;**92**:109–14.
- 2 Lucas P, Arai L, Baird J, *et al*. A systematic review of lay views about infant size and growth. *Arch Dis Child* 2007;**92**:120–7.
- 3 Spencer NJ. Failure to think about failure to thrive. *Arch Dis Child* 2007;**92**:95–6.
- 4 Wright CM, Weaver LT. Image or reality: why do infant size and growth matter to parents? *Arch Dis Child* 2007;**92**:98–100.
- 5 McCue JD. The naturalness of dying. *JAMA* 1995;**273**:1039–43.
- 6 Robertson RG, Montagnini M. Geriatric failure to thrive. *Am Fam Physician* 2004;**70**:343–50.
- 7 Olsen EM. Failure to thrive: still a problem of definition. *Clin Pediatr* 2006;**45**:1–6.
- 8 Cole TJ. Conditional reference charts to assess weight gain in British infants. *Arch Dis Child* 1995;**73**:8–16.
- 9 Raynor P, Rudolf MCJ. Anthropometric indices of failure to thrive. *Arch Dis Child* 2000;**82**:364–5.
- 10 Davies DP, Williams T. Is weighing babies in clinics worthwhile? *BMJ* 1983;**286**:860–3.
- 11 Wright CM, Callum J, Birks E, *et al*. Community based management of failure to thrive: a randomized control trial. *BMJ* 1998;**317**:571–4.
- 12 Blair PS, Drewett RF, Emmett PM, *et al*. Family, socioeconomic and prenatal factors associated with failure to thrive in the Avon Longitudinal Study of Parents and Children (ALSPAC). *Int J Epidemiol* 2004;**33**:839–47.
- 13 Rudolf MCJ, Logan S. What is the long term outcome for children who fail to thrive? A systematic review. *Arch Dis Child* 2004;**90**:925–31.
- 14 Emond AM, Drewett RF, Blair PS, *et al*. Postnatal factors associated with failure to thrive in term infants in the Avon Longitudinal Study of Parents and Children. *Arch Dis Child* 2007;**92**:113–7.
- 15 Addison CC, White MS, Jenkins BW, *et al*. Combating the epidemic of obesity and cardiovascular disease: perspectives from school-aged children. *Int J Environ Res Public Health* 2006;**3**:268–73.
- 16 Obesity epidemic 'engulfing the entire world'. *New Scientist* 2006;**191**:7.
- 17 Ong KK, Emmett PM, Noble S, *et al*. Dietary energy intake at the age of 4 months predicts postnatal weight gain and childhood body mass index. *Pediatrics* 2006;**117**:e503–8.
- 18 Ong KK, Loos RJ. Rapid infancy weight gain and subsequent obesity: systematic reviews and hopeful suggestions. *Acta Paediatr* 2006;**95**:904–8.

Image or reality

Image or reality: why do infant size and growth matter to parents?

Charlotte M Wright, Lawrence T Weaver

Perspective on the paper by Lucas *et al* (see page 120)

It has long been known that poor growth in infancy is associated with high morbidity and mortality in childhood. The earliest systematic records of infant mortality collated by the registrar general ascribed “debility” and “atrophy” as the principal causes of death in early life and the knowledge that undernourished babies were likely to grow up into fragile adults was one of the driving forces behind the provision of public welfare services for mothers and children.¹ So great was the concern for the future of the newborn that a parliamentary commission surveyed the physical status of babies and school children across Great Britain in the early years of the past century.² Growth charts, essential tools for such surveys, had been pioneered in clinics aimed at detecting and managing babies and children who failed to thrive,³ largely as a consequence of infectious diseases and poor feeding. Their widespread use was crucial to the success of public child health initiatives, which served to highlight the connection

between domestic and social conditions, including parenting and child health.

Although there remains a strong correlation between poverty and short stature, the fortunes of children are now immeasurably better than they were a hundred years ago. Nevertheless, growth is still used routinely to assess child health and development, and parents inevitably still attach great importance to it. Lucas *et al*⁴ in their systematic review of lay perceptions about infant size and growth, found that parents emphasise the importance of normality in growth. However, judging from the selected quotations presented, parents also strongly link quality of parenting and sufficiency of nutrition to growth, and experience great anxiety and a sense of diminished worth when their child's growth is subnormal.

Depending on your perspective, this could be bad or perfectly natural. Growth and size in early childhood can still matter a lot. Parents who have watched their sick baby lose weight know this all too well, as does any watcher of news

from regions of famine. However, there is also a view that the weighing of babies generates needless anxiety. Of course, both views are valid and consistent with each other. If one simply defines abnormal growth as falling below one of many possible lower growth thresholds, 27% of infants in Copenhagen are abnormal⁵ and for every child wasting away from illness or neglect there are many others whose growth is subnormal, but who are otherwise well.^{5–6}

So how are paediatricians and parents to navigate these complexities and where do problems most often arise? First, the distinction between association and prediction should be clearly understood. Just because a child in one setting may become undernourished because he or she is ill or neglected it does not mean all undernourished infants are ill or neglected or that all small infants are undernourished. Equally, just because a small child is not neglected or ill does not mean he or she is necessarily sufficiently nourished or growing normally. Most children with faltering weights have no underlying medical problem,^{7–8} and recent population-based work has shown that the classic association between faltering weight and poverty or maternal deprivation no longer applies in affluent societies such as the UK.^{9–10}

Arguably, problems most commonly arise when there is a mismatch between the perceptions of parents and professionals of the child's growth or the explanations of each for it. There are four basic situations where problems of perception of growth and size arise, each