

Contemporary Themes

Is weighing babies in clinics worth while?

D P DAVIES, T WILLIAMS

Abstract

An appraisal of the widely implemented clinic practice of weighing babies to monitor their physical well being showed that these weighing practices are often inadequately administered through faulty weighing techniques, insufficient use of centile charts, and misunderstanding of normal variations in, and nutritional influences on, early weight gain. If measurements of weight are accurate and the counts of weight gain plotted on centile charts and the resulting profile sensibly interpreted it becomes a valuable method of monitoring health. Possibly the greatest benefit is that the mothers have the opportunity to discuss any anxieties about the baby's health.

Introduction

Community health clinics exist to promote health in childhood. In common with "well person" clinics at any age this aim is achieved by the combined measures of prevention and pre-emption. Preventive measures include immunisation and advice about feeding and health care. Pre-emption necessitates the early detection of abnormalities and is carried out by monitoring neurodevelopmental progress and physical well being. An essential component of physical well being is the encouragement of regular weighing of babies—a practice intended especially to detect failure to thrive and excessive weight gain.¹

For such a common procedure it is somewhat surprising how little guidance there is for those who are actually responsible for weighing babies. As a result careless and deficient weighing practices are all too prevalent and abnormal weight gain often passes undetected. Attention is often drawn to patterns of weight gain that are incorrectly interpreted as being abnormal. This is a source of much unnecessary anxiety to the parents, many of whom often comment that inaccurate weighing is a waste of time.

Four factors are responsible for these deficient weighing practices: unreliable techniques, insufficient use of centile charts, inadequate understanding of normal variation in weight gain, and misunderstanding of nutritional influences on weight gain. We examine these deficiencies and recommend some improvements.

Neonatal Unit, Leicester Royal Infirmary Maternity Hospital, Leicester LE1 5WW

D P DAVIES, MD, FRCP, senior lecturer
T WILLIAMS, MB, MRCP, senior registrar

Correspondence to: Professor D P Davies, Department of Paediatrics, Faculty of Medicine, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong.

Poor weighing methods

It should go without saying, although regrettably it is nearly always not the case, that babies ought to be weighed in a warm room, on scales capable of accurate measurement, and without clothes. This is not only necessary to achieve meaningful measurement but it may show unexpected wasting or obesity. In a cold room clothes should be kept to a minimum and appropriate weight allowance should be made. Unfortunately in many clinics rooms have inadequate sources of heat, thereby providing an inhospitable environment for babies to be undressed, examined, and weighed. There should be no illusion that such health surveillance is of much benefit, and health authorities must make every effort to repair these sloppy practices.

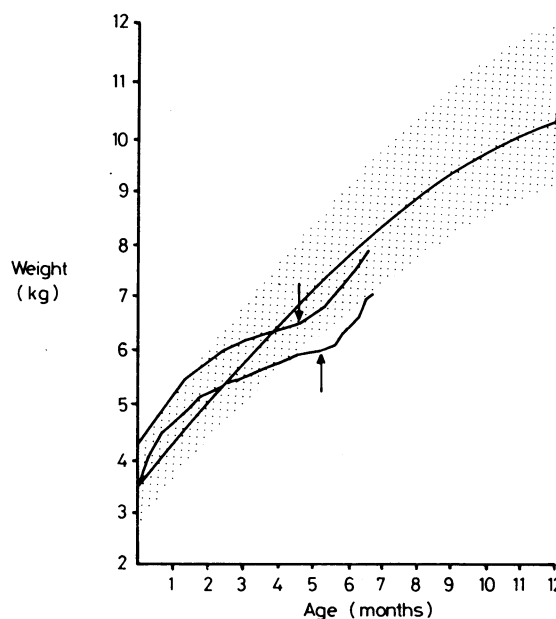


FIG 1—Weight patterns constructed retrospectively from health clinic records of two babies. Arrows show time of referral to hospital clinic.

Insufficient use of weight charts

Once a weight is accurately recorded its meaning must be reliably interpreted. This cannot be achieved using the type of card all too widely used that simply documents individual weighings. Weight gain, as with other measures of growth, is a dynamic process whose adequacy may be judged only if it is visualised against a standard of reference. The use of some form of centile chart is, therefore, mandatory: without it errors occur which the very process of surveillance is intended to detect. An example is given in fig 1: two babies failing to thrive despite regular attendance at a clinic. Had centile charts been correctly used (see below) failure to thrive could have been diagnosed earlier. If centile charts are used, and there is now reason to believe that these charts are beginning to be more widely introduced in clinics, it is

probably best if they are incorporated into a clinic card along with details of developmental milestones and an immunisation record. Several such cards are now commercially available, and some individual health authorities produce their own. (It is somewhat ironic that this method of charting weight progress, for many years adopted in developing countries and in other countries in the industrialised world, has for some inexplicable reason been slow to be adopted in Britain on any wide scale.) The ideal centile chart should include the latter part of the prenatal growth period for use with preterm babies and have relatively more space devoted to the first couple of months after birth when babies are most often brought to clinics.

Understanding normal patterns of weight gain

Once a profile of weight gain emerges on a centile chart reliable interpretation is needed. This is not always as straightforward as might be supposed. If weight profiles of individual babies are examined in the early months after birth considerable shifts across centile lines are seen to take place. These occur in both upward and downward directions as the baby leaves behind intrauterine influences on its fetal growth and grows under the direction of its own genetic machinery.³ Figure 2 shows some typical profiles of weight gain in babies of appropriate weight for gestation. In a recent study of weight gain over

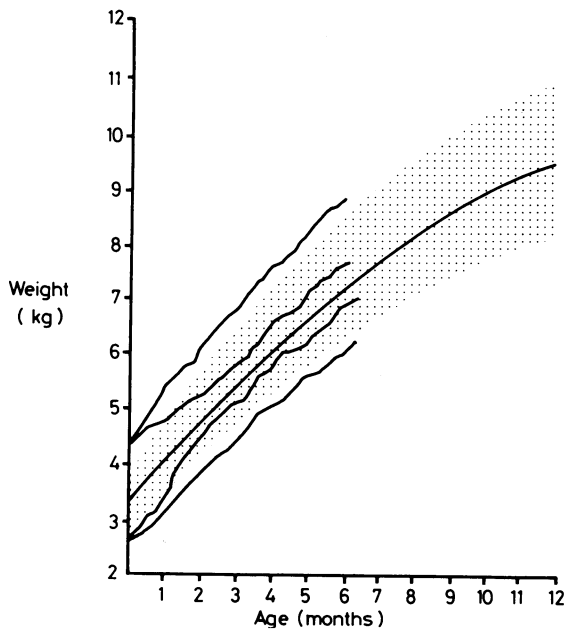


FIG 2—Patterns of weight gain in normal term babies.

the first year in 66 normal term babies only eight (12%) kept roughly in the same channel in which they were born. Eighteen (28%) showed downward centile crossing.³ Most showed upward centile crossing. The greatest amount of weight shift took place in the first three months after birth. Infants born at term of atypical size (small and heavy for dates) show similar, though often more extreme, growth shifts (fig 3). Following centile lines may be expected only when the period of shifting weight gain is complete: in most infants this is usually between three and six months. Nutritional surveillance is, therefore, encouraged at a stage of development when the interpretation of weight changes is most difficult. Weight standards widely used in paediatric practice are derived from cross sectional analyses of weights at various ages so that considerable caution must be exercised in evaluating an individual weight pattern, particularly at a time of shifting growth.

How might normal weight gain be defined? Perhaps there should be less emphasis on quantitative aspects: instead it might be considered simply as that pattern of weight gain which an infant describes when, in health, it is fed milk (breast or bottle) and later a sensible mixed diet. The guideline of 30 g a day in the first few months after birth falling to a value of 15 g at the end of the first year is certainly helpful, but variation beyond this must be carefully evaluated in the light of the above definition and hasty conclusions avoided.

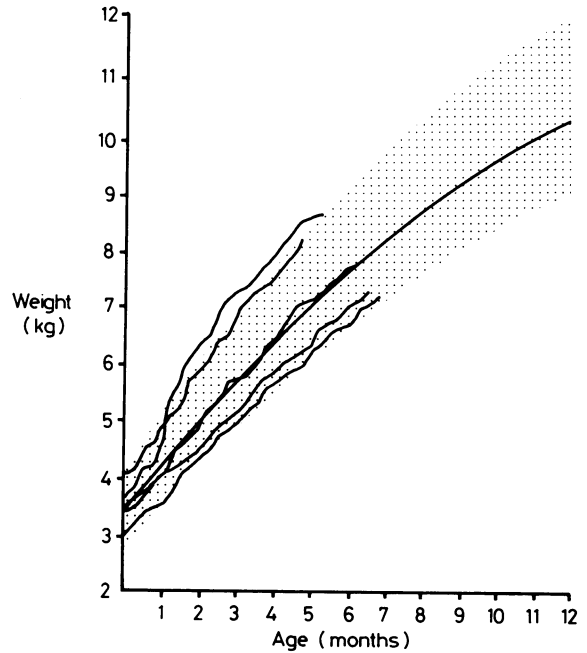


FIG 3—Characteristic weight patterns in "heavy for dates" and "light for dates" babies.

Nutritional influences

The fourth source of deficient weighing practices relates to the misunderstanding of nutritional influences on weight gain, especially breast feeding and the introduction of solids. Misconceptions that originated in the early 1970s (when feeding practices in infancy often left much to be desired with the indiscriminate introduction of solids, little breast feeding, and the use of high solute milks that were often made up inappropriately) continue to be applied. It now seems that babies who are adequately breast fed gain weight at a similar rate to those correctly bottle fed.³ In regard to the introduction of solids, provided that a baby is fed a sensible balanced diet, the introduction of solid foods, whatever the age, will not cause weight gain to proceed abnormally.⁴

Practical applications

Having examined the reasons for faulty weighing practices what practical advice may be offered?

WHERE WEIGHT GAIN CLOSELY FOLLOWS CENTILE LINES

A baby whose weight gain closely follows centile lines and who is feeding well and appears healthy may be assumed to be gaining weight satisfactorily.

WHERE THERE IS UPWARD CENTILE CROSSING

When upward centile crossing is observed it is important not to jump to the hasty conclusion (as all too often is the case) that this reflects abnormal weight gain. For reasons explained above it might represent physiological upward shift (especially in small for dates babies). It is sensible practice to take a feeding history in case the upward shift is due to bad dietary practices, but if these are judged to be appropriate for the individual baby the weight pattern must be considered normal and any possible anxiety in the mother about overweight relieved by sensible counsel. Eventually the rate of growth, reflected in upward centile crossing, will slow down, and the weight profile will then continue in the centile channel that has been reached. Recently unreasonable anxiety has been created by the view put forward in the 1970s that fat babies might become fat adults.^{5,6} It is not sufficiently appreciated that in the four months after birth about 40% of the increment in weight is made up of adipose tissue⁷: this contrasts strongly with 11% before birth and 20% from 4 months to 12 months.⁷ It is thus physiological for babies in the early months

after birth to acquire "puppy fat." The plump baby can in fact be a healthy baby. Figure 4 is a weight chart of a fully breast fed chubby baby showing definite upward centile crossing. The mother was told the baby was getting fat and one breast feed a day should be replaced by one of water.

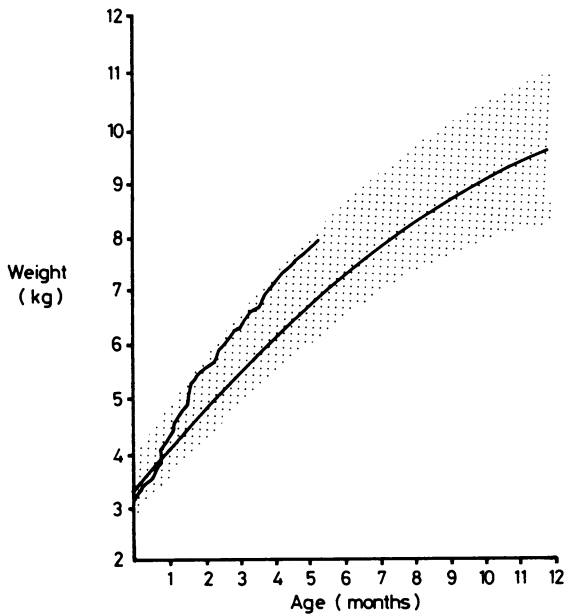


FIG 4—Upward centile crossing in a healthy breast fed baby.

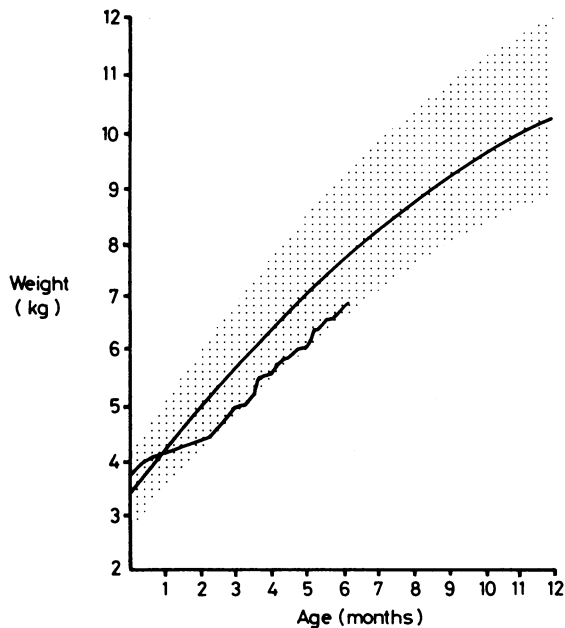


FIG 5—Downward drift of weight arresting on its own accord in one baby. There was no clinical evidence of failure to thrive.

WHERE THERE IS DOWNWARD CENTILE CROSSING

Downward centile crossing might also represent a physiological adjustment: it need not necessarily indicate failure to thrive. This will apply especially to those infants who are heavy for dates at birth, most of whom have a weight curve that moves inwards towards the median curve.⁸ A careful feeding history should none the less always be taken with the baby undressed and signs of undernutrition looked for. You must not assume that because a baby is breast fed food intake is necessarily adequate. (The breast feeding mother of a contented baby whose weight pattern suggests failure to thrive may well not be providing sufficient milk⁹). If there is no immediate evi-

dence of undernutrition follow up at weekly or fortnightly intervals is desirable until the problem is resolved. If the downward shift is physiological it will eventually arrest and centile clinging will later follow (fig 5). If definite failure to thrive emerges (fig 6) further investigation and treatment will be indicated.

Conclusion

A lively debate has recently taken place in the columns of the *BMJ* on the effectiveness of child health clinics.¹⁰ This paper on a closely related theme carries the same message that we should not be afraid to examine our procedures critically, however

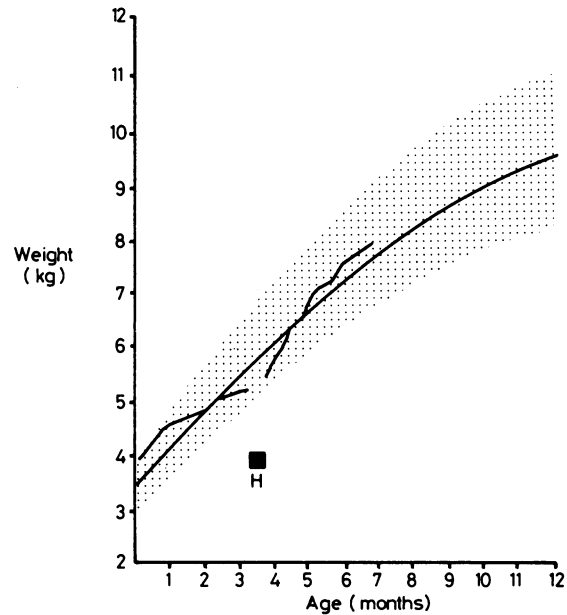


FIG 6—Downward drift of weight in a baby diagnosed as failure to thrive due to feeding difficulties that resolved after admission to hospital (H).

mundane and entrenched in routine these may be. In this instance we recommend the regular weighing of babies as a means of detecting excessive weight gain and failure to thrive, but too much trust in unreliable measurements, overdiagnosis of obesity, and failure to detect failure to thrive must be guarded against. If measurements of weight are accurate and the course of weight gain plotted on centile charts and the resulting profile are sensibly interpreted it becomes a valuable method of monitoring health. On the other hand, the deficient practices of inaccurate weighing, lack of the use of centile charts, poor understanding of normal weight gain variations, and irresponsible counselling make the practice of routine weighing of dubious benefit with the capacity to do more harm than good.

Possibly the greatest benefit for mothers having their babies weighed regularly in clinics is that during clinic visits they have the opportunity to discuss anxieties about common problems such as feeding worries, coughs and colds, immunisation, etc. All the more reason therefore not to create further problems by unreliable weighing practices.

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Letters to a Young Doctor

Women doctors

PHILIP RHODES

Opportunities for women in medicine grow. The first women entered medicine about 100 years ago. Now they make up about half of the entry to medical schools. It has been a prolonged struggle to reach this proportion, and it has been steadily rising only over the past 30 years. Most practising doctors still are men because of the time lag from entry to medicine and resignation, retirement, and death. It will take several more decades before there is full numerical equality of the sexes. It may be longer still before there are 50% of women in all the various specialties. Women seem to prefer some specialties rather than others, or it may be that they find it difficult to get into certain specialties because of severe competition and prejudice.

The really determined woman may achieve as much in medicine as any of her male colleagues and contemporaries. In so doing, however, she may have to sacrifice much of her personal life. The problem for a woman doctor is obtaining the right mix of aspects of her professional, biological, psychological, and social lives. The present social context in the United Kingdom and elsewhere makes it much easier for men to reconcile these for themselves. They do not normally devote as much energy and time as women to home, spouse, children, and other family commitments. They are freer to pursue their professional careers more singlemindedly. There is more and more evidence that this is changing.

Men more often take on what were believed to be traditionally women's roles in caring for home and family, so helping to liberate their wives for other pursuits. Women now often expect their husbands to help them with daily chores. Patterns for women in medicine have changed over the years. Formerly many would retire from the profession while they were having babies and bringing them up. This could take them out of medicine for 20 years, so that they might then feel unable to return, lacking confidence in their knowledge and skills, and perhaps being unwilling to study deeply again. More recently women have worked in medicine till relatively late in pregnancy, have cut short the time of total care of the baby, using other

people to help with this, and returned fairly quickly to at least part time work in medicine so that their knowledge and skills do not atrophy.

Of all men doctors in the United Kingdom about 91% practise medicine. For women the rate is only 6% or 7% less overall, though this may obscure the fact that more women may be working part time. Nevertheless, this shows that no woman needs to drop out of medicine unless she wishes to or is forced out by some other circumstance such as ill health. The curve of the participation rate of women with age is now M-shaped, showing a high participation rate after qualifying, a drop during childbearing years, and a return to fuller participation as these factors recede.

Get full registration early

Many women now marry during their undergraduate years. Probably the best advice then to give is to delay childbearing until after full registration. There are many women who do not do this, of course, but there is no doubt that they have difficulty fulfilling the necessary one year compulsory residence as a preregistration house officer after graduation when there is a young child at home. The advice being offered here is intended to help to diminish probable difficulties. All the difficulties may be overcome as many women doctors, to their enormous credit, show. Some seem to thrive on overcoming the obstacles to professional progress. But others succumb and find that they cannot cope to their own satisfaction with both family and professional lives. This is scarcely surprising since both are very demanding.

It is a matter of personal choice, which depends on many factors—emotional, rational, financial, attitudes of husband and others, expectation of family life, and so on. There may be no set patterns. Each woman is her own person with individual likes and dislikes and varying perceived pressures on her. Nevertheless, there is a pattern of professional progress that may more easily cope with the reconciliation of a medical career with family and social aspirations. That is what is outlined here with no certain belief that it should be followed by anyone or everyone. It is advice that may be taken or left, as all advice should be. It is hoped that here there is no air of pontification and righteousness.

The aim of the undergraduate is to get a degree. Thereafter

University of Southampton, South Block, Southampton General Hospital, Tremona Road, Southampton SO9 4XY

PHILIP RHODES, MB, FRCS, professor of postgraduate medical education, and dean of graduate medicine for the Wessex region