

## Birth weight as a risk factor for raised blood pressure

SIR,—Dr Daniel S Seidman and colleagues report that overweight in adolescence rather than low birth weight is the greater risk factor for raised blood pressure.<sup>1</sup> Previously, Barker *et al* had advocated nutritional supplementation for pregnant women to increase birth weight because they believed that this would reduce the risk of cardiovascular disease later in life.<sup>2,3</sup> Dr Seidman and colleagues, echoing previous correspondence,<sup>4,6</sup> suggest that this advice should be reconsidered. Barker *et al* were one of many groups who found that birth weight was inversely related to adult blood pressure.<sup>4</sup> In contrast, Dr Seidman and colleagues found that birth weight <2500 g was not significantly related to either diastolic or systolic blood pressure.<sup>1</sup>

Differences in the circumstances of these two studies may explain why their results seem inconsistent. The subjects studied by Barker *et al* were born in Britain between 1911 and 1930 whereas the subjects studied by Dr Seidman and colleagues were born in Israel between 1964 and 1971.

The perinatal mortality rate in Britain in 1920<sup>5</sup> was two to three times higher than it was in Western countries by 1970.<sup>7</sup> Low birthweight infants account for the greater proportion of this wastage.<sup>7</sup> Nevertheless, evidence suggests that there are two main groups of low birthweight infants and that these groups differ not only in their risk of perinatal death but also in their risk of subsequent cardiovascular disease. Twins have a low birth weight because of intrauterine growth retardation<sup>8</sup> and have a high rate of perinatal death, but they are not at increased risk of cardiovascular disease subsequently relative to singleton infants. Probably largely because of genetic factors, North American black infants have a lower average birth weight than white infants yet low birthweight black infants have about a 30% lower risk of perinatal death than matched low birthweight white infants.<sup>7</sup> Many black races, however, have a greater risk of cardiovascular disease when they adopt a Western lifestyle.<sup>9</sup>

Because of advances in perinatal care the low birthweight infants studied by Dr Seidman and colleagues who survived to join the Israeli army will have included many suffering from intrauterine growth retardation but not at increased risk of subsequent cardiovascular disease who would not have survived if they had been born at the time when the cohort studied by Barker *et al* were born.

There is a view that the inverse relation between weight in infancy and the risk of cardiovascular disease is found only when the genetic factors that contribute to determining body weight predominate.<sup>4,5</sup> The lack of correlation between the studies of Dr Seidman and colleagues and Barker *et al* is consistent with this view.

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- 1 Seidman DS, Laor A, Gale R, Stevenson DK, Mashiach S, Danon YL. Birth weight, current body weight, and blood pressure in late adolescence. *BMJ* 1991;302:1235-7. (25 May.)
- 2 Barker DJP, Winter PD, Osmond C, Margetts B, Simmonds SJ. Weight in infancy and death from ischaemic heart disease. *Lancet* 1989;ii:577-80.
- 3 Barker DJP, Bull AR, Osmond C, Simmonds SJ. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;301:259-62.
- 4 Bradley PJ. Weight in infancy and death from ischaemic heart disease. *Lancet* 1989;ii:985.
- 5 Bradley PJ. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;301:551.
- 6 Bradley PJ. Deprivation in infancy or in adult life. *Lancet* 1991;337:1043-4.
- 7 Wilcox AJ, Russell IT. Birthweight and perinatal mortality. III. Towards a new method of analysis. *Int J Epidemiol* 1986;15:188-96.
- 8 Naeye RL, Benirschke K, Hagstrom JWC, Marcus CC.

Intrauterine growth of twins as estimated from newborn birth-weight data. *Pediatrics* 1966;37:409-16.

- 9 McKeigue PM, Shah B, Marmot MG. Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in south Asians. *Lancet* 1991;337:382-6.

SIR,—Dr Daniel S Seidman and colleagues found that the blood pressures of 17 year old men and women were less strongly related to birth weight than to current body mass.<sup>1</sup> They conclude that the contribution of impaired fetal growth to hypertension is less important than that of excess adult weight. This conclusion, however, does not follow from their findings. The differences in blood pressure associated with birth weight increase through adult life, whereas those associated with current body mass decrease.<sup>2</sup> The table shows systolic blood pressures at age 59-70 among 785 men in Hertfordshire. There is a difference of 7 mm Hg between those who had the highest and lowest birth weights.

Average systolic blood pressure among 785 men aged 59-70 according to birth weight

Birth weight (lb)	No of subjects	Average systolic blood pressure (mm Hg)
≤5.5	31	169
-6.5	94	166
-7.5	250	165
-8.5	231	163
-9.5	123	163
>9.5	56	162
Total	785	164 SD=23

In a study of men and women aged 50, to which Dr Seidman and colleagues refer, we showed opposing trends in blood pressure associated with decreasing birth weight and increasing placental weight.<sup>3</sup> The highest pressures were in people who had been small babies with large placentas. A high ratio of placental weight to birth weight is an index of fetal growth retardation. Consideration of birth weight alone greatly underestimates the contribution of impaired fetal growth to adult blood pressure and hypertension.

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- 1 Seidman DS, Laor A, Gale R, Stevenson DK, Mashiach S, Danon YL. Birth weight, current body weight, and blood pressure in late adolescence. *BMJ* 1991;302:1235-7. (25 May.)
- 2 Chiang B, Perlman L, Epstein F. Overweight and hypertension: a review. *Circulation* 1969;39:403-21.
- 3 Barker D, Bull A, Osmond C, Simmonds S. Fetal and placental size and risk of hypertension in adult life. *BMJ* 1990;301:259-62.

## Wheezing or asthma?

SIR,—Professor Roger Robinson, in his report of a paper that changed his practice, describes the benefits of calling all episodes of wheezing in childhood "asthma."<sup>1</sup> We have always believed in this practice and have taught it to others. We have now, however, seen an adverse consequence of doing this.

In 1974 a 6 year old boy was admitted to hospital with an episode of respiratory distress and wheezing. He responded to routine treatment with antibiotics and bronchodilators. The consultant paediatrician under whom he was admitted obtained a history of there having been one or two similar episodes over the preceding year and he instituted prophylactic treatment for asthma with inhaled cromoglycate. The general practitioner's records suggest that this was supplied on repeat prescription for about another six months. Treat-

ment then lapsed, and he received no further treatment for his chest. He did not have any further chest complaint or treatment for asthma. His exercise tolerance was excellent, and he completed a half marathon on several occasions.

In 1990 he applied to join the Royal Air Force, hoping to become a flight crew member. He was rejected because on his application form, in the section asking about medical history, he had entered the word asthma. His peak flow and spirometric values were normal. Challenge testing with methacholine showed him to have no evidence of bronchial hyperreactivity (bronchoconstriction was less than 20% with the maximum concentration of methacholine used (32 g/l)).

We clearly see the need for the Royal Air Force to exclude from aircrew training people who might develop asthma, particularly on exposure to dry, cold gas at altitude. By all accepted criteria, however, this young man does not have asthma. He has failed in his chosen career because of a diagnostic label applied to him in childhood. In this case the disadvantages have greatly outweighed the advantages of calling wheezing asthma.

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- 1 Robinson R. Wheezy children. *BMJ* 1991;302:1516. (22 June.)

## Differences between peak flow meters on prescription

SIR,—On behalf of Ferraris, the manufacturer of the new Wright pocket peak flow meter, I should like to respond to Dr Ian Gregg's letter about the meter.<sup>1</sup>

Ferraris, the sole manufacturer of the Wright peak flow meter, which was developed in conjunction with Dr Martin Wright over 30 years ago, registered the Wright trademark in 1976. Thus when introducing the new Wright pocket peak flow meter it exercised its existing trademark rights.

Ferraris uses the same equipment and master instrument to calibrate the Wright peak flow meter and the Wright pocket peak flow meter. Each device is tested against this master instrument, and the claimed accuracy of calibration and repeatability are thereby guaranteed. The Department of Health's drug tariff specification uses the Wright peak flow meter as the standard against which all prescribable products must be measured.

To satisfy the Department of Health's requirements all aspects of accuracy and repeatability must be submitted and proof must be given that the meter will survive three years' use. The flexible steel vane that is the key to the meter's simplicity has been tested to the equivalent of 20 years' use. The department's approval process also requires independent clinical testing, this being done by experts at the Royal Brompton and National Heart Hospitals with meters randomly selected by the department.

As regards clinical studies, the Wright pocket peak flow meter has been evaluated in several leading centres, including Guy's Hospital, against the Wright peak flow meter and another leading meter. Clinical studies are currently under way at centres outside the United Kingdom. In the United States Ferraris has been working with the National Institutes of Health in meeting the American Thoracic Society's standards.

The meter's price was a commercial decision by Ferraris because the meter is simpler to manufacture than other products currently available.

Finally, we would like to acknowledge Dr Gregg's work on nomograms. After discussion with the Department of Health, however, it had already been decided to discontinue the nomogram.