

## Are mistakes still being made?

*In the press, lay and medical, during 2008 there were a number of occasions when I thought that the authors might have benefited had they listened to Charles. I was interested in his reaction to these thoughts over dinner with a distinguished nutritionist, Nicholas.*

‘Charles, I sometimes think that some people, many distinguished in their fields, might benefit from your wisdom!’ *I started.*

‘Coe flattery gets you nowhere! What on earth have you been reading?’

‘We are repeatedly told that unless we improve, and spend more on our public health preventative services, the NHS costs are going to be astronomical.’

‘And what if we do? You know the answer!’

‘They will be just as astronomical!’

‘And possibly more so! Although the medium-term cost of illness might be reduced, any consequent improvement in survival would inevitably increase long-term NHS and social costs. That is unless you can arrange for the majority of 90 year olds to die of a coronary during their daily jog!’ *Charles added with a smile.*

‘Or game of tennis! But you are not opposed to all this type of expenditure?’

‘No I am not! Sixty years ago, it was excusable that Nye Bevan did not realise that successful medicine has long-term costs, but the authorities should realise by now that total cost might be even more astronomical if we do improve preventative services. The point is that saving money or even human resources should play no part in the equation. These measures should be judged on what they are trying to do, which is to extend healthy lifespan!’

‘Even when money doesn’t come into the equation, the ultimate justification is often forgotten, Charles!’ *I replied, recalling another conversation.*

‘Don’t tell me, disease-specific results are being used to lobby for general public health measures?’

‘You have guessed right!’

‘Hardly a guess, but give me an example, Coe.’

‘In a study of reduction of salt intake in subjects with “pre-hypertension” there was a predictable fall in cardiovascular-related morbidity over the 10,000 or so man-years of observation. Despite this there

was no significant fall in either specific or general mortality with a slight non-significant preponderance of cardiovascular mortality in the control group, and vice versa.’

‘I bet the effect on general health was not even considered!’

‘Quite right, and yet this paper led to a banner headline and a leading article suggesting legislative controls aimed at reducing salt intake.’

‘I recognise there is a problem with assessing overall morbidity but that does not justify ignoring it, but rather it should challenge researchers to make efforts to establish satisfactory methods for use in such studies.’

‘Then there is body mass index (BMI)’ *I said, giving another example,* ‘This is still thought of as an absolute measure of obesity irrespective of height.’

‘Judging by the press, even though those who understand that it’s only a proxy, seem to fall into this trap, albeit acknowledging that healthy muscularity may sometimes make it a little misleading!’

*Nicholas intervened,* ‘Charles, I enjoy your pieces and agree with you on the first two points but do feel you were too hard on BMI.’

‘Go on...’

‘There has been a lot of careful work done on this. BMI always comes up better than ponderal index as might possibly be expected from two of the likely confounders, shape and regression to the mean. If one wants to keep it simple BMI has much to commend it.’

‘But if individuals are of the same shape and composition, BMI is proportional to height!’

‘That does not prevent it working well when obesity rather than height differs. Difference in height is relatively unimportant,’ *Nicholas insisted, adding* ‘We are not comparing a pygmy shrew with a Shakespearian one!’

‘I cannot accept what you say when the same BMI suggests that a rugby scrum half 5’3" tall (1.60 m) is of optimal weight but that his team mate (6’4", 1.93 m) in the second row of the scrum is obese! And what about children?’

‘You may have a point,’ *Nicholas conceded.*

'I am sure I do, so long as values of BMI are presented as absolute measurements for obesity and malnutrition.'

'We have never suggested that they should be!'

'No you and your colleagues are not guilty, but that does not prevent the Chief Medical Officer's office downwards appearing to make that false assumption!'

'On the other hand,' *I intervened*, 'When our last conversation stimulated me to explore the problem, I was surprised to find that no publication, expert as well as lay, stated explicitly that BMI was influenced by height. This was even true for longitudinal studies where change in height might be particularly relevant.'

'Perhaps we have concentrated too much on other factors in attempting to explain discrepancies, but it is well recognised that BMI varies with age in children. In a recent study aimed at recognising nutritionally deprived children, a family of curves was produced for children of different ages to show equivalent values of BMI at 18 years. For example a BMI of 18 at two was equivalent to a BMI of 25 at 18. This might be a good model' *suggested Nicholas, adding*, 'Of course one would use height if one were to do it for adults.'

'Span might be better to allow for shrinkage in old age!' *Charles suggested.*

'Good idea, Charles'

'Going back to the children, the difference in BMI between the ages is less than the two to threefold to be expected from the differences in height, implying that infants are more bulky!'

'But infants are not the same shape as adults!'

'Yes, Nicholas, but don't you think that they, like pygmy shrews need that greater bulk?' *Charles continued*, 'It would be

interesting to see if such an exercise in adults suggested the shorter you are the bulkier you should be.'

'I would be surprised if it did!'

'But Nicholas, thinking of other methods of assessment, if it is true that absolute waist measurement is as good a proxy for hazard in obesity as BMI, then it seems that short adults do also benefit from greater bulk,' *I suggested.*

'So BMI has a lot going for it in adults. Not only is it good proxy for obesity in adults of similar stature, but also short adults might benefit from a little more fat than their taller peers, enabling a single standard across a wide range of heights.'

'So you give BMI a reprieve Charles!' said Nicholas with a smile.

'Conditional only Nicholas! It must become general knowledge among experts as well as laymen that BMI is proportional to height in geometrically similar individuals, otherwise tall athletes will continue to be seen as obese at worst and over-muscled at best.'

'Does that really matter Charles?'

'Only to their pride, but it does matter if gross undernutrition is not recognised in tall fashion models or tall old men because their BMI is comfortably above 18 or if a mother or nurse unfamiliar with the chart is falsely reassured her young child is not overweight because their BMI is only 23.'

*It might be said that all three examples illustrate that sometimes experts might benefit as much from outside education as the lay person.*

Coemgenus