

Letters to the Editor

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Priority will be given to letters less than 500 words long.
Authors must sign the letter, which may be edited for reasons of space.

Editor-in-Chief's note: Readers will note that the letter below is far longer than we would normally publish. However, in this instance we decided to publish the letter in full in view of the serious nature of the subject matter and the authors' expressed need to answer thoroughly all previously made points. In general, potential correspondents are asked to keep letters within the 500 word preferred limit.

ETHICAL DENTAL AGE ASSESSMENT

Sir, the recent letter from Professor Sir Albert Aynsley Green¹ is a challenging critique to the use of contemporary medical and dental knowledge in the assessment of the age of subjects who are unable or unwilling to provide a record of her/his date of birth. This circumstance occurs mainly in children and adults who have entered the UK or another European country without the legal right to do so.

It is helpful for readers to understand Professor Sir Albert Aynsley Green's position. He is a professor of paediatrics, and is the Commissioner for Children for England. This is a Government appointment where the main remit of the appointee is to oversee, and intervene where appropriate, in any activity where the wellbeing of children is a concern. This is an important role and children in the UK benefit as a result of Professor Sir Albert Aynsley Green's vigilance. He has long been an opponent of age assessment using dental radiographs.

The issue of the 'flawed statistics' raised by Professor Sir Albert Aynsley Green we consider to be a misleading exaggeration. In the paper published on the new method² we initially used the

Table 1 Worked example from the MICROSOFT EXCEL NORMDIST function of Cumulative Probability Calculation for LLBEf with repeated calculations for the 15 yr, 16 yr, 17 yr and 18 yr thresholds. The same cumulative probability as the mean age is also calculated and as is shown, this should equal 0.5 (50%) as the mean age of a normally distributed population is exactly at the position of 0.5 cumulative probability

Years	15	=	A number – age in years up to which cumulative probability is sought
(a) Mean	15.0	=	Mean age from sample (reference data set)
(c) Standard deviation	1.31	=	Standard deviation from sample (reference data set)
(d) Cumulative probability	True	=	Enter TRUE in this box

Figures in red are derived from the reference data set in the DAA database.

Table 2 The calculation in Table 1 can be repeated for each of the ages for which cumulative probability is required. The interpretation if this is relatively simple. The cumulative probability is that part of the Normal distribution curve below the cut-off age chosen

Cumulative probability that subject is under 15 yrs	=	0.32 [32%]
Cumulative probability that subject is under 15.6 yrs	=	0.50 [50%]
Cumulative probability that subject is under 16 yrs	=	0.62 [62%]
Cumulative probability that subject is under 17 yrs	=	0.85 [85%]
Cumulative probability that subject is under 18 yrs	=	0.96 [96%]

Figures in red are derived from the reference data set in the DAA database.

'confidence interval of the estimation of the population mean' as an indication of the expression of the confidence of the likely lower and upper limits of the estimate. Professor Tim Cole, who holds a personal chair in medical statistics at the Institute of Child Health and with whom we have been working for some four years, disagreed with the level of precision signified by the use of the confidence interval of the estimation of the population mean, and quite properly drew attention to this inappropriate claim of accuracy.³ This does not show '...the statistical and methodological weaknesses in interpreting the data presented by Roberts *et al.*' This is a gross

overstatement. It does show, however, that there is a need for an adjustment of the way the data is presented based on objective statistical reasoning, and since July 2008, the use of confidence intervals in this way has been stopped. The estimated population mean is still used and assigned to the subject as her/his 'dental age'. If further information is required we now provide the probability for the individual subject being, for example, 'under 16 years'. A worked example is given in Tables 1 and 2.

This clearly demonstrates that it is possible to provide a reliable probability that an individual subject is below (or above) a given age and that the criticism

of Sir Albert that 'The method cannot give a reliable probability of the range of age that the individual has achieved' is incorrect. The data held in the dental age assessment (DAA) database is similar to that produced by other investigators.⁴ We are aware of the difficulties in estimating the uncertainty of our estimates and it is for that reason that we make available the details of cumulative probability.

It is ironic that Sir Albert draws attention to the difficulties associated with ethnicity as it is the paper he quotes¹ that demonstrates unequivocally that ethnicity does not greatly influence the age of attainment of tooth development stages, especially in relation to the third molar. As an example, the relevant data for males is reproduced in Table 3. It is clear that these are small differences. Similar minimal differences are reported in a detailed study of ethnicity and third molar mineralisation including a Japanese population, where the differences between races for the final stage of third molar development is only 0.1 years.⁵

The claim that taking dental radiographs for DAA is unethical and that proper consent has not been obtained is not true. First, it is permissible (ie a legal procedure) to take radiographs for non-diagnostic and non-treatment purposes.⁶ This is commonly done for medicolegal reports where a decision about liability and the quantum of damages may need to be assessed where there is no direct clinical benefit to the subject, although there is usually a financial benefit. The DAA process is similar. The suggestion that asylum seekers are unable to give informed consent is also untrue. All the subjects seen by our DAA team give informed consent. This process starts with the referring social worker or lawyers who have our information sheet. This explains the process of the clinical and radiographic examination and the reason for doing this. When the subjects attend, the process is described once again with the assistance of an interpreter, as may be required. The assessor(s) make a final check to ensure that the subject understands that the procedure is to estimate the subject's own age. Once this is established, the subject is invited to sign the consent. To

Table 3 Data demonstrating that ethnicity does not affect the age of attainment of complete root growth for third molars

Ethnicity ⁴	Age of attainment (in years) of complete root growth for third molars MALES
African (black)	19.31
Cape Coloured	20.06
Bangladeshi (living in London)	19.53
White (UK)	19.36

date we have carried out over 560 dental age assessments and only one subject demurred. The process was explained once again after which the subject signed the consent without further query. Sir Albert claims that the process of having a radiograph taken has unacceptable risk attached to it. The most recent estimates indicate that a single dental panoramic tomograph has a one in two million lifetime risk of causing cancer.⁷ To put this in perspective, our Consent Committee at King's College Hospital instructed us to replace 'one in two million...' with the phrases 'There are no risks associated with the clinical procedures.' and 'The risk from irradiation is about half of a long-haul air journey. This is a vanishingly small risk.' The idea that these subjects are frightened by the radiographic procedure does not withstand scrutiny. Not one subject of our 560 plus cases has shown any signs of anxiety whilst having the radiograph taken. No doubt this is due to the careful explanation provided and the behavioural management skills of our radiography staff. The social workers and/or solicitors make sure that the subject knows why the radiograph is being undertaken and the implications of the result. It is important to note that the majority of these subjects are estimated as being more than 18 years of age by home office administrators or social workers *before* the referral is made for dental age assessment.

The proposal to assess the age of children '...in a holistic way...' would be acceptable if there was any evidence that this method were of value. Despite vigorous attempts to establish the validity of the 'holistic' approach, it has not been possible to find any objective research indicating the reliability of the age estimates using this holistic method

and then comparing these age estimates with the gold standard of a verifiable birth date. In this day of evidence-based clinical practice this is a fatal shortcoming and in our view is unacceptable. A number of studies published over the last 20 years have shown that DAA correlates more closely with the chronological age than any of the other methods such as skeletal age, height, weight, psychological assessments and assessments of sexual maturity.⁸⁻¹¹ The method of DAA we use has been validated using the gold standard of chronological age. Our most recent study looked at the 16 year threshold¹² and was designed to compare the estimated dental age (DA) with the known chronological age (CA) of a separate study sample of children in the 15 to 17 years of age range. The radiographs used were from children who did not form part of the reference data sample. This paper compared the CA with the estimated DA of healthy children. On average, there is a difference of only three months.¹² This mean value disguises a wide range of values. Examination of them shows that 42% of the age estimates are within six months of the true age and 68% of age estimates are within one year of the true age. These findings are indicative of the superiority of DA over other methods of age assessment. As indicated above, the lack of an objective assessment of the holistic method makes it impossible to carry out any meaningful comparison.

A further issue is the concern over the effects of nutrition. First, the effects of nutrition are small and not discernible in humans.⁹ Second, the majority of subjects for whom nutrition may be an issue are young people who look like adults and are claiming to be under 18 years of age. In such cases, *if* there was any

influence of nutrition, it would affect the outcome by the teeth indicating a younger DA. This would transfer into a younger estimated CA which would be to the benefit of an individual of unknown age claiming to be under 18 years of age.

To date, we have not been aware of the Government's wish to recommend the routine use of radiographs of children for age assessment. All the subjects referred to our dental age assessment clinic have previously been assigned an 'age' by the Home Office immigration officer or social workers. Given the thousands of young asylum seekers who reach the UK, the numbers whose age is disputed are small and estimated at only a few hundred each year. This does not appear to be the use of '...routine X-raying of children for age assessment.' The reality is different from this. Only those asylum seekers who dispute the age assigned to them by the Home Office immigration officials or social workers end up having a dental age assessment.

A further issue is the apparent emphasis on young men deemed to be over 18 years old. Sir Albert states that '...if over that age, they will be treated as adults.' First, if the subjects are over 18 years of age then it is proper that they should be managed as an adult. It suggests that Sir Albert has not been faced with young people of unknown age who are actually under 16 years of age but passed off as over 16 years by the adults controlling the lives of these children for illegal purposes. There are young girls believed to be as young as 12 brought into the country for arranged marriages. If ever there was an issue of '...full consent...' it is this serious abuse of children's rights, which Sir Albert has overlooked. A further serious problem is the number of children trafficked into the country for illegal sexual activity against their will. Because they are claimed by their abusers to be over 16 years old and there is no documentation to the contrary, these children are further abused and exploited without any recourse to justice should their oppressors be apprehended.

What of young men in their twenties claiming to be under 16 years of age? These may be placed in close association with young girls and boys who will

not have the maturity to cope with the behaviour exhibited by these men. This is an aspect of age assessment that Sir Albert has overlooked.

Dental age assessment is not precise but it provides a realistic quantifiable estimate of age which is not matched by any other method.¹¹ Sir Albert has raised these issues appropriately, if only to focus thinking as to the realistic limits of age assessment, especially his own favourite, the 'holistic' method. Our major concern is that there has been no objective validation of this method. Until there are reliable data on the holistic method we believe it is unethical to promote its use.

Dental age assessment is carried out using methods parallel to ours in Norway,¹³ Belgium,¹⁴ Germany,¹⁵ Spain,¹⁶ Italy¹⁷ and Austria.¹⁸ The problem of estimating the age of asylum seekers will not go away. Our research and that of others is moving steadily towards acceptable ways of assessing age with reasonable accuracy. The methods we are currently using provide subjects with a realistic and useable assessment of their own age. The only thing that provides more reliable information is an authentic birth certificate.

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DOI: 10.1038/sj.bdj.2009.821

SUBMUCOUS CLEFT PALATE

Sir, submucous cleft palate can be defined as the abnormal attachment of the palatal muscles with intact oral and nasal mucosa.¹ This produces functional difficulties for the patient including speech problems, feeding difficulties or middle ear dysfunction. However, only 10% of cases are symptomatic.²

Clinically, the cardinal signs of a submucous cleft palate are a bifid uvula, a V-shaped notch at the back of the hard palate, a translucent line in the midline of the soft palate and a short palate. It should, however, be noted that a bifid uvula occurs in isolation in about 0.1-3% of the population³⁻⁵ and that not all of the above signs need to be present to diagnose a submucous cleft palate.^{6,7}

A 68-year-old man was referred to our ENT colleagues with what was thought to be a polyp on his uvula. He had suffered from middle ear problems throughout his life. The ENT surgeons felt that rather than a polyp it was more likely to be a bifid uvula and queried a diagnosis of submucous cleft palate and subsequently referred him to our cleft team.

On examination it was noted that the patient had hyponasal speech with con-

stant air escape during conversation. He commented that people found him difficult to understand, especially whilst conversing on the telephone. The patient was edentulous and wearing a complete upper denture (Fig. 1). His uvula was clearly seen to be bifid. He exhibited a V-shaped notch at the back of the hard palate and his soft palate was noted to be short (Fig. 2). There was no translucent line on the soft palate and no evidence of previous palatal surgery. There was no familial cleft history of note.



Figs 1-2 The edentulous patient with bifid uvula and V-shaped notch at the back of the hard palate

This case highlights the importance of a sound history and clinical evaluation in any patient presenting with speech problems. This gentleman had been fitted with a number of complete upper dentures. Numerous health care professionals had the opportunity to diagnose the condition but on each occasion his underlying submucous cleft remained unnoticed. The patient suffered long term middle-ear dysfunction due to the altered anatomical form of the Eustachian tube musculature.

The condition of submucous cleft palate is uncommon, having an incidence of 1:1,200 births.^{2,3} In this case it is unfortunate that the definitive diagnosis has been made so late in the patient's life despite suffering from classical speech problems and clinical signs that would point to a diagnosis of submucous cleft palate.⁸

The patient was offered surgery to correct the cleft but declined as he felt that both the diagnosis and treatment option had come too late to be worthwhile.

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DOI: 10.1038/sj.bdj.2009.822

ALL IN HER HEAD

Sir, in 1975, as a dental student, I gave an inferior dental nerve block to a young dental nurse who almost immediately complained of numbness of the ear. At that time no one could give an explanation and despite her not being able to detect pin pricking some said that it was all in her mind. She has reminded me of this on many occasions since and despite giving several her id blocks over the years it has never occurred again. I was therefore delighted to read the article by Ngeow and Chai (*BDJ* 2009; **207**: 19-21) on this matter and have explained to my wife that, after all, it was not all in her mind as some had said but actually all in her head.

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DOI: 10.1038/sj.bdj.2009.823