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BRITISH ORTHODONTIC SOCIETY

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By post and email to Don.Sinclair@sph.nhs.uk

Dear Dr Sinclair

Re: Orthognathic Surgery - Consultation draft issued by SPH (Solutions for Public Health) for consideration by South Central PCTs

It has recently been brought to the attention of the Consultant Orthodontists Group of the British Orthodontic Society that South Central PCTs have commissioned a report from SPH (Solutions for Public Health) on Orthognathic Surgery. The stated reason for this review is to develop "*a policy specifying diagnoses and/or patient groups for whom orthognathic surgery is clinically and cost effective and for whom NHS funding should be a priority*. "

We are pleased to see that the commissioning of orthognathic treatment is being reviewed, as we feel this is timely and may assist with the proposed new NHS Centralised Commissioning arrangements planned for 2013. Being considered as a dental and surgical procedure we would anticipate Centralised Commissioning of orthognathic treatment, rather than GP Consortia Commissioning.

Having had the opportunity to read the Consultation draft, we understand the review is asking the Priorities Committees to consider whether NHS funding for orthognathic treatment should be *recommended* or whether it should be considered a *low priority* treatment. More specifically it considers each of the following four indications for orthognathic treatment listed below:

1. The treatment of clinically impaired oral function such as biting and chewing
2. The treatment of speech or articulation abnormalities
3. The treatment of patients with obstructive sleep apnoea/hypopnoea syndrome (OSAHS)
4. The treatment of patients with TMJ pain

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We would like to comment on each of the four indications listed in turn:

1. The treatment of clinically impaired oral function such as biting and chewing

The review has highlighted three relevant studies with respect to functional improvements following orthognathic surgery, namely Murphy *et al.* (2011), Lee *et al*. (2008) and Motegi *et al*. (2003). All three studies showed significant improvements in oral function following orthognathic treatment. Within the text and in Table 1 of the Consultation draft the comment is made that although all three studies were prospective, none were controlled. However, not mentioned within the Consultation draft is the recently published study by Øland *et al*. (2010) in which 118 patients undergoing orthognathic treatment were compared with 47 matched controls. Like the three studies quoted in the draft, this study also concluded "*that orthognathic surgery improves patients' stomatognathic function in most cases, and that patients' satisfaction correlated with perceived, reported, and measured function at the end of the treatment.*" This same trend of improved oral function following orthognathic treatment is reported over and again by other, albeit less powerful studies, for example, van den Braber *et al.* (2006), Kharrat et *al.* (2006) and Khadka *et al.* (2011).

It is our strong and considered view that NHS funding for orthognathic surgery should be RECOMMENDED for the treatment of patients with malocclusion and clinically impaired oral function, such as biting or chewing.

2. **The treatment of speech or articulation abnormalities**

The second indication for orthognathic treatment, discussed within the Consultation draft, is for the treatment of speech or articulation abnormalities. As pointed out within the draft there is a paucity of evidence on this subject and the few studies that have been performed are of low quality.

It is true that there is little reliable evidence to support the use of orthognathic treatment for the treatment of speech or articulation abnormalities. Having also considered the available evidence it is our opinion that NHS funding for orthognathic treatment for the treatment of speech or articulation abnormalities could be considered a low priority, unless further evidence becomes available to suggest otherwise.

3. **The treatment of patients with obstructive sleep apnoea/hypopnoea syndrome (OSAHS**)

The third indication discussed within the Consultation draft is orthognathic treatment for the treatment of patients with obstructive sleep apnoea/hypopnoea syndrome (OSAHS). It is worth remembering that OSAHS, when severe, can be devastating not only for the affected individual but also their families. It can have serious long term consequences for patients' physiological health and Health Related Quality of Life (Davey 2003). The inability to achieve good quality sleep causes excessive daytime sleepiness, resulting in the inability to function effectively, irritability, depression, and an increased risk of road traffic accidents (Haraldsson *et al.* 1990, Terán-Santos 1999), as well as disruption of social relationships. There is also growing evidence that untreated OSAHS is associated with a range of adverse cardiovascular issues, including hypertension (Peppard *et al.* 2000), stroke, congestive heart failure and atrial fibrillation (Shahnar *et al.* 2001, Ng *et al.* 2005).

The SPH Consultation draft describes two reviews in some detail, those of Pirklbauer (2011) and Holty (2010). Within both reviews, one trial, notably the one by Vincini (2010), demonstrated significant clinical improvements in the two assessment parameters for OSAHS following

orthognathic treatment. Indeed orthognathic treatment was shown to be as effective as CPAP in the treatment of OSAHS.
An important additional factor that was not considered in the Consultation draft is the difference between orthognathic treatment and CPAP in the treatment of OSAHS. The use of CPAP requires the patient to wear an external facemask and positive pressure pump during sleep over many years and perhaps indefinitely. The CPAP equipment is expensive, cumbersome and noisy for both the patient and their partner, and as a result compliance with CPAP can be poor (Wright *et al.* 1997 Ferguson *et al.* 1997,). By contrast orthognathic treatment may well be a cheaper, morecost effective and better for the patient and their family than CPAP, because orthognathic treatment is a *one off* treatment used to affect a change, whereas CPAP is a long term management programme extending over many many years.

It is our strong view that NHS funding for orthognathic treatment should be RECOMMENDED for the treatment of patients with severe OHAHS, where CPAP has been tried but has either not been successful or cannot be tolerated.

4. The treatment of patients with TMJ pain

The fourth and final consideration within the consultation draft is orthognathic treatment for the treatment of patients with temporomandibular joint (TMJ) dysfunction. The SPH consultation draft states that no studies could be identified that specifically examined the effect of orthognathic treatment on pain from the jaw or TMJ. However, a meta-analysis on Orthognathic treatment and TMJ disorders was published in 2009 (Al-Riyami *et al.* 2009) and concluded "*although orthognathic surgery should not be advocated solely for treating TMD (temporomandibular dysfunction), patients having orthognathic treatment for dentofacial deformities and who are also suffering from TMD, appear more likely to see improvement in their signs and symptoms than deterioration*. "

Nevertheless, as was the case for speech or articulation problems, there is little reliable evidence to support the use of orthognathic treatment for the treatment of patients with temporomandibular joint (TMJ) pain at the current time. It is our opinion that NHS funding for orthognathic surgery for the treatment of patients with TMJ pain could be considered a low priority treatment, unless further evidence becomes available to suggest otherwise.

Of interest to note within this Consultation draft on orthognathic treatment is the statement that there is no evidence of cost-effectiveness to the modern NHS, and that in the cited paper by Cunningham *et al.* (2003) there was no assessment of functional outcomes, meaning it could not be used as high quality evidence. What this paper calculated was cost per QALY for orthognathic treatment. Cost per QALY is a standard method of economic evaluation (Drummond *et al*. 2005) which has been used worldwide in the justification of many different forms of treatment. The benefits of orthognathic treatment (including improved function) are reflected in the QALYs gained and are not assessed directly, which again is standard methodology. If it is accepted that most orthognathic treatment is performed in young adults and for functional reasons, then the findings of Cunningham *et al.* (2003) should not be ignored. The overall cost-utility of £546/QALY for bimaxillary surgery and £617/QALY for single jaw surgery demonstrates that for a relatively low cost, orthognathic treatment will improve clinically impaired oral function. Coupled with the relatively young age at which the treatment is carried out this means that the benefit will last many years. It is

certainly more cost effective than the treatment of a number of other conditions currently funded by the present day NHS. In addition, and as highlighted in the Consultation draft, orthognathic treatment carries a low risk and low incidence of relapse and reoperation.

Within the Consultation draft an estimate of future costs is made based on an increase in the number of orthognathic treatment cases over just the last two years. The evidence for a continued increase in the number of orthognathic cases beyond 2010/11 from the two year figures presented is not compelling. If calculations were made on the preceding two years then it would be estimated the number of cases would instead begin to fall in the coming years. Specifically excluded from this Consultation draft is orthognathic treatment for major craniofacial anomalies, for facial reconstruction, or for the treatment of cleft lip and palate. It is not clear from the figures presented within the draft whether or not the annual expenditure of £314,955 quoted includes these even more complex cases, or consists only of those cases where the four specific indications for surgery, namely impaired oral function, speech or articulation abnormalities, OSAHS, or TMJ pain are being considered.

What is also disappointing to note is the statement within the Consultation draft "*Orthognathic treatment is usually performed after the age of 18 years, as the jaws have normally stopped growing. Children under the age of 18 years would usually receive orthodontics and growth modification of the jaws rather than orthognathic surgery.*" The intimation is that in all cases, if orthodontic treatment was started before the age of 18 years there would never be any need for orthognathic treatment. This is incorrect. Those patients who require orthognathic surgery are usually those whose skeletal jaw relationship is so severe that orthodontics alone will not treat the malocclusion, no matter how young the patient when they are when first seen. Indeed they are often in the highest need for treatment category, as defined by the IOTN (Index of Orthodontic Treatment Need). The reason they have orthognathic surgery after the age of 18 years is because by that time any adverse facial growth will have ceased. The orthognathic treatment can then be undertaken safe in the knowledge that relapse will be minimised and reoperation avoided.

Finally we think there should have been more emphasis on the quality of life measures in the assessment of the need for orthognathic treatment in these young adult patients. Both the Department of Health and the WHO have categorically stated that quality of life should be assessed alongside other outcome measures when assessing the effectiveness of different therapies. This is particularly important in orthognathic treatments, since most quality of life models also include measures of change of functional ability (Spilker 1996), which is an important indication for orthognathic treatment as stated in the Consultation draft.

To summarise, having read the SPH Consultation Draft on Orthognathic treatment and also having considered the additional evidence available, **we would urge the Priorities Committees to agree that NHS funding for orthognathic treatment should be RECOMMENDED for the treatment of patients with malocclusion and clinically impaired oral function, such as biting and chewing, and also for the treatment of patients with obstructive sleep apnoea/hypopnoea syndrome (OSAHS).** We would agree that based on currently available evidence, NHS funding for orthognathic treatment for the treatment of speech or articulation problems, or for the treatment of TMJ pain could be considered low priority, until such a time that evidence becomes available to alter this opinion.

We would be happy to discuss any of this in more detail and in person if that would be helpful. Meanwhile we look forward to hearing your response.

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Professor N P Hunt
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