LETTERS TO THE EDITOR

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ORAL HEALTH

Risk definition in halitosis

Sir, we read with great interest the paper *Halitosis: a new definition and classification* (*BDJ* 2014; 217: E1). However, we believe the authors have misunderstood some very important issues.

The International Association for Breath Research¹ has just confirmed the classification described by Miyazaki *et al.* as the international standard.² The International Association for Halitosis Research, previously International Society for Breath Odor Research, has also endorsed this classification.³ The classification defines treatment needs (TN), including zinc-containing mouthwash. If TN 1 or 2 do not work, the dentist may suspect a general condition, and the patient can be easily referred to a specialist for further medical diagnosis. Halitophobia is also easily referred. Since the definitions of extra-oral pathological halitosis and halitophobia are broad, specific skills and a medical licence is not required for dentists to diagnose these conditions. The authors claim that their criteria can make the choice of a specialist for referral much easier, 75% of the criteria are medical, and that multiple diagnoses are possible because three medical criteria are included. The authors conclude that their criteria offer a more precise classification of extra-oral halitosis. However, in order to diagnose using their criteria, there must always be medical specialists involved. Otherwise, dental practitioners will be forced to diagnose these medical conditions themselves, even though dentists cannot legally tell patients that their condition involves a gastroesophageal, airway or blood-borne condition, making these criteria impractical for dentists to use. The standard classification clearly distinguishes between the responsibilities of medical and dental practitioners in order to avoid malpractice, but the authors have removed that distinction.

They have also made large scientific errors. Halitosis can originate in the sinus, tonsils or nose. Following these criteria, the practitioner must diagnose both an

CLINICAL ASSESSMENT

Sir, we read with interest the recent paper by Bots *et al.* (*BDJ* 2014; 217: 80) on the assessment of oral dryness by photographic appearances of the tongue. Perhaps not surprisingly, visual inspection of photographs of tongues was unreliable in diagnosing oral dryness. We would concur with the authors conclusion that 'further clinical inspection of the oral cavity is indicated'.¹

As mentioned by Dr Murray Thomson in his commentary, we have developed a scale for clinical oral dryness² to try and address this exact problem. Most oral healthcare workers who see patients regularly can recognise a number of signs and symptoms which suggest that the patient may have a dry mouth, but assessment of the degree of dryness is notoriously difficult. It is apparent that a reproducible clinical scale of dryness might allow the clinician to determine whether the dryness is mild and could be managed with local measures and advice in the surgery (such as that secondary to xerogenic drugs) or whether it is severe and requires the patient to be referred for further investigation as to the cause and management. It is also important to distinguish between *xerostomia* which is accepted as reflecting symptoms of dryness and *hyposalivation* where a reduced salivary flow is demonstrated. Xerostomia is not always associated with hyposalivation³ which is why attempts to correlate the two are often unsuccessful.

A clinical oral dryness score (CODS) for clinical signs has been developed² and has been found to be reliable and easy to use for routine assessment of the severity of dry mouth.⁴ The scale is

based on ten key features of dry mouth, accompanied by example images, and allocates one point for each feature.² The use of any single feature of dryness for assessment was found to be unreliable. CODS can be incorporated into the routine clinical assessment of dry mouth patients, particularly since the clinician would normally be undertaking most aspects of the clinical assessment routinely. In general practice, a low COD score (1-3) indicates mild dryness manageable normally in practice, whereas a high COD score (7-10) is an indication for referral for further investigation. CODS seems to be closely related to both the unstimulated salivary flow and the thickness of the mucin layer over the epithelium (mucosal wetness) suggesting a physiological basis to the feeling of xerostomia.³

Clinical diagnoses usually require both a clinical history and a clinical examination (often aided by investigations). Xerostomia and hyposalivation would appear to be no exception.

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1. Bots C P, Beest A V, Brand H S. The assessment of oral dryness by photographic appearance of the tongue. *Br Dent J* 2014; 217: E3.
2. King's College London. The Challacombe Scale of Clinical Oral Dryness. 2011. Available at: http://www.dentalhealth.org/uploads/download/resource-files/download_68_1_The%20Challacombe%20Scale.pdf (accessed October 2014).
3. Osailan S M, Pramanik R, Shirodaria S, Challacombe S J, Proctor G B. Investigating the relationship between hyposalivation and mucosal wetness. *Oral Dis* 2010; 17: 109-114.
4. Osailan S M, Pramanik R, Shirlaw P, Proctor G B, Challacombe S J. Clinical assessment of oral dryness: development of a scoring system related to salivary flow and mucosal wetness. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2012; 114: 597-603.

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airway and a gastroesophageal (ironically including the airway) condition. There are three errors: the question arises of whether this constitutes multiple diagnoses, whereas the dentist may easily diagnose it as extra-oral pathological halitosis. The authors also claim that all their criteria

involve physiologic halitosis, but this is not the case: physiologic halitosis is caused only by volatile sulphur compounds produced in the oral cavity. Lastly, because of their misunderstanding of the causes of halitosis, they believe that organoleptic measurements correlate with amines found

physiologically. Their reference did not determine the amines in mouth air but determined salivary amines, which produce almost no volatiles in mouth air.⁴

Their proposed criteria are not realistic for dental practitioners, since medical specialists must always be present to make the multiple diagnoses.

K. Yaegaki, H. Miyazaki, Japan;
E. G. Winkel, the Netherlands;
M. Quirynen, Belgium;
R. Seemann, Switzerland

1. Seemann R, Conceicao M D, Filippi A *et al.* Halitosis management by the general dental practitioner – results of an international consensus workshop. *J Breath Res* 2014; **8**: 017101.
2. Miyazaki H, Aro M, Okamura K *et al.* Tentative classification of halitosis and its treatment needs. [Article in Japanese] *Niigata Dent J* 1999; **32**: 7–11.
3. Yaegaki K, Brunette D M, Tangeman A *et al.* Standardization of clinical protocols in oral malodor research. *J Breath Res* 2012; **6**: 017101.
4. Dadamio J, Van Tornout M, Van den Velde S, Federico R, Dekeyser C, Quirynen M. A novel and visual test for oral malodour: first observations. *J Breath Res* 2011; **5**: 046003.

The authors of Halitosis: a new definition and classification, M. Aydin and C. N. Harvey-Woodworth, respond: Thank you to Winkel et al. for paying attention to our work. This definition and classification paper is a part of our work. As we have previously explained to the reviewers of the BDJ, we are currently preparing one more manuscript on gas measurement method in halitosis patients to estimate the exact location(s) of the major halitosis gases emitted from the patient. Therefore, the diagnosis, treatment of halitosis and patient management protocol according to this new scheme will be discussed in a separate publication. We have emphasised this condition in the first page of our manuscript (see the last sentence of the 'previous definitions' section).

Almost every dentist in the world has been sufficiently trained and has the capacity to manage/refer a halitosis case. Our classification scheme and gas measurement method (not yet published) do not require specific skills, any medical licence or involvement of medical specialists.

In our manuscript, we have: 1) defined, 2) aetiologically classified halitosis by explaining its mechanisms, and 3) revised its terminology but never described any clinical application that may potentially cause malpractice.

Furthermore, as a general rule, every pathologic condition (including halitosis) must be systematically classified according to its aetiology or according to its mechanism but not according to practitioners' capabilities nor according to any particular medical branch.

On the other hand, amines are found in the composition of saliva, and vaporise when saliva dries. They are detectable by gas detectors or organoleptically, known as 'amine breath' or indole breath,¹ nitrogen-containing volatile amines^{2,3} and more.⁴

The classification made by Miyazaki et al. in 1999 does not reflect the multifactorial nature of halitosis and does not clearly cover every clinical situation. There are a lot of logic and terminological problems with their classification but these are not the main topic of this letter. The old classification does not meet the needs of our new gas measurement method. This is the reason why we need to re-classify halitosis before we declare our new gas measurement method in a separate publication.

Our classification has already been widely used by practitioners and patients. It is more logical, memorable, flexible, clear, concise and precise than the old classification. It permits multiple diagnoses, prevents terminological confusion, and is a unique classification that is mechanistic and aetiological!

1. Greenman J, Lenton P, Seemann R, Nachnani S. Organoleptic assessment of halitosis for dental professionals – general recommendations. *J Breath Res* 2014; **8**: 017102.
2. Aylıkçı B U, Colak H. Halitosis: from diagnosis to management. *J Nat Sci Biol Med* 2013; **4**: 14–23.
3. Bollen C M, Beikler T. Halitosis: the multidisciplinary approach. *Int J Oral Sci* 2012; **4**: 55–63.
4. Ongole R, Shenoy N. Halitosis: much beyond oral malodor. *Kathmandu Univ Med J* 2010; **8**: 269–275.

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ORTHODONTICS

Misleading focus

Sir, as long as we continue to treat malocclusion as if it has no effect on the rest of the body, and as long as we believe teeth just are crooked and don't become crooked because of things we do, and as long as we let children grow up (dentally) deformed before we begin to intervene, and until we see that the maxilla collapses in all three dimensions of space even if there is a Class II malocclusion... then we'll never be free.

For the first 25 years of my career as an orthodontist, I too thought I had an open mind. But it was my eyes that were closed. Once you begin to look at the changes to the modern human face that have been amply documented, you will see what the Drs Mew see, and you will be freed of the narrow and misleading focus of the Angle Classification. Not only freed, but empowered to influence the growth of the child's face in ways you've never imagined. We need to look again, not for research, but at the faces you see every day.

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