BY **NINA FARMER**

MAKE EVERY CONTACT COUNT

Making every contact count (MECC) is an NHS initiative with which readers will be familiar.[1] Its goal is to encourage health professionals to have conversations, give advice and inform patients about health and wellbeing topics, such as smoking cessation, alcohol consumption and healthy eating. Starting these conversations, and being able to signpost patients to suitable resources, is all part of holistic care.[2]

Dental professionals are in a fortunate position to help patients in this way. We see our patients regularly, notice changes in them and recognise when something is not quite right: they trust and listen to us when we offer them advice about their health. Dental hygienists and therapists absolutely CAN make every contact count!

In this article, the author shares examples of some oral and general manifestations related to nutrient deficiencies that she has observed in her dental patients.

Vitamin B Complex

B complex is a group of eight vitamins and deficiency is not uncommon. Often called the 'anti stress' or 'energy' vitamins, their role is the conversion of nutrients into energy by supporting enzyme activity, reducing fatigue and supporting brain and central nervous system function. With so many of our patients tired and stressed it is little wonder that it is so common!

Figure 1: **Angular Cheilitis**

Figure 2: **Geographic Tongue**

What might you see?

- Angular cheilitis (Fig 1): this may be due to low B2 (Riboflavin) or B12 (Cobalamin)[3]
- Glossitis: the tongue may be red at the tip, or more widespread and glossier. This can be due to low B12 or B9 (folic acid). A red and inflamed tongue is linked to low B12[4]
- Geographic tongue (Fig 2): currently thought to be caused, on occasions, by low levels of B9, B12 and zinc[5,6]

Who is at risk?

- Patients with restrictive diets, such as vegetarianism and veganism
- Highly stressed patients
- Patients with a high alcohol intake which affects the metabolism of the B vitamins
- Patients taking certain medications including proton pump inhibitors (PPI) [4] and oral contraceptive pills (OCP)[7] which can affect absorption
- Patients with digestive issues. B vitamins are synthesised and absorbed in the small intestine and for this reason alone it is important to sign post these patients. Supplementation may need to bypass the digestive tract either sub lingual under the tongue or via intramuscular injection

Vitamin C

Vitamin C (ascorbic acid) is vital in the production of collagen. A powerful antioxidant, a deficiency will impact wound healing and the function of the immune system.

What might you see?

- Bleeding gums: In milder forms, swollen and bleeding gums have been reported due to low vitamin C status.[8] Scurvy, the main known symptom of severe vitamin C deficiency, is thankfully rare
- Poor wound healing: deficiency of vitamin C may delay healing[9]
- Petechiae or purpura: insufficient levels of vitamin C can impact collagen which can lead to compromised blood vessel walls, causing either petechiae, small red spots that occur when capillaries rupture, or purpura, larger red spots that occur when capillaries rupture. This is sometimes present on the floor of the mouth

Who is at risk?

- Smokers: tend to use up more vitamin C than non-smokers. The anti-oxidant properties manage the free radicals in the inhaled chemicals. Smokers need 35 mg more a day than the recommended daily allowance for a non-smoker[8]
- Patients on restrictive diets: they tend to be lacking in fruits and vegetables. Ideally, they should aim to consume 30-40 portions of fruit and vegetables per week to obtain the required amount of vitamin C
- Highly stressed patients
- Patients suffering from malabsorption issues such as irritable bowel disease[10]

Iron

Iron is a key component of haemoglobin within red blood cells which are vital for the transportation of oxygen around the body. This provides the cells with energy: symptoms of fatigue are often reported when iron is low. Iron also plays an important role in the immune system and a deficiency will impact the risk of infections. [11]

What might you see?

- Pale tissues: a patient's inner eyelids and nailbeds can look pale pink or almost white in colour
- Low energy: a patient will often report feeling exhausted[12]
- Sore tongue: often accompanied by a metallic taste or glossitis[13]
- Headaches: sometimes mentioned along with a shortness of breath and palpitations[12]

Who is at risk?

- Patients on a restrictive diet
- Patients with digestive issues as iron is absorbed in the small intestine
- Women suffering from heavy menstruation or endometriosis
- Patients with Celiac disease, particularly those that are undiagnosed
- Regular blood donors
- Elderly patients
- Parasites and infections as the bacteria use Iron as a substrate

If you suspect your patient is suffering from an iron deficiency, it is best to guide them to their GMP in the first instance. It is unsafe to supplement without knowing the underlying cause. Women who do not menstruate should take care when supplementing with iron as it is stored in the body and can become harmful if recommended levels are exceeded. There are often other deficiencies, or other underlying health issues undetected, and a diagnosis can be life changing for the patient.

Omega 3

Resolvins derived from Omega 3 fatty acids have been found to help resolve the inflammatory processes.[14] An emerging body of clinical and experimental evidence has focused on the underlying molecular mechanisms of

resolvins and particularly Resolvin E1 (RvE1) in periodontitis. Recently, RvE1 has been directly correlated with the resolution of inflammation in periodontal disease.[15] Essential fatty acids also support the central nervous system.[16]

What might you see?

- The patient may have dry flaking skin
- The patient may have flaking and peeling nails
- The patient may have Keratosis pilaris - a bumpy rash often found on the tops of the arms

Who is at risk?

- Patients on restrictive diets such as low fat, vegetarian and vegan
- Patients consuming a diet high in processed food containing large amounts of hydrogenated fats

Ideally, these patients should consume fish twice a week. Other sources of Omega 3 include chia seeds, walnuts and flaxseed.

Magnesium

Magnesium is vital for wellbeing, it plays a role in over 300 processes in the body, one of the most important being the production of adenosine triphosphate (ATP) for cellular energy.

A deficiency will impact its role in: blood sugar balance; bone health; hormones; and the central nervous system.

What might you see?

- Flickering eyelash and / or flickering tongue at rest, which you may notice bouncing under the suction tube during treatment
- Restless leg: or ticks and muscle cramps may be observed

Who is at risk?

- Highly stressed patients
- Patients on some medication: over 100 drugs have been found to decrease Magnesium levels.[17] PPIs and OCP are on that list
- Patients with a highly processed diet

It is recommended that these patients consume green leafy vegetables, nuts, seeds and beans.

There is some evidence that magnesium can be absorbed transdermally[18] so magnesium flakes for a bath or foot bath could be recommended.

Zinc

Zinc is vital for wound healing and healthy epithelial cells, both important for skin and mucosal barriers. It also supports the immune system, growth and development, blood sugar balance and many more processes.[19]

What might you see?

- Smell and taste: deficiency of zinc may result in disturbances to a patient's sense of smell and taste[20]
- Ulceration: Ulcers typical of recurrent aphthous stomatitis may manifest (Fig 3)
- Nails: white flecks on all or most nails may also be noticed

Who is at risk?

- Children due to increased needs with growth
- Pregnant and lactating mothers
- Patients taking iron supplements
- Elderly patients
- Patients with malabsorption
- Patients consuming a processed diet

It is helpful to begin a conversation about the types of foods patients are eating and encourage them to introduce more zinc containing foods such as, shellfish, lamb, nuts, seeds and wholegrains.

Vitamin D

Vitamin D (cholecalciferol) is involved in immune and inflammatory processes and bone health due to its role in calcium absorption. There is good evidence that vitamin D is needed for well-being.

A systematic review by Malik et al 2023 concluded that despite the need for more research, 'qualitative synthesis of the evidence suggests that vitamin D supplements improve oral health outcomes, particularly periodontal health'.[21]

What might you see?

- Fatigue and bone pain: The patient

Figure 3: **Aphthous Stomatitis**

may report feeling regularly unwell and potentially slow wound healing

- Clubbed nails: these are rounded and often grooved down the middle of the thumb

If you ask the patient to place their thumb nails together facing each other and look through, you should see a diamond shape, and this is called the 'window of Schamroth'. A clubbed nail will not be able to produce this shape. It is important to note that note clubbed nails can also be a sign of other underlying health conditions.

Who is at risk?

- Office workers
- The elderly
- Patients with darker skin
- Patients who have little exposure to sunlight
- Patients with certain medical conditions such as autoimmune diseases

It is always wise to signpost the patient to their GMP for testing. Alternatively, they can test at home: https://www.vitamindtest.org.uk/ This NHS lab provide the patient with their results and signpost as necessary.

Vitamin D is a fat-soluble vitamin, so it is stored in the body and a baseline should be detected to ensure safe supplementation.

Closing thoughts

As a nutritional therapist I am quite comfortable talking about nutrition with my patients and I always talk from a food first perspective.[22] I only advise nutritional supplementation when I know the full history and a baseline from functional testing, either privately or through the patient's GMP.

TOP TIPS:

- Familiarise yourself with the signs and symptoms listed above and ask probing questions that may help to fill in the gaps
- Look closely at the patient's medical history- are there any gut health issues?
- Ask about their current stress levels
- Discuss their diet
- However, be mindful when discussing diet with patients. When talking about food groups, try to discuss what to add in to make it better and not what to remove: the patient's relationship with food is often unknown to us and we do not want to unknowingly contribute to disordered eating.
- Signpost accordingly, either to the patient's GMP or to a nutritionist

Author: Nina qualified in 2013 as a dental therapist from Sheffield Dental School and has worked to her full scope since graduating. Nina soon developed a passion for well-being and a holistic approach with her patients and returned to studying and graduated as a nutritional therapist in 2019. Nina loves bringing her passions together, whether it is in the dental surgery with patients or providing workshops, lectures and articles for dental professionals or the general public. Due to a love for teaching and helping others, she completed a post graduate diploma level 7 in Clinical Education, Coaching and Mentoring in November 2024.

Contact: ninafarmer8@hotmail.com

IMAGES COURTESY OF PROFESSOR MIKE LEWIS, EMERITUS PROFESSOR CARDIFF UNIVERSITY

References

1. NHS England. Workforce Training and Education. Making Every Contact Count (MECC). https://www.hee.nhs.uk/our-work/population-health/our-resources-hub/making-every-contact-count-mecc
2. Tardy AL, Pouteau E, Marquez D, Yilmaz C, Scholey A. Vitamins and minerals for energy, fatigue and cognition: a narrative review of the biochemical and clinical evidence. *Nutrients*. 2020;**12(1)**:228. doi: 10.3390/nu12010228. PMID: 31963141; PMCID: PMC7019700. https://pmc.ncbi.nlm.nih.gov/articles/PMC7019700/#sec8-nutrients-12-00228
3. Federico JR, Basehore BM, Zito PM. Angular Chelitis. [Updated 2023 Mar 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK536929/
4. Sands T, Jawed A, Stevenson E, Smith M, Jawaid I. Vitamin B12 deficiency: NICE guideline summary. *BMJ*. 2024;385. https://www.bmj.com/content/385/bmj.q1019
5. Mumtaz H, Ghafoor B, Saghir H, Tariq M, Dahar K, Ali SH et al. Association of Vitamin B12 deficiency with long-term PPIs use: A cohort study. *Ann Med Surg*. 2022;**82**:104762. doi: 10.1016/j.amsu.2022.104762. PMID: 36268318; PMCID: PMC9577826. https://pmc.ncbi.nlm.nih.gov/articles/PMC9577826/
6. Khayamzadeh M, Najafi S, Sadrolodabaei P, Vakili F, Kharrazi Fard MJ. Determining salivary and serum levels of iron, zinc and vitamin B12 in patients with geographic tongue. *J Dent Res Dent Clin Dent Prospects*. 2019;**13(3)**:221-226. doi: 10.15171/joddd.2019.034. Epub 2019 Oct 7. PMID: 31857869; PMCID: PMC6904920. https://pmc.ncbi.nlm.nih.gov/articles/PMC6904920/#s5
7. Berenson AB, Rahman M. Effect of hormonal contraceptives on vitamin B12 level and the association of the latter with bone mineral density. Contraception. 2012;86(5):481-487. doi: 10.1016/j.contraception.2012.02.015. Epub 2012 Mar 28. PMID: 22464408; PMCID: PMC3410054 https://pmc.ncbi.nlm.nih.gov/articles/PMC3410054/
8. Murererehe J, Uwitonze AM, Nikuze P, Patel J, Razzaque MS. Beneficial effects of Vitamin C in maintaining optimal oral health. *Front Nutr*. 2022;**8**:805809. doi: 10.3389/fnut.2021.805809. PMID: 35083263; PMCID: PMC8784414. https://pmc.ncbi.nlm.nih.gov/articles/PMC8784414/
9. Tembunde Y, Ge S, Turney K, Driscoll M. Scurvy: A diagnosis not to be missed. *Cureus*. 2022;**14(12)**:e33050. doi: 10.7759/cureus.33050. PMID: 36721542; PMCID: PMC9881687. https://pmc.ncbi.nlm.nih.gov/articles/PMC9881687/
10. Wallace HA, Basehore BM, Zito PM. Wound Healing Phases. [Updated 2023 Jun 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470443/#https://www.ncbi.nlm.nih.gov/books/NBK470443/

11. Yilmaz B, Li H. Gut microbiota and iron: The crucial actors in health and disease. *Pharmaceuticals*. 2018;**11(4)**:98. doi: 10.3390/ph11040098. PMID: 30301142; PMCID: PMC6315993. https://pmc.ncbi.nlm.nih.gov/articles/PMC6315993/
12. NHS. Iron deficiency anaemia https://www.nhs.uk/conditions/iron-deficiency-anaemia/
13. Uwitonze AM, Murererehe J, Rehman M, Chittilla M, Uwambaye P, Mohammed S, Razzaque MS.. Oral manifestations of iron imbalance. *Front Nutr.* 2023;**10**:1272902. doi: 10.3389/fnut.2023.1272902 https://pmc.ncbi.nlm.nih.gov/articles/PMC10611504/
14. Liu C, Fan D, Lei Q, Lu A, He X. Roles of resolvins in chronic inflammatory response. *Int J Mol Sci.* 2022;**23(23)**:14883. doi: 10.3390/ijms232314883. PMID: 36499209; PMCID: PMC9738788https://pmc.ncbi.nlm.nih.gov/articles/PMC9738788/#sec7-ijms-23-14883
15. Balta MG, Loos BG, Nicu EA. Emerging concepts in the resolution of periodontal inflammation: a role for resolvin E1. *Front Immunol.* 2017;**8**:1682. doi: 10.3389/fimmu.2017.01682. PMID: 29312286; PMCID: PMC5735081. https://pmc.ncbi.nlm.nih.gov/articles/PMC5735081/
16. Wysoczański T, Sokoła-Wysoczańska E, Pękala J, Lochyński S, Czyż K, Bodkowski R et al. Omega-3 fatty acids and their role in central nervous system - a review. *Curr Med Chem.* 2016;**23(8)**:816-31. doi: 10.2174/0929867323666160122114439. PMID: 26795198. https://pubmed.ncbi.nlm.nih.gov/26795198/
17. Lukens BE, Dipan R. Drug-induced Magnesium Deficiency. *The Journal for Nurse Practitioners.* 2016; **12(7)**:496 – 497 https://www.npjournal.org/article/S1555-4155(16)30065 -4/abstr
18. Kass L, Rosanoff A, Tanner A, Sullivan K, McAuley W, Plesset M. Effect of transdermal magnesium cream on serum and urinary magnesium levels in humans: *A pilot study. PLoS One.* 2017;**12(4)**:e0174817. doi: 10.1371/journal.pone.0174817. PMID: 28403154; PMCID: PMC5389641. https://pmc.ncbi.nlm.nih.gov/articles/PMC5389641/#sec022
19. Roohani N, Hurrell R, Kelishadi R, Schulin R. Zinc and its importance for human health: An integrative review. *J Res Med Sci.* 2013;**18(2)**:144-157. PMID: 23914218; PMCID: PMC3724376. https://pmc.ncbi.nlm.nih.gov/articles/PMC3724376/
20. Yagi T, Asakawa A, Ueda H, Ikeda S, Miyawaki S, Inui A. The role of zinc in the treatment of taste disorders. *Recent Pat Food Nutr Agric.* 2013;**5(1)**:44-51. doi: 10.2174/2212798411305010007. PMID: 23305423. https://pubmed.ncbi.nlm.nih.gov/23305423/
21. Ab Malik N, Mohamad Yatim S, Mokhtar KN, Md Ramli SNR, Dissanayaka WL, Pelekos G, McGrath C. Oral health and vitamin D in adult: a systematic review. *Br J Nutr.* 2023;**129(2)**:218-230. doi: 10.1017/S0007114522000964. Epub 2022 Apr 13. PMID: 35416136. https://pubmed.ncbi.nlm.nih.gov/35416136/
22. Institute of Medicine. Food and Nutrition Board. Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids . Washington, DC: National Academy Press, 2000. https://ods.od.nih.gov/factsheets/VitaminC-HealthProfessional/

Cite this article:

Farmer N. Make every contact count. Dental Health 2025;64(3):24-27. https://doi.org10.59489bsdht160