A mixed national picture
The current state of periodontology in the UK and why there needs a lot to be done
By Prof. Francis Hughes, London

Periodontal disease has now been associated with risk of a number of other systemic conditions, most notably cardiovascular and cerebrovascular disease, among many other conditions. It has been clearly shown that periodontal disease causes a measurable systemic inflammatory response but it is not at all clear that periodontal treatment actually reduces the risk of these conditions, or whether the conditions are associated through common factors such as genetic predisposition. Nevertheless, given the importance of these systemic conditions it is recommended that periodontal health should be regarded as part of general health.

Manpower
Clearly there remains a major, often unmet, periodontal treatment need within the UK population, which represent a significant challenge for dental health professionals. There are currently over 30,000 registered dentists and over 6,000 dental hygienists in the country. In addition, there are approximately 900 periodontists on the specialist list, who work mainly in private specialist practices or in the hospital and university services. Given that there are an estimated five million cases of moderate to severe periodontitis, and perhaps 20 to 30 million with some signs of periodontal disease, it would appear that these relative proportions of dental manpower are not currently ideally suited for the provision of primary and secondary periodontal care according to actual clinical needs. There are of course a significant but unknown number of general dentists who provide a degree of periodontal treatments that might otherwise be considered to be at secondary care level.

The number of specialist periodontists in training is small (certainly less than 20 every year), which is probably insufficient to maintain the total number on the specialist list over time. There is considerable interest and some commitment to providing a group of dentists with additional skills in specific restorative specialties including periodontology, who could potentially...
meet much of the treatment need for secondary care periodontal treatment, but this group does not really exist at the present time. It should also be commented that this model of periodontal care provision does remain essentially untested on a large scale at present.

Overall the picture of periodontal care provision in the UK at present is mixed at best. In most areas of the country, those choosing to seek their periodontal care from the private sector, are able to access specialist care from highly trained periodontists and their teams, who often provide a wide range of effective and sophisticated treatment options. However, outside the dental schools there is little or very patchy access to specialist treatment services within the NHS. Recognition of this manpower deficit and a move to address it through intermediate level training in periodontal therapy is an encouraging but still unproven development.

Possibly the most important health professional for the implementation of primary prevention are dental hygienists. Although there is little evidence on deployment of hygienists within primary care, anecdote suggests that they may spend much of their time removing supragingival calculus (as prescribed by their employing-dentists) without any routine attention to properly targeted attempts to provide adequate personalised oral hygiene instruction. Indeed the whole issue of the routine ‘scale and polish’ as a therapeutic intervention has been questioned and is the subject of current research projects whose findings are yet to be reported.

**Implantology**

Many aspects of implantology, including surgical management, management of soft and hard tissues, and management of peri-implant health and disease, are squarely within the realm of periodontal treatments, and implantology is indeed a substantial component of specialist training in periodontology. Whilst the growth in implant treatments has been markedly slower than in many other European countries, there is now a large and ever growing use of dental implants in UK dental practice and wider acceptance from significant numbers of patients of the value of implants and their potential cost/benefits. It is not clear that implant treatment could never be met within the National Health Services as the costs could potentially swallow much of the total NHS budget. However some recognition of the clinical needs and cost/benefits on a more individual basis even within the NHS dental services would appear to be inevitable in the future.

There are two major developing issues, which are partly related to each other, which may particularly affect the periodontist practicing implant dentistry. Firstly, there is the growing problem of peri-implantitis. Reported prevalence rates of long standing implants vary but are typically on the region of 30%. This progressive destructive condition creates particular problems as it appears to be much more difficult to manage than its first cousin, periodontitis. As many more implants have been placed for a number of years there is great concern about the growth of this condition.

Secondly, apparently oblivious to the above problems and an understanding of long term survival rates of teeth and implants, there is a disturbing trend amongst some to advocate early removal of diseased teeth and replacement by implants. There may be some short term gains for the dentist and/or patient to be had from this approach but it is a sure way to store up major new problems for the future.

So there remains a lot to do to tackle periodontal disease in the UK. One of the most encouraging developments in the near future is the development of care pathways within the General Dental Services which place considerable emphasis on prevention, risk factor management and tackling early periodontal disease, as well as mapping out appropriate care pathways for those in need of more involved periodontal treatment. This will inevitably be painful for some as it represents a new way of service delivery based on evidence based outcomes. However it also carries with it the prospects for better provision of higher level periodontal care, particularly if the planned development of dentists with some specialist skills is successful.

**Challenges remain**

The challenge of managing periodontal disease in an increasingly ageing population is likely to become a major issue going forward, and at time the profession will have to consider how it interacts with general medical services, for example in screening and detection of the currently estimated 750,000 people in the UK who may have undiagnosed diabetes.

The private sector looks set to increase its provision of specialist periodontal care and implant provision. The challenges of long term implant survival and management of peri-implant disease will present new challenges for many. There will undoubtedly be novel treatments and developments which we can only speculate on.interesting times indeed but there is lots to do.

Francis Hughes is Professor of Periodontology at Kings College London and Chair of the European Congress of Periodontology Conference in London. He can be contacted at francis.hughes@kcl.ac.uk.
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Knowledge can save lives
Understanding and treating patients with eating disorders

By Linda Douglas, Canada

The UK has the highest rate of eating disorders in Europe. Recent figures suggest that one in 100 British women have a clinically diagnosed eating disorder. In the US, anorexia nervosa is the third most common chronic illness among adolescents. Eating disorders occur mostly in females aged 15–25, but also occur in males, in children as young as 7 years of age, and in people aged over 50.

As one of the most common eating disorders, bulimia nervosa is characterised by a pattern of consumption of massive amounts of food (binge eating) and recurrent inappropriate weight control behaviours. These include purging through self-induced vomiting, abuse of laxatives and other substances, as well as behaviours such as fasting (not eating) and excessive exercise.

Table 1: Medical complications of eating disorders

<table>
<thead>
<tr>
<th>Complication</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Skin (especially with anorexia)</strong></td>
<td>Extremely dry, scaly, itchy skin with a grey cast, increased lanugo hair, fine hair on the body and arms (the body’s attempt to retain heat after excessive loss of body fat)</td>
</tr>
<tr>
<td><strong>Digestive system</strong></td>
<td>Dehydration, malnutrition, gastritis, puncture wounds of the colon, stomach perforation, or Mallory–Weiss lesions (gastro-oesophageal laceration syndrome), due to vomiting</td>
</tr>
<tr>
<td><strong>General</strong></td>
<td>Muscle weakness, hypoglycaemia, anaemia, low white blood cell count, impaired immunity, slow metabolism, osteoporosis, loss of muscle mass, causing stick-like limbs</td>
</tr>
<tr>
<td><strong>Extremities</strong></td>
<td>Clubbed fingers, related to cardiac complications or overuse of laxatives, cold hands and feet related to peripheral vasoconstriction, related to forced vomiting</td>
</tr>
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Knowledge can save lives. We need to instigate timely interventions, to minimise damage to the oral hard and soft tissue, and initiate medical referral for access to specialists in treating eating disorders.

Heart and major organs
- Cardiac arrhythmias, and cardiac arrest related to electrolyte imbalance, especially low potassium, dehydration, or starvation-induced atrophy of the myocardium
- Slow pulse rate
- Low blood pressure
- Impaired capacity to think, due to starvation-related brain changes
- Kidney damage
- Liver damage due to starvation or substance abuse
- Hypothyroidism
- Infertility related to amenorrhoea

Digestive system
- Abdominal pain
- Chronic constipation
- Poor muscle tone of the colon, and incontinence related to misuse of laxatives
- Ruptured oesophagus, or Mallory–Weiss lesions
- Gastric bleeding
- Stomach might rupture during bingeing
- Swollen parotid glands and sore throat related to purging

General
- Dehydration, malnutrition
- Fatigue
- Electrolyte imbalance
- Hypoglycaemia
- Anaemia
- Low white blood cell count, and impaired immunity
- Slow metabolism
- Osteoporosis
- Loss of muscle mass, causing stick-like limbs

Skin (especially with anorexia)
- Extremely dry, scaly, itchy skin with a grey cast
- Decreased scalp hair, which is short and brittle
- Increased lanugo hair—fine hair on the body and arms (the body’s attempt to retain heat after excessive loss of body fat)
- Bloodshot eyes and broken capillaries (petechiae) of the skin around the eyes, related to forced vomiting

According to the US National Institute of Dental and Craniofacial Research, 28 per cent of patients with bulimia are first diagnosed at a dental appointment. Although dentists are in an ideal position to detect the warning signs of eating disorders, research has found that knowledge of the oral and physical signs of these conditions is often limited.

Nevertheless, we have an ethical obligation to increase our knowledge and participate in secondary prevention of eating disorders, as it could improve prognosis and even be a life-saver for some patients. Research has shown that such disorders have the highest mortality rate of all psychiatric illnesses. We need to instigate timely interventions, to minimise damage to the oral hard and soft tissue, and vary our knowledge and participate in secondary prevention of eating disorders, as it could improve prognosis and even be a life-saver for some patients. Research has shown that such disorders have the highest mortality rate of all psychiatric illnesses. We need to instigate timely interventions, to minimise damage to the oral hard and soft tissue, and initiate medical referral for access to specialists in treating eating disorders.
ing for at least 4 hours) or excessive exercise. The weight of bulimic individuals tends to fluctuate, but remains within normal limits. About one-third of bulimics have a history of anorexia nervosa, and some have a history of obesity.

During binging, bulimic individuals usually consume between 1,500 and 3,000 calories within 1 or 2 hours, and have been known to consume as much as 40,000 calories in one bulimic binge. They typically eat sweet, high-calorie foods, which are easy to consume quickly, like ice cream. This is followed by depression, panic and guilt, and a compulsion to purge. These episodes occur at least twice weekly over a period of several months. Some bulimics even vomit five or six times per day. Most bulimics who die do so in the act of purging.

Anorexia nervosa is characterised by a refusal to eat enough to maintain body weight within 15 per cent of the minimal normal weight for age and height (the anorexic individual is often 20 per cent to 40 per cent below a healthy body weight). They have an extreme fear of gaining weight, and a distorted body image, which results in patients believing that they are fat, even when they are emaciated, and amenorrhoea (absence of menstruation). A significant number of anorectic individuals also purge, and some have pica; they may consume cotton balls soaked in orange juice, for example, to control hunger. The main difference between bulimia nervosa and purging anorexia is that the individual with anorexia is underweight.

Binge-eating disorder is characterised by frequent consumption of abnormally large amounts of food in one sitting, while feeling a loss of control over eating. Individuals with this disorder do not purge afterwards, but feel depressed and guilty after overeating. Most individuals with binge-eating disorder are obese, with the related increased risks of obesity.

Contributing factors, however, include living in a culture where thinness is generally admired. There are indeed unrealistic depictions of beauty and thinness in most media. At about 6 feet (1.82 m) tall and 117 pounds (53.07 kg), today's fashion model is indeed the ideal. There are indeed unrealistic depictions of beauty and thinness in most media. At about 6 feet (1.82 m) tall and 117 pounds (53.07 kg), today's fashion model is indeed the ideal.

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Aetiology

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Vomit has a pH of about 3.8. During purging, the vomit hits the palatal aspects of the maxillary anterior teeth. Dental erosion due to purging by vomiting becomes apparent about six months after onset. It eventually undermines the palatal surfaces and leads to incisal fractures and chipping, and over-eruption of the mandibular anterior teeth. Erosion also occurs in the posterior teeth, causing perimolysis: tooth tissue surrounding restorations is eroded, leaving the restorations with a raised, island-like appearance. Eroded occlusal contacts also lead to loss of vertical dimension.

Bulimics tend to consume foods high in refined carbohydrates, and individuals with eating disorders often consume acidic diet beverages. Therefore, they have a high caries risk and impaired salivary buffering capacity. Dental hypersensitivity is also common. The loss of bone density increases the risk of jaw fracture during extractions.

Dental management of patients with eating disorders

Medical treatment of eating disorders includes nutritional therapy to treat the medical complications and the starvation-related brain changes that perpetuate the illness. This is combined with psychotherapy and medication, such as antidepressants. Individuals with eating disorders also need regular dental visits in a supportive environment, for continuing care. They must be regarded as medically compromised, owing to the risk of grave medical complications, particularly cardiac arrest due to electrolyte imbalance.

Thorough clinical assessment includes general appraisal, which begins the moment we greet our patient. We should tactfully observe his or her general demeanour, gait, and facial symmetry. The skin should also be observed for lesions and pallor, and the hands for Russell’s sign or clubbed fingers. A comprehensive medical history is needed, as well as monitoring of the vital signs. Extra-oral and intra-oral examination, as well as examination of the oral hard and soft tissue, is needed, plus comprehensive documentation that includes detailed clinical notes, periodontal charts, radiographs, intra-oral photographs and study models to monitor damage.

When an eating disorder is suspected, this sensitive topic needs to be approached in a non-judgemental, non-threatening manner. It is beyond our scope of practice to diagnose eating disorders, but we can present the findings of our examination to the patient. If he or she discloses his or her eating disorder to us, he or she should be referred to his or her physician. If he or she is not ready to tell us, we can still be supportive and initiate

<table>
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<tr>
<th>Depression, anxiety</th>
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<tr>
<td>Perfectionist, overachiever</td>
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<tr>
<td>Low self-esteem</td>
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<tr>
<td>Mood swings</td>
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<tr>
<td>Guilt, shame</td>
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<tr>
<td>Alienation, loneliness</td>
</tr>
<tr>
<td>Social isolation</td>
</tr>
<tr>
<td>Eating alone</td>
</tr>
<tr>
<td>Compulsive behaviours</td>
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<tr>
<td>Misperception of hunger and satiation</td>
</tr>
<tr>
<td>Obsessive thoughts about food, calories and weight often weighing themselves several times per day</td>
</tr>
<tr>
<td>Secrecy and denial of their illness: individuals with anorexia nervosa often dress to hide their body shape, and they might put coins in their pockets when being weighed</td>
</tr>
<tr>
<td>They often claim to have food allergies in order to justify their restrictive diet</td>
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<tr>
<th>Psychological aspects of eating disorders</th>
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Table 2: Psychological aspects of eating disorders

The loss of bone density increases the risk of jaw fracture during extractions.
a prevention protocol based on our clinical findings.

Definitive dental restorations cannot be completed while a patient is purging regularly, as acid erosion will compromise the restorations. Only essential restorative work should be done, to limit tooth damage and keep the patient free of pain. Pending the patient’s recovery from his or her eating disorder, the dental hygienist can provide interventions to limit damage to the oral hard and soft tissue, and relieve xerostomia and dental hypersensitivity. During dental hygiene appointments, such patients should be polished with a non-abrasive fluoride paste. A protocol to reduce caries risk should include in-office fluoride varnish applications, plus self-applied neutral fluoride, and calcium and phosphate products, such as Novamin, Recaldent and nano-hydroxyapatite, to remineralise and desensitise.

Xylitol-containing products, such as toothpastes, gum and candies, are also beneficial. When used for 5 minutes, five times per day, they stimulate salivary flow, reduce the oral population of cariogenic bacteria, and reduce oral acidity. Patients should brush three times per day with a soft brush and a toothpaste containing 5,000 ppm fluoride. They should clean the interproximal embrasures daily and clean their tongue too, to remove biofilm and acid residue.

A mouth guard can be used to protect the dentition during vomiting. Brushing directly after vomiting causes more loss of tooth structure, and rinsing with water reduces the protective properties of the saliva. Instead, the oral pH should be neutralised by rinsing with one teaspoon of sodium bicarbonate in 250 ml water, or with a product containing calcium and phosphate ions. For additional support, we can share information on resources for those who struggle with eating disorders. With increased knowledge and vigilance, dental care professionals can enhance detection of warning signs of eating disorders, for improved patient care and favourable outcomes.

Editorial note: A complete list of references is available from the publisher.
Avoiding irreversible dental treatment

Types of orofacial pain and understanding them correctly

By Prof. Joanna Zakrzewska, London

Pains is one of the most complex health conditions encountered, as it affects not only the sufferers, but also the community in which they live. It is often associated with other co-morbidities, especially anxiety, depression and chronic pain elsewhere. In the orofacial region, the most commonly reported pain is dental, and this inevitably requires a visit to a dentist, who in most instances can provide a cure. However, there are other pains encountered in the orofacial region that can become chronic, defined as pain that has been present for over three months. These pains need to be diagnosed correctly, as their management is different.

At present, we have no biomarkers for chronic pain, and the only way we can make a diagnosis is to listen carefully to the history the patient gives. We need to elicit the key features of pain, for example onset, duration, location, severity, character, provoking and relieving factors, as well as the impact on quality of life and activities of daily living. It is essential to determine the presence of other illnesses, especially other chronic pain. Chronic orofacial pain has a significant psychological impact, as the face used to express pain from other parts of the body is now in pain itself. Patients with chronic orofacial pain are also confused as to whom they should consult, a dentist or a doctor. Their choice of health care provider will significantly affect both first-line treatment and subsequent referral.

Pain is notoriously difficult to communicate and poor communication of pain is cited as the main barrier to treatment and management. This “unsharability” of pain can be correlated with its resistance to language. This results in an intense burden of suffering and isolation for the individual. It is often associated with other co-morbidities, especially anxiety, depression and chronic pain elsewhere. Patients with musculoskeletal pain will use words such as “heavy”, “aching” and “nagging”, whereas those with neurological causes will describe their pain as “burning”, “pins and needles”, “shooting” and “stabbing”. We also try to measure pain using a scale of 1 to 10, but do these verbal measures really capture the experiences of those with facial pain? This question recently led to a project with a visual artist to create photographic images of pain. Thus images were co-created by the artist Deborah Padfield and facial pain sufferers, aiming to reflect the individual experience of pain. A selection of these images were then made into pain cards, which are now being used with other pain patients to help improve mutual understanding and communication between doctors and patients. They appear to be helpful in describing the characteristics of the pain, as well as initiating discussions about its impact.

Once a dental or oral mucosal cause of pain has been excluded, the commonest cause of pain in the lower part of the face is temporomandibular disorders (TMD). TMD can present as clicking or locking of the jaw and can come on suddenly. It can present on only one side or both. Pain in the muscles of mastication with or without pain in the joint itself is the commonest form of this group of disorders. It is very common and up to 20 per cent of cases can become chronic.

The pain is centred in the pre-auricular area and can spread down the mandible and neck, as well as up to the forehead. It can be associated with clicks on opening or closing and rarely with reduced opening. The pain is described as dull, aching, sore and occasionally sharp. When the main muscles are palpated, the same character pain is elicited. A careful history is essential in order to identify any potential red flags. It is important to check for possible temporal arteritis in anyone over the age of 50 having his or her first episode, as prompt treatment with steroids is required to prevent blindness. Any history of malignancy, neurological deficits, weight loss or severe trismus will require prompt investigation.

Traditional TMD has been managed by dentists with the provision of a variety of intra-oral appliances. They do provide pain relief, but this may be due to the natural history of the condition. Current data from the world’s largest study on TMD in the US has highlighted that the most common provoking factors are psychosocial. There is increasing evidence that patients with TMD also experience pain in other parts of the body and are more likely to be headache and migraine sufferers. This data therefore suggests that our approach to management of these conditions needs to be radically changed to include a more holistic approach as described below.

A condition with increasing incidence is persistent dentoalveolar pain, also known...
Orofacial pain can have many non-dental causes. As atypical facial pain. This is pain in the region of the teeth and/or tooth-bearing area in which a dental cause cannot be identified. In some cases, the pain is related to nerve injury. This can occur after extraction of teeth, especially third molars, as well as after root canal work, implants or facial trauma.

This pain is often not identified and leads to extensive irreversible, unnecessary dental treatment. It is probably a neurogenic pain and so needs to be managed in the same manner as other reported neurogenic pains according to guidelines. Drugs such as anti-depressants and anti-convulsants are helpful, opioids are of no help in these conditions. However, management with medications alone is insufficient. Patients need to be given an explanation about pain and how it is influenced by past experiences, mood, attention, significant life events, as well as genetic variability.

Evidence shows that chronic pain outcomes are improved when a biopsychosocial approach is used. Cognitive behaviour therapy needs to be delivered by multidisciplinary teams that include clinical psychologists and physical therapists.

Pain that remains intra-oral and does not radiate externally is burning mouth syndrome. This is defined as a burning pain or discomfort often present continuously on the tongue and other parts of the oral mucosa. There are no local or systemic factors to account for this pain, and often it is associated with altered taste and changes in salivary flow. Its highest incidence is in perimenopausal women, and so it had for many years been labelled as a psychological pain; however, recent research has now shown that this is also a neurogenic pain with abnormalities especially in perception of warmth and cold.

There have been a number of randomised controlled trials performed, but the evidence of any efficacy is low. Cognitive behaviour therapy is effective, especially if it includes a careful explanation of the potential causes of this condition and a reassurance that it is not cancerous.

Another rare pain that dentists often see is trigeminal neuralgia. It is defined as a “sudden, usually unilateral, severe, brief, stabbing, recurrent pain in the distribution of one or more branches of the fifth cranial nerve” that is provoked by light touch activities. It has a highly significant impact on quality of life and if poorly managed leads to depression. In some rare cases, it is caused by multiple sclerosis or tumours, but its cause is unknown in the majority of patients. Many patients will have compression of the nerve inside the skull. The pain often presents in the mouth, leading patients to believe that the cause is dental and to ask dentists to investigate.

Again, many patients will undergo unnecessary irreversible treatment until patient or dentist realises that it is non-dental. In the early stages, the pain is highly responsive to anti-convulsants, either carbamazepine or oxcarbazepine, and all guidelines suggest this as the first-line drug type. However, for trigeminal neuralgia, there is a wide range of treatments, both medical and surgical, and so patients need to be seen not only by neurologists or oral physicians, but also by neurosurgeons. In correctly diagnosed patients, surgical outcomes can give the longest pain relief periods.

It is increasingly important that dentists recognise that there are many non-dental causes of orofacial pain. Time needs to be spent in eliciting a careful history, and irreversible dental treatment must be avoided. Chronic orofacial pain patients will have better outcomes if managed by specialist teams with multidisciplinary staff.

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