

# Manpower planning in periodontology – how many specialists do we need?

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## IN BRIEF

- Highlights which patients may need a periodontal specialist opinion.
- Estimates the potential periodontal treatment need that exists in the adult population, using national survey data.
- Considers the manpower required to meet this treatment need.
- Discusses the need for better manpower planning to deal with periodontal disease in the UK.

Given that one of the major focus points within this issue of the journal is 'practical periodontal medicine' and the relationship between periodontal disease and systemic chronic diseases, it is surprising that we have no indication of the manpower required to secure better oral and general health in this field. Despite many of the heralded improvements in dental health reported in the Adult Dental Health Survey 2009, as monitored by the falling rates of edentulous subjects and decayed, missing and filled teeth (DMF), the overall increase between 1998 and 2009 in the number of subjects with deep pockets from 6% to 8% has largely gone unnoticed! This is a major concern given that most other indicators of oral health have improved over this time period. Furthermore, the tissue damage associated with periodontitis is largely irreversible, and has consequences not only for oral function and quality of life, but also may adversely impact on aspects of general health. This article aims to highlight why we need specialists in periodontics, which patients should be referred to them, how big a problem periodontal disease is and how many specialists in periodontics would be required to meet this treatment need. Estimates are made using the information gained from the Adult Dental Health Survey 2009 and the Office for National Statistics 2011 census, along with estimates of the average patient pool managed within specialist periodontal practices. However, the paper emphasises that these are estimates based on incomplete information which would be necessary to allow more complete models of manpower planning to be used.

## WHY DO WE NEED SPECIALISTS AND SPECIALIST LISTS?

Prior to the General Dental Council (GDC) introducing the specialist list in periodontics in 1998, there were dentists and dental practices which advertised themselves as 'restricted to periodontics'. This suggested some degree of expertise in the subject, whereas, in reality, somebody could qualify with a BDS degree on one day and then advertise themselves in this way the following day. There were a number of very good well-established practices, where the dentists had received appropriate postgraduate education in order to be considered as specialists in their field. However, there were no requirements for such training and no minimum standards. This was one of the

drivers behind the publication of the Chief Dental Officer's report,<sup>1</sup> which made recommendations on the introduction of specialist lists. One of the fundamental components of this was to safeguard the public, by ensuring that any dentist on a specialist list had met certain conditions and minimum requirements of training to permit them to use the title 'specialist'.

The current recommendations on training can be found on the GDC website<sup>2</sup> which outlines the agreed curricula for the 13 dental specialties currently recognised in the UK. For periodontics, the curriculum was most recently agreed in 2009/2010 and will be due for an update in 2015. The curriculum highlights that 'the usual training period will be three years (4,500 hours) whole time, or agreed equivalent within the framework of a less than full-time training programme. The programme content should be apportioned approximately as 60% clinical, 25% academic and 15% research. This time allocation is flexible and will depend upon the capacity of the trainees to complete the curriculum to a competent level'. It is also stated that the specialist training should follow on from a minimum of two years of basic dental foundation training.

## WHO SHOULD RECEIVE TREATMENT FROM A SPECIALIST IN PERIODONTICS?

This is a difficult question to answer, as clearly it depends upon the interest and level of competence of the dental practice team providing overall dental care for each individual patient. Nevertheless, we can look for guidance in four publications produced by the British Society of Periodontology (BSP), which are available on their website:<sup>3</sup>

- Young Practitioners' Guide to Periodontology 2012
- Basic Periodontal Examination (BPE) 2011
- Parameters of Care 2011
- Guidelines for Periodontal Screening and Management of Children and Adolescents Under 18 Years of Age 2012 (jointly published by the British Society of Periodontology and The British Society of Paediatric Dentistry).

Plans for care teams with a specialist in periodontics leading a service provided by dentists with a special interest in periodontics along with hygienists/therapists and oral health educators are being discussed and will influence workforce plan modelling. The *Parameters of care* document highlights

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that it is the responsibility of the dentist to monitor/screen patients regularly for the presence of periodontal diseases. Failure to do this, or to show evidence that this has been performed, is an increasing area of the work undertaken by the medical and dental defence organisations involving claims of negligence against dentists. Having undertaken the clinical examination, the dentist may need to use relevant radiographs to help make a diagnosis and formulate an appropriate treatment plan. The treatment plan (including consideration of the various options that may be appropriate) should be discussed and agreed with the patient. The treatment should then be undertaken and the outcomes monitored.

Having made an appropriate diagnosis, or at least assessment of the periodontal status, the dentist may view that the clinical situation is beyond the scope of his/her treatment capabilities and therefore decides to refer the patient to either a specialist in periodontics or a hospital consultant. Guidance on referral policy is given in the BSP *Parameters of care* document.<sup>3</sup> This indicates that a referral may be initiated because of:

- The severity of disease and complexity of treatment required
- The patient's desire to see a specialist for specialist treatment
- The GDP's knowledge, experience and training to treat patients with a range of periodontal outcomes
- Complicating factors such as the patient's medical history.

The British Society of Periodontology has also given general guidance on the interpretation of the BPE scores as outlined in Table 1. The BPE originated from an epidemiological/public health background and evolved from the periodontal screening procedure that was originally described as the Community Periodontal Index of Treatment Needs (CPITN). The advantage of the BPE is that it is relatively quick and easy to perform, and it is understood by clinicians around the world. On the other hand, as it only records the most severe score in each sextant, it does not provide complete information on the periodontal status in patients with periodontitis. For this reason, when BPE codes of 3 or 4 are detected, more detailed periodontal charting is required (as specified in the BSP guidance document).<sup>3</sup>

In broad terms, BPE scores can be helpful in determining the level of treatment that a patient might require, but as noted in the BSP guidance document, interpreting the BPE scores depends on many factors that are unique to each patient. It is important, therefore, that the clinician uses their skill,

knowledge and judgement when interpreting BPE scores and considers these together with other factors when making decisions about whether to refer. Having said this, patients who exhibit codes 0-2 should generally be treated by oral hygiene advice and removal of plaque retentive factors by the dentist or hygienist/therapist at the patient's practice. Codes 3 can generally be treated by providing treatment as outlined for codes 0-2 above, plus some extent of root instrumentation by the dentist or hygienist/therapist at the patient's practice. Code 4 along with the \* code (representing furcation involvement of teeth) requires more complex periodontal treatment and referral to a periodontal specialist may be indicated. This is not necessarily always the case, however, as again it will be dependent upon the interest and expertise of the team providing services at the patient's dental practice. This is particularly relevant when we start introducing the concept of care teams and of the 'dentist with a special interest in periodontics'.

### HOW WIDESPREAD A PROBLEM IS PERIODONTAL DISEASE?

We do not have good epidemiological data on the extent and prevalence of periodontal diseases within the UK. The best data that we have comes from the Adult Dental Health (ADH) Surveys. While the methodology used for assessing periodontal status varied in the earlier ADH surveys (1978, 1988) a consistent examination and evaluation process for periodontal health was used in the two most recent ADH surveys (1998, 2009). The authors of the 2009 report<sup>4</sup> identified that the periodontal examination was one of the more taxing elements of the data collection process, in the challenging field conditions, particularly when compared to recording information derived from questionnaires, or simple examination of whether a tooth is present in the mouth or not. Periodontal examinations are complex and demanding, and can suffer from significant inter-operator variation, which benefits from training and calibration of examiners. All these features were recognised by the authors of the report who indicated that 'the results are likely to underestimate rather than overestimate the prevalence of the condition'. The examination within the ADH survey also represented a partial mouth scoring system (only two sites were measured per tooth) and it is well recognised in the periodontal literature that such systems underestimate the prevalence of periodontal disease.<sup>5</sup> Given these shortcomings, the benefit of the ADH data is that the ADH surveys have been undertaken every ten years and represent a much larger sample of patients than any

**Table 1** General guidance from the British Society of Periodontology on the interpretation of the Basic Periodontal Examination (BPE) scores

Code	Interpretation
0	No need for periodontal treatment
1	Oral hygiene instruction (OHI)
2	OHI, removal of plaque retentive factors, including supra- and subgingival calculus
3	OHI, root surface debridement (RSD)
4	OHI, RSD. Assess the need for more complex treatment; referral to a specialist may be indicated.
*	OHI, RSD. Assess the need for more complex treatment; referral to a specialist may be indicated.

other 'epidemiological data' derived from UK-based populations.

If we follow the BSP guidelines on referral policy, as outlined earlier, then we should consider any patients with a BPE code of 4 or \* as potentially requiring the expertise of a specialist in periodontics. Within the context of the ADH survey (2009) this would represent anybody who is defined as having 'deep pockets' ( $\geq 6$  mm), and therefore represents 8% of the population overall. Further analysis of the data reveals that this level of periodontitis affects 7.4% of 16-64-year-olds and 14.3% of individuals  $\geq 65$  years old (Table 2). The significance of such a large proportion of the adult population being affected by this extent of periodontitis is underscored by the evidence that sites with pockets  $\geq 6$  mm have an increased risk of disease progression and tooth loss, and therefore periodontal treatment should be provided.<sup>6</sup> It is particularly worrisome when considering that the recorded percentage of adults with pocketing  $\geq 6$  mm has increased from 6% in the 1998 ADH survey to 8% in 2009.

The most recent population statistics for the UK<sup>7</sup> estimate that the total population is 63.7 million people. Of these, 11.8 million (18.6%) are under 16.<sup>8</sup> The remaining 51.8 million represent the UK adult population included within the age range described by the ADH survey (2009). These are further subdivided into ten year cohorts, which for simplicity we have combined as two groups (to match the ADH survey data as described above). The younger group (16-64) includes 41.3 million adults (64.9%) and the older group ( $\geq 65$ ) 10.5 million adults (16.5%).<sup>8</sup> Of the 16-64-year-olds, approximately 1.5% are edentulous representing 0.6 million of this population. That leaves 40.7 million at periodontal risk and as the prevalence of deep pockets in this age group was 7.4%,

**Table 2** Estimation of the number of individuals with severe periodontal disease requiring specialist periodontal care. Based on data from the Office for National Statistics<sup>7</sup> (2011 census) and the UK Adult Dental Health Survey (2009)<sup>4</sup>

	UK population (millions)	N adults (millions)	% edentulous	N edentulous (millions)	N at risk of periodontitis (millions)	% with pockets ≥6 mm	N with pockets ≥6 mm (millions)
Under 16	11.8						
16-64	41.3	41.3	1.5	0.6	40.7	7.4	3.0
≥65	10.5	10.5	9.0	0.9	9.6	14.3	1.4
<b>Total</b>	<b>63.7</b>	<b>51.8</b>	<b>6.0</b>	<b>1.5</b>	<b>50.3</b>	<b>8.0</b>	<b>4.4</b>

the estimated number of the UK population in this age group with severe periodontal disease (pockets ≥6 mm) represent approximately 3 million people. Similarly, for the 65 and over age group, 9% were edentulous which represents 0.9 million individuals. This leaves 9.6 million who are at periodontal risk and, as the prevalence of deep pockets (≥6 mm) in this age group is 14.3%, the estimated number of the UK population in this age group with severe periodontal disease is approximately 1.4 million. These figures are an approximation based on data from the Adult Dental Health Survey<sup>4</sup> which was derived from subjects in England, Wales and Northern Ireland and the age cohort population data of the 2011 census<sup>8</sup> which was derived from data from subjects in England and Wales only. We have extrapolated the information gained from these data sets to the entire UK population.<sup>7</sup> From this we estimate that the total UK adult population has an estimated 4.4 million individuals with severe periodontal disease, manifest by pocketing ≥6 mm. According to the recommended guidelines of the BSP, as discussed above, these individuals should be considered for referral to a specialist in periodontics.

### HOW MANY SPECIALISTS IN PERIODONTICS ARE NEEDED TO TREAT THE UK POPULATION?

Assuming a high estimate of one periodontist needed per 1,000 people with severe periodontal disease we would need 4.4 million/1000 = 4,400 periodontists. If we go for a low estimate with one periodontist needed per 2,000 people with severe periodontal disease we would need 4.4 million/2,000 = 2,200 periodontists. These estimates are derived from sample information obtained from specialist periodontal practices on the pool of patients cared for by a single specialist in periodontics. Based on these assumptions there would be a predicted need of 2,200-4,400 periodontal specialists to meet this treatment need.

Assuming a 40 hour week and 46 working weeks per year (these would be high estimates) this would give 1,840 working hours per year. At a ratio of one periodontist per

**Table 3** Number of specialists in periodontics and restorative dentistry according to data derived from the General Dental Council website and British Society of Periodontology membership records (data as at May 2014)

	Specialists on the GDC website	Specialists according to the BSP membership records
Specialists in periodontics	318	242
Specialists in restorative dentistry	306	101

1,000 people with severe periodontal disease this equates to 1.8 hours per patient per year (one hour 48 minutes per patient per year). At the ratio of one periodontist per 2,000 people this is halved to 54 minutes per patient per year. Clearly this is not enough time to manage complex periodontal problems (particularly when considering the lifelong need for periodontal maintenance care), and therefore dental hygienists, dental therapists and dentists with a special interest in periodontology will need to work alongside periodontists in order to achieve the desired clinical outcomes.

### HOW MANY SPECIALISTS IN PERIODONTICS DO WE HAVE?

Table 3 shows that there are 318 specialists in periodontics registered with the GDC. This table also shows that there are 306 registered on the GDC specialist list in restorative dentistry. It is impossible for us to know how many registrants are included in both sets of figures. This is important as someone registered on the restorative dentistry specialist list is quite likely to be providing periodontal care at a specialist level. However, the number of sessions in the working week that they devote to delivering specialist periodontics is likely to be less than someone who is only on the specialist list for periodontics. This has significant implications for manpower planning. It is also very relevant to note that the majority of individuals who are on the specialist list in restorative dentistry are employed as NHS consultants or honorary consultants in academic positions, and therefore do not contribute directly to the provision of periodontal treatment in primary care. Similarly, Table 3 shows that the BSP membership records at May 2014 indicate that there are 242 BSP members who

are registered as specialists in periodontics. In addition, there are 101 BSP members who are registered with the GDC as specialists in restorative dentistry. Again it is not possible for us to ascertain the degree of overlap between the 242 who report themselves a specialist in periodontics and the 101 who report themselves as specialists in restorative dentistry.

In summary, there are presently 318 dentists on the GDC specialist list in periodontics, but not all of them may be actively involved in periodontics. It seems more reliable to accept the figures from the BSP, which would identify 242 dentists who consider themselves specialists in periodontics, and are presumably actively involved in periodontics. With regards to manpower planning, it would be reasonable to use the figure of 101 BSP specialists on the restorative dentistry specialist list as providing some activity in periodontics during the working week, but this is likely to be limited to 1-2 sessions. This equates to approximately 168-376 hours, which is very different from our high estimate of 1,840 hours per year provided by the specialist who is working full-time in periodontics. This illustrates why it is important to not only know how many specialists are registered, but how much time they are devoting to treatment within that particular speciality. The same problems arise when assessing the input of hygienists. As the current trend is to train with the dual qualification of hygiene and therapy the amount of time spent treating periodontal patients by this group would not be easy to estimate.

However the figures on the current numbers of specialists are interpreted, it is important to recognise that they fall a long way short of the 2,200-4,400 needed to meet the

periodontal treatment need of the UK population. Our best estimate (bearing in mind the lack of clear data on the number of specialists in periodontics and the amount of time they devote to practising periodontics) is that the current number of specialists is approximately 1/10<sup>th</sup> of that required to manage the disease burden in the UK. There is clearly, therefore, a need for an increased number of specialists in periodontics.

It is important to realise that these calculations are an approximation based on a large number of assumptions, which have been highlighted throughout the text. Other factors not highlighted include, in particular, poor attendance for dental treatment and the cost implications of providing such treatment. These would need to be taken into account, but more accurate data would need to be available before more extensive modelling of manpower needs, as suggested by for example Segal and Leach,<sup>9</sup> could be considered.

### COMMENTS

- There is a clear need for increased numbers of specialists trained in periodontics to manage the periodontal disease burden in the UK
- There is an almost total lack of specialists in periodontics within the NHS outside hospital and university restorative dentistry consultants

- To our knowledge the NHS has not funded the training of one specialist in periodontics. (The NHS provides training for consultants and specialists in restorative dentistry, however.)

### RECOMMENDATIONS

- More accurate data on the existing manpower are urgently needed. Collaborative working between the GDC and specialist societies such as the British Society of Periodontology and the Association of Consultants and Specialists in Restorative Dentistry is necessary to obtain this information.
  - How many specialists are there and in what sectors do they work?
  - For those working in more than one speciality, how much time do they spend in each speciality?
  - How many hours are spent on the periodontal treatment of patients?
  - How much time is spent providing treatment in the NHS (both in primary care and secondary/tertiary care) compared to private practice?
  - Proportion of patients in active treatment - and the severity of the disease
  - Proportion of patients in maintenance/supportive periodontal care
  - Proportion of patients for other treatment such as implant therapy, and pre-prosthetic treatment

- Incorporation of a hygienist/therapist into management plan
- What would this cost?

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1. UK Specialist Dental Training Report of the Chief Dental Officer. NHS Executive, May 1995.
2. General Dental Council curriculum for the dental specialties. Available at: <http://www.gdc-uk.org/Dentalprofessionals/Specialistlist/Pages/default.aspx> (accessed 29 May 2014).
3. British Society of Periodontology publications Available at: <http://www.bsperio.org.uk/publications/index.php> (accessed 29 May 2014).
4. UK Adult Dental Health Survey (2009). Available at: <http://www.hscic.gov.uk/pubs/dentalsurveyfull-report09> (accessed 29 May 2014).
5. Eaton K A, Duffy S, Griffiths G S, Gilthorpe M S, Johnson N W. The influence of partial and full-mouth recordings on estimates of prevalence and extent of lifetime cumulative attachment loss: a study in a population of young male military recruits. *J Periodontol* 2001; **72**: 140-145.
6. Matulienė G, Studer R, Lang N P *et al*. Significance of Periodontal Risk Assessment in the recurrence of periodontitis and tooth loss. *J Clin Periodontol* 2010; **37**: 191-199.
7. Publication Hub. Gateway to UK National Statistics. UK population statistics. Available at: <http://webarchive.nationalarchives.gov.uk/20140721132900/http://www.statistics.gov.uk/hub/population/index.html> (accessed October 2014).
8. Office for National Statistics. Statistical Bulletin. 2011 Census - Population and Household Estimates for England and Wales, March 2011. 16 July 2012. Available at: [http://www.ons.gov.uk/ons/dcp171778\\_270487.pdf](http://www.ons.gov.uk/ons/dcp171778_270487.pdf) (accessed 29 May 2014).
9. Segal L, Leach M J. An evidence-based health workforce model for primary and community care. *Implement Sci* 2011; **6**: 93.