Orthodontic therapists – the first Bristol cohort

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VERIFIABLE CPD PAPER

IN BRIEF

- Introduces readers to the history behind the introduction of the course for orthodontic therapists and the experience of the first Bristol cohort.
- Highlights the duties of the newly trained orthodontic therapist in contemporary orthodontic practice.

EDUCATION

This paper outlines the development of the training of orthodontic therapists in the UK, the experiences of the first cohort to pass through the Bristol course, the roles and responsibilities of the therapist and possible issues with future orthodontic manpower planning.

At the end of the 1990s two seminal papers were published which described a potential training model for what were then called orthodontic auxiliaries.[1,2] These were timely publications as there was evidence that up to 50% of 11-year-old children had a defined need for orthodontic treatment[3] and that within the UK there were fewer orthodontic specialists than in the majority of European countries. In addition, most orthodontists in high street practice had caseloads of at least double that of their European counterparts.[4] As a result many patients did not receive the specialist care they required.[5] Since then the introduction of a specialist list in orthodontics, an increase in the number of qualified trainees moving into specialist practice and the development of Dentists with a Special Interest (DwSIs) has done much to address the manpower issues. Furthermore significant progress has been made with regard to the organisation and training of orthodontic therapists within the UK.

By the mid-1990s two thirds of European countries were using orthodontic auxiliaries in the delivery of orthodontic healthcare.[6] In the UK the use of such personnel was not permitted, with only qualified dentists being allowed to carry out orthodontic treatment. To some extent this position was loosened after the groundbreaking pilot study carried out at Bristol Dental School demonstrated that it was possible to train hygienists and orthodontic nurses to perform specific orthodontic related tasks to a satisfactory level, and in a relatively short time period (four weeks). The study provided crucial information on the development of an orthodontic therapy training programme, and as such formed the basis for the significant numbers of orthodontic therapy courses, which have since developed in the United Kingdom.

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What did the pilot study comprise?

Although there was extensive experience of providing undergraduate and postgraduate orthodontic training at Bristol, and in the case of the latter at DwSI, specialist and supra specialist levels, it was immediately apparent there was little experience of training at the orthodontic therapist level. This was despite having a reasonably clear concept of what would constitute an appropriate programme. In order to overcome this deficiency the advice and support of two experienced trainers from the Faculty of Continuing Dental Education, University of British Columbia, Vancouver, Canada was sought. Trainees on the Canadian programme were dental nurses with an interest in orthodontics and therefore similar to the type of trainee that future UK courses would be aimed at. This proved insightful as the current UK orthodontic therapy training programmes (either running or advertised) have mostly recruited at this level. During the Bristol pilot we were fortunate the Vancouver Course Director and a registered Canadian orthodontic auxiliary both agreed to participate in the study.

The details of the pilot are reported extensively elsewhere[1,2] but to summarise, a four week training programme was developed, comprising 17 modules, which aimed to develop basic intra-oral dental skills and then to teach a range of appropriate orthodontic skills. A reading list was sent to all trainees before the course began. During the course a variety of teaching methods were used including lectures, video and audio-visual presentations, practical demonstrations and practical experience on typodonts, fellow trainees and orthodontic patients.

On completion of the course the trainees, combined with a high standard of clinical and theoretical knowledge, demonstrated practical abilities which far exceeded the expectations of the course organisers. They were then able to perform the tasks recommended by the British Orthodontic Society as being appropriate for delegation, competently and safely.[7] The level of skill demonstrated by the trainees was judged to be higher than that seen in final year dental students and instead was closer to that seen in orthodontic postgraduate students. However, the trainees took approximately two to three times as long as an experienced orthodontist to carry

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out the same procedure, albeit they were not working with the assistance of a dental nurse. The recommendations for the training and deployment of orthodontic auxiliaries in the UK, based on the experiences of this pilot investigation, have provided a foundation for the current training models being used in Bristol and Leeds, as well as those institutions proposing to or having just initiated programmes (Cardiff, Edinburgh, Manchester and Warwick). It will be important to fully evaluate the appropriateness of the training and skills acquired from the two current courses over time before there is a further proliferation of programmes around the UK. At the end of the Bristol pilot it was suggested that there should initially be an establishment of one or two auxiliary training courses in the UK to ensure the development of a National Standard, and that further courses would then be seeded from these centres. The exact fit of the current training to this prediction is uncanny and could not have been controlled. The length of the probationary period within orthodontic practice, following the intensive skills course, is still a matter of conjecture. The Bristol and Leeds courses are currently of 12 months duration, comprising a four week intensive course followed by study days throughout the year and with work based training in primary care. Lastly, it was identified that there would be a need to provide short training courses to enable practice based orthodontists not only to participate in the training of orthodontic therapists, but also to ensure the efficient and successful utilisation of orthodontic therapists. This requirement has been met by both Bristol and Leeds with regular 'Training the Trainers' courses covering topics such as assessment, monitoring students, as well as practice based visits to quality assure work based placements. Both Bristol and Leeds have elected to have their course trainees accredited externally by the Royal Colleges of Edinburgh and England respectively. This enables external monitoring and standard setting, rather than accrediting internally through a university.

Who can train as an orthodontic therapist and what are the permitted duties of such a therapist?

In order to train as an orthodontic therapist, individuals need to be qualified in dental nursing, dental hygiene, dental therapy or dental technology and also need to have a period of post-qualification experience.

The duties orthodontic therapists are permitted to perform are quite specific:

- Clinical record taking
- Removable appliance treatment
- Fixed appliance placement and removal
- Orthodontic emergency care.

Clinical record taking

Orthodontic therapists should be proficient in the taking of the full range of records required for orthodontic patients. These include taking intra and extra oral photographs, dental impressions, occlusal records and including the use of gnathological face bow records where required. In addition orthodontic therapists are taught the basics of cephalometrics, as well as the laboratory techniques of model casting, basing and trimming, all of which are permitted duties.

Removable appliance treatment

Orthodontic therapists are permitted to insert passive removable appliances, such as space maintainers or retainers, and active removable appliances which have been adjusted previously by a dentist. They should be able to assess the quality of fit and the criteria by which to accept or reject the appliance. They can fit orthodontic headgear, including the insertion of facebows previously adjusted to fit by a dentist, and understand the risks of headgear. They can also give advice on headgear safety to patients.

Fixed appliance replacement and removal

The orthodontic therapist can undertake a wide range of fixed appliance skills. These include the placement and removal of orthodontic separators, the selection and cementation of appropriately sized bands (including welding attachments where required), placement of bonded attachments using orthodontic adhesives, the insertion, ligation and removal of archwires and archwire auxiliaries. They are permitted to clean and prepare the tooth surface before bonding by the removal of soft deposits only. At the completion of active treatment they are permitted to remove archwires, attachments and bands, before removing the adhesive and cement residues from the teeth using contemporary methods.

Orthodontic emergency care

Orthodontic therapists are able to manage patients who may need emergency care such as presenting with a broken appliance, trauma or pain.

In addition to these outlined duties therapists should be able to identify the principles of a range of contemporary orthodontic appliance systems, and understand the scope and limitations of orthodontic treatment. They are not allowed to diagnose or provide any form of treatment plan for orthodontic patients and are not allowed to activate any part of a removable appliance, but are permitted to trim acrylic and tighten retentive components. They are also not permitted to remove calcified tooth deposits such as supra and sub gingival calculus.

When and where can an orthodontic therapist practice?

Although the permitted duties of an orthodontic therapist seem to be quite clear, there has been some confusion as to the circumstance under which they are able to perform these duties. The most recent guidance received by the principal author from the GDC in December 2008 states that 'Qualified orthodontic therapists must work under the prescription of a dentist.' However, the GDC go on to state 'There is no requirement for the orthodontic therapist to be in the same premises as the dentist/orthodontist who has provided that prescription when the treatment is carried out. Orthodontic therapists (along with other DCP groups) are permitted to treat patients when a dentist/orthodontist is not on site provided that they are working to the prescription of that dentists/orthodontist and that they are working within their competencies. It certainly used to be the case that these DCP groups had to work under the supervision of a dentist, but our new guidelines have removed this requirement and it has allowed certain DCP groups to set up on their own and accept referrals from dentists; so they are effectively working remotely.

The only exception to the requirement for orthodontic therapists to work under the prescription of a dentist/orthodontist is with the provision of emergency care to

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a patient. This can be carried out without the need for a prescription from a dentist as long as it is an emergency and is in the patient's best interests.

The concern expressed by the principal author of this article, and by the course organisers of the Bristol and Leeds courses is that within paragraph 2.5 of the GDC document *Principles of dental team working*, it states that all DCPs can work independently once they have a treatment plan and the patient does not need to be seen again by the referring dentist until the reassessment date, with this date being set by the referring dentist. There is a problem as to what constitutes an appropriate reassessment interval when a full mouth assessment is supposed to be carried out by the dentist/orthodontist. For most categories of DCP, eg a dental hygienist, there may be several patient visits without a decision being required about the next step in the overall treatment plan. However, in orthodontics it can be argued that an orthodontist would make a full mouth orthodontic assessment at each visit and as a result the treatment plan may require continual updating and adjustment dependent on the findings. The appropriate reassessment schedule during a course of orthodontic treatment is therefore a reassessment at every visit, which is obviously not possible if the DCP is working independently and particularly if in different premises. As yet the principal author has had no further communication from the GDC Education committee on the matter.

The first cohort of Bristol students

Once legislation had been approved, a formal orthodontic therapy training programme was established at the University of Bristol, Dental Care Professional School and commenced with its first intake of six students in October 2007. The programme began with a four-week core course at the Dental School and Hospital. Following this the students were required to work for at least 3.5 days per week (about 23 hours) treating patients under their trainer's supervision and within a specialist orthodontic practice or hospital setting. They also attended 15 compulsory study days at the Dental Hospital. Students and their trainers were advised to set aside one session per week during the 12 month programme for additional programmed study.

The entrance requirements for the Bristol programme are currently a minimum of five GCSE passes (grades A-C) including English and mathematics, or equivalent. In addition a GDC registrable qualification in dental technology, dental nursing, dental hygiene or dental therapy is essential. All prospective trainers must be on the GDC specialist list for orthodontics. The first cohort of the 2007-8 programme consisted of six students, all of whom were from dental nursing or dental hygienist/therapist employment backgrounds. Once on the course all students carried out orthodontic therapy treatment in their training practice as a matter of routine. The dental hygienists enrolled on the programme worked full-time as orthodontic therapists; the dental nurses on occasion had to cover some dental nursing duties when needed, but all worked more than 3.5 days per week as an orthodontic therapist.

A broad range of teaching input methods are used in the delivery of the programme, enabling good coverage of all relevant topics. Bristol has developed some impressive learning environments in other areas of orthodontics[8] and quite naturally these have extended neatly to orthodontic therapy training. This enables the students to have full access to all relevant course material. Well-defined training agreements have been put in place to establish the trainer's role and responsibility in respect of their student. In order to receive other external views the course directors of the Leeds orthodontic therapy course recently visited the programme at Bristol, which included speaking to students individually to gauge their views on the level and quality of the teaching.

The four-week core course introduced the subject-specific curricular including communication skills and IT, with the teaching material being specifically tailored towards the students on the programme. Practical training took place in both a clinical skills laboratory and in the treatment clinic, where students also gained valuable experience by performing simple procedures on each other. Both the students and their trainers have found the core course provides a suitable introduction to orthodontic therapy, and that students are comfortable treating patients soon after. Students from a dental nursing background felt that learning operative techniques in a peer group, which included some students with previous clinical experience, had been invaluable. The majority of the clinical training was performed under direct supervision, within a specialist orthodontic practice or hospital setting, and with a good level of orthodontic nursing support.

The course has been very popular with the students and appears to have met their training needs for orthodontic therapy. The first cohort of six students has now passed through the one year programme. Their final examinations, set by the Royal College of Surgeons of Edinburgh, consisted of two 2-hour written papers, each containing six compulsory short answer questions, a 30-minute case presentation of two patients treated by the student, and a 15-minute oral examination. All three components had to be passed independently, with no compensation permitted between components. All of the students were successful in their final examinations with one being award the Gold medal from the Royal College.

The GDC inspected and approved the course in September 2008, stating 'Overall, we are satisfied that the Diploma examination provides a rigorous assessment of candidates' knowledge and clinical skills.' They have suggested the use of OSCEs as part of the final examination for future diets and in addition the use of in-course work based assessments.

The future?

The expectation is that the training of orthodontic therapists will increase productivity, efficiency and treatment standards. Their introduction should lead to a reduction in the clinical workload of the specialist, allowing more time for treatment planning and finishing procedures. It should also reduce costs in training the orthodontic workforce and enable orthodontic therapists to be deployed in those areas with limited orthodontic provision. Following the Bristol pilot there was a lengthy delay before legislation was enabled to allow the training of orthodontic therapists. The requirement to develop mandatory registration for all dental care professionals (DCPs) also contributed to this delay since dental nurses without registration would have been precluded from this training.

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Since the original pilot, other factors have come into play with respect to orthodontic manpower planning and provision. Firstly there has been the development of the three year part-time BOS/FGDP DwSI training programme leading to the Diploma in Primary Care Orthodontics, which is in addition to the established three-year full time specialist training programmes leading to a Membership in Orthodontics. Secondly and perhaps more importantly it has become evident, with the introduction of the new dental contract in 2006, that the Department of Health is not going to sanction an unlimited contract base for the delivery of orthodontics in practice. This begs the question: will there be enough clinical orthodontics to be carried out to sustain this increase in orthodontic manpower? While undoubtedly the private market is increasing in size, it will be a number of years before the extent of this market can be more fully gauged. Traditionally most manpower planning studies are doomed to fail before they start and it is seldom that any predictions demonstrate valid perspicacity. Other factors which may or may not have an impact on orthodontic manpower planning include the increased number of dental student training places, which have been predicted may lead to dental unemployment by 2012. Such dentists may become orthodontic therapists without further training, as happens to a small extent at present. There is also an increase in the number of orthodontic specialists being trained and in addition a drive by the Department of Health, with what appears to be no particular benefit, to instigate at least some of the three year full time specialist training to be undertaken within a high street practice environment.

Are there any solutions available if there is a surplus of orthodontic manpower provision? There will be various options; orthodontists as well as general dentists may well decide to practise outside of the UK, and with EU legislation this has become easier in recent years. There may be an opportunity to address inequalities of access and those areas of provision shortage may benefit from an increase in the orthodontic workforce. A final possibility might be an improvement in the opportunities for salaried services to deliver orthodontic care.[9,10] We have previously demonstrated that these services can provide efficient care with satisfactory outcomes and high cost effectiveness. It may well pay the Department of Health to invest some time and consideration in the opportunities now presented by encouraging flexible arrangements for the training and future employment of the whole orthodontic team.[11]

In summary

The first cohort to pass through the Bristol orthodontic therapy course have done so successfully. The roles and responsibilities of the therapist have been outlined along with potential issues with the interpretation of these roles. Finally the effect of the introduction of orthodontic therapists, along with a number of other changes in orthodontic provision are yet to be fully realised.

1. Stephens C D, Keith O, Witt P, Sorfleet M *et al.* Orthodontic auxiliaries - a pilot project. *Br Dent J* 1998; **185:** 181–187.
2. Atack N E, Clark J R, Keith O, Stephens C D, Sandy J R. Orthodontic auxiliaries: the way forward? *Dent Update* 1999; **26:** 203–208.
3. Stephens C D, Harradine N W T. Changes in the complexity of orthodontic treatment for patients referred to a teaching hospital. *Br J Orthod* 1988; **15:** 27-32.
4. Stephens C D, Drage K D, Andrews M, Richmond S. The consistency of opinions of NHS consultants on the appropriateness of orthodontic treatment plans devised by practitioners working in the general dental service. *J Dent* 1993; **21:** 355–359.
5. Allred H. Training and the use of auxiliary personnel. *Public Health in Europe* 1977; **7:** 1–70.
6. Moss J P. Orthodontics in Europe 1992. *Eur J Orthod* 1993; **15:** 393-401.
7. British Orthodontic Society. Joint Response of the British Orthodontic Societies to the Nuffield Enquiry into personnel auxiliary to dentistry. *Br Dent J* 1993; **174:** 182-183.
8. Ireland A J, Smith A S A, Alder D M, Sandy J R, Chadwick S M. Building a learning community on-line: the first step towards a national virtual learning environment in orthodontics. *J Orthod* 2005; **32:** 214-219.
9. Kumar S, Williams A C, Sandy J R. Orthognathic treatment: how much does it cost? *Eur J Orthod* 2006; **28:** 520–528.
10. Kumar S, Williams A C, Ireland A J, Sandy J R. Orthognathic cases: what are the surgical costs? *Eur J Orthod* 2008; **30:** 31-39.
11. Cure R J, Ireland R S. The development of an outreach training programme in orthodontics. *Br Dent J* 2008; **204:** 631-634.

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