An integrated curriculum for dentists and dental therapists in Liverpool

Laura Gartshore,*[1] Joanne Bowles,[2] Luke J. Dawson[3] and Vince Bissell[4]

Key points

Scope of practice of the multidisciplinary team remains poorly understood, to the detriment of teamworking.

NHS England's workforce plan aims to have the right number of staff, with the right skills and competencies, in the right place, at the right time, to deliver services that provide the best possible patient care and meet demand, within an affordable budget. For this, the profession is required to have a flexible and appropriately trained skill mix. The NHS needs to develop healthcare professionals who can adapt to meet the oral health needs of the population while leveraging a sustainable workforce.

In 2019, the School of Dentistry at the University of Liverpool introduced a novel 'centennial curriculum' designed to fully integrate the interprofessional training of dentists and dental therapists. We discuss the challenges we have faced and how these have been addressed.

Abstract

The role of the dental therapist has evolved over the course of the past 70 years, both in the UK and across the globe. The General Dental Council's *Scope of practice* guidance sets out the skills and abilities of each of the professional roles within the dental team, including the dental therapist. Scope of practice of the multidisciplinary team remains poorly understood, to the detriment of teamworking. The dental profession is under pressure and the development of a flexible and appropriately trained skill mix might help us adapt to meet the oral health needs of the population, while leveraging a sustainable workforce. In 2019, the School of Dentistry at the University of Liverpool introduced a novel 'centennial curriculum', designed to fully integrate the interprofessional training requirements of dentists and dental therapists, following application via two distinct routes of entry. Challenges have arisen and addressing these has required a culture of openness and honesty regarding the complexities of shared care and scope of practice.

A brief history of dental therapy

Dental therapy has evolved over the course of the past 70 years, both in the UK and across the globe.[1] In the UK, dental therapists are registered dental professionals with the General Dental Council (GDC) and they can provide dental care service directly to patients, or under the prescription of a dentist.

The origins of dental therapy were with the 'dental auxiliary', a role first introduced in the UK in response to the prevalence of childhood caries and a shortage of dentists. The introduction of this new registrant group required a change to the Dentists Act of 1956. In 1960, the New Cross School in London launched a two-year programme to train 50 female students, aged between 17–25 years of age, to become dental auxiliaries (Fig. 1). The programme was modelled on the New Zealand School dental service. At that time, the dental auxiliary students were taught to provide paediatric dental care, including restorative procedures and the extraction of primary teeth. The students were transported on a bus each morning from shared accommodation to the New Cross community clinic to deliver care to local school children.

Fig. 1 The final cohort to graduate from New Cross in 1983. Image used with permission from the British Association of Dental Therapists

[1]Undergraduate BDS Programme Director, Senior Lecturer and Honorary Consultant in Paediatric Dentistry, The School of Dentistry, University of Liverpool, UK; [2]BSc Programme Director, The School of Dentistry, University of Liverpool, UK; [3]Vice Dean of Education and Scholarship and Professor of Dental Education, The School of Dentistry, University of Liverpool, UK; [4]Dean, The School of Dentistry, University of Liverpool, UK.
*Correspondence to: Laura Gartshore
Email address: lauramg@liverpool.ac.uk

Refereed Paper.
Submitted 14 December 2023
Revised 12 February 2024
Accepted 14 February 2024
https://doi.org/10.1038/s41415-024-7673-4

© The Author(s) under exclusive licence to the British Dental Association 2024.

In 1979, dental auxiliaries became known as 'dental therapists'; it is thought that this name change coincided with the introduction to the health service of other therapists, such as physiotherapists and occupational therapists. Shortly afterwards, a review of the dental workforce determined that there were sufficient general dental practitioners to treat the population, and many dentists and dental therapists working in the community service were made redundant. The government at the time felt that the New Cross school had served its purpose, and the school was closed in 1983. Subsequently, a high-profile campaign led to the continuation of dental therapy training and the Royal London Hospital commenced the dual qualification training of dental therapists and dental hygienists with an intake of eight students per year. Over time, more schools began to train dually qualified dental professionals.

Before 2002, dental therapists were only able to work in the hospital or community dental services; however, a change in legislation that year enabled dental therapists to work in the general dental services and to own their own dental practice, employing other members of the dental team. At this time, additional procedures were included in their scope of practice, including pulpotomies of primary teeth and the placement of preformed metal crowns. In 2013, the GDC removed the barrier to direct access for dental therapists and dental hygienists. Today, dental therapists can complete their full scope of practice by direct access, except for tooth whitening, which must be carried out on referral from a dentist. Today, approximately 350 dental therapists graduate each year across the UK from around 25 schools. Qualifications awarded have evolved from certificate, to diploma, to Bachelor of Science (BSc).

Despite this progress, the following scope of practice issues would appear to present barriers to the optimal utilisation of the dental team:

- Prescription-only medicines (PoMs), such as local anaesthetic and some fluoride varnishes, must be prescribed by a dentist, and there must be a patient-specific direction or patient group direction in place. (There is currently a project underway, led by NHS England and Department of Health and Social Care, to consider the introduction of exemptions to allow dental hygienists and dental therapists to undertake further training to administer and apply PoMs without the prescription of a dentist)
- The prescribing and reporting of radiographs is a barrier for qualified dental hygienists and dental therapists; however, in more recent years, these skills have formed part of undergraduate curricula. Therefore, if trained, competent and indemnified to do so, dental hygienists and dental therapists can prescribe and report on radiographs within their scope of practice
- Until recently, dental hygienists and dental therapists were unable to open a course of treatment on the NHS; however, recent clarification has served to allow this.

Additionally, there are unseen barriers that persist regarding perceptions of scope of practice.

Scope of practice guidance

The GDC's *Scope of practice* guidance sets out the skills and abilities of each of the seven professional roles within the dental team.[2] It is noted that all dental professionals can expect that their scope of practice might evolve over the course of a career, as skills and knowledge develop, further training is undertaken and as dentistry itself advances. The *Scope of practice* guidance was last updated in 2013, with the introduction of direct access and publication of *Standards for the dental team*.

In 2019, the *Scope of practice* guidance was reviewed independently under commission by the GDC. The findings indicated that the guidance was not used in the way that it was intended, with its primary users being education and training providers, employers and professional representative bodies, rather than dental professionals.[3] The findings also revealed that dental professionals reported good awareness and understanding of their own scope of practice, but poorer awareness of the scope of others in the dental team. The knowledge that they did have was gained through education, work and experience, but not through reference to *Scope of practice* guidance. Additionally, it was reported that the public and patients were not aware of *Scope of practice* guidance and that they do not feel it is relevant or necessary for them to have access to this type of information. Nevertheless, there were significant concerns reported by dental professionals and stakeholders on the suggestion that there may be substantial changes to scope of practice, or that the guidance might be unnecessary. The reason identified for this concern was a fear that others may act out of scope.

In early 2023, a consultation took place regarding a revised scope of practice guidance. The draft revised guidance does not propose to alter any professionals' scope of practice, but rather to help all members of the dental team understand the boundaries of each other's roles, and to enable those who are trained, competent and indemnified to expand their personal scope of practice within those boundaries safely and effectively. It seems obvious that education must play the key role in fostering this interprofessional understanding, enabling the dental team to function as effectively as possible, for the benefit of patients.

Drivers for educational change

All members of the dental team contribute to a patient's experience of dentistry and it is widely recognised that the quality of teamwork is intricately linked to quality of care and improved patient safety.[4] The GDC's *Preparing for practice (dental team learning outcomes for registration)* indicates that future dental registrants should recognise the importance of teamwork and should have the opportunity to develop in a team-focused environment as early as possible in their training.[5] Likewise, *Standards for the dental team* necessitates that registrants must work effectively with their colleagues and contribute to good teamwork.[6] NHS England have committed to exploring the skill mix of the dental profession for some time.[7] Health Education England's *Advancing dental care* review of education and training reported that a multidisciplinary workforce, with a flexible training model and progression framework (or 'skills escalator'), for dentists and dental therapists would enable the workforce of the future to be responsive to population needs.[8]

A Liverpool move

A part-time training programme for dental hygienists and dental therapists existed until 2004 at the School of Dentistry in Liverpool. From 2004 until 2019, a modular combined diploma in dental hygiene and dental therapy (DHDT) was in place, alongside a BSc in DHDT (2011–2014). During this time, there was little integration between the DHDT programmes or with the Bachelor of Dental Surgery (BDS) programme. Staff and students of the individual programmes carried out their daily work almost entirely independently of each other. It was decided that integration of the BSc and BDS programmes provided a

© The Author(s) under exclusive licence to the British Dental Association 2024.

Fig. 2 Dental therapy graduates of Liverpool's centennial curriculum in 2022 celebrate with BDS colleagues. Image used with permission from University of Liverpool, School of Dentistry

response to the call to action made by Health Education England, and in 2019, Liverpool's centennial curriculum commenced.

The centennial curriculum embraced the opportunity to ground its approaches in evidence-based pedagogy, as well as innovate in areas of personal development and assessment to support learning. The design has focused on the complete integration of dentistry and dental therapy training, leading to improved opportunities for teamwork and fostering improved understanding of roles and scopes of practice, plus providing a flexible model that allows responsiveness to workforce needs and skills escalation. Staff and students had a voice in design of the new curriculum, and in defining the individual themes and their associated learning outcomes, termed milestones. The milestones are distinct to the existing and focused individual competencies of *Preparing for practice* because they reflect authentic, integrated real-world capabilities that students must evidence for progression.

Aspiring dental and dental therapy students apply via the Universities and Colleges Admissions Service (UCAS) to the BDS or BSc programme, respectively, each with distinct entry requirements. In Years 1–3, BDS and BSc students, although technically on separate programmes, learn the scope of practice of a dental therapist in a 'collaborative learning core'. During this time, there is no obvious practical distinction between students on different programmes in their clinical, academic, or professional development activities, nor in the assessment or evidence required for their progression. At the completion of Year 3, assessment of BSc students presents as exit examinations, whereas for BDS students, the same assessments provide a gateway for progression to the final two years of the programme. In Years 4 and 5, BDS students upskill to train to the additional scope of practice that represents a dentist, in line with *Preparing for practice*, before their exit examinations towards the end of Year 5.

Within this model, there is the facility for BSc students who wish to apply to directly enter Year 4 of the BDS programme following competitive application. Currently, there are two places available per year. For the two years to date that these places have been available, both have been filled. Experience thus far suggests that these students have been highly successful.

A concern raised in the adopting of this model was that we might inadvertently cut off a route for dental nurses to apply to study dental therapy as a result of the increased admission requirements of the degree level BSc in comparison to the previously existing diploma. The existence of a foundation year programme addresses this concern and is a popular option for dental nurses.

Design of the centennial curriculum centres around the concept of the patient journey, from initial presentation to review. Students are tasked to consider the underlying foundations to their practice, coupled with a major emphasis on procedural clinical skills and including skills in communication, professional behaviours, academic knowledge, psychosocial skills (eg self-efficacy and resilience) and the management and leadership approaches that combine to ensure a positive outcome and experience for the patient and the dental team. The mapping of this patient journey model with its integrated clinical practice to pre-specified and clearly defined milestones is, of course, somewhat complex. Nevertheless, this activity presents an opportunity to rethink long-held existing teaching practices, to challenge the structure and placement of activities within the programme, to drive a positive educational impact, and to reflect on the best way forward for demonstrating attainment of the integrated real-world skills required to be a competent, safe beginner.[9] Systems of assessment were designed to encourage development and to evidence authentic 'clinical readiness'.

A positive trajectory?

There have been significant challenges to forging ahead with a novel, fully integrated curriculum, particularly in light of the unexpected COVID-19 pandemic. This has been a necessarily iterative process; however, there have been many successes, most notable of which was approval of the BSc programme in 2022, with no recommendations made following GDC inspection.

Application to the programmes is competitive and has increased year on year. Student evaluations of experience have improved since introduction of the centennial curriculum, as evidenced by internal and external evaluation, with positive feedback on teaching, learning opportunities, academic support and organisation, assessment and feedback, and school community. These data provide some reassurance that multidisciplinary teamworking does not detract from, but may enhance, education of the dental team by engendering mutual respect and understanding of one another's skills. Students report that they feel supported in their career choices and enabled to thrive and to understand the role of all individuals in the dental team (Fig. 2). Furthermore, employment or the continuing education of graduates of the BSc programme is 100% to date, with the first cohort of the BDS programme due to graduate this academic year.

Introduction of a new curriculum has provided opportunity to innovate and to challenge the structure and order of activities within the programme. This approach has led to the introduction of a longitudinal personal development and wellbeing programme to support self-reflection regarding key psychosocial skills in order to prevent the adoption of maladjusted learning strategies,[10] as well as novel components that encourage partnership approaches to learning, research and quality improvement activity.

Introduction of new curricula required careful communications to manage the expectations of BDS students who were

© The Author(s) under exclusive licence to the British Dental Association 2024.

studying under the 'classic' curriculum until its completion, and of BSc students who had applied to the new BDS programme but were not successful in application. Open and transparent conversations about managing workload were held with busy academic staff and with other key stakeholders, such as the university, the NHS and the professional regulator. At times, each of these communications have been complicated to navigate. Addressing these challenges has required a culture of openness, honesty and an acceptance that we don't get everything right first time.

The challenges that we have addressed head on have sometimes been based upon misconception. Initially, it was perceived that we would have a single point of entry to the programmes; however, we have been very clear that we have two separate programmes with distinct application requirements and routes via UCAS.

In the first year of the curriculum, we experienced high levels of dental therapy applicants who wished to transfer to the BDS programme, and who perhaps perceived their entry as a back route into dentistry. As a school, we are committed to training dental therapists, and we have taken steps to address this. We have made it explicitly clear to applicants and current students that while there may be an opportunity for dental therapy students to transfer to the BDS programme later, this is not universal. Furthermore, we are clear in our activities that we are committed to the training of dental therapists and in aiding understanding of their role.

A key to success to the implementation and development of the centennial curriculum was the employment of a non-clinical project officer who continues to have oversight of the entirety of the curriculum, who schedules the multitude of meetings and collaborations required to enable newly defined learning components to develop and to integrate, and to prepare for the internal and external programme inspections that quality assure our efforts.

A snapshot of educator opinion

At a recent meeting of the Association for Dental Education in Europe, we presented much of what has been discussed in this paper with the audience during a structured symposium. Attendees were present from across the globe and represented a variety of clinical roles. When surveyed, a vast majority agreed that there was little or no formal integration of the training of dentists and dental therapists in their place of work or study, but that there might be some shared learning opportunities in the clinical environment. Discussion during the session raised the challenges discussed, coupled with a shared concern that it takes time to change attitudes in healthcare, and that the public often have little understanding of the commonalities and differences between multiprofessional clinical roles. Significantly, 94% of attendees agreed that they would consider adopting a similar approach to integrated training of the dental team in their place of work because they could agree the benefits of a multiprofessional training were worth exploring.

Conclusions

The challenges facing NHS dentistry are well-rehearsed and the impact on patients in terms of access to dental care well-publicised. The 2023 *NHS long term workforce plan* makes a commitment to a 40% increase in training places for dental therapists (and 'hygiene professionals') and dentists by 2031/32.[11] The subsequent UK Government/NHS England policy paper *Faster, simpler and fairer: our plan to recover and reform NHS dentistry* lays further emphasis on the role of dental care professionals and the importance of skill mix.[12] The belief underpinning the curriculum changes described above is that maximising teamworking in dentistry requires carefully planned educational strategies, beginning at the undergraduate level. Our experience suggests that educating student dentists and dental therapists in a fully integrated way serves to effectively eliminate confusion about scope of practice and foster the genuine mutual respect essential to the proper deployment of skill mix. We recognise that a survey of UK education providers would most likely reveal a number of variations on this theme, but we offer this account to share our approach and experience in Liverpool.

Ethics declaration

The authors declare no conflicts of interest.

Ethical approval was obtained from University of Liverpool for the survey carried out at the ADEE meeting. Consent to the online survey was approved as opt-in – those present could choose to participate if they wished.

Author contributions

Study conception: Vince Bissell; study design: Laura Gartshore; data collection: Laura Gartshore; data analysis and interpretation of results: Laura Gartshore, Joanne Bowles, Luke J. Dawson and Vince Bissell; manuscript preparation: all authors, led by Laura Gartshore.

Acknowledgements

We would like to acknowledge the contribution of the British Association of Dental Therapists for the contribution of historical information.

References

1. Nash D A, Friedman J W, Kardos T B *et al.* Dental therapists: a global perspective. *Int Dent J* 2008; **58:** 61–70.
2. General Dental Council. Scope of Practice. 2013. Available at https://www.gdc-uk.org/standards-guidance/standards-and-guidance/scope-of-practice (accessed July 2024).
3. General Dental Council. Scope of Practice Review: 2020. Available at https://www.gdc-uk.org/about-us/what-we-do/research/our-research-library/detail/report/scope-of-practice-review (accessed July 2024).
4. Royal College of Physicians. Improving teams in healthcare. 2017. Available at https://www.rcplondon.ac.uk/file/8202/download (accessed July 2024).
5. General Dental Council. Preparing for practice. 2015. Available at https://www.gdc-uk.org/docs/default-source/quality-assurance/preparing-for-practice-(revised-2015).pdf (accessed July 2024).
6. General Dental Council. Standards for the Dental Team. 2013. Available at https://standards.gdc-uk.org/Assets/pdf/Standards%20for%20the%20Dental%20Team.pdf (accessed July 2024).
7. NHS England. Facing the Facts, Shaping the Future. 2017. Available at https://www.hee.nhs.uk/sites/default/files/documents/Facing%20the%20Facts%2C%20Shaping%20the%20Future%20%E2%80%93%20a%20draft%20health%20and%20care%20workforce%20strategy%20for%20England%20to%202027.pdf (accessed July 2024).
8. NHS England. Advancing Dental Care Review: Final Report. 2021. Available at https://www.hee.nhs.uk/our-work/advancing-dental-care (accessed July 2024).
9. Van Der Vleuten C P M. The assessment of professional competence: Developments, research and practical implications. *Adv Health Sci Educ* 1996; **1:** 41–67.
10. Dawson L, Fox K. Can assessment be a barrier to successful professional development? *Phys Ther Rev* 2018; **23:** 11–16.
11. NHS England. NHS Long Term Workforce Plan. 2023. Available at https://www.england.nhs.uk/publication/nhs-long-term-workforce-plan/ (accessed December 2023).
12. UK Government. Faster, simpler and fairer: our plan to recover and reform NHS dentistry. 2024. Available at https://www.gov.uk/government/publications/our-plan-to-recover-and-reform-nhs-dentistry/faster-simpler-and-fairer-our-plan-to-recover-and-reform-nhs-dentistry#supporting-and-developing-the-whole-dental-workforce (accessed July 2024).

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

© The Author(s) under exclusive licence to the British Dental Association 2024.