Rapid Industry Assessment of CPD in Dentistry

prepared for the General Dental Council

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A report submitted by ICF GHK

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Job Number J60013

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Summary of the research

All dentists and Dental Care Professionals[1] (DCPs) are required to be registered with the General Dental Council (GDC) in order to practise in the UK. The purpose of the GDC is to protect the public and regulate the dental team by registering dental professionals, setting standards of dental practice and conduct, assuring the quality of dental education, ensuring professionals keep up to date and helping patients with complaints.[2]

GDC registrants are required in law to complete a minimum amount of Continuing Professional Development (CPD). Dentists are currently required to complete 250 hours of CPD and DCPs 150 hours in a five year period. Of this, 75 hours and 50 hours respectively must be verifiable. For CPD to be verifiable there must be documentary evidence that the individual participated and that the activity has concise educational aims and objectives, clear anticipated outcomes and quality controls. The GDC also makes some recommendations around CPD topics in certain areas, where this could contribute to patient safety.

While the GDC does not regulate CPD providers, there is a belief that the market has grown since the introduction of mandatory CPD. Research has been undertaken which has identified that some forms of CPD are likely to be more effective than others. There is also a developing evidence base on the factors which impact on dental professionals' likelihood to access CPD.

In this context, the GDC has commissioned a rapid industry assessment of CPD provision in dentistry. The research was undertaken during October and early November, 2013. The overall aim of this research has been *'to produce a rapid assessment of the CPD industry as it applies to dentistry'*[3]. The main study objectives were as follows:

- Provide an evidence-based assessment of the size of the CPD industry in the UK as it applies to dental professionals, based on total income/turnover of the industry and number of providers.

- Categorise and quantify the categories of CPD providers that make up the CPD industry in the UK based on a set of identified variables[4].

- Provide an evidence-based estimate of the proportion of CPD that is delivered or controlled by GDC registrants.

- Provide an evidence-based estimate of the amount of CPD activity that is delivered as 'core' or 'recommended' CPD.

- Provide an accompanying narrative describing the CPD industry as it applies to dental professionals in the UK based on the data collected, including industry trends.

The rapid industry assessment defined the CPD industry as relating to the activities of those providers that <u>explicitly market their services to dental professionals</u> (although not necessarily only to dental professionals) and which, as a consequence, are theoretically able to provide <u>a meaningful assessment of their own provision of CPD to dental professionals</u>.

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[1] Which includes dental nurses, dental technicians, clinical dental technicians, dental hygienists, dental therapists and orthodontic dentists

[2] The Dentists Act, 1984

[3] Research contract for a Rapid Industry Assessment of CPD provision in dentistry in the UK – Invitation to tender, GDC (2013)

[4] Charging methodology; level of cost to participant; size of provider income/turnover; type of provider; time active in industry; geographic distribution (e.g. England, Scotland, Wales, Northern Ireland, UK-wide/ local, regional, national, international); main target participant (i.e. dentist, whole dental team, dental nurse etc.); whether or not provider only supplies dental sector; range of provision type (i.e. online, journal based, short courses, conference etc.); form of assessment (where in place); accreditation (where in place); nature of quality control measures; GDC registrant involvement in delivery (e.g. MD, Principal, tutor etc.); Ratio of verifiable/non-verifiable CPD.

It was based around three stages of activity:

Stage 1 – Initial Scoping:

- Initial scoping to define the dental CPD industry in scope of the assessment

- Desk research to identify dental CPD providers

- The development of research tools in the form of a template for capturing provider information corresponding to the study variables and the structure for an underpinning dataset to log results

- The pre-population of the template for all identified providers based on publicly-available information.

Stage 2 – Research:

- A survey of 102 identified CPD providers over a three-week window based on a mix of telephone interviews and provider self-completion of the template.

- Six stakeholder interviews to encompass particular elements of the industry.

Stage 3 – Analysis and reporting:

- Data analysis to generate generalised findings based on the sample of survey respondents.

Main Findings

Overview of the dental CPD market

CPD for dental professionals is available from a diverse array of providers. There is an estimated 556 dental CPD providers based on the definition used for this study. Expanding the definition to include organisations potentially offering in-house CPD increases the estimate of organisations that could be involved in providing CPD in the UK to over 10,000. There is no dominant single organisation in the industry, although there are a small number of large categories of provider in numerical terms - including membership networks /study groups and commercial providers. Nearly four fifths of providers exclusively or mainly target the dental sector.

The research estimated the size of different categories of provider by the number of CPD customers. By this measure, commercial providers, postgraduate dental deaneries and publishers are the most parts of the industry. Other key parts of the industry in terms of customer volume are professional and specialist bodies, dental schools and universities, dental care organisations offering external CPD, and organisations that primarily provide dental products and services.

The provider market is quite mature. An estimated 256 providers, around half of the total number, have been offering dental CPD for more than fifteen years. The few new entrants are largely composed of commercial organisations. There was a spike in new entrants 6-10 years ago (compared to the preceding five year period), which is likely to reflect the introduction of mandatory CPD requirements for dentists in 2002.

The qualitative interviews also gave a clear sense of a CPD industry that is growing. In some areas, this is related to the DCP market, which some organisations feel is under-served and the source of significant growth potential. Overall, around 90% of providers are estimated to have experienced stability or growth in dental CPD provision over the last three years. An estimated 71 providers (around 13% of all providers) have experienced significant growth.

Around two-fifths of providers (239 providers, 43% of all providers) are estimated to operate a model in which the full cost is paid by participants. Much of the remainder of the industry is composed of subscription / membership-based models and subsidised provision. More detailed analysis at the level of the individual provider shows that it is fairly common for individual providers to deploy a mixed approach to charging for different products (mainly) or for different customer groups (to a lesser extent).

This research estimates that the overall dental CPD industry is estimated to be worth just over £57 million annually. Over half of the industry (57.3%) in terms of income / turnover relates to commercial providers and the postgraduate dental deaneries. The vast majority of deanery income takes the form of subsidy. The next largest parts of the industry in financial terms relate to dental practices providing

external specialist CPD, the Royal Colleges and Faculties and dental schools, each of which represents £3-4 million in income / turnover. Publishers and professional associations each fall within the £2-3 million range, even though both categories of provider have a substantial spread of engagement. The remaining components of the industry are relatively small-scale.

Types and availability of CPD provision

Short courses are the main type of provision in the dental CPD industry, particularly for postgraduate dental deaneries and commercial providers. Two thirds of providers (376 providers) are estimated to offer short courses. This is likely to be a reflection of the importance of time and accessibility in informing dentists' and DCPs' CPD decisions. This also helps to explain why e-learning is the second most substantial form of provision, offered by an estimated 196 providers.

GDPs are the main customers of the dentistry CPD industry. They make up over half of the customer base for around 240 providers (around two-fifths of the total number of providers). This is understandable given the size of the professional group and their CPD requirements. There are other providers whose main market is specialist dentists which reflects their specialist skill needs. Most of the 25 providers for which dentists on a specialist list form the majority of CPD customers are the specialist societies.

Dental nurses make up a relatively small portion of the CPD industry given their scale as a professional group. For around one-third of the industry, dental nurses represented little or none of the CPD customer base in the last year. There are also relatively few providers (under one-tenth of the industry) for which dental nurses make up over half of their market. This suggests that there is relatively little CPD tailored to dental nurses. Within this group, publishers are well-represented suggesting that dental nurses access a lot of CPD through this medium.

There is also a niche industry providing CPD to dental technicians (relative to the size of the profession, and in comparison with the larger dental nursing profession). There are estimated to be 13 providers for which dental technicians form at least three-quarters of the customer base.

The dentistry CPD industry is predominated by organisations which define themselves as having a UK or international scope. Just over half of all providers are estimated to have national or international reach – including an estimated 244 UK-wide providers (44% of all providers) and 61 international providers (a further 11% of providers). Furthermore, these providers are estimated to represent around three quarters (74%) of CPD provision. Specialist societies, professional associations (which typically have a mandate to represent their profession or specialism across the UK) or commercial providers are heavily represented within this group.

A further third of the providers (195 providers) in the industry are organisations with a local market, most of which are part of the BDA's network of local organisations or Local Dental Committees. There are also several large regional organisations, mostly postgraduate deaneries.

Quality and content of CPD provision

Around one third of providers in the CPD industry delivered primarily core provision in the last year. Furthermore, only one-tenth of providers did not provide any core topics in this time period. It was clear from desk research that many providers market their services around the core topic provision they deliver in the context of dental professionals meeting the GDC's suggested number of hours for core topics.

Around two-thirds of providers also offer some recommended topics although the prevalence of CPD in these topic areas is far lower than core topics. A large part of the industry was found to offer non-core or recommended topics which is unsurprising given the likely range of potential topics available. The main areas identified were training related to particular dental products / devices, management skills or more specialist dentistry topics.

The industry is dominated by providers offering verifiable CPD. Around three quarters of providers are estimated to offer a fully verifiable set of CPD products or services. Commercial providers offer the highest proportion of verifiable CPD and, in interviews, it was clear that provision of CPD that is verifiable is seen as essential to attract business. Postgraduate dental deaneries and dental schools also offer a particularly high proportion of verifiable CPD. Less verifiable CPD is available through journals. This is likely to be a reflection of the challenges in quality assuring the learning that is

acquired through this medium. A high proportion of verifiable CPD is available through postgraduate training and qualifications and seminars and study groups. Meeting the GDC's requirements for verifiable learning is more straightforward in these learning contexts.

Ensuring the quality of the training and delivered is a key issue in the dentistry CPD industry. The research found a high degree of homogeneity in the type of quality controls used by providers. Across all the different categories of provider, the main quality control used was feedback gathered from learners at the end of the training. In the majority of cases, providers described that this feedback was fed into a review system of some description (either of the CPD material used, or the individual who delivered the CPD). Universities, dental schools, deaneries, professional associations and publishers and specialist societies, reported that undertaking peer review and collecting feedback from learners were their main quality controls.

There are two main forms of assessment used across the industry: attendance / registration of the training participant and the use of multiple choice assessments. There are a range of models used for this latter form of assessment. Providers also differ as to whether they set a pass mark for the assessment. Perhaps unsurprisingly, there is a relationship between the form of assessment used and the type of provision. For example, attendance / registration is the main form of assessment for providers of conference, industry/trade shows and short courses, while multiple choice tests are used, primarily, for assessment of CPD delivered through journals, seminars / study groups and e-learning. This is an area where providers are attempting to innovate, for example, how best to assess e-learning.

Around half of the industry does not accredit CPD, although there are parts of the industry where it is the norm, for example, universities, dental schools and postgraduate dental deaneries. Most CPD providers are managed by a GDC registrant or a mixture of registrants and non-registrants. However the extent of their involvement differs across the industry. For example, it is lower in publishers and dental products or device suppliers. GDC registrants are also heavily involved in the design and delivery of CPD across the industry. Around half of providers are estimated to have all CPD both designed and delivered by registrants. Only a small proportion of CPD is delivered by non-registrants, primarily in the commercial and publishing sectors.

Conclusions and areas for further work

The rapid industry assessment has found evidence of a dentistry CPD industry which is both large and varied. There is strong evidence that it is a dynamic market and that it continues to grow. Primarily as a result of the range of provision available and its rapidly changing nature, the quality of CPD delivered is a relevant question and one of interest to providers across the industry (as well as the GDC).

Given the focused goals of this rapid assessment, there are additional questions of interest that this study has only touched upon, and which would benefit from further research. These relate to:

- The question of the quality of CPD available, providers' perspectives on the quality of their own, and others' provision, which have only been addressed in a rather targeted fashion as part of the rapid industry assessment.

- Secondly, a study focusing on the CPD that dentists and DCPs record in their returns to the GDC would shed light on the mix of CPD accessed at the level of dental professionals and provide insight into some of the areas of the industry which have been difficult to assess in the context of this rapid assessment.

1 Introduction

This is a report of the rapid industry assessment of CPD provision in dentistry by ICF GHK on behalf of the General Dental Council (GDC). The research was undertaken during October and early November 2013.

1.1 Review context

1.1.1 The mandatory requirements for CPD

All dentists and Dental Care Professionals (dental nurses, dental technicians, clinical dental technicians, dental hygienists, dental therapists and orthodontic dentists) are required to be registered with the GDC in order to practise in the UK. The purpose of the GDC is to protect the public and regulate the dental team by:

■ Registering qualified professionals;

■ Setting standards of dental practice and conduct;

■ Assuring the quality of dental education;

■ Ensuring professionals keep up to date;

■ Helping patients with complaints.[5]

In order to help maintain public confidence and ensure that the dental team retains up-to-date professional knowledge and skills, GDC registrants are required in law to undertake a minimum amount of CPD. The mandatory CPD requirements were introduced for dentists in 2002 and for Dental Care Professionals (DCPs) in 2008.

Dentists are required to undertake 250 hours of CPD and DCPs must undertake 150 hours of CPD during a five year period. The current legal requirements also state that, within a five-year cycle, a minimum of 75 hours of CPD for dentists and 50 hours of CPD for dental care professionals must meet the requirements of verifiable CPD:

■ Verifiable CPD must have documentary evidence that the individual participated and that the activity has concise educational aims and objectives, clear anticipated outcomes, and quality controls.

■ Activities which do not satisfy all of the verifiable CPD criteria may be recorded as part of the total hours but not as verifiable.

The GDC makes some recommendations about CPD in certain topic areas, where this could contribute to patient safety, but these are not enforceable in law[6]. This means they are not mandatory. The law defines CPD for dentists and dental care professionals as:

"Lectures, seminars, courses, individual study and other activities, that can be included in your CPD record if it can be reasonably expected to advance your professional development as a dentist or dental care professional and is relevant to your practice or intended practice."[7]

There is therefore considerable flexibility in the potential format and content of CPD activity that dental professionals could undertake in order to meet the GDC's requirements. It is up to dental professionals to use their professional judgement to make decisions about the CPD they do in order to meet the GDC's requirements.

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[5] The Dentists Act, 1984

[6] Medical emergencies (at least 10 hours per CPD cycle and two hours per year); Disinfection and decontamination (at least 5 hours per CPD cycle); Radiography and radiation protection (at least 5 hours per CPD cycle), plus: legal and ethical issues; complaints handling; early detection of oral cancer

[7] Continuing Professional Development for Dental Professionals, General Dental Council (2013)

1.1.2 Beliefs about the dental CPD industry

The GDC does not regulate or quality-assure CPD providers. It is anecdotally believed by the GDC that the CPD industry in dentistry has grown since mandatory CPD became part of the professional regulatory framework for dentists in 2002. It is also anecdotally believed that the market may be highly-fragmented in terms of category of provider and products and services. The GDC has also received feedback that some CPD provision may be of variable quality and may not offer good value for money.

A Literature Review undertaken for the GDC in 2011 on the effectiveness of CPD in dentistry indicated that some forms of CPD are likely to be more effective than others, for example, CPD activities utilising multimedia[8]. It also indicated the value of active rather than passive learning and the potential benefits of individuals taking a blended learning approach[9]. The report also emphasised the importance of planning of learning and the use of reflective practice to increase the effectiveness of CPD.

This Literature Review and a separate GDC commissioned study published in January 2012[10] on registrant and provider perspectives on CPD noted that the drivers for dental professionals undertaking CPD often include factors such as access and cost. The report also indicated that the motivations of dental professionals and drivers for undertaking CPD vary considerably. The evidence suggests factors such as cost (noted as an influencing factor in their choice of CPD by around 36% of registrants surveyed), time (noted as a barrier by 76% of registrants surveyed) and accessibility (noted by 43%) all influence the approach taken.

1.1.3 The GDC's review of CPD

Since mid-2011 the GDC has been undertaking a review of its CPD requirements, in the context of ensuring they remain fit for ongoing regulatory purposes, particularly in the context of the likely introduction of revalidation in the future.[11] The Picker Institute also recommended that the value of CPD could be enhanced by ensuring it is part of wider professional development planning, there are structures in place to facilitate reflection, and it is needs based and outcomes focussed.[12]

The review has led to the development of proposals for an 'enhanced scheme' for CPD, which emphasises:

■ *"Making good decisions about their CPD based on effective planning and reflection;*

■ *Undertaking CPD that achieved learning outcomes that reflect the GDC's Standards;*

■ *Embedding CPD into their professional life; and*

■ *Giving the GDC regular assurance of their CPD activity in order to reassure the public"*.[13]

The rapid industry assessment is a key evidence source for this review.

1.1.4 Rapid industry assessment: aims and objectives

The overall aim of this research has been *'to produce a rapid assessment of the CPD industry as it applies to dentistry'*[14]. The main study objectives were as follows:

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[8] The Impact of Continuing Professional Development in Dentistry: A Literature Review, Prof. Eaton et al, 2011, p. 5

[9] The Impact of Continuing Professional Development in Dentistry: A Literature Review, Prof. Eaton et al, 2011, p. 5

[10] Registrant and Provider Perspectives on Mandatory CPD in Dentistry in the UK, Electoral Reform Services Research, 2012

[11] GDC website: Continuing Professional Development review [accessed *19th November, 2013*]

[12] Evaluation of Supporting Evidence Types for Revalidation stage 1, Picker Institute, 2012, p. 29

[13] Post-consultation statement on CPD and Continuing Assurance of Fitness to Practise, p. 1

[14] Research contract for a Rapid Industry Assessment of CPD provision in dentistry in the UK – Invitation to tender, GDC (2013)

■ Provide an evidence-based assessment of the size of the CPD industry in the UK as it applies to dental professionals, based on total income/turnover of the industry and number of providers.

■ Categorise and quantify the categories of CPD providers that make up the CPD industry in the UK based on a set of identified variables[15].

■ Provide an evidence-based estimate of the proportion of CPD that is delivered or controlled by GDC registrants.

■ Provide an evidence-based estimate of the amount of CPD activity that is delivered as 'core' or 'recommended' CPD.

■ Provide an accompanying narrative describing the CPD industry as it applies to dental professionals in the UK based on the data collected, including industry trends.

The methodology undertaken in the context of a rapid assessment is set out below.

1.2 Methodology

The rapid industry assessment was based around three stages of activity:

■ Stage 1 – Initial Scoping:

– Initial scoping to define the dental CPD industry in scope of the assessment

– Desk research to identify dental CPD providers

– The development of research tools in the form of a template for capturing provider information corresponding to the study variables and the structure for an underpinning dataset to log results

– The pre-population of the template for all identified providers based on publicly-available information.

■ Stage 2 – Research:

– A survey of 102 identified CPD providers over a three-week window based on a mix of telephone interviews and provider self-completion of the template.

– Six stakeholder interviews to encompass particular elements of the industry.

■ Stage 3 – Analysis and reporting:

– Data analysis to generate generalised findings based on the sample of survey respondents.

1.2.1 Stage 1: Initial Scoping

1.2.1.1 *Defining the CPD industry for the purposes of the study*

The scope for dental professional CPD is wide-ranging. The market for providing CPD is open and unregulated. Dental professionals retain ownership over the judgement of the forms of learning that be 'reasonably expected to advance' their professional development. Without surveying registrant practitioners it is very difficult to capture all possible CPD provision that dental professionals could legitimately access. This was also not practicable in the context of a rapid industry assessment.

It was therefore important to provide an upfront definition of which providers were in scope of the study. The agreed definition of the CPD industry therefore related to *the activities of*

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[15] Charging methodology; level of cost to participant; size of provider income/turnover; type of provider; time active in industry; geographic distribution (e.g. England, Scotland, Wales, Northern Ireland, UK-wide/ local, regional, national, international); main target participant (i.e. dentist, whole dental team, dental nurse etc.); whether or not provider only supplies dental sector; range of provision type (i.e. online, journal based, short courses, conference etc.); form of assessment (where in place); accreditation (where in place); nature of quality control measures; GDC registrant involvement in delivery (e.g. MD, Principal, tutor etc.); Ratio of verifiable/non-verifiable CPD.

those providers that <u>explicitly market their services to dental professionals</u> (although not necessarily only to dental professionals) and which, as a consequence, are theoretically able to provide <u>a meaningful assessment of their own provision of CPD to dental professionals</u>.

1.2.1.2 *Desk research to identify dental CPD providers*

It is important to note that at the start of the rapid industry assessment there was no pre-existing list of dental CPD providers. There was no recent or substantial literature scoping the industry. It is also extremely difficult (if not impossible) to produce a definitive list of providers given that the industry is unregulated, complex in nature and dynamic. New providers are entering the industry on a regular basis. Existing providers exit the industry for a variety of reasons. Organisations that are well-established, but primarily focus on aspects of dentistry other than CPD, may start to offer CPD as a minor addition to an existing business. Furthermore, as noted above, dental professionals may access some CPD from providers with no explicit focus to the dental market. This is why having a definition of the CPD industry for the purpose of the study was so important.

It meant that the work to identify dental CPD providers was a significant undertaking. Over 800 separate organisations were reviewed as part of this process – to determine whether they were in scope according to the study definition and to build, from scratch, a list of known CPD providers. Nevertheless, it is worth emphasising that the list of identified providers is not assumed to be definitive. Indeed, a key part of the analysis phase of the study involved making estimates of 'unknown' providers to generate industry-level estimates.

The scoping phase included the desk research to produce the long list of identified dental CPD providers. This was based initially on Internet search[16]. The list grew iteratively throughout the course of the study, incorporating information provided by the GDC derived from its stakeholder engagement activities and our discussions with CPD providers.

The list of providers was developed in conjunction with a categorisation of providers. Categorisation of providers helped to segment the industry in a way that ultimately enabled a total number of providers to be calculated. As the initial list of providers was developed, these were each ascribed a provider category, which generated an initial typology of providers. This provider typology was tested with the GDC, which suggested additional groupings. As the list of identified providers evolved, a series of steps were followed to check that all types of provider had been captured:

■ When a new provider was identified it was assessed whether the provider was in scope of the study according to the industry assessment definition.

■ If the provider was in scope, it was checked whether the provider matched to an existing category of provider.

■ If the provider did not match, then a new category of provider was added or an existing category was redefined.

The result was a comprehensive list of 15 provider categories that could then be used to build a bottom up estimate of the total number of providers operating in the UK dental CPD industry.

The GDC also provided a list of 533 named CPD providers derived from a recent audit sample of dentist CPD records. It was not known to us how many dentists this list related to, or the incidence of CPD activity per provider. However, by researching each organisation it was possible to both identify additional CPD providers in scope of the study and categorise them.

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[16] Searches were based on combining two groups of search terms: 1) 'dental', 'dentist', 'dental practitioner', 'dentist specialist', 'dental nurse', 'dental technician', clinical dental technician', 'dental hygienist', dental therapist' and 'orthodontic dentist'; 2) 'CPD', 'continuing professional development', 'training', 'professional development' and 'learning'.

A substantial number of 533 organisations recorded of the sample of CPD logs did not meet the agreed CPD industry definition for the purpose of the subsequent survey and were therefore excluded from the findings of the study. The exclusions were:

■ CPD that had been accessed via providers that did not specifically market their services to dental professionals (such as more general professional development or generic CPD which dental professionals may nevertheless access).

■ CPD from international organisations that have no UK base (i.e. this does not include global companies that operate in the UK and which therefore market CPD to UK dental professionals).

There were also elements that related to in-house provision of CPD by employers (either dental practices or health organisations). This is understood to be an important area of CPD for some dental professionals, but posed a challenge in the context the rapid industry assessment. The complexity of delivery in the NHS, in particular, made it difficult to generate a comparable picture to providers that market CPD externally; especially within the timeframe of the rapid review.

The CPD provider is the basic unit of analysis for the study. As noted in Section 2.1.1 below, the inclusion of in-house CPD provided by dental employers vastly inflates the number of providers assumed to form the CPD industry. This potentially skews the assessment of the industry towards in-house development that is often characteristically different from the 15 provider categories that have provided the main focus for the rapid review.

For example, to assess the size of the CPD industry based on the income/turnover of providers requires a financial value to be placed on CPD at provider level. For certain elements of in-house CPD, where there is no direct or indirect financial transaction between the provider (the dental practice or health organisation) and the recipient (the dental professional), the basis for measuring industry size has to be quite different.

Even where this is possible, given the time and resource constraints, the study methodology had to target providers that market dental CPD provision externally (i.e. providers that were identifiable based on desk research). There was not scope to survey all or a representative sample of the many thousands of dental employers to first identify which employers offer in-house CPD to staff and then to capture this quite distinct aspect of CPD provision. It is, however, acknowledged as an important source of CPD and is included in Section 2.1.2.8.

1.2.1.3 Research tools

A framework (analytical fiche) was developed collaboratively with the GDC to translate the study variables into a series of categories / sub-categories that formed the basis of questions to underpin the main tools for the research: the provider template and spreadsheet for analysis.

The provider template is included in Annex 1 to this report.

1.2.1.4 Pre-population of the provider template

The provider template was pre-populated for each identified provider based on publicly available information. Ultimately, 239 providers were found to be in the scope of the research – excluding certain groups within the membership body / study group category of providers, which were tackled collectively. Contact information for all providers was also gathered as part of this process.

1.2.2 Stage 2: Research

1.2.2.1 The provider survey

The pre-populated templates were sent to providers. Providers were asked to review the information which had already been pre-populated, and then either check and fill in the rest of the document, or agree a time for a short telephone interview. In the three week window set aside for the fieldwork, 40 fiches were completed by the provider and returned electronically, and 62 were completed via a telephone interview. Therefore, a total of 102

CPD providers gave complete information, which represents a response rate of 43%. These 102 providers were estimated to relate to 61% of CPD provision in scope of the rapid industry assessment based on the generalised study findings.

1.2.2.2 *Stakeholder interviews*

Certain segments of the dental industry whose primary purpose is not learning and training, but which nevertheless provide CPD were covered collectively via six stakeholder interviews:

■ Two interviews were undertaken with stakeholders in the BDA focusing on key parts of their CPD offer (conferences, seminars, short courses, local networks and e-learning).

■ A stakeholder from the Committee of Postgraduate Dental Deans and Directors (COPDEND) was interviewed providing an overview of provision by deaneries.

■ A stakeholder from NHS Education for Scotland was interviewed about their CPD provision and the wider Scottish market.

■ Two interviews with representatives of specialist societies and acute settings were also undertaken.

1.2.3 Stage 3: Analysis and reporting

1.2.3.1 *Data analysis*

Analysis of the study dataset provided the basis for generalising findings from the sample of respondents to the CPD industry. This involved:

■ A process of generalising from the sample of providers identified through the study to an estimate of the number of providers comprising the UK dental CPD industry based around the following steps:

   – Identifying a comprehensive list of provider categories

   – Estimating the total number of providers per category

   – Calculating generalised study findings based on the estimated total number of providers.

■ A process of generalising from the financial and customer information within the provider sample to an estimate of industry size and share (by provider category). This involved the following steps:

   – Generating consistent financial and customer information across the provider sample

   – Estimating total income / turnover per provider category and for the industry as a whole

   – Calculating generalised study findings based on industry share.

A detailed technical note (Annex 2) sets out the method followed for each of the above processes, including the assumptions that underpin each estimate. These assumptions are important. As noted above, one of the key challenges for the rapid industry assessment was that there is no definitive list of CPD providers offering services to dental professionals. As the CPD provider was the main unit of analysis for the industry assessment, the study therefore had to estimate a total number of providers in order to calculate generalised findings. This estimate was based on the evidence gathered about known providers operating in the dental CPD industry: i.e. the 239 identified providers plus the additional local networks mentioned above. Assumptions also had to be made about further 'unknown' providers in certain categories.

Further judgement about what was in and out of scope relating to the definition of the industry used for this assessment was also exercised. This is because there are a large number of general providers that offer no dental-specific CPD, but which are used by dental professionals as part of their professional development and recorded as such on CPD logs. The judgement in this context related to whether a provider was offering CPD that explicitly targeted dental professionals. It was based on review of CPD provider websites/marketing.

A degree of caution therefore needs to be applied to the total number of providers estimated as part of this study. The study indicates the overall order of magnitude of the industry and the distribution of providers by category based 15 identified provider categories. Segmenting the industry by these provider categories makes it is easier to be confident about the constituent elements of this complex and diverse industry. However, it is important to consider the analysis in the context of it being a rapid assessment that started from a very limited existing evidence base.

1.2.3.2   *This report*

Within the report, results are presented in the following way:

■ Results from the sample of 102 CPD providers participating in the survey (number and percentage of providers)

■ The generalised results for the CPD industry as a whole for all providers (number and percentage of providers)

■ Where relevant, generalised results for the industry share of provision based on income / turnover.

The remainder of the report sets out the results of the rapid industry assessment in the following sections:

■ Chapter 2 provides an **overview of the dental CPD market** – discussing the categories of organisation involved in the market, market trends, and providing the headline estimate of the size of the CPD market.

■ Chapter 3 focuses on **types of CPD provision and the availability of CPD provision** for each of the dental professions and by geographic area.

■ Chapter 4 looks at the **quality and content of CPD provision** – including take-up of CPD provision by topic area (based on the GDC's core, recommended and other topics), the take-up of verifiable CPD, quality controls used by providers, forms of assessment and accreditation and the involvement of GDC registrants in the management and delivery of CPD provision.

■ Chapter 5 presents the **conclusions to the research**.

2 Overview of the dental CPD market

2.1 Categories of organisation involved in the dental CPD industry

2.1.1 Overview of the number of CPD providers and the customer base

CPD for dental professionals is available from a diverse array of providers. There are an estimated 556 providers in the dental CPD industry based on the definition used for this study. Table 2.1 provides the breakdown of organisations by 15 categories of provider. It also provides a separate estimate for the total number of organisations potentially offering in-house dental CPD, which radically increases the estimate of organisations that could be involved in providing CPD in the UK to over 10,000.

There is no single dominant player within the industry and a potentially rich mix of providers that dental professionals can access. The provider categories containing the highest number of organisations, which in practice relate to the most fragmented parts of the industry, are:

■ The estimated 182 membership networks / study groups, which are typically small-scale and locally-based.

■ The estimated 117 commercial providers, which encompasses a substantial variation in scale of operations.

■ The estimated 100 dental product and device suppliers, only a small number of which undertake substantial CPD activities.

It is estimated that 441 providers (79% of the estimated total number of providers) only or mainly targets the dental sector. The remainder are mainly commercial organisations that generally have a wider health profession focus.

As part of the study, CPD providers reported how many dental professionals had accessed CPD in the last year. This enables a cumulative count of CPD customers by provider category to be undertaken, which is also shown in Table 2.1. The data has limitations as a measure of the overall proportion of dental professionals accessing different categories of CPD provider[17], but, nevertheless, offers an indication of the size of different parts of the industry. It shows that:

■ Commercial providers are by far the largest category of providers, accounting for a third (33.1%) of the cumulative total of dental CPD customers.

■ Postgraduate dental deaneries (17.7%) and publishers (14%) are the next most substantial portion of the industry in terms of cumulative dental CPD customer numbers. This is noteworthy in that the cumulative number of CPD customers broadly corresponds to industry share in financial terms (present in Section 0 below) with the exception of publishers, which form a much smaller share of the market in financial terms. This indicates that dental CPD publishers have a wide reach but less depth of CPD engagement.

■ Other key categories of provider based on cumulative customer numbers are professional associations, membership networks / study groups and health organisations. The remainder of the industry is fairly dispersed.

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[17] Note that this does not correspond to individual dental professionals accessing CPD by provider category because it is based on bottom-up estimates by providers – dental professionals accessing CPD from different providers within the same category are counted multiple times

Table 2.1 **The number of CPD providers in the UK dental CPD industry by provider category and cumulative customer share**

Provider category	Sample			Generalised findings		
	Number of providers	Cumulative number of CPD customers	Percentage of CPD customers	Number of providers	Cumulative number of CPD customers	Percentage of CPD customers
Membership Networks / Study Groups	162	27,880	7.8%	182	32,000	6.4%
Commercial Providers	28	140,276	39.4%	117	165,750	33.1%
Dental Product or Device Suppliers	6	8,525	2.4%	100	19,500	3.9%
Dental Practices (external provision of specialist CPD)	2	210	0.1%	27	2,750	0.5%
- Dental practices potentially undertaking in-house CPD				(9,640)	(101,594)	
Dental Services Providers	5	3,952	1.1%	21	16,500	3.3%
Specialist Societies	11	8,075	2.3%	17	12,500	2.5%
Postgraduate Dental Deaneries	10	55,453	15.6%	16	88,750	17.7%
Dental Schools	7	2,185	0.6%	16	3,760	0.8%
Professional Associations	7	34,778	9.8%	10	40,750	8.1%
Health service organisations (external provision of CPD)	3	26,120	7.3%	10	29,500	5.9%
- Trusts potentially undertaking in-house CPD				(230)	(4,000)	
Dental Bodies Corporate	3	1,015	0.3%	10	2,000	0.4%
Universities	3	720	0.2%	10	2,400	0.5%
Publishers	4	40,000	11.2%	7	70,000	14.0%
Medical Defence / Insurance / Indemnity	3	5,250	1.5%	7	12,250	2.4%
Royal Colleges and Faculties	2	1,200	0.3%	6	2,000	0.4%
Total	256	355,639	100%	556	500,410	100%
Total – including in-house CPD				(10,426)	(606,004)	

2.1.2 Characteristics of providers operating in the dental CPD industry

2.1.2.1 The major players: Postgraduate dental deaneries and commercial providers

The most important categories of provider by industry share are **commercial providers** and the **postgraduate dental deaneries**.

The commercial sector is the most diverse segment of the market in terms of the type of provision offered and size of organisation. The estimated 117 commercial providers vary from organisations with turnovers of several million pounds down to those for which dental CPD only accounts for one or two thousand pounds of turnover. There are a handful of commercial organisations that operate internationally, but most are based around the UK market.

It was clear from the interviews that the commercial providers have developed their CPD products over the years, with a move to providing e-learning particularly apparent. This has required investment in delivery methods and quality assuring the learning.

There is a particular focus on providing verifiable CPD within the commercial segment of the industry. It is seen as a key selling point for most providers. There is, though, variation in the character and volume of quality controls used by commercial providers, as well as quality of CPD assessment procedures. Some commercial CPD providers recognise this variability in quality within what is quite a crowded market and, as a consequence, have focused on quality of CPD as a differentiating feature.

The 16 postgraduate dental deaneries are a well-established element of the CPD market and most are now part of Health Education England's local education and training board (LETB) structure. They offer subsidised training to dental staff working in the NHS or those offering NHS-funded services. The subsidy, in some cases, was estimated to reduce prices to one-tenth of some commercial equivalents. The CPD is split between providing foundation, dental core and dental speciality training for registered dentists, and a mix of short courses for dentists and the wider dental team. Given the public subsidy for the training there is an apparent focus on topics which could be seen as part of a dentist's central skillset rather than some of the more specialist topics. Training tends to be offered in several locations across the deanery area to ensure that dentists are able to attend (particularly as they typically have to take time off from practice to undertake CPD).

2.1.2.2 Professional and specialist associations

Another substantial part of the industry relates to organisations which could be collectively be termed professional bodies (i.e. they are formed on the basis of the profession or specialism within professions that they represent). This encompasses an estimated 33 organisations in total; collectively representing 14.6% of dental provision (see Table 2.5 below). It includes **professional associations**, **specialist societies**, and the **Royal Colleges and Faculties**. Taken together, these three provider categories account for a sizeable proportion of the market in spite of the fact that, alongside some major players, many of these organisations are very small (in terms of the resources available and the size of the membership).

There are six **Royal Colleges and Faculties** which offer dental CPD. They perform, primarily, the function of a union, but also aim to safeguard and improve standards within their professions. As well as delivering training, there is also evidence that they are involved in supporting the delivery of foundation / specialist training.

The 10 **professional associations** represent the different members of the dental team or the dentistry profession as a whole. All offer dental CPD of some sort. In most cases, CPD is part of the membership / subscriptions that people pay on joining, although a few also charge for particular training sessions.

Specialist societies represent the range of specialist lists within dentistry. It includes societies relating to endodontology, orthodontics, periodontology and oral and maxillofacial pathology, as well as areas such as Special Care Dentistry and anaesthesia in dentistry. A total of 17 societies have been identified as offering CPD. The turnover of these

organisations which is related to CPD varies between tens of thousands of pounds and several hundred thousand pounds, a likely reflection of the different sizes of the specialist lists.

2.1.2.3 Dental schools and Universities

There are 16 **dental schools** in the UK able to offer pre-registration training to dentists in the UK (these are typically older universities and those in the major cities). Most of these institutions also offer a wide selection of CPD types. A further 10 higher education institutions (referred to in this study as universities) also offer dental CPD. They often have a formal link with a dental school.

2.1.2.4 Publishers

Publishers are also an important part of the CPD industry, especially with regard to their reach across the dental profession. The seven publishers offering dental CPD material to dentists and DCPs are estimated to represent 14% of the cumulative number of CPD customers. This is partially as a result of the accessibility of the verifiable learning and also their attachment to large institutions, such as the BDA. Overall, the category ranges from publishers of several journals and organisations producing journals as part of a set of wider CPD products (for example, e-learning), through to relatively smaller organisations that publish few journals.

2.1.2.5 Membership networks and study groups

The main **membership networks** are a key source of face-to-face dental CPD at the local level. There are two main types of membership network evident from the fieldwork, both of which are substantial providers of CPD (as part of a category of provider estimated to represent 6.4% of the cumulative dental CPD customer base): the local branch system of professional associations such as the BDA and their underpinning structures such as Local Dental Committees/Branches or equivalent.

For example, upon joining the BDA, all members are allocated a local 'branch' (there are 21 nationally, mostly at the county level) and a 'section' (of which there are 80, mostly on the scale of a town and local area). Meetings of these groups are normally monthly or bi-monthly and attendance can range from 20–100. These events tend to take place for a couple of hours in the evening to maximise attendance. The topics are varied depending on how active the local deanery is (implying that there is awareness of the local market of face-to-face CPD amongst providers) or how active the group's membership is. Another key motivation for attendance at these events was to network with other local dentists. While the BDA holds some records centrally on the activity of these groups, they operate with a large degree of autonomy, so there are only estimates of the scale of the CPD delivered through the networks.

The 77 Local Dental Committees have provision in statute which sets out their main purpose as being consultative and representative bodies which are formed by groups of dentists with a General Dental Services contract or a Primary Dental Services contract. The level and character of the activity of these groups varies but CPD is delivered in most cases. A stakeholder reported that the CPD is often related to policy issues facing dentists.

2.1.2.6 Dental care organisations offering CPD

There is a selection of organisations which primarily provide dental care, but also offer CPD on a commercial basis. Within this group are **Dental Bodies Corporate**, **dental practices** and **organisations within the National Health Service/Health Service**. There are 10 dental bodies corporate, a few of which offer CPD to their own staff, and staff of some local dental practices (including, but not limited to, those who refer them patients) on either a cost-free, or subsidised basis. There is some evidence that the subject matter covered in this training is more specialist in nature (i.e. it is unlikely to be core or recommended as defined by the GDC).

A similar model appears to exist in a small minority of dental practices. The research has identified that some practices in the UK, particularly those with more specialist services, also

offer CPD on a commercial basis to local DCPs. This ranges from very short courses (a couple of hours in the evening of verifiable CPD) to full postgraduate modules or qualifications offered over several weeks / months.

2.1.2.7 Organisations primarily providing dental products or services

The next segment of the CPD industry to consider is organisations which provide **dental products or devices.** There are estimated to be around 100 such organisations with some relevance to the dental CPD industry. These are mainly private enterprises, ranging from large multinational organisations through to small companies developing and manufacturing niche dentistry products, which offer CPD to dentists in the use of their products. Training is largely free, and often delivered at conferences or other events.

The role of CPD in the business models of the estimated 21 **dental services providers** is slightly different to providers of dental products and devices. These organisations provide support services to dental practices (for example, payment plans for customers, consultancy support, back office functions, and specialist training and development activities). Some of these organisations offer CPD either free, as an inducement for practices to sign up to their services, or on a commercial basis. The provision of CPD does not appear to be a substantial part of their business model though.

A further (relatively) small, but important, part of the CPD industry is **medical defence / insurance / indemnity organisations.** The seven providers in this category offer CPD around quite a focused set of topics (on legal matters, patient confidentiality, resolving complaints, for example). While these are typically substantial organisations, CPD is generally considered to be very much a secondary part of their business, often considered as a member benefit.

2.1.2.8 Other CPD that dental professionals access

As noted earlier, some CPD providers identified encompasses activity that is not explicitly targeted to the dental sector (62 out of the 533 providers identified by a list provided by the GDC). Two thirds of these organisations (40 organisations) offer first aid or safety (mainly resuscitation) training. These are typically small, local training providers. At least one organisation offers niche provision of this type of training specifically targeting dental practices, but this appears to be relatively exceptional. Other providers include:

■ Professional coaching organisations;

■ Organisation performance and relationship development specialists;

■ Individual CPD trainers;

■ IT training;

■ Specific training on safeguarding children (sourced from specialist charities or local authorities);

■ General further education or work-based learning providers.

A further 26 out of the 533 sources of dental CPD related to international organisations that have no direct UK presence for the provision of CPD (i.e. this does not include global companies that operate in the UK and which therefore market CPD to UK dental professionals). Around half of these organisations were specialist dental professional associations in other countries or at international level. There were also a small number of universities in other countries, international conferences, plus general training consultancies based abroad.

As noted above, it is to be expected that a portion of CPD is provided in-house by dental practices, especially in the context of the whole dental team. For dentists in secondary care settings, this is also the case. Dentists employed in acute NHS trusts access CPD from a mix of sources. While it is difficult to generalise, given the range of settings and specialities of dentists working in these settings, it is clear that much of these dentists' CPD needs are accessed through their specialist societies. The trusts also provide free training in-house to dentists and DCPs that they employ. This is likely to be more general in nature, as this is

often delivered to dentists and DCPs together. The CPD delivered in these settings is also delivered in line with appraisals and individual development plans.

2.2 Maturity of the industry and recent trends

The CPD industry in dentistry is quite mature. Table 2.2 shows that an estimated 265 providers, around half of all providers (47.6%), have been offering dental CPD for over 15 years. A number of key providers have been established for much longer. The few new entrants (15 providers, 2.7% of all providers) are largely composed of commercial organisations.

There is a spike in new entrants 6-10 years ago (compared to the preceding five year period). This may be associated with the introduction of mandatory CPD requirements for dentists in 2002 and for DCPs in 2008. A number of interviewees with extensive experience of the CPD industry over time reported that the years after 2002 saw significant expansion (and flux) within the industry. A similar pattern was reported by some interviewees in relation to the current industry, as the post-2008 mandatory CPD requirements for DCPs had reportedly increased demand for CPD in a way that was bringing in new providers.

The qualitative interviews gave a clear sense of a CPD market that is growing. In some areas, this is related to the DCP market, which some organisations feel is under-served and the source of significant growth potential. Overall, as Table 2.3 shows, around 90% of providers felt that the market had remained either constant or had grown in size.

The commercial sector, professional associations and dental product suppliers were all more likely to report growth. Interviews suggest significant developments (in recent times and in the pipeline) from these elements of the market to harness technology to improve the reach of the CPD offer. Several providers also noted e-learning as a growth area.

Table 2.2   Length of time that providers have been operating in the dental CPD market

	Sample		Generalised results	
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers
Up to 2 years	4	4.0%	15	2.7%
2-5 years	18	18.0%	145	26.2%
6-10 years	23	23.0%	101	18.1%
11-15 years	6	6.0%	30	5.4%
15+ years	49	49.0%	265	47.6%
Total	100	100.0%	556	100.0%

Table 2.3   To what extent has turnover or income grown over the previous three years?

	Sample		Generalised results	
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers
It has fallen substantially	1	1.4%	3	0.5%
It has fallen slightly	10	14.1%	43	7.7%
It has remained fairly constant	25	35.2%	285	51.3%
It has grown slightly	22	31.0%	154	27.7%
It has grown significantly	13	18.3%	71	12.7%
Total	71	100.0%	556	100.0%

2.3 Size of the CPD market

2.3.1 Charging models and costs to dental professionals

Table 2.4 shows the distribution of charging models used by dental CPD providers. This shows that around two-fifths (43%) of providers operate a model in which the full cost is paid by participants. Much of the remainder of the market is composed on subscription / membership-based models (11.6% of providers) and subsidised provision (11.6% of providers).

More detailed analysis also suggests that:

■ Professional associations and study groups predominantly offer CPD as part of a wider subscription.

■ Postgraduate dental deaneries are the dominant source of subsidised training, although this model is also used by medical defence organisations and Dental Bodies Corporate.

■ There is relatively little provision that is 'free' to participants.

It is important to note that more detailed analysis at individual provider level highlights the complexity in charging arrangements. It is fairly common for individual providers across the market to deploy a mixed approach to charging for different products (mainly) or for different customer groups (to a lesser extent). This also means that at the level of provider category, there is huge diversity of charging models and, as a consequence, an extremely diverse offer in terms of costs to participants. In average terms, the most expensive provision relates to universities, dental schools and specialist dental practices offering external CPD. However, some of these providers offer relatively inexpensive short CPD sessions as well.

Table 2.4   Which of the following categories best describes how dental professionals are charged for CPD provision?

	Sample		Generalised results	
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers
Full cost is paid	48	47.1%	239	43.0%
Subscription / membership	25	24.5%	201	36.1%
Subsidised	22	21.6%	64	11.6%
All provision is free	7	6.9%	52	9.3%
Total	102	100.0%	556	100.0%

2.3.2 Income / turnover generated by CPD providers

Table 2.5 below shows that the overall dental CPD industry is estimated to be worth just over £57 million annually. Over half of the industry (57.3%) in terms of income / turnover relates to commercial providers and the postgraduate dental deaneries. The vast majority of deanery income takes the form of subsidy.

The next largest parts of the industry relate to dental practices providing external specialist CPD, the Royal Colleges and Faculties and dental schools, each of which represents £3-4 million in income / turnover.

Publishers and professional associations each fall within the £2-3 million range, even though both categories of provider have a substantial spread of engagement. The remaining components of the industry are relatively small-scale.

Table 2.5   Total annual income / turnover for the UK dental CPD industry by provider category

Provider category	Sample		Generalised findings		
	Number of providers	Total income / turnover	Number of providers	Total income / turnover	Industry share of income / turnover
Commercial Providers	28	£15,873,500	117	£20,500,000	35.9%
Postgraduate Dental Deaneries	10	£8,290,850	16	£12,250,000	21.4%
Dental Practices (external provision of specialist CPD)	2	£303,000	27	£4,000,000	7.0%
Royal Colleges and Faculties	2	£1,500,000	6	£3,500,000	6.1%
Dental Schools	7	£1,393,875	16	£3,300,000	5.8%
Publishers	4	£1,675,000	7	£2,900,000	5.1%
Specialist Societies	11	£1,764,900	17	£2,700,000	4.7%
Professional Associations	7	£1,830,500	10	£2,200,000	3.8%
Medical Defence / Insurance / Indemnity	3	£617,500	7	£1,400,000	2.4%
Dental Product or Device Suppliers	6	£557,500	100	£1,200,000	2.1%
Dental Services Providers	5	£294,400	21	£1,200,000	2.1%
Universities	3	£195,000	10	£900,000	1.6%
Membership Networks / Study Groups	162	£175,550	182	£700,000	1.2%
Health service organisations (external provision of CPD)	3	£77,800	10	£300,000	0.5%
Dental Bodies Corporate	3	£53,500	10	£100,000	0.2%
Total	256	£34,602,875	556	£57,150,000	100%

3   Types of provision and availability of provision

3.1   Types of provision

Most providers in the dental CPD industry have a diversified model of provision, offering more than one type of provision. Interviews found that providers consciously attempt to diversify their offer in order to attract business.

Short courses are the main type of provision offered in the dental CPD industry – offered by an estimated 376 providers. This is a likely response to the needs of those undertaking the CPD, who have to leave their workplace in order to attend training. Providing a wide range of short courses was found to be a central part of the marketing strategy of most postgraduate dental deaneries and commercial providers. Relative accessibility may also explain why e-learning is the third most substantial form of provision offered in this industry. The types of provision which are most niche in nature are journals and industry / trade shows.

Table 3.1   Types of CPD provision offered by providers

	Sample		Generalised results	
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers
Short courses	69	67.6%	376	67.7%
Seminars / study groups	54	52.9%	315	56.6%
e-learning	49	48.0%	196	35.3%
Conferences	52	51.0%	190	34.1%
Post-graduate training / qualifications	43	42.2%	145	26.1%
Industry shows / trade shows	22	21.6%	90	16.2%
Journals	21	20.6%	49	8.8%
Total	102	100%	556	100%

3.2   Availability of provision across the dental professions

Figure 3.1 summarises the data on CPD providers for which a particular dental profession makes up at least half of their market. These providers may be considered to have a core customer base. There are an estimated 340 providers targeting a specific dental profession in this way (an estimated three-fifths of all providers).

Figure 3.1 also shows that around 240 providers (or around two-fifths of providers) focus their provision on GDPs. This is over twice the number of providers focussed on all the other dental professions together (99 providers in total) and backs up findings from the desk research of publically available materials which suggested that GDPs were the main target group for CPD provision. GDPs represent the second largest professional group within dentistry, and have the highest CPD requirements. Therefore it is understandable that they make up such a large part of the industry.

Dental nurses make up at least half of the customer of 46 providers in total. This represents less than one-tenth of providers in the industry. Given that dental nurses comprise the largest single profession within the dentistry team (nearly 50,000 registrants in the GDC's last available register) it is surprising that they are not a core customer base for more providers in the industry.

The industry of CPD providers for dentists on a specialist list appears to reflect these dentists' specialist skills and training requirements. There are 22 providers for which these dentists make up over three-quarters of their customer base, and an additional three providers for which these dentists make up 50-75% of the customer base. Dental technicians also appear to have a similar specialist set of providers. They form over three quarters of the customer base for 13 providers.

The graph also shows that clinical dental technicians and orthodontic therapists make up very marginal parts of the industry – these professions do not comprise the core customer base for any providers.

Figure 3.1   Number of providers with particular dental professions as key parts of their customer base
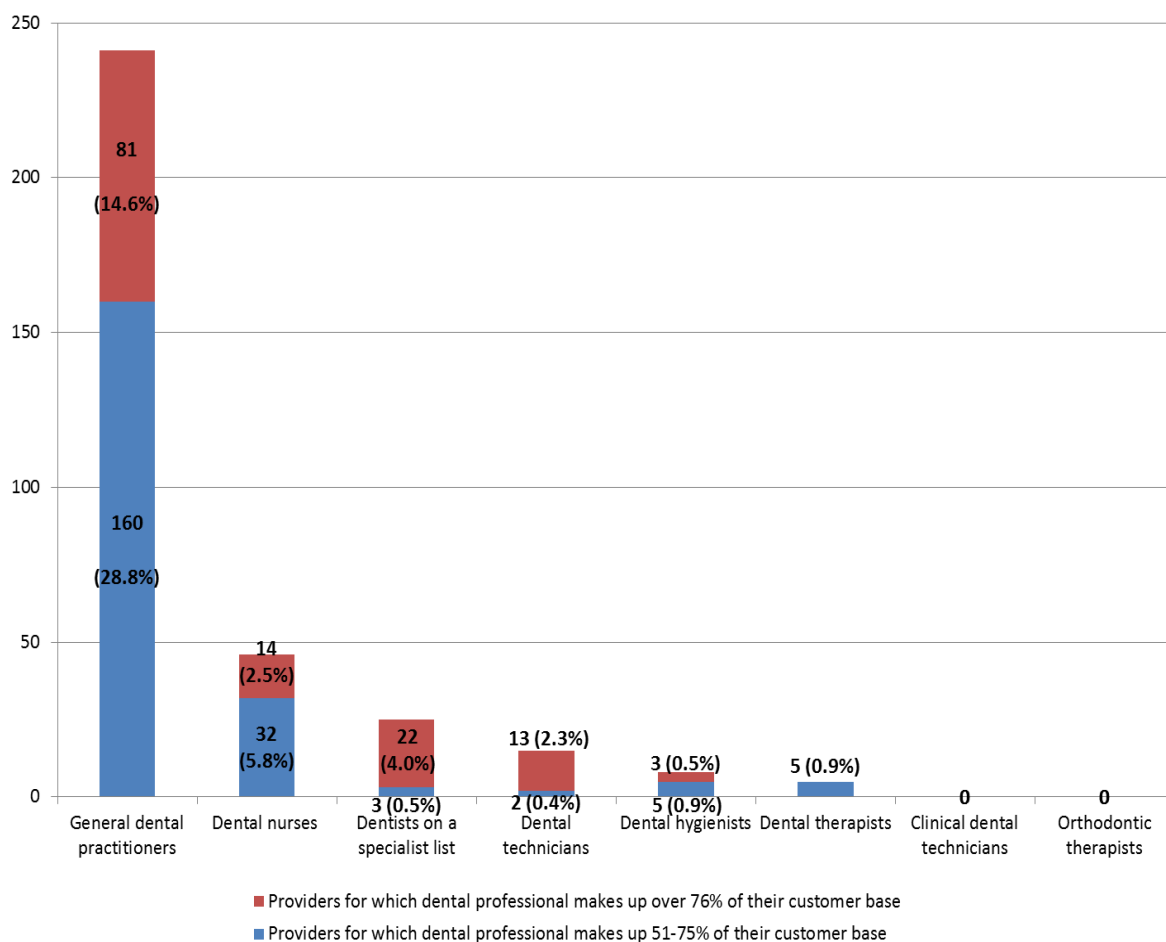
The data collected for each professional group is now reviewed in turn.

Table 3.2 shows the data for dentists on a specialist list. Around half of CPD providers provide little or no CPD to dentists on a specialist list. At the other end of the scale there are around 20 providers whose customer base is primarily comprise of dentists on a specialist list. For the most part, these are the specialist societies reflecting the specialist CPD requirements / interests of these dentists.

Table 3.2   Percentage of CPD customers over the last year that were dentists on a specialist list

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	8	11.4%	22	4.0%	5.9%
51-75%	2	2.9%	3	0.6%	0.3%
26-50%	6	8.6%	68	12.2%	6.6%
11-25%	12	17.1%	62	11.2%	23.6%
6-10%	11	15.7%	90	16.1%	17.9%
Less than 5%	20	28.6%	186	33.5%	30.6%
None	11	15.7%	125	22.4%	15.1%
Total	70	100.0%	556	100.0%	100.0%

Table 3.3 shows the data for GDPs. Although this is the largest part of the industry, there are around one-fifth of providers for which GDPs represented very few or none of their customers.

GDPs made up the core customer base over the last year for nearly half of providers in the industry. This includes a varied mix of provider categories, which is not surprising given its scale. However, GDPs were particularly large parts of the customer base for dental schools, commercial providers, professional associations and medical defence / insurance / indemnity organisations.

Table 3.3   Percentage of CPD customers over the last year that were GDPs

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	15	16.9%	81	14.6%	17.2%
51-75%	29	32.6%	160	28.8%	30.5%
26-50%	22	24.7%	133	23.9%	26.0%
11-25%	10	11.2%	45	8.1%	13.4%
6-10%	3	3.4%	24	4.3%	3.9%
Less than 5%	5	5.6%	96	17.3%	5.4%
None	5	5.6%	16	2.9%	3.6%
Total	89	100.0%	556	100.0%	100.0%

Table 3.4 shows the data for dental nurses. For around one-third of the industry, dental nurses represented little or none of their customer base last year. This is in comparison to just one-fifth of the customer base for GDPs, which are a professional group of comparable size. There are also relatively few providers (under one-tenth of the providers in the industry) for which dental nurses make up over half of their customer base. This suggests that dental nurses are able to access CPD largely from more general provision. Within this group there are relatively fewer commercial providers represented, but publishers are well-represented suggesting that dental nurses access a lot of CPD through this medium. Postgraduate dental deaneries are also major providers of CPD for dental nurses.

Table 3.4   Percentage of CPD customers over the last year that were dental nurses

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	5	6.4%	14	2.4%	1.3%
51-75%	8	10.3%	32	5.7%	13.0%
26-50%	12	15.4%	67	12.0%	9.4%
11-25%	22	28.2%	133	23.9%	36.2%
6-10%	12	15.4%	93	16.8%	23.1%
Less than 5%	8	10.3%	112	20.1%	10.5%
None	11	14.1%	73	13.2%	6.5%
Total	78	100.0%	556	100.0%	100.0%

Dental technicians appear to access CPD from a wide range of different providers. There is also a niche industry (estimated to reflect 5.6% of the overall CPD industry) that specialises in dental technician CPD and which is of considerable scale relative to the size of the profession and in comparison with the larger dental nursing profession.

Table 3.5   Percentage of CPD customers over the last year that were dental technicians

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	5	7.0%	13	2.3%	5.6%
51-75%	1	1.4%	2	0.3%	0.1%
26-50%	1	1.4%	2	0.3%	0.1%
11-25%	10	14.1%	49	8.8%	23.3%
6-10%	9	12.7%	83	15.0%	18.8%
Less than 5%	31	43.7%	257	46.2%	35.3%
None	14	19.7%	75	13.4%	16.8%
Total	71	100.0%	556	100.0%	100.0%

Clinical dental technicians are a very small part of the industry with around 250 registered with the GDC (as at November 2013). As such, they represent a very small part (less than 5%) of the customer base for around half of CPD providers.

Table 3.6   Percentage of CPD customers over the last year that were clinical dental technicians

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	0	0.0%	0	0.0%	0.0%
51-75%	0	0.0%	0	0.0%	0.0%
26-50%	0	0.0%	0	0.0%	0.0%
11-25%	6	9.8%	31	5.6%	15.7%
6-10%	6	9.8%	108	19.4%	13.8%
Less than 5%	30	49.2%	279	50.2%	47.7%
None	19	31.1%	138	24.8%	22.8%
Total	61	100.0%	556	100.0%	100.0%

Dental Hygienists represent the majority of the customer base for very few providers. Given that they represent the fourth largest professional group within dentistry, with only slightly

fewer registrants than the dental technician group in November 2013, the apparent lack of hygienist-focused providers may indicate their CPD needs and interests might be met across a range of provision.

Table 3.7   Percentage of CPD customers over the last year that were dental hygienists

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	1	1.4%	3	0.6%	0.3%
51-75%	1	1.4%	5	0.9%	0.0%
26-50%	3	4.2%	37	6.7%	1.5%
11-25%	13	18.1%	77	13.8%	29.2%
6-10%	19	26.4%	143	25.7%	31.0%
Less than 5%	26	36.1%	215	38.6%	28.1%
None	9	12.5%	76	13.8%	9.7%
Total	72	100.0%	556	100.0%	100.0%

For the approximately 2,200 registered dental therapists, there are only a handful of providers for which they comprise at least one quarter of their customer base.

Table 3.8   Percentage of CPD customers over the last year that were dental therapists

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	0	0.0%	0	0.0%	0.0%
51-75%	1	1.4%	5	0.9%	0.0%
26-50%	2	2.9%	4	0.7%	0.3%
11-25%	10	14.3%	42	7.5%	20.7%
6-10%	12	17.1%	108	19.4%	20.7%
Less than 5%	33	47.1%	247	44.4%	43.1%
None	12	17.1%	141	25.3%	15.2%
Total	70	100.0%	556	100.0%	100.0%

Orthodontic therapists are a very small part of the industry with around 350 registered with the GDC (as of November 2013). As such their CPD requirements are provided by a diffuse set of providers. For around half of the CPD industry, orthodontic therapists represent a small part of the customer base (less than 5%).

Table 3.9   Percentage of CPD customers over the last year that were orthodontic therapists

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
76-100%	0	0.0%	0	0.0%	0.0%
51-75%	0	0.0%	0	0.0%	0.0%
26-50%	0	0.0%	0	0.0%	0.0%
11-25%	5	9.1%	33	5.9%	17.9%
6-10%	6	10.9%	71	12.8%	9.3%
Less than 5%	26	47.3%	294	52.8%	52.9%
None	18	32.7%	148	26.7%	19.9%
Total	55	100.0%	556	100.0%	100.0%

3.3 Geographic availability of provision

Table 3.10 shows that the dentistry CPD industry is dominated by organisations with a UK or international market (estimated to be 54.9% of all providers). Providers with an international focus are primarily commercial providers or specialist societies. The providers with a UK national focus are mainly specialist societies, professional associations (which typically have a mandate to represent their profession or specialism across the UK) or commercial providers.

A third (35.1%) of the industry is made up of organisations delivering CPD locally. Most of the estimated 195 local dental CPD providers are part of the BDA's local branch and section network or the local dental committees. As such they are quite small in nature. There are a much smaller number of providers operating at a regional level, most of which are postgraduate dental deaneries.

Table 3.10 Geographic markets for dental CPD

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
UK wide	57	22.3%	244	43.9%	57.7%
Local	161	62.9%	195	35.1%	6.4%
International	17	6.6%	61	11.0%	16.1%
Regional	13	5.1%	27	4.8%	7.5%
Only offer online provision	4	1.6%	15	2.7%	8.7%
England	2	0.8%	8	1.4%	2.8%
Scotland	2	0.8%	6	1.0%	0.8%
Total	256	100.0%	556	100.0%	100.0%

4 Quality and content of CPD provision

4.1 Take-up of provision by topic area

The GDC has previously identified a number of 'core' and 'recommended' CPD topics that dentists and DCPs are advised to undertake. These are not a mandatory element of the GDC's requirements. Figure 4.1 shows that 187 providers (34% of the estimated total number of providers) primarily delivered CPD in 'core' topics in the last year. This is defined as providers reporting that two thirds or more of provision related to 'core' topics. It contrasts with 8% of providers that primarily delivered 'recommended' topics. A substantial proportion of the industry (38% of providers) primarily offers neither 'core' nor 'recommended' CPD.

Figure 4.1   Number of providers primarily delivering 'core', 'recommended' and other CPD
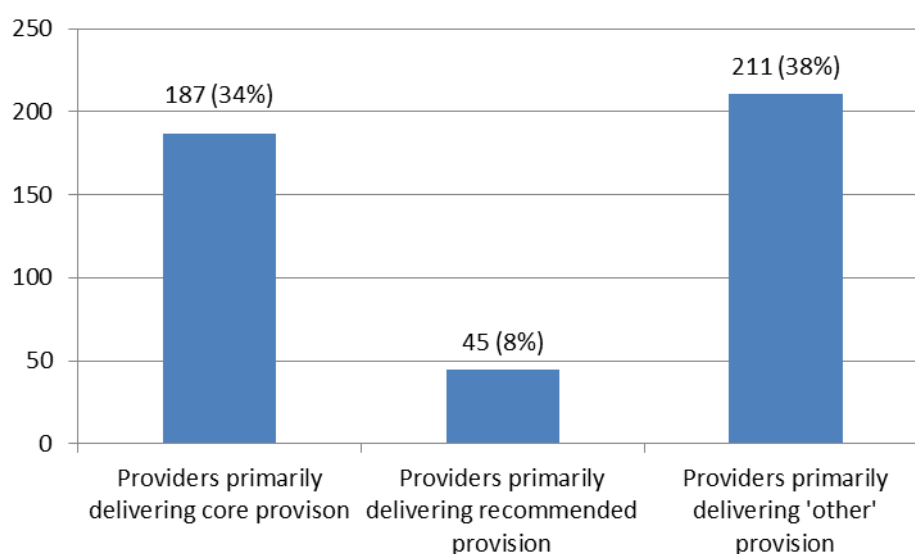
As shown in Table 4.1, about 90% of providers offer at least some core topic provision. It was also clear from the desk research of providers' websites that many providers market their offer around core or recommended topics.

Table 4.2 shows that around 65% of providers offer at least some of the GDC recommended topics although the prevalence of CPD in these topic areas is far lower than for core topics. Provision of CPD in recommended topics is likely to be quite focused on a relatively small number of providers as the desk research found several examples of organisations which specialised in particular recommended topics such as legal and ethical issues or complaints handling.

As shown in Table 4.3, there is also a large part of the industry for non-core or recommended topics with around 90% of providers offering some training of this sort too. This is a reflection of the vast range of possible topics outside of the six core and recommended topics. From the desk research, the main 'other' topics are: subjects related to particular dental products / devices, leadership and management skills (including practice management), or more specialist dentistry topics.

Table 4.1   Approximate percentage of customers in the last year receiving CPD related to 'Core' topics (medical emergencies; disinfection and decontamination; radiography and radiation/materials and equipment)

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
All (100%)	9	10.8%	44	7.9%	26.9%
Most (67%-99%)	21	25.3%	143	25.7%	22.8%
Around half (34-66%)	19	22.9%	178	32.0%	24.5%
Some (up to 33%)	28	33.7%	130	23.3%	23.3%
None	6	7.2%	62	11.1%	2.5%
Total	83	100.0%	556	100.0%	100.0%

Table 4.2   Approximate percentage of customers in the last year receiving CPD related to 'Recommended' topics (legal & ethical issues; complaints handling; oral cancer: early detection)

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
All (100%)	4	5.4%	10	1.8%	0.7%
Most (67%-99%)	9	12.2%	34	6.2%	11.6%
Around half (34-66%)	20	27.0%	150	27.0%	30.0%
Some (up to 33%)	32	43.2%	165	29.6%	41.7%
None	9	12.2%	196	35.3%	16.0%
Total	74	100.0%	556	100.0%	100.0%

Table 4.3   Approximate percentage of customers in the last year receiving CPD related to neither core nor recommended topics (i.e. any other topic)

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
All (100%)	16	19.3%	114	20.5%	27.6%
Most (67%-99%)	13	15.7%	97	17.5%	14.9%
Around half (34-66%)	12	14.5%	43	7.8%	17.6%
Some (up to 33%)	29	34.9%	250	44.9%	30.8%
None	13	15.7%	52	9.3%	9.1%
Total	83	100.0%	556	100.0%	100.0%

4.2 Delivery of verifiable CPD

Around three-quarters of providers in the industry offer a fully verifiable set of CPD products and services (see Table 4.4).

Table 4.4   Approximate percentage of the verifiable CPD delivered by providers in the last year

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
All (100%)	77	77.8%	408	73.5%	84.0%
Most (67%-99%)	17	17.2%	120	21.6%	9.8%
Around half (34-66%)	4	4.0%	23	4.1%	3.5%
Some (up to 33%)	1	1.0%	4	0.8%	2.7%
Total	99	100.0%	556	100.0%	100.0%

Commercial providers offer the highest proportion of verifiable CPD; in interviews, it was clear that offering a large proportion of verifiable CPD was a deliberate part of their business strategy as dental professionals are less likely to pay for non-verifiable CPD. Postgraduate dental deaneries and dental schools also offered a particularly high proportion of verifiable CPD.

There is slight variation in the proportion of which types of provision are verifiable. The proportion of verifiable CPD is highest in postgraduate training and qualifications; seminars and study groups also offered a high proportion of verifiable CPD. This is a result of the setting of the learning which makes it more straightforward to meet the requirements of verifiable CPD (such as undertaking an assessment and providing documentary evidence of participation). Other defining characteristics of verifiable CPD, such as the ensuring the training has concise educational aims and objectives and clear anticipated outcomes are already built into postgraduate training and qualifications.

Providers of CPD through journals offered the lowest proportion of verifiable CPD. Given the challenges in quality assuring the learning that is acquired through this medium, this is not a surprising finding. Another type of provision where the question of quality control is crucial is e-learning.

4.3 Quality controls

There was a high degree of homogeneity in the quality controls that providers from different parts of the industry used in their CPD. Across all providers, the main quality control was feedback gathered from learners at the end of CPD provision. Feedback was often structured around the aims and objectives of the course or conference. In the majority of cases, this information fed into a formal or informal internal reviewing system.

Universities, dental schools, deaneries, professional associations and publishers and specialist societies, reported that undertaking peer review and collecting feedback from learners were their main quality controls. Dental service providers, product suppliers, medical defence and insurance organisations who principally offered short courses mostly used feedback forms from learners.

Several providers noted that they took steps to ensure the subject experts delivered the training and that these individuals were respected in their fields. For providers where the standing of the individual delivering the training was critical to the success of the business, steps were taken to ensure the individual delivers on expectations (such as taking references on past performance, or ensuring that the individual has published peer-reviewed material in the area in question).

Several providers, particularly those who provided e-learning referred to developing robust and objective assessment tools, for example software which could assess the time spent

online. Commercial providers reported a variety of quality controls but still principally used feedback as a quality assurance tool.

There was also a clear sense from the interviews that providers were aware of the need for quality control of the training and noted that, while satisfied with the measures they had in place, they felt this could always be improved. Interviewees generally also exhibited a high degree of awareness of what other providers were doing in relation to quality controls.

4.4 Forms of assessment and accreditation

4.4.1 Forms of assessment used

The data show that there are two main forms of assessment across the dental CPD industry:

■ the attendance / registration of the training participant; and

■ the use of multiple choice assessments.

From interviews, it is clear that there is a range of different models used for this latter form, which include a short set of questions asking the participant whether they have learned anything from attending the training, through to multiple choice questions embedded throughout the training. Providers also vary in terms of whether they require a certain pass mark in these assessments. Very few providers use no forms of assessment.

Table 4.5   Forms of assessment used by CPD providers

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
Attendance / registration	76	74.5%	419	75.4%	63.6%
Multiple-choice tests	47	46.1%	228	41.0%	49.5%
Written examination	20	19.6%	65	11.7%	26.9%
Time spent studying online material is logged	13	12.7%	44	7.9%	17.8%
Other examination / test (oral etc.)	7	6.9%	24	4.3%	8.8%
None / Not applicable	3	2.9%	9	1.6%	3.7%
Total	102	100.0%	556	100.0%	100.0%

The form of assessment used is closely related to the type of provision. For example, attendance taking / registration is the dominant form of assessment for providers delivering conferences, industry trade shows, and short courses while multiple choice tests are used mostly in the assessment of CPD delivered through journals, seminars/study groups and e-learning.

The category of provider is also linked to the assessment methods used. The two largest categories of providers – postgraduate dental deaneries and commercial providers – use attendance/registration and multiple choice testing as the main means of assessment.

The potentially more rigorous methods of assessment – written examinations and oral examination – are used by most dental schools and universities, reflecting the academic location of the training. These methods are also used quite regularly by commercial providers.

Publishers only use multiple choice tests, largely a result of the limitations of this medium, although from the interviews in this area, it was clear that there was a wide variety in the testing methods used.

From the interviews, it is clear that, in general, assessment of learning is an area where providers are attempting to innovate. For example, in assessing the learning gained during e-learning courses, a few providers described the measures they use to ensure they are assessing the active learning of those undertaking the training. For face-to-face methods, a

few providers described developing questionnaires which aimed to assess what had been learned and how this might be used in the workplace.

Finally, interviewees had a high level of awareness of the methods of assessment used across the industry and their relative strengths and weaknesses.

4.4.2 Accreditation of CPD

Large sections of the CPD industry do not offer accredited CPD. Table 4.6 shows that over half of organisations (333 out of 556 providers) do not offer accredited CPD.

Table 4.6   Provision of accredited dental CPD

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
Providers offering accredited CPD	46	46.5%	223	40.1%	47.5%
Providers not offering accredited CPD	53	53.5%	333	59.9%	52.5%
Total	99	100.0%	556	100.0%	100.0%

There are parts of the CPD industry where accredited CPD is the norm, namely postgraduate dental deaneries, dental schools, universities, and specialist societies. Given the links these organisations have with universities, this is not a surprising finding.

There are four main types of organisation which accredit CPD in this sector. These are

■   Royal Colleges, professional associations or institutes. This group mainly accredits specialist societies.

■   University accreditation. Almost all universities accredit their own CPD courses or are accredited by a partner university.

■   Examining boards, which principally accredit longer courses for commercial organisations.

■   Accreditation by a local deanery. The Deaneries themselves accredit their own courses but other NHS lead or subsidised organisations such as NHS post graduate dental schools courses are also accredited by Deaneries.

Accreditation was not the norm in commercial providers, dental products and suppliers, professional associations or publishers. From the interviews, it was also clear that many providers saw some value in accredited CPD but were unclear on the process of gaining accreditation.

4.5   Involvement of GDC registrants in CPD provision

The involvement of GDC registrants in the management of CPD providers and in the delivery of training was assessed in this research. The involvement of registrants can be seen as being important in the quality assurance process and ensuring that CPD content and delivery meets the needs of the GDC. Several providers also noted that in some topic areas which have less of a focus on core dentistry skills, involvement of registrants is not necessarily required.

4.5.1 Involvement of GDC registrants in management

Most CPD providers in the industry are managed by a GDC registrant or by a mixture of registrants and non-registrants. Only around a quarter of the industry has no involvement of GDC registrants in the management (see Table 4.7).

Table 4.7   CPD providers managed by dental professionals registered with the GDC

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
Providers managed by dental professionals registered with the GDC	69	68.3%	322	57.9%	65.1%
Providers managed by a mix of GDC registrants and non-registrants	14	13.9%	103	18.6%	9.2%
Providers not managed by dental professionals registered with the GDC	18	17.8%	130	23.5%	25.7%
Total	101	100.0%	556	100.0%	100.0%

However, the extent of involvement of registrants differs quite widely across the industry. It is highest among professionals associations, specialist societies, postgraduate deaneries and dental schools and universities. These organisations are professionally driven, and their reputations rest on their expert knowledge.

The involvement of GDC registrants in the management of CPD providers is lowest in publishers and dental products or device suppliers. In these categories of organisation, skills in management and sales are of particular importance; the content of the training is produced by subject experts. However several providers from these parts of the industry and the wider commercial sector involved a GDC registrant in a senior role, either to quality assure the CPD delivery, or to provide clinical leadership to the organisation. In many cases these skills were seen as complementing the management or commercial skills of the non-GDC registrants.

4.5.2   Involvement of GDC registrants in delivery

A large proportion of the dental CPD industry has, at minimum, some involvement of GDC registrants in the delivery of the training. Around half of dentistry CPD providers reported that all of their CPD is both designed and delivered by GDC registrants. A further third of the industry reported that their CPD is delivered by a mixture of registrants and non-registrants.

Table 4.8   Involvement of dental professionals registered with the GDC in the delivery of dental CPD

	Sample		Generalised results		
	Number of providers	Percentage of Providers	Number of providers	Percentage of Providers	Industry share of provision
All CPD is designed and delivered by GDC registrants	52	52.5%	284	51.0%	52.5%
All CPD is delivered by GDC registrants	4	4.0%	12	2.1%	1.2%
Some CPD is delivered by GDC registrants	32	32.3%	211	37.9%	31.5%
CPD is mainly delivered by non-GDC registrants	11	11.1%	50	9.0%	14.8%
Total	99	100.0%	556	100.0%	100.0%

There is no strong pattern in relation to the design and delivery of CPD by GDC registrants and the type of provision. Across all types of CPD provision in the industry most CPD is designed and delivered by GDC registrants, or delivered by registrants. The only substantial differences to this are short courses.

Only a small proportion of CPD is delivered by non-registrants; this is primarily publishers and commercial providers. Interviewees noted that in some topic areas, such as management skills, or some of the legal topics, there is no advantage to the CPD being delivered by a registrant; these providers noted that they ensured that these topic areas were delivered by subject experts in these areas.

5 Conclusions

This report has summarised the main characteristics of the UK dentistry CPD industry. The evidence presented here allows us to make several high level conclusions about the nature of the industry.

■ There is a large number and varied range of providers operating in the industry. They vary in terms of: the type and the size of the organisation and its CPD offer, and whether CPD is in fact their core business, or a by-product or commercial incentive sitting alongside other activities. All of these factors influence the likely costs that the dentist or DCP will have to pay. There are a range of different payment models in place too, with some training paid for at cost and other training accessed through subscription or membership of an organisation.

■ There are several different types of provision, or styles of learning, available in the industry which range from formal methods, such as lectures, through to informal self-directed methods such as journal reading.

■ A substantial amount of CPD is delivered at a very local level by providers with a local market, but also by providers with national and international markets.

■ The CPD topics covered are vary enormously (reflecting the array of skills required in modern dentistry) and range from specialist dentistry skills through to more generalist management skills, such as how to manage a dental practice. However, the 'core' topics as defined by the GDC make up a large portion of the industry provision.

■ The industry is also characterised by a predominance of CPD for dentists (and GDPs in particular). Both for GDPs and dentists on a specialist list, there is a large range of providers for which they are the main target group. The market for the other dental professionals is far less specialised. This may be a reflection of the skills required in these roles. The industry is dynamic. There is evidence that improving access to IT allied to the demands of some dentists and DCPs to complete their CPD requirements outside of work hours, or in their own home, has driven providers to diversify into e-learning provision, in addition to a number of specialist e-learning providers.

■ There is some evidence that the CPD industry in dentistry is growing.

As a result of the large number of providers, even when looking at a very local level, it is likely that dentists and DCPs have a multitude of options when choosing how to fulfil their CPD requirements; even before taking the quality of the learning or its suitability for their own learning style into consideration. However, the sheer number of potential options and the imbalance of provision across the dental professions makes it difficult to see how DCPs in particular can easily make informed choices about the best or most relevant CPD.

Primarily as a result of the range of different types of provision available, the quality of CPD delivered is a relevant question and one of interest to providers across the industry (as well as the GDC). There are several methods for potentially quality assuring CPD, such as involving GDC registrants in its design and delivery, using different forms of assessment to ensure that active learning is taking place, and including quality controls. However providers, on the whole, recognise that this can always be done better and is an ongoing area of work in many cases.

Given the focused goals of this rapid assessment, there are additional questions of interest that this study has only touched upon, and which would benefit from further research. These are:

■ On the question of the quality of CPD available, providers' perspectives on the quality of their own, and others' provision, have only been addressed in a rather targeted fashion.

■ Secondly, a study focusing on the CPD that dentists and DCPs record in their returns to the GDC would shed light on the mix of CPD accessed at the level of dental professionals and provide insight into some of the areas of the market which have been difficult to assess in the context of this rapid assessment.

Annex 1   CPD Provider Template

Organisation name	Click here to enter text.
1. Type of organisation	Choose an item.
2. How long has your organisation been providing CPD to dental professionals? *(Up to 2 years; 2-5 years; 6-10 years; 11-15 years; 15+ years)*	Choose an item.
3. Which of the following types of CPD provision do you offer? *(please select all that apply from the list below)*	
Post-graduate training / qualifications	☐
Short courses	☐
e-learning	☐
Journals	☐
Seminars / study groups	☐
Conferences	☐
Industry shows / trade shows	☐
Other (Please specify)	Click here to enter text.
4. Excluding any online provision you may offer, which of the following categories best describes the geographic markets for dental CPD do you serve? *(International; UK-wide; England; Scotland; Wales; Northern Ireland; regional; local; only offer online provision)*	Choose an item.
5a. Does your organisation only or mainly target the dental sector?	Choose an item.
5b. If no, please describe your sector focus (i.e. which other sectors or occupations you serve)?	Click here to enter text.
6. Can you provide a rough breakdown of the percentage of dental profession CPD customers by profession over the last year by group? *(None; less than 5%; 6-10%; 11-25%; 26-50%; 51-75%; 76-100%)*	
Dentists on a specialist list	Choose an item.
General dental practitioners	Choose an item.
Dental nurses	Choose an item.
Dental technicians	Choose an item.
Clinical dental technicians	Choose an item.
Dental hygienists	Choose an item.
Dental therapists	Choose an item.
Orthodontic therapists	Choose an item.
7. Which of the following categories best describes how dental professionals are charged for CPD provision? *(full cost is paid by participant or employer; subsidised; subscription/membership; all provision is free)*	Choose an item.
8. Can you provide indicative costs to participants for the main types of CPD offered?	Click here to enter text.
9a. Roughly how many dental professionals accessed CPD provision in the last year for which information is available (excluding free, downloadable material)?	Click here to enter text.

9b. What is your organisation's turnover or income in the most recent year?	Click here to enter text.
9c. If known, what is the level of turnover/income for the same period relating the provision of dental CPD?	Click here to enter text.
9d. Or, please estimate the percentage of total turnover or income related to provision of dental CPD.	Click here to enter text.
9e. To what extent has turnover or income grown over the previous three years *(please select one from the following options: it has grown significantly; it has grown slightly; it has remained fairly constant; it has fallen slightly; it has fallen substantially)?*	Choose an item.
10. What is the approximate percentage of customers in the last year receiving CPD related to: *(all (100%); most (67%-99%); around half (34%-66%); some (up to 33%); none)*	
'Core' topics (medical emergencies; disinfection and decontamination; radiography and radiation/materials and equipment)?	Choose an item.
'Recommended' topics (legal & ethical issues; complaints handling; oral cancer: early detection)?	Choose an item.
Neither core nor recommended topics (i.e. any other topic)?	Choose an item.
11. What forms of assessment, if any, does your organisation use in relation to dental CPD? *(please select all that apply from the list below)*	
None / not applicable	☐
Attendance / registration	☐
Multiple-choice tests	☐
Time spent studying online material is logged	☐
Written examination	☐
Other examination/test (oral etc.)	☐
Other (Please specify)	Click here to enter text.
12a. Do you offer accredited dental CPD?	Choose an item.
12b. If yes, which organisation or organisations accredit the CPD?	Click here to enter text.
13. Approximately, what percentage of the dental CPD you have delivered in the last year has been verifiable CPD, as defined by the GDC requirements? *(all (100%); most (67%-99%); around half (34%-66%); some (up to 33%); none)*	Choose an item.
14. What quality controls do you provide in the context of verifiable CPD?	Click here to enter text.
15a. Is your organisation (or the parts of your organisation involved in provision of dental CPD) managed by dental professionals registered with the GDC?	Choose an item.
15b. Which of the following categories best describes the nature of involvement of dental professionals registered with the GDC in the delivery of dental CPD by your organisation? *(All CPD is designed and delivered by GDC registrants; All CPD is delivered by GDC registrants; Some CPD is delivered by GDC registrants; CPD is mainly delivered by non-GDC registrants)*	Choose an item.

Annex 2   Technical Note

This Annex provides an overview of:

■ The study dataset

■ The process of generalising from the sample of providers identified through the study to an estimate of the number of providers comprising the UK dental CPD industry based around the following steps:

– Identifying a comprehensive list of provider categories

– Estimating the total number of providers per category

– Calculating generalised study findings based on the estimated total number of providers.

■ The process of generalising from the financial and customer information within the provider sample to an estimate of industry size and share (by provider category). This involved the following steps:

– Generating consistent financial and customer information across the provider sample

– Estimating total income / turnover per provider category and for the industry as a whole

– Calculating generalised study findings based on industry share.

A2.1   The dataset

The study produced a main dataset for analysing the dental CPD industry, which included all CPD providers identified through online search. This was based around a total of 239 organisations for which some information could be gathered through desk research based on publicly-available information.

Desk research based on CPD provider websites offers only an incomplete picture of the industry in terms of the study variables. CPD providers were therefore asked to undertake an interview with the research team or complete a template to provide a more information relating to the study variables.

Out of the 239 providers identified and included in the desk research, a total of 102 CPD providers responded to the survey (a response rate of 43%). This sample of 102 providers provided the basis for generalising to the industry.

Additionally, the dataset included information about two groups of CPD provider within the membership network / study group category that were researched primarily at aggregate level through stakeholder interviews owing to their localised nature:

■ The 80 local BDA branches.

■ The 77 Local Dental Committees.

A2.2   Number of providers: Generalising from the sample

Below we set out the steps to a) first identifying a comprehensive list of provider categories, b) estimating the total number of providers per category, and c) using that estimate to calculate generalised findings for the main study variables.

A2.2.1   Step 1: Identifying a comprehensive list of provider categories

The first step was to segment the market into types of providers. This was undertaken iteratively. As the initial list of providers was developed, these were each ascribed a provider category, which generated an initial typology of providers. This initial list and associated provider typology was tested with the GDC, which suggested additional groupings and provided additional data on organisations that registrants had recorded on their CPD logs. As the list of identified providers evolved, a series of steps were followed to check that all types of provider had been captured:

■ When a new provider was identified it was assessed whether the provider was in scope of the study according to the industry assessment definition.

- If the provider was in scope, it was checked whether the provider matched to an existing category of provider.

- If the provider did not match, then a new category of provider was added or an existing category was redefined.

The result was a comprehensive list of 15 provider categories that could then be used to build a bottom up estimate of the total number of providers operating in the UK dental CPD market.

A2.2.2   Step 2: Estimating the total number of providers per category

One of the key challenges for the rapid industry assessment was that there is no definitive list of CPD providers offering services to dental professionals. The CPD provider was the main unit of analysis for the industry assessment. The study therefore had to estimate a total number of providers in order to calculate generalised findings. This estimate was based on the evidence gathered about known providers operating in the dental CPD industry: i.e. the 239 identified providers plus the additional local networks mentioned above. Assumptions also had to be made about further 'unknown' providers in certain categories.

For some provider categories it was relatively straightforward to identify a category total. In other cases, there was need to estimate a number of unknown providers. The approach by provider category is summarised below in three groups:

1. Organisation categories that are clearly-defined and / or for which comprehensive lists of providers are easily available:

- Dental schools (the GDC publishes a list of Dental Schools in the UK)

- Postgraduate Dental Deaneries (the GDC publishes a list of Postgraduate Dental Deaneries in the UK)

- Professional Associations (the GDC publishes a list of Professional Associations)

- Royal Colleges and Faculties (a defined list of organisations)

- Dental Bodies Corporate (the GDC held a list of Dental Bodies Corporate that could be updated and refined to take account of mergers / market consolidation)

- Specialist Societies (the GDC held a list of Specialist Societies)

- Medical Defence / Insurance / Indemnity Organisations (this is a well-established portion of the industry framed around a relatively small number of providers).

2. Organisational categories from which a list of provider types was drawn:

- Universities (based on a known universe of providers and once Dental Schools had been allocated, this category was formed by the remaining education institutions identified as offering CPD for dentists)

- Publishers (by their nature, accessible through Internet search – there a large number of Journals of potential relevance for dental CPD purposes, but there are relatively few publishers)

- Dental Services Providers (typically larger providers and assumed to be relatively easily to identify)

3. Organisation categories for which there were 'known unknowns' that needed to be reflected in some way in the industry assessment, even though it was not possible to be definitive about the size of the unknown group:

For other provider categories, there was an assumed need to calculate a number of 'unknown' providers. Information gathered through the desk research and surveys could help to generate assumptions for making an estimate of the overall number of providers within each category. In summary, the nature of the assumed unknown portion of the market was as follows

- Commercial providers: While we could be reasonably confident that the provider identification and scoping process had identified major providers, there was assumed to be a sub-group of small, localised providers that remained unidentified because of a lack of marketing presence.

■ Dental product and device suppliers: A discrete exercise to map the separate – and presumed to be much larger – dental product and device market was not in scope of the rapid industry assessment. This category of organisation does offer CPD and was included in the sample where identified as doing so – i.e. where these organisations market a CPD offer to dental professionals. In some cases there is ambiguity about this offer given that CPD relating to the use of a device or product purchased by a dental practice may be offered as a 'free' benefit. There was therefore assumed to be an unknown portion of the industry in this category, some of which offered CPD and some of which did not.

■ Dental practices and health service organisations (i.e. dental employers) providing external CPD: Some of the provision in these categories is known to be small-scale and specialist in nature. Without surveying a representative sample of the 9,000+ dental practices and the 230 health Trusts it is not possible to be definitive about the total number of these organisations that sell CPD to external dental professionals – as distinct from offering in-house training to staff. An assumed number of unknown providers in each category therefore had to be generated.

■ Membership networks / study groups: The study gathered information about a selection of local study groups and networks in addition to those that sit within known structures such as the BDA local branch network and the Local Dental Committees. Given the localised scale of these other groups, it was assumed that other unknown groups exist that could be accounted for in the assessment.

A degree of caution should be applied to the total number of 556 providers estimated as forming the CPD in dentistry industry. We can be fairly confident about the order of magnitude of the industry and the distribution of CPD providers by category, but the process has involved some estimates for 'unknowns'. As noted above, it is challenging to calculate a definitive number of providers operating in the industry, certainly within the timeframe of this study. This partly reflects the diversity of organisations offering some dental CPD. It also relates to the judgement about what is in and out of scope relating to the definition of the industry used for this assessment. The rapid industry assessment defined providers as being in scope where they <u>explicitly market their services to dental professionals</u> (although not necessarily only to dental professionals) and which, as a consequence, are theoretically able to provide <u>a meaningful assessment of their own provision of CPD to dental professionals</u>. The rationale for defining the industry in this way is set out in the main body of the report in Section 1.2.1.1.

The specific assumptions used in each case are set out below as part of the discussion of the approach to estimating total industry turnover / income (Section A2.3.2). The estimates relating to unknown parts of the market may be refined through future research. However, it is worth noting that, as this typically relates to small-scale organisations / networks comprising a minor share of overall CPD provision, the impact of any inaccuracy in estimating unknowns on the overall picture is marginal.

The bottom-up estimates of provider numbers by category enabled an assumed total number of providers operating the dental CPD industry to be calculated. This simply reflected each provider category total. It provided the basis for generalising study results from the sample to the industry as a whole.

A2.2.3   Step 3: Calculating generalised findings by provider number

For each of the main study fields a multiplier was calculated based on the number of respondents in the sample (by provider type). We scaled up the number of responses we collected in each field using the estimated total number of providers, to estimate the total number of providers in each field.

To do this, we:

■ Estimated the total number of providers in each provider category (for example dental practice or dental school).

■ Used this estimate to calculate a multiplier for each provider category (the estimated total number of providers in each provider category / the number of survey respondents in each provider category).

- Multiplied the number of survey responses in each provider category and field by the provider category multiplier to provide an adjusted number of responses in each provider category and each field.

- Summed the adjusted number of responses in each field to estimate the total adjusted providers in each field.

The formula is illustrated below:

$$C \;=\; \sum_{i=1}^{i=15} \left[n_i \times \left(\frac{P_i}{r_i} \right) \right]$$

Where:

C   = Total adjusted providers in each field

n   = Number of providers that responded to the survey in each field

P   = Estimated total number of providers

r   = Number of providers that responded to the survey

i   = Provider category (for example dental practice or dental school)

A2.3   Industry size and share: generalising from the sample

While it is useful to present generalised results corresponding to the number of providers estimated to operate in the UK dental CPD industry, this does not reflect substantial imbalances in provider size. It was therefore it important to provide a complementary analysis that takes account of these differences – i.e. to estimate generalised results according to CPD *provision* as well as CPD *providers*.

Below we explain the steps to, first, generating consistent financial information about providers, then estimating the total income / turnover for the industry and, finally, using that estimate to calculate generalised findings in terms of industry share for relevant study variables.

A2.3.1   Step 1: Generating consistent financial information

Reflecting the quite different financial models and likely information availability across the eventual sample, the study asked providers for information in a variety of forms. For the most recent year, we asked about:

- Indicative costs to participants for the main types of CPD offered

- The number of dental professionals accessing CPD (excluding free, downloadable information)

- The organisation's total turnover/income

- The level of turnover/income related to the provision of dental CPD

- The estimated percentage of total turnover/income related to dental CPD.

These questions provided alternative routes to generating financial information at provider level – reflecting the assumption that there may be sensitivities about providing some financial information for some providers and that some providers may not be able to answer some of the questions. A consolidated figure for provider income / turnover could then be calculated for each respondent based on the information provided. In some cases, for example, knowing the range of costs for each type CPD offered by a provider and the provider's number of customers provided the basis for calculating the consolidated figure in the absence of overall information about dental CPD turnover/income. The method allowed for various elements of financial information to be gathered, which could be triangulated to identify inconsistencies or dubious data.

Importantly, the study also asked providers about the charging method for dental CPD, to reflect different models that had significant implications for estimating overall industry size:

■ Whether the full cost of the CPD is paid by the participant or employer

■ Whether it is subsidised

■ Whether it forms part of a subscription or membership fees

■ Whether the provision is free.

This typology of charging methods allowed us to apply assumptions about what should and what should not form part of the calculation of CPD industry size. These assumptions are as follows:

■ Where the full cost of the CPD activity is paid by the participant or employer, the consolidated income / turnover figures at provider level can form part of the estimate of CPD industry size - as long as the transaction relates directly and exclusively to a CPD activity.

■ Where CPD is subsidised it is important to distinguish between public subsidy for dental training and development (which is included in the calculation of CPD industry size) and subsidised or reduced rates that are offered to dental professionals as an inducement or benefit associated with a non-CPD product or service (which had to be treated on a case-by-case basis).

■ In some cases, CPD is offered 'free' to members of a Professional Association, network or group. Unless the network or group primarily focusses on professional development, it is not appropriate to apportion the full membership costs paid by the dental professional to the dental CPD industry.

■ Membership fees for Professional Associations, Medical Defence / Indemnity / Insurance organisations that provide CPD as a member benefit are excluded from the calculation of CPD industry size where CPD is not the core activity of the provider organisation. This was verified with providers through the study interviews. However, where members pay for specific CPD activities (even at a reduced rate), this is included in the calculation.

■ Similarly, where dental product, device and services suppliers offer 'free' CPD to dental practices that purchase a product or device, none of the associated costs of that product or device are included in the calculation of CPD industry size.

■ In all of the above cases, where providers offered information about the number of dental professionals accessing CPD, this was included the calculation of CPD customers irrespective of charging method.

A2.3.2   Step 2: Estimating total income / turnover for the industry

Once financial information about provider turnover / income related to dental CPD had been generated for the sample, it was possible to use the generalised findings on the number of providers per category (as described in Section A2.2) to estimate the size of the CPD industry by applying certain assumptions about the income / turnover of non-respondent and unknown providers based on:

■ The distribution of provider income / turnover by provider type for the sample of 102 study respondents.

■ Publicly-available information about the activities of the larger sample of 239 providers gathered relating to the study variables.

Below we set out the assumptions used for each type of provider and set out the basis for generalising in each case. A series of tables shows estimated information per provider category (i.e. the application of our assumptions). The top row of these tables presents the sample responses for the provider category as shown in Table 2.1 (customers) and Table 2.5 (income / turnover) in the main report. The remaining rows make explicit the average customer numbers and income for non-respondents and unknowns used to calculate generalised totals.

Commercial providers:

Assumptions:

- A total of 67 commercial providers were identified (the process for identifying providers is set out in the main body of the report in Section 1.2.1.2). This was assumed to represent all major CPD providers.

- There is a large variation in the scale of commercial providers. The non-respondents among identified providers were assumed to be, on average, of the scale of the median commercial respondent (for turnover and number of dental customers).

- A number of very small-scale, typically local commercial providers were identified during the study. It was assumed that further providers of this nature were unknown (including sole traders etc.). An estimate was therefore made of 50 additional providers to reflect this unknown portion – equivalent on average to the scale of known small commercial provider.

Estimate:

Commercial Providers	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*28*			*140,276*	*£15,873,500*
Non-respondents	**39**	**600**	**£100,000**	**23,400**	**£3,900,000**
Unknowns	**50**	**40**	**£15,000**	**2,000**	**£750,000**
Total	**117**			**165,676**	**£20,523,500**

Dental Bodies Corporate:

Assumptions:

- The research indicated that not all Dental Bodies Corporate offer CPD.

- It was therefore assumed that out of the seven non-respondents, two of these Dental Bodies Corporate offer CPD at the scale of the average of known providers.

Estimate:

Dental Bodies Corporate	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*3*			*1,015*	*£53,500*
Non-respondents: Offering CPD	**2**	**475**	**£26,750**	**950**	**£53,500**
Non-respondents: Not offering CPD	**5**	**0**	**£0**	**0**	**£0**
Total	**10**			**1,965**	**£107,000**

Dental Practices offering external CPD:

Assumptions:

- A total of seven providers were identified in this category. The scale of CPD provision was assumed to be relatively similar within this category based on information provided by respondents and marketing information of non-respondents. Most providers appeared to be offering similar CPD activities mostly based on cosmetic dentistry.

- An estimate of 20 additional unknown providers was made at the scale of the average of known providers.

Estimate:

Dental Practices offering external CPD	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*2*			*210*	*£303,000*
Non-respondents	**5**	**105**	**£151,500**	**525**	**£757,500**
Unknowns	**20**	**105**	**£151,500**	**2,100**	**£3,030,000**
Total	**27**			**2,835**	**£4,090,500**

Dental Product and Device Suppliers

Assumptions:

■ This was a difficult category to estimate given that it relates primarily to a group of organisations whose primary function is not CPD and for which the provision of CPD in ancillary to marketing dental products or devices. In some cases, there is evidence that suppliers offer CPD as a 'free' benefit to product or device customers.

■ A total of 24 organisations were identified as offering CPD from a wider list of 68 identified organisations in this category. The wider list of dental product and device suppliers was not assumed to be comprehensive, so an estimate had to be made for unknowns as well as for unknown organisations offering more than 'free' CPD.

■ An estimate of 100 organisations in this category was made. Of the 94 unknown/non-respondent providers, it was assumed that two thirds (62 organisations) have no substantive CPD offer based on the desk research, even though some dentists are known to record these organisations on their CPD log. For these providers, an average estimate of 100 customers per organisation was included in the industry estimate for CPD customers, but CPD is assumed to provide zero income.

■ The remaining 32 estimated unknown/non-respondent providers were assumed to have the median CPD turnover of respondent providers (given some noted imbalance in provider size – i.e. the existence of a small number of large providers).

Estimate:

Dental Product and Device Suppliers	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*6*			*8,525*	*£557,500*
Non-respondents / unknowns: No CPD	**62**	**100**	**£0**	**6,200**	**£0**
Non-respondents / unknowns: Mid-scale	**32**	**150**	**£20,000**	**4,800**	**£640,000**
Total	**100**			**19,525**	**£1,197,500**

Dental Schools:

Assumptions:

■ Non-respondents were assumed to be operating at the equivalent scale to the median respondent provider.

Estimate:

Dental Schools	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*7*			*2,185*	*£1,393,875*
Non-respondents	**9**	**175**	**£210,000**	**1,575**	**£1,890,000**
Total	**16**			**3,760**	**£3,283,875**

Dental Services Providers:

Assumptions:

- There was no substantial variation in the scale of respondent providers, so the average CPD scale of respondents was used to generate estimates for non-respondents.

Estimate:

Dental Service Providers	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*5*			*3,952*	*£294,400*
Non-respondents	**16**	**790**	**£58,880**	**12,640**	**£942,080**
Total	**21**			**16,592**	**£1,236,480**

Health Organisations offering external CPD:

Assumptions:

- This category pertains to a diverse mix of organisations and CPD activities. A central element of organisations attached to NHS Trusts could be identified as the basis for estimating an unknown element of the category (other NHS Trusts offering similar external training).

- As only a small number of providers were identified, it was not assumed to be a widespread element of the industry. An estimate of seven unknown providers was therefore included in the analysis, calculated at a slightly discounted average scale of the respondents fitting the NHS Trust-based model.

Estimate:

Health Service External Providers	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*3*			*26,120*	*£77,800*
Unknowns	**7**	**480**	**£24,700**	**3,360**	**£173,400**
Total	**10**			**29,480**	**£256,200**

Medical Defence / Insurance / Indemnity:

Assumptions:

- The three respondents were assumed to provide a reasonable spread of this portion of the CPD industry. Non-respondents were therefore assumed to be operating at the average scale of respondents.

Estimate:

Medical Defence / Insurance / Indemnity.	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*3*			*5,250*	*£617,500*
Non-respondents	**4**	**1,750**	**£205,833**	**7,000**	**£823,333**
Total	**7**			**12,250**	**£1,440,833**

Membership Networks / Study Groups:

Assumptions:

- There are 77 LDCs, which do not generate CPD income, although they deliver some CPD to members. A regional estimate of members accessing CPD through this channel gained through provider interviews was multiplied by the total number of English regions and UK nations to provide the basis for estimating the total number of customers.

- The 80 BDA branch networks are included collectively for reported the total number of customers, but attribution for income generated by the branch network (via membership fees) is made.

- Five other respondents (study groups and similar) provide the basis for estimating an assumed 20 unknowns, all at average 150 members. The unknowns are split to correspond financially to a top-end group/society and a low-cost group/society based on the modelling of respondents.

Estimate:

Membership Network / Study Groups	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*162*			*27,880*	*£175,550*
Unknown: 'High end'	**10**	**310**	**£51,150**	**3,100**	**£511,500**
Unknown: 'Low end'	**10**	**120**	**£2,400**	**1,200**	**£24,000**
Total	**182**			**32,180**	**£711,050**

Postgraduate Dental Deaneries:

Assumptions:

- The level of subsidy provided via the Deaneries was estimated at £10 million. This was based on the level of reported subsidy at provider level and factoring this up based on the proportion of the dental workforce within the geographic area. The total subsidy was then distributing evenly among non-respondents.

- Additional income for the six non-respondents was assumed at the average respondent level.

Estimate:

Postgraduate Dental Deanery	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*10*			*55,453*	*£8,290,850*
Non-respondents	**6**	**5,545**		**33,272**	**£3,915,142**
Total	**16**			**88,725**	**£12,205,992**

Professional Associations:

Assumptions:

- The three non-respondent providers were estimated at half of the average CPD income of known providers. This reflected the interplay between the wide variation in member/customer numbers across the Professional Associations and where CPD was offered as a member benefit and not deemed by providers to attract income).

- The number of CPD customers for non-respondents was taken as rounded average of respondents excluding the BDA.

Estimate:

Professional Associations	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*7*			*34,778*	*£1,830,500*
Non-respondents	**3**	**2,000**	**£130,000**	**6,000**	**£390,000**
Total	**10**			**40,778**	**£2,220,500**

Publishers:

Assumptions:

- There was assumed to be a good mix of respondents and good basic information about the CPD activities of non-respondents.

- Non-respondents were therefore assumed to be operating at the average scale of respondents.

Estimate:

Publishers	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*4*			*40,000*	*£1,675,000*
Non-respondents:	**3**	**10,000**	**£418,750**	**30,000**	**£1,256,250**
Total	**7**			**70,000**	**£2,931,250**

Royal Colleges and Faculties:

Assumptions:

■ In estimating non-respondent income, we took account of an assumed disparity in scale between the General Dental Faculty and other organisations in this category. Non-respondents were therefore estimated at a discounted average of respondents.

Estimate:

Royal Colleges and Faculties	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*2*			*1,200*	*£1,500,000*
Non-respondents	**4**	**200**	**£500,000**	**800**	**£2,000,000**
Total	**6**			**2,000**	**£3,500,000**

Specialist Societies:

Assumptions:

■ There was assumed to be a good mix of respondents and good basic information about the CPD activities of non-respondents.

■ Non-respondents were therefore assumed to be operating at the average scale of respondents.

Estimate:

Specialist Societies	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*11*			*8,075*	*£1,764,900*
Non-respondents: no CPD	**6**	**734**	**£160,445.45**	**4,404**	**£962,673**
Total	**17**			**12,479**	**£2,727,573**

Universities:

Assumptions:

■ One respondent reported that provision is free to participants and subsidised via Deaneries. In order to avoid double-counting income, the non-respondent estimate of income is based on the average of those organisations reporting that they charge customers.

Estimate:

Universities	Number of providers	CPD customers (per provider)	Income (per provider)	CPD customers - Total	Income - Total
Sample	*3*			*720*	*£195,000*
Non-respondents	**7**	**240**	**£97,500**	**1,680**	**£682,500**
Total	**10**			**2,400**	**£877,500**

A2.3.3 Step 3: Calculating generalised findings for industry share

The generalised results for income / turnover calculated during Step 2 provided the estimate for the size of the dental CPD industry. The proportion of the total income / turnover figure represented by each provider category was used to calculate generalised findings for industry share (akin to the volume of CPD provided).

What we have done:

- Estimated the total number of providers in each provider category (for example dental practice or dental school).

- Used this estimate to calculate a multiplier for each provider category (the estimated total number of providers in each provider category / the number of survey respondents in each provider category).

- Multiplied the number of survey responses in each provider category and field by the provider category multiplier to provide an adjusted number of responses in each provider category and each field.

- Estimated the value of dentistry CPD in each provider category (v_i) as described previously, and divided this by the sum of the value of dentistry CPD in all provider categories (V_T) for each provider category, to give the proportion of the value of dentistry CPD in each provider category.

- Multiplied the adjusted number of responses in each provider category and each field by the proportion of the value of dentistry CPD in each provider category, to give the responses adjusted by market share in provider category and each field.

- Summed the responses adjusted by market share in each field to find the estimated market share in each field.

The formula is illustrated below:

$$M = \sum_{i=1}^{i=15} \left[n_i \times \left(\frac{P_i}{r_i} \right) \times \left(\frac{v_i}{V_T} \right) \right]$$

Where:

M   = Estimated market share in each field

n   = Number of providers that responded to the survey in each field

P   = Estimated total number of providers

r   = Number of providers that responded to the survey

v   = Estimated value (in £) of CPD in each provider category

V_T = Estimated total value (in £) of Dentistry CPD

i   = Provider category (for example dental practice or dental school)