Clinical record keeping by general dental practitioners piloting the Denplan 'Excel' Accreditation Programme

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Background Denplan is a private capitation-based system of providing primary dental care in the UK. An additional programme called Denplan Excel has been developed which requires General Dental Practitioners to instigate various quality processes within their practices in order to become accredited. Clinical record keeping is one area where standards are monitored. This study reports changes in record keeping at patient recall appointments following the implementation of the Denplan Excel programme.

Method Fifty dentists participating in the Denplan Excel pilot programme from different areas of the UK were sampled by means of cluster sampling. Twenty records for each dentist were sampled and items recorded for patients recalled both pre- and post-pilot were compared.

Results The majority of dentists recorded presenting complaint, diagnosis and treatment plan both pre- and post-pilot. However, post-pilot there were a number of improvements in record keeping. Caries recorded on a grid increased from 7% of records to 46%, basic periodontal examination increased from 48% to 85% of records and the updating of medical history increased from 51% to 65% of records. These findings were all significant at the $p < 0.01$ level.

Conclusion Changes can be achieved by voluntary participation in a system of structured record keeping.

Every practising dentist has a legal duty to keep some sort of record of each of their patients for whom they provide dental care. Whilst this requirement may be met by simply recording the patient's name and address, it is widely accepted in the profession that there is an ethical duty to maintain patient records to ensure accurate and safe treatment¹.

Whilst there are relatively few reports in the literature concerning the quality of clinical record keeping in primary dental care, it does appear that the standard of record keeping is inadequate^{2,3}. Younger dentists, female dentists and specialists are those most likely to keep complete and accurate records^{2,3}. Although there have been no studies of clinical records kept by General Dental Practitioners (GDPs) in the UK, an observation made by two District Reference Officers (DROs) in Scotland does give rise to concern⁴. On comparing National Health Service forms completed by GDPs (in

which there is a charting of teeth present), only 48% of chartings were the same as the charting carried out by one of the DROs. The DROs' charts commonly showed more teeth as present than actually were present, suggesting that records were made at the first visit of a course of treatment and not kept up-to-date.

And why is it deemed important to keep good clinical records? There are seen to be four main reasons. Firstly, it is in the dentists' best interests. It is a well-known adage that 'good records facilitate good defence, poor records a poor defence and no records no defence'. The dental record serves as an official document in mal-practice suits. It often becomes the pivotal point not only in the decision to pursue a course of litigation, but also in the outcome⁵. Secondly, good dental records aid in the process of forensic odontology and poor records hinder it⁶. Thirdly, good records facilitate the process of dental audit⁷.

Fourthly, good records enable a monitoring of the patients' state of oral health. This information can then be used for the benefit of the patient, to aid motivation in preventive oral healthcare practices and to monitor the success of any treatment carried out. As patients become more aware of various treatment alternatives and as consumers (particularly where treatment is being provided on a private or private capitation basis) wish to be informed of the progress of treatment, this fourth aspect of record keeping is becoming increasingly important.

Denplan is a private capitation-based system of providing dental healthcare in the UK. Patients are assigned to a fee-band using a weighting formula dependent on the patients' oral health status. Denplan collects a monthly payment from the patient and then pays the dentist, after deducting an administration fee. Currently approximately 5,000 GDPs in the UK provide regular dental care for about one million patients under the Denplan Care system⁸.

The company has developed an additional system called the Denplan Excel Accreditation Programme. This programme is designed to enhance the quality of patient care. There are several strands to this programme. Communication between patient and dentist is supported by a series of information cards that personalize information about preventive care and oral health goals. Participating dentists are also required to keep an ongoing measure of the patient's oral health in the form of an Oral Health Score⁹. This score is derived from measuring and aggregating a number of clinical indicators and is represented as a percentage out of a potential maximum of 100%. Some of the components of the oral health score are patient perception indicators, which are determined by asking the patient how they feel about aesthetics, pain or their ability to chew (function), etc. An additional requirement of dentists participating in the programme is that they should record certain essential clinical information when recalling patients for periodic review.

The Denplan Excel programme was introduced as a one-year pilot programme in October 1999 and made available to all dentists registered under Denplan Care. Six hundred and seventy six dentists took part on a voluntary basis. In recognition of the inadequacies of many existing dental record systems, which do not lead the

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dentist through a logical sequence of recording, a new form of record card was made available to prompt the GDP for what should be routinely recorded. The new record card is compatible with most existing record card systems used in general dental practice, although its use was not a requirement of the programme. The aim of this study was to investigate any change in clinical record keeping at recall by dentists piloting the Denplan Excel Programme.

Method

A random sample of 50 dentists was selected by means of cluster sampling from the 676 dentists who had volunteered to participate in the Excel programme. All practices who had dentists registered in the pilot programme were grouped into geographically related clusters of ten practices each. From these clusters, five clusters were sampled by random selection. Only one dentist from each practice in the cluster was selected randomly. Denplan contacted the selected practitioners and obtained their consent for participation in the study. The research assistant (RP) contacted all participating dentists, explained the nature of the study and arranged a time and date to visit the practice and collect the data. Each dentist was coded so that the data would remain anonymous. Patients' records were identified for recall patients who had been registered as Denplan patients with the dentists for at least two recall examinations and where at least one of these examinations was prior to the introduction of the pilot programme. Twenty consecutive patient records were examined for each dentist in the sample making a total of 1,000 patient records selected. To maintain patient confidentiality, identification of individual patient data was by means of a coded list retained by the practitioner. Ten per cent of the dentists (giving 200 patient records) were re-sampled to check for transcription errors.

As part of the programme it is a requirement of dentists to record all the information listed in Figure 1 by means of a paper based or electronic clinical record system. Information on each of the items listed in Figure 1, recorded by the dentist on pre- and post-pilot records was entered into a database. The data were analyzed using the Statistical Package for Social Sciences (SPSS). Statistical comparison of pre- and post-pilot records of patient recalls was done using the Chi-squared test.

Results

Analysis of the records of the five dentists revisited showed that there were no problems with the reproducibility of transcribing information from the record cards to the database. Eleven of the 50

Required information to be recorded for recall patients by dentists accredited by the Denplan Excel Programme

1. Presenting patient complaint
2. Medical history update
3. Basic periodontal examination (BPE) or full periodontal examination where appropriate
4. Oral Health Score update which includes the following components
 - 4.1 Patient perception - pain
 - 4.2 Patient perception - aesthetics
 - 4.3 Patient perception - function
 - 4.4 Caries
 - 4.5 Occlusion
 - 4.6 Mobility
 - 4.7 Toothwear
 - 4.8 Soft tissue examination
 - 4.9 BPE
 - 4.10 Denture status (if appropriate)
5. Diagnosis (if applicable)
6. Record of discussions about treatment alternatives
7. Treatment plan (with patient and dentist signature if necessary)

Fig. 1. Required information to be recorded for recall patients by dentists accredited by the Denplan Excel programme.

dentists used a computerized clinical record keeping system.

Considerable changes in record keeping were seen with the introduction of the pilot programme. When pre-pilot patient recalls were compared with the records of post-pilot patient recalls, a range of items were more likely to be noted in post-pilot records (Table 1). These included an update of the medical history, basic periodontal examination (BPE), a record of patient pain, aesthetics, function, caries, occlusion, mobility, toothwear and soft tissue examination ($p < 0.01$). However, there were no significant changes in the proportion of records recording presenting complaint, denture status, diagnosis, treatment alternatives and a treatment plan ($p > 0.05$).

Since the Oral Health Score was developed specifically for use within the pilot programme, no pre-pilot records of patient recalls contained this score. Many of the clinical indicators contributing to the Oral Health Score, such as patient pain, aesthetics and function

Table 1 Comparison of all patient recall records completed pre-pilot with records completed post-pilot

Data Recorded	Yes	Pre-pilot No	N/A	Post-pilot Yes	No	N/A	Sig/Not Sig
Presenting complaint recorded	96%	4%		98%	2%		NS
Medical history updated on chart	51%	49%		65%	35%		
Medical history signed by pt.	11%	67%	22%	*23%	*72%	*6%	S
Oral Health Score recorded	0%	100%		90%	10%		S
Patient pain	0%	100%		45%	55%		S
Patient aesthetics	0%	100%		47%	53%		S
Patient function	0%	100%		*47%	*54%		S
Caries scored	0%	100%		49%	51%		S
Caries recorded on grid	7%	93%		46%	45%	9%	S
Occlusion scored	2%	98%		47%	53%		S
Mobility scored	5%	95%		30%	70%		S
Toothwear scored	2%	98%		51%	49%		S
Soft tissue exam scored	4%	96%		49%	51%		S
BPE scored	48%	52%		85%	15%		S
Denture status recorded	5%	7%	88%	5%	5%	90%	NS
Diagnosis recorded	97%	3%		98%	2%		NS
Treatment alternatives recorded	6%	94%		*7%	*94%		NS
Written treatment plan	97%	3%		97%	3%		NS

Results marked with * do not add up to 100% due to rounding.

S = Significant ($p < 0.01$); NS = Not Significant ($p > 0.05$)

N/A is because the practice is computerized (except for denture status)

Table 2 Number (%) of dentists updating medical history records before and after the introduction of the pilot programme

Number of pre-pilot patient recall records per dentist where medical history was updated	Number of post-pilot patient recall records per dentist where medical history was updated	Number (%) of dentists
0	0	3 (6%)
0	1-14	5 (10%)
0	15-19	2 (4%)
0	20	0
1-14	0	2 (4%)
1-14	1-14	6 (12%)
1-14	15-19	6 (12%)
1-14	20	2 (4%)
15-19	0	0
15-19	1-14	1 (2%)
15-19	15-19	1 (2%)
15-19	20	4 (8%)
20	0	0
20	1-14	1 (2%)
20	15-19	2 (4%)
20	20	9 (18%)
		50 (100%)

were not recorded by dentists in any of the pre-pilot records. Pre-pilot, only 2% of dentists made a record of the occlusion, 16% recorded mobility, 2% recorded toothwear and 6% recorded the state of soft tissues. After the introduction of the pilot programme, 56% of dentists had made a record of patient pain, 58% recorded patient aesthetics and 58% recorded patient function in any of the 20 records examined. Sixty per cent of dentists had at least one post-pilot record with an occlusion score and 50% had at least one post-pilot record with a mobility score. The percentage of dentists with at least one post-pilot record of toothwear and soft tissues was 64% and 54% respectively.

The proportion of dentists updating the medical history on all 20 post-pilot records examined was 30% (Table 2). Eighteen per cent of dentists updated medical history on all 20 post-pilot records who had done this on all 20 pre-pilot records, with a further 8% updating medical histories on all 20 post-pilot records who had done this on between 15 and 19 pre-pilot records. Thus changes observed were relatively small.

The BPE, a periodontal screening test¹⁰, had been recorded by many dentists prior to the introduction of the pilot programme. Forty-six per cent had recorded the BPE in 15 or more of the pre-pilot records examined (Table 3). Most of these dentists appear to have continued to record BPE on the majority of records after the introduction of the pilot programme. The programme appears to have stimulated an additional 34% of dentists into recording the BPE for at least some of their patients, where previously they made no record of the BPE. Sixteen per cent of dentists made a post-pilot record of BPE in all 20 post-pilot records when they had made no records of BPE in any of their 20 pre-pilot records.

The recording of the Oral Health Score post-pilot was consistently high. Ninety-six per cent of dentists recorded the Oral Health Score in at least one of the 20 records examined. In fact, 64% recorded the Oral Health Score in all 20 of the records and a further 26% in between 15 and 19 of the records examined.

Sixty-eight per cent of dentists did not record caries on a chart prior to the implementation of the pilot programme. Post-pilot there was a full recording (ie on all 20 records examined) by almost a third of these (10) (Table 4). However, even after the introduction of the pilot programme 28% of dentists did not record caries on a chart in any of the 20 records examined, with a further 12% only recording this in less than three-quarters of the records examined.

The reason that there was no significant change in the numbers of records pre- and post-pilot with a record of presenting complaint

Table 3 Number (%) of dentists recording the basic periodontal examination (BPE) before and after the introduction of the pilot programme

Number of pre-pilot patient recall records per dentist where BPE was recorded	Number of post-pilot patient recall records per dentist where BPE was recorded	Number (%) of dentists
0	0	2 (4%)
0	1-14	4 (8%)
0	15-19	3 (6%)
0	20	8 (16%)
1-14	0	0
1-14	1-14	2 (4%)
1-14	15-19	6 (12%)
1-14	20	2 (4%)
15-19	0	0
15-19	1-14	0
15-19	15-19	2 (4%)
15-19	20	11 (22%)
20	0	0
20	1-14	1 (2%)
20	15-19	0
20	20	9 (18%)
		50 (100%)

and diagnosis was that the majority of dentists appear to have been routinely recording these items pre-pilot. Only 2% of dentists did not record the presenting complaint on any of their pre-pilot records, whereas 94% recorded this on all 20 pre-pilot records. Eighty-eight per cent of dentists recorded presenting complaint on all 20 post-pilot records, with the remaining 12% of dentists recording this on between 1 and 19 records. No dentists failed to record the diagnosis on at least one of the pre-pilot records, and 84% recorded the diagnosis on all 20 pre-pilot records. Eighty-six per cent of dentists recorded diagnosis on all 20 of the post-pilot records.

There was a relatively low recording of treatment alternatives pre-pilot and there was little change with the introduction of the pilot programme. Only two dentists recorded treatment alternatives on all 20 pre-pilot records. Post-pilot this actually fell to one dentist recording treatment alternatives on all 20 records. Seventy per cent of dentists made no record of treatment alternatives on any of the pre-pilot records. This fell only slightly to 66% who made no record of treatment alternatives on any of the post-pilot records.

By contrast, most dentists recorded a written treatment plan prior to the pilot programme. Only 12% did not have a written treatment plan in all their 20 pre-pilot records, and 10% did not have a written

Table 4 Number (%) of dentists recording caries on a chart before and after the introduction of the pilot programme

Number of pre-pilot patient recall records per dentist where caries are recorded on a chart	Number of post-pilot patient recall records per dentist where caries are recorded on a chart	Number (%) of dentists
0	0	14 (28%)
0	1-14	6 (12%)
0	15-19	4 (8%)
0	20	10 (20%)
1-14	0	1 (2%)
1-14	1-14	9 (18%)
1-14	15-19	2 (4%)
1-14	20	2 (4%)
15-19	0	0
15-19	1-14	0
15-19	15-19	0
15-19	20	2 (4%)
20	0	0
20	1-14	0
20	15-19	0
20	20	0
		50 (100%)

treatment plan in all their post-pilot records. In all of these cases the dentists had still included a treatment plan in at least a quarter of their records, both pre- and post-pilot.

Discussion

The study shows that in certain areas there was a significant change in dentists' record keeping with the introduction of the pilot programme. In particular, there were increases in the number of dentists recording caries on a dental chart and recording the BPE. The recording of the BPE appears to be relatively high, even before the pilot when compared with results of a New Zealand study where the use of the BPE was low, despite efforts made to introduce the system¹¹. Even in referral letters to the Periodontal Department of a London dental hospital only 4% of dentists included the BPE score, suggesting that this information was not routinely collected by these dentists¹².

It may appear disappointing that the updating of medical histories is not more comprehensively done, even after the introduction of the pilot programme. However, the figures do still compare favourably with a study undertaken in Finland². Also, it is possible that the medical history was updated on the first treatment visit following the recall examination, but the updating did not feature in the results as data was gathered in relation to the recall examination visit only.

Although there was a good recording of the Oral Health Score, the components of the score, such as records of mobility and toothwear were less well recorded. It is possible that dentists, whilst recognizing that the Oral Health Score is of direct benefit in motivating patients, consider that other items, such as records of occlusion, to be less relevant. Even after the introduction of the programme the recording of treatment alternatives was very low. The most likely reason for this low level of recording was that many of the patients recalled would not require treatment and therefore there was nothing to record.

It is interesting to note that some items, even before the introduction of the programme, were fairly consistently recorded, ie presenting complaint, diagnosis and treatment plan. This indicates the priorities in terms of record keeping as perceived by the GDPs.

Whilst the group of dentists sampled reflects a high standard of record keeping, a further study of the record keeping of GDPs working in the NHS and private (fee per item) practice would be interest-

ing. Also, although the dentists were participating in the pilot programme on a voluntary basis, the programme does appear to have been a stimulus for change, although it would be valuable to monitor this over a longer period of time to see if this change is maintained. This provides encouragement that the standard of record keeping may be improved, particularly where structured record cards or computerized record keeping systems exist that lead the dentist through the examination in a logical way, providing prompts at each stage.

An expert working group of the Faculty of General Dental Practitioners and the British Dental Association is currently preparing a guideline document on examination and record keeping in primary dental care. Its forthcoming publication may stimulate some debate as to how realistic these recommendations are and how they compare with current practice in General Dental Practice in the UK. Hopefully the findings of this study will inform the debate.

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