Management of plaque related periodontal conditions

A clinical studying the assessment and management of plaque-related periodontal conditions of patients by the practitioners at a general dental practice in Hertfordshire in 2013

Abstract:
Undiagnosed and unmanaged periodontal conditions are fast becoming one of the biggest areas of litigation and complaints within the dental field. Thorough periodontal assessment is vital for diagnosis, treatment planning and monitoring the progression of periodontal disease. This is a report of a clinical audit that studied the periodontal assessment carried out at a general dental practice in Stevenage, Herts. This audit was conducted over a seven month period, analysing 50 patients for each audit cycle. A new protocol for periodontal assessment using the guidelines of the British Society of Periodontology was introduced. The results demonstrate a marked improvement in assessing the periodontal condition of patients in this general dental practice.

Null Hypotheses:
The five dental practitioners being audited would not exceed the expected percentage of 50 per cent of patients being provided with Gold Standard treatment with regards to periodontal monitoring and management.

The five dental practitioners being audited would exceed the expected percentage of less than 10 per cent of patients being provided with Unacceptable treatment with regards to periodontal monitoring and management.

Aim:
The aim of this audit is to assess periodontal screening and subsequent non-surgical periodontal treatment for patients with plaque-related periodontal conditions at the practice compared to that suggested in guidance documents.

The main objective for the audit is to investigate the standard of screening and treatment patients are receiving with regards to their periodontal condition. This will be achieved by ensuring that the number of ‘Unacceptable’ treatments provided is minimal, meaning the majority of patients seen at the practice receive at least an ‘Acceptable’ level of treatment, if not the ‘Gold Standard’ level. In this way, the audit aims to disprove the first null hypothesis.

A secondary objective is that, as long as the first objective is achieved, the majority of the patients receive the ‘Gold Standard’ of screening and treatment with regard to surgical periodontal therapy. Specific risk factors for patients were not included, such as smoking status and medical conditions. Ten patients were chosen at random from each of the GDP’s day lists. These patients had been seen within four weeks of 17th December 2012; the start date for the audit was chosen meaning the examination is likely to have been carried out or at least started by the start date of the audit. Notes before this were not investigated as this may not represent the most current practice of the practitioners being audited.

Inclusion criteria for the patients were as follows:
• The patient must have been seen for an exam within the four weeks prior to the audit start date. This ruled out the possibility that the patient had attended for an emergency appointment in the last four weeks, where a full exam including a periodontal screening may not have been carried out.
• The patients must have been over 18 at the time of their most recent exam and any edentulous patients were excluded. This meant that an exam must have been carried out.

Ref 1.0 Flowchart constructed in order to grade patients notes with regards to their periodontal screening and management
include a full periodontal screening, which may not have been done for children and adolescents, or patients without their natural teeth remaining.

A flow-chart was constructed which was followed during the auditing process in order to score each set of notes based on whether sufficient periodontal screening had been carried out and whether the correct subsequent non-surgical management was recommended or carried out based on the results of the screening.

Each of the sets of notes were studied and the flowchart followed in order to grade the overall process of the monitoring and managing plaque-related periodontal disease. The flow chart is shown in Ref 1.0.

By following the flowchart, each patient’s screening and management was given a score according to the number of correct steps completed. If any step had not been correctly completed this was reflected in the scoring system and lead to a lower overall score for the patient’s treatment.

A standard BPE was accepted as an appropriate screening of periodontal health during a patient’s exam.

If a patient had been offered the correct treatment (i.e. it was recommended) according to the findings of their screening, but had refused to accept or failed to attend for treatment suggested by the GDP, the practitioner was scored according to the steps taken up to that point in the management of the patient. This was considered acceptable treatment delivered by the GDP as it was the patient’s choice not to undergo suggested procedures.

Eight patients included in the first cycle and one patient in the second cycle of audit declined treatment which was recommended to them. Two patients in the first cycle were found to be edentulous when examining the notes and so were re-selected; none were found to be edentulous in the second cycle.

Since the default recall time for patients attending this practice is six monthly, this was accepted as the intended follow-up time for a patient where no specific recall period was stated in the notes. If the patient needed to be seen before this time it should be written in the patient’s notes e.g. ‘Follow-up 5-4 months’, or modified on the computer system, which was also checked at time of audit. This would be appropriate for any patients with a BPE of 5, 4, * or with pockets ≥ 4mm, who had undergone plaque-related periodontal treatment for this, in order to monitor healing and observe where further treatment may be necessary. Therefore if, for these patients, a recall period was not stated in their notes or modified on the computer system following treatment, this was seen as inappropriate follow-up.

The type of follow-up treatment was not included as part of this audit. This was due to the fact that not enough time would have passed between the start of the audit and the allocated four week period prior to this, from which patients were chosen, in order for the follow-up treatments to have been carried out.

‘Appropriate’ management of the periodontal condition included further investigations and treatment based on the BPE and was decided upon by amalgamating information from three different sources. A chart was drawn up which indicates the correct management for each particular finding of the BPE screening. This is shown in Table 1.0; the sources are also quoted below the table.

This audit included whether a diagnosis was made relating to the periodontal condition. The accuracy of diagnosis in relation to the BPE findings was not investigated as this is outside the scope of the audit.

Each grading which was given to a patient’s periodontal treatment according to the flowchart was then put into one of three categories: Gold Standard, Acceptable, Unacceptable. This reflected the standard of treatment delivered to each patient. The scores included in each category and explanations are as follows:

**Gold Standard**= 5

Represents patients who received completely correct screening and management from their GDP according to the flowchart.

**Unacceptable**= 0-2

Represents patients who hadn’t received an appropriate screening at examination, had no diagnosis made or treatment recommended and hadn’t received correct management for their plaque-related periodontal condition indicated by the screening process. This was deemed an unacceptable level of treatment.

**Acceptable**= 3-4

Represents patients who had an appropriate screening carried out during their exam and the correct treatment was delivered according to this screening. The ‘Gold Standard’ level was not given to these as some steps along the flowchart had not been followed e.g. diagnosis or follow-up wasn’t included. However this was not deemed as negligent on behalf of the GDP as screening and appropriate treatment was still carried out for the patient, and the ultimate goal of diagnosing and managing the patient’s plaque-related periodontal condition was reached.

The percentage of the overall categories which made up was then calculated and this was compared to the expected percentages set out at the start of the audit.

Sources:

### Table 1.0

<table>
<thead>
<tr>
<th>Category</th>
<th>Expected Percentage</th>
<th>Actual Percentage Audit Cycle 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard</td>
<td>&gt; 50</td>
<td>32</td>
</tr>
<tr>
<td>Acceptable</td>
<td>≤ 50</td>
<td>56</td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt; 10</td>
<td>12</td>
</tr>
</tbody>
</table>

### Table 1.1

<table>
<thead>
<tr>
<th>Category</th>
<th>Expected Percentage</th>
<th>Actual Percentage Audit Cycle 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard</td>
<td>&gt; 50</td>
<td>74</td>
</tr>
<tr>
<td>Acceptable</td>
<td>≤ 50</td>
<td>24</td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt; 10</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table 1.2

- Ref 1.1: Graph showing expected ranges of each category and actual percentages for first cycle.
The following emergency resuscitation drugs¹ are available from BOC Healthcare:

- Glyceryl trinitrate (GTN) spray (400 micrograms/dose)
- Salbutamol aerosol inhaler (100 micrograms/dose)
- Adrenaline injection (1:1000, 1 mg/ml)
- Aspirin (300 mg)
- Glucagon injection (1 mg)
- Oral glucose gel
- Midazolam 10 mg (buccal)

Features of the complete drugs kit:

- Supplied in a bespoke bag for easy storage and transport²
- Supplied with algorithms on management of medical emergencies
- Items can be bought individually or as part of a combination³
- No intravenous access required for the drugs

¹ All drugs are only available to prescribing medical professionals
² Bag is an optional extra and will incur a charge
³ Only applies to certain products

We also supply medical oxygen with prices from £197 +VAT per annum and Automated External Defibrillators from £799 +VAT only.

For further information or to place an order call 0161 930 6010 or email bochealthcare-uk@boc.com

BOC: Living healthcare

BOC Healthcare
Customer Service Centre, Priestley Road, Worsley, Manchester M28 2UT, United Kingdom
www.bochealthcare.co.uk

Ref 1.2

It was found during the second cycle of audit that where the stickers were used in the patient’s notes, Gold Standard treatment was delivered or planned.

Ref 1.1

As shown by the graph (Ref 1.1), the percentage of all treatment standards found in the first cycle of audit were outside the expected values. The Acceptable level of treatment was delivered to 56 per cent of patients included in the audit, which is above the expected 50 per cent. Due to the Unacceptable treatment being above the expected 10 per cent of patients provided this level of treatment, this meant that the Gold Standard level of treatment was delivered to less than 50 per cent of patients.

The results from the first cycle of audit prove both null hypotheses correct, and thus the aims of the audit to disprove these are not met during this cycle. Therefore changes must be implemented at the practice in order to improve the levels of treatments being provided to patients at the practice with regards to their periodontal condition and disprove the hypotheses.

In order to improve these results, the Gold Standard level of treatment provided must be increased and the Unacceptable level of treatment provided must be decreased.

When examining the raw data collected during cycle one of the audit, there are some obvious areas which needed to be improved in order to increase the level of Gold Standard treatment and decrease the level of Unacceptable treatment provided. Where treatment was Unacceptable, this was mainly because a BPE had not been performed at any examinations within the last year. Another point to note was that the majority of treatments provided within the Acceptable

BOC: Member of the Linde Group

Are you prepared for a medical emergency in your dental practice?

Emergency drugs from BOC Healthcare.
categories, were not deemed as Gold Standard due to the fact that either a diagnosis had been omitted, a follow-up period had not been recommended, or both. These are the areas which must be looked at in order to improve results at the next cycle of audit. There was no specific pattern of scores for each individual practitioner.

Changes implemented to improve overall standard of treatment provided:

As demonstrated in the specific pattern shown from the scores for the different practitioners, it was not deemed appropriate to speak to each individually to improve the results, but to implement a method which would improve the practice’s score as a whole for periodontal diagnoses, management and follow up.

With this in mind, a sticker was introduced and piloted, which was to be stuck in each patient’s notes who was attending for a regular check-up, and which recorded the findings of diagnosis, treatment and follow-up for periodontal conditions. The sticker designed is shown in Ref 1.2.

Using this, each practitioner would be able to consist of at least two stickers per patient’s notes after attending to make the practice’s score more reliable.

The presence, or otherwise, of risk factors for periodontal disease was not accounted for in this audit. The aim of the audit was to determine whether the correct non-surgical plaque-related treatment was being carried out for each patient according to the screening results, regardless of the risk factors, e.g. medical conditions, medications and smoking status. It was assumed that these risk factors were observed by the GDP and discussed or investigated accordingly. Also, the precise diagnosis arrived at for each patient was not investigated. The audit only looked at the basic principles of management and recording the score.

As shown by the table (1.2) and the graph below (Ref 1.5), the results from the second cycle of the audit were found to be within the expected values set out at the beginning of the audit, therefore disproving both the null hypotheses. The audit has therefore achieved its aim by improving the overall standard of monitoring and management of patient’s periodontal conditions at the practice. It was found during the second cycle of audit that where the stickers were used in the patient’s notes, Gold Standard treatment was delivered or planned, resulting in the significant improvement in the findings during the second cycle.

The next step to improve the results further would be to ensure that all dentists are using the stickers during every adult patient exam, as where this wasn’t being done, some elements were still being omitted resulting in a treatment which was less than Gold Standard. In the future the monitoring and management of periodontal condition will need to be readjusted to ensure these standards are maintained and improved on where possible. The results from both cycles can be seen represented in the pie charts in Ref 1.4.

Limitations and Improvements to the Audit:

There are many limitations to this audit and possible improvements which could be made to refine the results and give a much broader and more accurate perspective of periodontal screening and treatment at the practice. Firstly, a very small sample size was considered. According to the number of patients recorded on the practice system, 50 patients make up about 0.56 per cent of the total patient population of the practice. A much larger sample size would be needed to make the results of the audit more reliable.

For the patients who refused to accept or commence appropriate treatment based on their BPE score, it was assumed that the practitioner explained the risks of not having the treatment suggested to them and that this was sufficient and enough for the patient to understand. For completeness, this aspect should be checked from the notes taken on the day to ensure these patients were able to make an informed decision on the treatment they had chosen to opt out of.

It was noted by members of staff at the practice that the stickers used to improve the results were a costly way of doing so, due to the expense of purchasing the stickers and then printing the design onto them. Following a successful trial period of the stickers used in patients’ notes at the practice, it may be more cost-effective to create a stamp which includes the information on the sticker, and use this to create the same template for patients’ notes instead. With this method, staff and GDP’s at the practice would be able to use the stamp multiple times, with only the initial expense of the stamp itself and occasional cost of ink pads.

Conclusion:

Periodontal disease is becoming increasingly prevalent amongst today’s population due to, amongst other factors, people living for longer and maintaining their natural teeth later into life. For this reason it is essential to identify and manage any periodontal conditions as early as possible in the disease process in order to delay the deleterious effects of the condition and prevent it progressing further. In order to do this, we as dental professionals must have simple and effective methods of recording periodontal screenings and diagnoses so that we may recommend and deliver appropriate treatment to patients for these periodontal conditions.

As demonstrated by the implementation of a simple pro-forma during a patient examination, in this case in the form of a sticker, periodontal screening and management can be greatly improved. This template quickly and effectively allows the practitioner to cover all relevant areas of periodontal screening and management and means it is less likely that important periodontal elements will be omitted from the process. With a reliable and repeatable procedure such as this in place, the periodontal condition of patients attending the practice is more likely to remain healthier for longer. This will subsequently improve the prognosis of all other dental procedures delivered by the GDP, giving the patients a better quality of care overall.\n
Ref 1.3 Graph showing expected ranges of each category and actual percentages for second cycle Ref 1.4 Results from Cycle 1 and 2 represented in pie charts