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 Hertfoldshire 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.

Clinical relevance:
Regular periodontal assessment is required to aid diagnosis, treatment planning and monitoring of disease. Without such assessment, it is possible to misdiagnose, develop incorrect treatment plans and prevent objective assessment of disease progression. With the periodontium being the scaffold for all other restorative techniques performed by dentists, this is an essential area which must not be overlooked or under managed.

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.

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.

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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

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• 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
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 flowchart 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 correct steps completed. This reflected 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.

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.

A ‘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 patients periodontal treatment according to the flowchart was then put into one of three categories: Gold Standard, Acceptable and Unacceptable. This reflected the standard of treatment delivered to each patient. The type of follow-up 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.

Sources:

BPE Score and Criteria

<table>
<thead>
<tr>
<th>Management</th>
<th>Follow-up</th>
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</thead>
<tbody>
<tr>
<td>First Investigations: None</td>
<td>As per next check-up (6 monthly)</td>
</tr>
<tr>
<td>Treatment: Appropriate preventive care</td>
<td></td>
</tr>
<tr>
<td>Further Investigations: Patient’s OH habits; some visual inspection of plaque or investigation using disclosing agents</td>
<td>As per next check-up (6 monthly)</td>
</tr>
<tr>
<td>Treatment: Oral hygiene instruction and prophylaxis</td>
<td></td>
</tr>
</tbody>
</table>

Step 1: Bleeding after gentle probing; presence of calculus, plaque retention factors and/or defective margins; gingival crevice 0-3mm

Step 2: Bleeding after gentle probing; presence of calculus, plaque retention factors and/or defective margins; gingival crevice 3-5mm

Step 3: Shallow pockets of 3.5 to 5.5mm found in the sextant (black band of WHO 10 probe partially visible)

Step 4: Deep pockets of 6mm or more found in sextant (black band of WHO 10 probe not visible)

Step 5: *Furcation involvement, recession and probing depth of 7mm or more.

Table 1.0

<table>
<thead>
<tr>
<th>Category</th>
<th>Expected Percentage</th>
<th>Actual Percentage Audit Cycle 1</th>
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</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>
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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

References

Ref 1.1

Graph showing expected ranges of each category and actual percentages for first cycle.
Ref 1.2

Results Cycle 1:
The expected and actual percentages of each category found during the first cycle of the audit are shown below.

It was expected that Gold Standard screening and treatment for plaque-related periodontal conditions should make up more than 50 per cent of the results and that Unacceptable periodontal screening and treatment should make up less than 10 per cent. If both of these criteria are satisfied, Acceptable treatments would represent anything from 0 per cent to 50 per cent, which is why the expected percentage for Acceptable treatments is stated as less than or equal to 50 per cent where Gold Standard and Unacceptable treatments are within the stated expected values. Where Gold Standard treatments do not make up more than 50 per cent, but Unacceptable treatments make up less than 10 per cent, the Acceptable treatment percentage will rise above 50 per cent.

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...
changes implemented to improve overall standard of treatment provided: As shown 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 designed and produced, which was to be stuck in each patient’s notes who was attending for a regular check-up, and which reined the benefits 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 easily and quickly record the patient’s periodontal condition at their exam, and would be less likely to forget to include aspects such as a diagnosis and suggested follow-up period. The sticker is designed to give the practitioner a ‘tick system’ for the management of the patient’s periodontal condition. The treatment recommended for the BPE scores found in the chain§, the five GDP’s next to the treatments, making it easy for the GDP to tick which treatment they recommended the patient should receive according to the BPE score and diagnosis recorded above. There is also an option to circle which treatment they recommended for the BPE scores, the patient’s notes recorded above.

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 re-audited 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 representative of peri-odontal 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 made up about 0.36 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.

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 in investigated accordingly. Also, the precise diagnosis arrived at for each patient was not investigated. The audit only looked at the basic principles of management 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.

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.

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 risk factors will be omitted from the process. With a reliable and reproducible 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.

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