THE 2017 AAP PERIODONTAL CLASSIFICATION GUIDELINES:

WHAT EVERY DENTAL OFFICE SHOULD BE IMPLEMENTING

An Undergraduate Research Scholars Thesis

by

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ABSTRACT

The 2017 AAP Periodontal Classification Guidelines: What Every Dental Office Should Be Implementing

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The Dental Practice Act outlines the parameters for diagnosis and treatment that dental providers must follow when treating patients. Failure to adhere to these guidelines may result in malpractice or negligence. The new 2017 AAP guidelines provide clinicians with specific criteria to accurately diagnose and treat periodontal disease, reducing the risk of legal action. Historically, clinicians have used probing depths, recession, and radiographs to determine the patient's periodontal diagnosis. The updated 2017 periodontal classification guidelines base a patient's periodontal stage on the severity, complexity, extent, and distribution of the measurable amount of destroyed tissue. Additions to the AAP guidelines include separate categories for gingival health, periodontal disease involving implants and systemic health as determining factors of periodontal diagnosis and prognosis. The intentions of the new periodontal classification system is to assess specific factors that may contribute to the complexity of long term case management. Adherence to the 2017 guidelines will result in improved patient outcomes and reduction of risk for litigation for clinicians. The changes and additions made to the AAP classification guidelines enable a more accurate diagnosis for every patient type by

providing a more specific assessment of the overall health of the periodontium. The 2017 AAP classification guidelines now address conditions that were previously overlooked and allows for recognition of a healthy patient. The new 2017 AAP classification guidelines provide for a more accurate overall assessment, diagnosis, and treatment of periodontal disease.

DEDICATION

Our group would like to dedicate this research project to our friend and classmate, Cooper Truong. Cooper has had to take some time off of school to make his health his top priority. He has been so strong and despite going through his trials, he has been supportive to us and to our class. In the midst of his toughest challenge he has shown us so much love and encouragement. We are so proud of Cooper and so thankful he has been a part of our journey through dental hygiene school. We know that when he gets back to his path to RDH, he will be the biggest blessing to his patients. And we will always be there to cheer him on. We love you, Coop!

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KEY WORDS

AAP   American Academy of Periodontology

PD   Periodontal Disease

CAL   Clinical Attachment Loss

RBL   Radiographic Bone Loss

INTRODUCTION

      The American Academy of Periodontology (AAP) has made changes to the periodontal classification system that has allowed clinicians to diagnose and treat patients in a more direct manner. Practitioners are responsible for identifying and maintaining their patient's periodontal status. This topic aligns with NDHRA priority area of Education – Evaluation. In the clinic, hygienists and dentists should be aware of the changes to the periodontal classification guidelines and be able to apply them in their practice. Close adherence to the updated guidelines is paramount to legal and ethical practice. Professionally, clinicians around the country should follow the same guidelines so that there are no discrepancies in patient care. We will be examining how the 2017 AAP periodontal classifications are adopted into private practice from primary sources of literature. This will be done by examining cases of malpractice that relate to inaccurate periodontal classifications of patients. Without this knowledge reaching clinicians, incorrect diagnosis and coding may occur. The clinician is then putting themselves at risk for legal repercussions. A comparison between the 1999 and 2017 classification guidelines is summarized with emphasis on new additions. After discussing the differences, the clinician will understand how to adapt and implement these changes into their practice.

SECTION I

THE LEGAL IMPLICATIONS

Objective 1

Sec.A251.003 in the Dental Practice Act states that dental providers are responsible for diagnosing and treating disease, infection, deficiency, and any conditions in or around the oral cavity.[1] In order to determine the correct periodontal diagnosis, it is essential to have a comprehensive evaluation of the patient's current oral and overall health. The American Academy of Periodontology (AAP) recommends that every patient has an annual comprehensive exam that includes a complete periodontal assessment.[2] This complete periodontal assessment includes the recording of probing depths, the width of keratinized tissue, gingival recession, evaluation of radiographs, and clinical attachment level.[2] Bleeding on probing, purulence, furcation involvement, and mobility are all factors that are necessary to reach an accurate diagnosis.[2] A biofilm index, amount of calculus, and gingival description are recommended to be a part of the differential diagnosis.[2] Radiographs are evaluated to determine the amount and type of bone loss present. It is important to consider pre-existing systemic conditions and patient risk factors.[2] Risk factors identified in the health history, such as smoking or diabetes, will assist in accurately grading the progression of the patient's condition.[2]

In between the years of 2000-2019, the National Practitioner Data Bank (NPDB) accounted for a total of 65,653 malpractice cases within the United States of America.[3] Of those cases, 6,397 were lawsuits against dental hygienist and dental assistants.[3] The remaining 59,256 were malpractice cases against dentists.[3] Malpractice is a broad term that can range from infliction of trauma to the negligence of a patient's disease.[4] Oftentimes, malpractice cases are

due to incorrect diagnosis, delay in treatment, and improper management of patient care.[4] It is vital to accurately diagnose each patient so the treatment rendered is effective. If a diagnosis is incorrect, the treatment rendered may also be incorrect. When disease is left untreated, dental providers open themselves to the risk of a lawsuit for malpractice and neglect.

In 2006, a case settlement equivalent to $65,370.70 - plus 26,252.87 in general damages and $39,117.83 for special damages, were charged to a general dental practitioner due to neglect of the claimant's undiagnosed periodontal disease.[5] The claimant, who was a 56 year old male, had been going to the dental practice between December 1988 and January 2002.[5] The claimant was being seen by the defendant on a 6 month recall status.[5] Throughout these years, the periodontal disease was overlooked despite the clinical warning signs that are seen on radiographs and periodontal pocket depths.[5] The periodontal abscesses were treated with extractions.[5] When the claimant was seen by a periodontal specialist he was diagnosed with 60% bone loss and required 15 extractions.[5] Due to the oversight of disease and/or delayed referral to a periodontist, the defendant was charged with neglect.[5] If proper diagnosis would have been given along with treatments or referral, the outcomes could have been different. Additionally, pain and suffering may have been avoided or less severe.

Another dental malpractice case was settled for the amount of $85,000.[6] An elderly women had regularly seen the same general dentist for a time span of 30 years.[6] As early as 1970, the plaintiff noticed clinical warning signs such as bleeding gums and mobility of her dentition.[6] It wasn't until after 1999 that the plaintiff reached out for a second opinion.[6] The second opinion advised the plaintiff of her severe periodontal disease.[6]

The updated guidelines have a step by step process to diagnose, treat, and refer patients for specialist care when needed. A printable checklist is also available on the AAP website to

ensure all factors in the annual comprehensive exam are being evaluated.[2] Proper diagnosis will

lead to correct treatment planning. This will reduce the risk of malpractice lawsuits for dental

providers.

SECTION II

DIFFERENCES BETWEEN THE 1999 AND 2017 AAP CLASSIFICATION GUIDELINES

Objective 2

Up until 2017 the AAP periodontal classification guidelines have not been updated since 1999. Practicing clinicians in the dental field have learned that there are many factors that contribute to periodontal disease and we should assess every aspect of the patient before classifying them and diagnosing treatment. Historically, clinicians have used different parts of the assessment to determine the periodontal type of a patient. With the 2017 modifications the classification system includes periodontal health and physical health to determine periodontal staging and grading.[3] Clinicians can now determine if the patient is healthy, has gingivitis, or periodontitis along with current status of periodontal disease.[3] The stage is indicated by looking at the clinical attachment loss (CAL), radiographic bone loss (RBL), and tooth loss due to periodontitis.[3] It is important to note that when staging a patient you should use the most advanced site in order to determine the patients stage of periodontitis.[3] The AAP came to the conclusion that the classifications should be catered more directly to each individual.[5] There is also a new section in the AAP classification guidelines where the clinician determines the progression of the disease which is then reported as the grade of potential further periodontal destruction.[6] This new aspect is incorporated into the classification guidelines and compares the most recent radiographs to the old radiographs and even considers major risk factors such as smoking and diabetes.[6] Grading is defined by three levels of disease progression.[5] Grade A is the slow rate of progression, B is a moderate rate of progression, and C is a rapid rate of

progression.[5] The grading suggests if the patient's periodontal disease is stable or if more invasive treatment must be done to return the patient to a stable condition.[6] Another addition to the AAP classification guidelines is that peri-implant disease is assessed and taken into consideration.[5] The clinician determines if the implant is healthy or if there is a disease present.[5] The implant is either categorized as being healthy, having peri-implant mucositis, or peri-implantitis.[3] Overall, the major modifications to the 2017 AAP classification guidelines are the grading system to incorporate progression of disease, the healthy patient category allowing differentiation between the need for prophylaxis and periodontal debridement, and the category for implants that addresses peri-implant disease.[5] It is common knowledge that smoking and diabetes contribute to the progression of periodontal disease, but the grade of progression was not taken into consideration when determining proper treatment for patients with periodontal disease prior to the 2017 modifications.[5] Considering external contributors, systemic factors, and comparing the new and old assessment to determine the rate that the patient's disease is progressing is a good way to diagnose frequency of treatment. Prior to the alterations, patients either had gingivitis or periodontitis which could be broken down into mild, moderate, or severe.[5] The AAP recognized that patients free of disease no longer should be grouped in with the category of gingivitis.[5] The health of a patient's implant is always evaluated because it is another sign of oral health.[5] By integrating a category for the health status of the patients implant the clinician can better document and detect changes in implant health.[5]

<center>**SECTION III**</center>

<center>**HOW TO APPLY THE 2017 AAP PERIODONTAL CLASSIFICATION**</center>

<center>**GUIDELINES TO DENTAL PRACTICES**</center>

Objective 3

       The last time the American Academy of Periodontology (AAP) periodontal classification guidelines were updated was in 1999.[2] Oral health care practitioners have learned that there are multifactorial and multidimensional contributions to periodontal disease. Practicing clinicians should assess every aspect of the patient before classifying, diagnosing, and prescribing treatment. Modifications in the 2017 AAP classification system utilizes periodontal health and overall health to determine the staging and grading of a patient's periodontal status.[3] Systemic factors such as smoking and diabetes play a role in periodontal health and are now being considered when classifying patients.

       The first modification to the 2017 AAP classification guidelines is that the healthy patient is now acknowledged.[3] Before, healthy patients were grouped together with gingivitis and periodontitis patients.[2] The new classification system allow a separate category for patients with healthy gingiva.[3]

       The second addition to the AAP periodontal classification guidelines is the staging and grading that assist in determining the patient's periodontal status.[2] The stage of periodontal disease is indicated by looking at the clinical interdental attachment loss (interdental CAL), radiographic bone loss (RBL), and tooth loss due to periodontitis.[2] The AAP considers the CAL on interproximal surfaces as an indicator of disease more so than the CAL on the facial or lingual aspects of dentition.[2] It is important to note that when staging a patient you should use the most

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advanced site in order to determine the patient's stage of periodontitis.[2] Once that patient has

been given a stage, it is critical to determine the distribution.[2] This will show how many teeth are

affected by the disease and is expressed with the terms generalized or localized.[2] For a

generalized description, there must be at least two non-adjacent teeth with the most severe

amount of interdental CAL.[2] For a localized description of disease, less than 30% of the teeth are

affected.[2] You can calculated this by using the percentage of teeth affected divided by the

number of teeth present. Once the stage has been determined, the patient will then be given a

grade.

Grading is a system that incorporates biological dimensions of periodontal disease,

including patient history, anticipated rate of progression, and control of risk factors.[2] Grading is

defined by three levels of disease progression.[2,7] This is then reported as the grade of potential

further periodontal destruction.[8] This is done by estimating the percentage of bone loss and

dividing it by the patient's age.[2] If the calculation is less than 0.25, then the patient would be

considered Grade A.[2] This is a slow rate of progression, in a patient who does not smoke or have

diabetes.[7] If the calculation is between 0.25 and 1.0, the patient is classified as Grade B. This is a

moderate rate of progression, and is the category that includes smoking less than ten cigarettes a

day and diabetic patients with a HbA1c less than 7.0%.[5] This means that if a patient has diabetes

or smokes, they cannot be a grade A. If the calculation of bone loss divided by patient age is

greater than 1.0 then that patient is considered Grade C. This is a rapid rate of progression, and

includes patients who smokes more than ten cigarettes a day and diabetics with a HbA1c greater

than 7.0%.[7] Clinicians should assume grade B disease for each patient and look for identifying

factors to shift to grade A or C.[2] The grade determines if the patient's periodontal status is

maintained, further treatment is necessary, or referral to a specialist is indicated.[9]

The third addition to the AAP classification guidelines is that peri-implant disease is assessed.[7] Implants have become a common restorative treatment. With advancements in the placement and maintenance of implants, it was long overdue to include them in the assessment and classification of periodontal health. With the new classification system, the clinician determines if the implant is healthy or if disease is present.[7] The implant is either categorized as healthy, having peri-implant mucositis, peri-implantitis or as having peri-implant soft and hard tissue deficiencies.[8]

Three major additions to the 2017 AAP classification guidelines include first a category for patients with gingival health allowing differentiation between the need for periodontal maintenance and periodontal debridement. Second, a grading system to incorporate progression of disease. Lastly, the creation of a classification system that addresses peri-implant disease.[7] Evidence based research shows us that smoking and diabetes are factors that may increase the risk for periodontal disease and contribute to the progression of periodontal disease. However, the rate of progression and the influence of contributing risk factors were not taken into consideration when determining proper treatment for patients with periodontal disease prior to the 2017 grading system.[7] Using the grading system to determine the rate of disease progression is a good way to diagnose frequency of treatment. Prior to the changes to the classification system, patients either had gingivitis or periodontitis which could be broken down into mild, moderate, or severe.[7] The AAP recognized that patients free of disease should no longer be grouped in with the category of gingivitis.[7] The health of a patient's implant should always be evaluated because it is another sign of oral health.[7] By integrating a category for a patients implant status the clinician can better document and detect changes in implant health.[7]

Each dental clinician should utilize the new classification system to evaluate their patients and to ensure accurate diagnosis and treatment. Evidence shows that there is no cure for periodontal disease.[2] Once a patient is classified as having periodontal disease, that patient will remain in that classification - unable to move back to the healthy category.[8] Patients with periodontal disease cannot return to gingival health even with effective treatment, their level of disease can only be maintained.[8] However, there is one exception to this rule. For example, if a case is classified as a Stage III due to a vertical periodontal defect and the rest of the interdental clinical attachment loss (CAL) throughout the mouth were congruent with Stage II, the problem sites could be regenerated, by possible bone graft treatment. In this case, the patient could be reclassified as Stage II Periodontitis.[2]

Prophylactic treatments prevent disease and are appropriate for patients with healthy gingiva and patients with gingivitis. When a patient is classified as having periodontitis, prophylactic treatment is no longer appropriate care. After periodontal disease is treated, with non-surgical periodontal debridement, the goal is to maintain the patient's periodontal status. This is achieved by periodontal maintenance therapy.

It is vital that each person in practice has an understanding of the etiology of periodontal disease, the benefit of the correct treatment, and the consequences of not receiving treatment.[9] The intention of the new periodontal classification system is to provide a more comprehensive and accurate approach to patient's periodontal status. The classification system also gives the clinician a guideline as to when to refer. If the patient is not responding to treatment, and the conditions of their periodontal and gingival health are not stable, the clinician will be able to refer to a periodontist. According to Sweeting, et al, the severity of periodontal disease of individuals referred for periodontal care is greater now than it was in 1980.[9] Inter-professional

variability in the standard of periodontal care in dental practices could result in unwanted outcomes and poorer periodontal health.[9] In Sweeting, et al, researchers used a sample of 100 newly referred dental patients from three separate periodontal practices.[9] Of the 100 subjects, 74 were diagnosed with periodontal case type IV at the point of referral.[9] Approximately 30% of patients were treatment planned by periodontists for extractions due to severity of their disease.[9] If these percentages of disease are projected to a larger geographical area, this may indicate that dentistry in the past has been failing to address timely diagnosis of periodontal disease, the appropriate treatment, and the time for referral.[9] This study indicates that the previous periodontal classification system may not have given clinicians clear information for accurate diagnosis and treatment of periodontal disease. The system needed to be upgraded and adjusted to focus on each patient's specific condition.

Any time a new system is put into place, there is a challenge with the implementation. The challenge comes from learning a whole new way to do a job that has been routine for a long time. Miyamoto et al demonstrates the application of the new system in the case of a 17 year old girl who presented with slight gingival inflammation.[10] Although the patient simply showed gingivitis, when the clinicians looked further into her case, they found that she is much more susceptible to periodontal disease than first anticipated.[10] Her family history had shown that her mother had been diagnosed with advanced periodontal disease.[10] Because of this, clinicians were able to focus their attention on the patient's susceptibility to the disease and were able to diagnose her with Stage I, grade C periodontitis.[10] They were able to manage the patient's state of periodontal health with scaling and root planning and systemic antibiotics.[10] In this case, special consideration was taken to alleviate the potential for rapid disease progression due to the evidence of family history of aggressive periodontitis.[10] This was an indication for early

intervention.[10] This case clearly shows the importance of adapting to the new classification system. Applying the staging and grading system will be crucial to understanding the need for periodontal referral and early periodontal treatment intervention. Without the specific and detailed new system, this patient may not have received the proper treatment that she needed to maintain her condition and prevent progression. The staging and grading pieces of the new classification system add an element of personalization that will be monumental to the diagnosis and treatment of periodontal disease.

CONCLUSION

This narrative highlights the substantial changes that the American Academy of Periodontology (AAP) has made to the periodontal classification guidelines. Changes to the guidelines implemented by the AAP provide the necessary information for clinicians to accurately diagnose, treat, refer, and maintain periodontal disease in their respective dental practices. Clinicians should stay informed on the changes going on in the dental field due to evolving health care.

Improvements to the periodontal classification system will ultimately result in a higher standard of care for the population. Clinicians should adapt to changes in the dental field in order to provide the accurate comprehensive care for patients. When dental offices incorporate the updated guidelines, dental clinicians will be able to closely monitor periodontal disease. They will be able to more effectively stop progression as well as maintain bone levels and tooth retention in every patient with periodontitis. The new classification system is a strong step forward for periodontal assessment and care.

REFERENCES

1. Practice Act & TSBDE Rules. Texas State Board of Dental Examiners Website.http://tsbde.texas.gov/78i8ljhbj/2019/02/Dental-Practice.pdf. Published 1999. Accessed October 13, 2019.

2. American Academy of Periodontology. Proceedings from the 2017 World Workshop on the Classification of Periodontal and Peri-implant Diseases and Conditions. https://www.perio.org. Accessed November 10, 2010.

3. U.S. Department of Health & Human Services. National Practitioner Data Bank. https://www.npdb.hrsa.gov/analysistool/. Accessed January 15, 2020.

4. Misra SR, Mishra L, Kumar M, et al. Dental Malpractice, The Odds in Dental Treatment. Indian J of Public Health. 2018;9(12):2430. http://search.ebscohost.com.srv-proxy2.library.tamu.edu/login.aspx?direct=true&db=edb&AN=137021282&site=eds-live. Accessed January 20, 2020.

5. Case: Pain from Untreated Periodontal Disease." 2007. ClinicalRisk 13 (4): 159. http://eds.a.ebscohost.com.srv-proxy1.library.tamu.edu/eds/pdfviewer/pdfviewer?vid=1&sid=976a1f3f-e96a-4fbd-8531-971dbae7610b%40sessionmgr4007. Accessed October 13, 2019.

6. Dental Malpractice: Elderly female, age not given: failure to diagnose and treat or refer out severe periodontal disease over aperiod of years: loose, shifting teeth: $85,000 settlement. CINAHL Nursing Guide. April 2007. htp://eds.b.ebscohost.com.srv-proxy2.library.tamu.edu/eds/pdfviewer/pdfviewer?vid=1&sid=b7031da2-74f7-454d-bfb0-1f908c31e110%40sessionmgr101. Accessed January 20, 2020.

7. Babay N, Alshehri F, and AlRowis R. Major highlights of the new 2017 classification of periodontal and peri-implant disease and conditions. Saudi Dent J. 2019;3:303-305. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6626283/. Published April 23, 2019. Accessed October 9, 2019.

8. Caton J, Armintage G, Berglundh T, et al. A new classification scheme for periodontal and peri-implant diseases and conditions - Introduction and key changes from the 1999 classification. *J Clin Periodontol*. 2018; 45 Suppl 20, S1-S8. 10.1111/jcpe.12935.

9. Sweeting LA, Davis K, Cobb CM. Periodontal Treatment Protocol (PTP) for the General Dental Practice. *J Clin Periodontol*. 82 (suppl 2) 16-26.

10. Miyamoto T, Kumagai T,Khan S, et al. Application of 2017 New Classification of Periodontal Diseases and Conditions to Localized Aggressive Periodontitis: Case Series. *J Clin Periodontol.* 2019; 9(4), 185-191.