Classification systems are necessary in order to provide a framework in which to scientifically study the etiology, pathogenesis, and treatment of diseases in an orderly fashion. In addition, such systems give clinicians a way to organize the health care needs of their patients. The last time scientists and clinicians in the field of periodontology and related areas agreed upon a classification system for periodontal diseases was in 1989 at the World Workshop in Clinical Periodontics.1 Subsequently, a simpler classification was agreed upon at the 1st European Workshop in Periodontology.2 These classification systems have been widely used by clinicians and research scientists throughout the world. Unfortunately, the 1989 classification had many shortcomings including: 1) considerable overlap in disease categories, 2) absence of a gingival disease component, 3) inappropriate emphasis on age of onset of disease and rates of progression, and 4) inadequate or unclear classification criteria. The 1993 European classification lacked the detail necessary for adequate characterization of the broad spectrum of periodontal diseases encountered in clinical practice. The need for a revised classification system for periodontal diseases was emphasized during the 1996 World Workshop in Periodontics.3 In 1997 the American Academy of Periodontology responded to this need and formed a committee to plan and organize an international workshop to revise the classification system for periodontal diseases. The proceedings in this volume are the result of this reclassification effort. The process involved development by the Organizing Committee of an outline for a new classification and identification of individuals to write state-of-the-science reviews for each of the items on the outline. The reviewers were encouraged to depart from the preliminary outline if there were data to support any modifications. On October 30–November 2, 1999, the International Workshop for a Classification of Periodontal Diseases and Conditions was held and a new classification was agreed upon (Fig. 1). This paper summarizes how the new classification for periodontal diseases and conditions presented in this volume differs from the classification system developed at the 1989 World Workshop in Clinical Periodontics.1 In addition, an analysis of the rationale is provided for each of the modifications and changes. Ann Periodontol 1999;4:1-6.

KEY WORDS
Periodontal diseases/classification; gingival diseases/classification.
I. Gingival Diseases
   A. Dental plaque-induced gingival diseases*
      1. Gingivitis associated with dental plaque only
         a. without other local contributing factors
         b. with local contributing factors (See VIII A)
      2. Gingival diseases modified by systemic factors
         a. associated with the endocrine system
            1) puberty-associated gingivitis
            2) menstrual cycle-associated gingivitis
            3) pregnancy-associated
               a) gingivitis
               b) pyogenic granuloma
            4) diabetes mellitus-associated gingivitis
         b. associated with blood dyscrasias
            1) leukemia-associated gingivitis
            2) other
      3. Gingival diseases modified by medications
         a. drug-influenced gingival diseases
            1) drug-influenced gingival enlargements
            2) drug-influenced gingivitis
               a) oral contraceptive-associated gingivitis
               b) other
         4. Gingival diseases modified by malnutrition
            a. ascorbic acid-deficiency gingivitis
            b. other
   B. Non-plaque-induced gingival lesions
      1. Gingival diseases of specific bacterial origin
         a. Neisseria gonorrhoeae-associated lesions
         b. Treponema pallidum-associated lesions
         c. streptococcal species-associated lesions
         d. other
      2. Gingival diseases of viral origin
         a. herpesvirus infections
            1) primary herpetic gingivostomatitis
            2) recurrent oral herpes
            3) varicella-zoster infections
         b. other
      3. Gingival diseases of fungal origin
         a. Candida-species infections
            1) generalized gingival candidosis
            b. linear gingival erythema
            c. histoplasmosis
            d. other
      4. Gingival lesions of genetic origin
         a. hereditary gingival fibromatosis
         b. other
      5. Gingival manifestations of systemic conditions
         a. mucocutaneous disorders
            1) lichen planus
            2) pemphigoid
            3) pemphigus vulgaris
            4) erythema multiforme
            5) lupus erythematosus
            6) drug-induced
            7) other
         b. allergic reactions
            1) dental restorative materials
               a) mercury
               b) nickel
               c) acrylic
               d) other
            2) reactions attributable to
               a) toothpastes/dentifrices
               b) mouthrinses/mouthwashes
               c) chewing gum additives
               d) foods and additives
            3) other
      6. Traumatic lesions (factitious, iatrogenic, accidental)
      7. Foreign body reactions
      8. Not otherwise specified (NOS)

Figure 1.
Classification of periodontal diseases and conditions.
* Can occur on a periodontium with no attachment loss or on a periodontium with attachment loss that is not progressing.

accurate to adopt a nonspecific term such as “Chronic Periodontitis” to characterize this constellation of destructive periodontal diseases.

A great deal of discussion centered around what words should be used to replace the Adult Periodontitis term. Substitute terminology such as “Periodontitis—Common Form” and “Type II Periodontitis” were considered and eventually rejected by the majority of the group. The term “Chronic Periodontitis” was criticized by some participants, since “chronic” might be interpreted as “noncurable” by some people. Nevertheless, “Chronic Periodontitis” was eventually agreed upon as long as it was understood that it did not imply that this disease was nonresponsive to treatment.

Traditionally, this form of periodontitis has been characterized as a slowly progressive disease.\textsuperscript{5} Indeed, data from many sources confirm that patients with this form of periodontitis usually exhibit slow rates of progression.\textsuperscript{6,7} However, there are also data indicating that some patients may experience short periods of rapid progression.\textsuperscript{8,9} Therefore, workshop participants concluded that rates of progression should not be used to exclude people from receiving the diagnosis of Chronic Periodontitis.

**Replacement of “Early-Onset Periodontitis” With “Aggressive Periodontitis”**

The term “Early-Onset Periodontitis” (EOP) was used in the 1989 AAP and 1993 European classifications as a collective designation for a group of dissimilar destructive periodontal diseases that affected young patients (i.e., prepubertal, juvenile, and rapidly pro-
gressive periodontitis). It was logically assumed that these diseases all had an early onset because they affected young people. Unfortunately, the “early onset” designation implies that one has temporal knowledge of when the disease started. However, in clinical practice and most other situations this is rarely the case. In addition, there is considerable uncertainty about arbitrarily setting an upper age limit for patients with so-called early-onset periodontitis. For example, how does one classify the type of periodontal disease in a 21-year-old patient with the classical incisor-first molar pattern of Localized Juvenile Periodontitis (LJP)? Since the patient is not a juvenile, should the age of the patient be ignored and the disease classified as LJP anyway? This type of problem stems from the age-dependent nature of the 1989 classification system. A similar problem arises when the 1989 classification is applied to a 21-year-old patient with generalized periodontal destruction. Does such a patient have “Rapidly Progressing Periodontitis” (RPP) or “Generalized Juvenile Periodontitis” (GJP)? It can be argued that neither designation is acceptable. The diagnosis of RPP may not be appropriate since the rate of progression is not known, and the GJP designation is unacceptable because the patient is no longer a juvenile.

Because of these problems, workshop participants decided that it was wise to discard classification terminologies that were age-dependent or required knowledge of rates of progression. Accordingly, highly destructive forms of periodontitis formerly considered under the umbrella of “Early-Onset Periodontitis” were renamed using the term “Aggressive Periodontitis.” In general, patients who meet the clinical criteria for LJP or GJP are now said to have “Localized Aggressive Periodontitis” or “Generalized Aggressive Periodontitis,” respectively. In the consensus report for “Aggres-

**Figure 1. (Continued)**

† Can be further classified on the basis of extent and severity. As a general guide, extent can be characterized as Localized = ≤30% of sites involved and Generalized = >30% of sites involved. Severity can be characterized on the basis of the amount of clinical attachment loss (CAL) as follows: Slight = 1 or 2 mm CAL, Moderate = 3 or 4 mm CAL, and Severe = ≥5 mm CAL.
Development of a Classification System for Periodontal Diseases and Conditions

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Elimination of a Separate Disease Category for "Refractory Periodontitis"

In the 1989 classification, a separate disease category was devoted to Refractory Periodontitis. This heterogeneous group of periodontal diseases refers to instances in which there is a continuing progression of periodontitis in spite of excellent patient compliance and the provision of periodontal therapy that succeeds in most patients. Because of the diversity of clinical conditions and treatments under which periodontal therapy fails to arrest the progression of periodontitis, workshop participants were of the opinion that "Refractory Periodontitis" is not a single disease entity. Indeed, it was considered possible that a small percentage of cases of all forms of periodontitis might be nonresponsive to treatment. Therefore the group concluded that, rather than a single disease category, the "refractory" designation could be applied to all forms of periodontitis in the new classification system (e.g., refractory chronic periodontitis, refractory aggressive periodontitis, etc.). It is recommended that future studies of these patients describe as fully as possible the population under investigation to minimize heterogeneity of the study sample.

Clarification of the Designation “Periodontitis as a Manifestation of Systemic Diseases”

In the 1989 classification, one of the disease categories was “Periodontitis Associated With Systemic Disease.” In general, this category has been retained in the new classification since it is clear that destructive periodontal disease can be a manifestation of certain systemic diseases. The Consensus Report for this portion of the workshop (page 64) contains a list of systemic diseases in which periodontitis is a frequent manifestation. It should be noted that diabetes mellitus is not on this list. In the collective view of workshop participants, diabetes can be a significant modifier of all forms of periodontitis but there are insufficient data to conclude that there is a specific diabetes mellitus-associated form of periodontitis. For example, the presence of uncontrolled diabetes mellitus can alter the clinical course and expression of chronic and aggressive forms of periodontitis. Similarly, the new classification does not contain a separate disease category for the effects of cigarette smoking on periodontitis. Smoking was considered to be a significant modifier of multiple forms of periodontitis.

One of the apparent inconsistencies in the new system is inclusion in the “Dental Plaque-Induced Gingival Diseases” (pages 18-19) portion of the classification a list of gingival diseases that can be modified by systemic factors. On this list is “diabetes mellitus-associated gingivitis.” How can one justify inclusion of a diabetes mellitus-associated gingivitis category and purposely exclude a parallel periodontitis category?
The reason for this decision was that plaque-induced gingivitis was considered a single entity by the workshop participants. This is not the case for periodontitis, where there are clearly different clinical forms. It would have been possible to include in the new classification additional subcategories such as “diabetes mellitus-associated chronic periodontitis” and “diabetes mellitus-associated aggressive periodontitis.” However, the group decided that this would be unnecessarily complicated and not yet justified by supporting data.

Replacement of “Necrotizing Ulcerative Periodontal Diseases” With “Necrotizing Periodontal Diseases”

Workshop participants acknowledged that necrotizing ulcerative gingivitis (NUG) and necrotizing ulcerative periodontitis (NUP) are clinically identifiable conditions. However, the group was less certain about the relationship between NUG and NUP. Are these clinical conditions part of a single disease process or are they truly separate diseases? Since there are insufficient data to resolve these issues, the group decided to place both clinical conditions under the single category of “Necrotizing Periodontal Diseases.” If future studies show that NUG and NUP are fundamentally different diseases, then they can be separated in subsequent revisions of the classification.

One of the potential problems with inclusion of “Necrotizing Periodontal Diseases” as a separate category is that both NUG and NUP might be manifestations of underlying systemic problems such as HIV infection. If this is true, then it might be more appropriate to place these conditions under manifestations of systemic diseases. The reason that this was not done is that there are many factors, other than systemic diseases, that appear to predispose to the development of NUG or NUP such as emotional stress and cigarette smoking. Since our understanding of these clinical conditions is far from complete, it was concluded that for the time being they should be included under a single and separate category in the new classification.

Addition of a Category on “Periodontal Abscess”

The 1989 classification did not include a section on periodontal abscesses. This has been remedied by the addition of a simple classification (page 83) primarily based on location (i.e., gingival, periodontal, peri-coronal) of these commonly encountered lesions. It could be argued that periodontal abscesses are part of the clinical course of many forms of periodontitis and formation of a separate disease category is not justified. However, in the view of workshop participants, since periodontal abscesses present special diagnostic and treatment challenges they deserve to be classified apart from other periodontal diseases.

Addition of a Category on “Periodontic-Endodontic Lesions”

The 1989 classification did not include a section on the connection between periodontitis and endodontic lesions. Therefore a simple classification dealing with this area has been added (page 90).

Addition of a Category on “Developmental or Acquired Deformities and Conditions”

Although the deformities and conditions listed in this section of the classification are not separate diseases, they are important modifiers of the susceptibility to periodontal diseases or can dramatically influence outcomes of treatment. In addition, since periodontists are routinely called upon to treat many of these conditions they have been given a place in the new classification (page 101).

FUTURE REVISIONS TO THE CLASSIFICATION

The classification of periodontal diseases and conditions in this volume should provide a workable framework upon which to study and develop effective treatments for this complex group of infections. It is anticipated that as we learn more about the etiology and pathogenesis of periodontal diseases, future revisions to the classification will be needed. All classification systems have inconsistencies or inaccuracies. The present effort is no exception. Nevertheless, the current classification represents the consensus of an international group of experts and it is hoped that the system will be useful to the profession and public we serve.

REFERENCES


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