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The Role of Technology in Periodontal Evaluation and Treatment Acceptance

A Peer-Reviewed Publication

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Educational Objectives

Upon completion of this course, the clinician will be able to do the following:

1. Know the prevalence of periodontal disease and understand treatment needs.
2. Be knowledgeable about treatment obstacles.
3. Understand the technology options available that assist in probing, charting and treatment planning and the advantages of these.
4. Understand the role of technology in patient treatment acceptance, practice-building and risk management.

Abstract

The prevalence of periodontal disease and estimates of provided treatment are indicative of treatment needs. Current technology offers standardized probing, automated charting, risk assessment, differential diagnosis and suggested treatment plans, as well as enabling clinicians to involve patients in the process. Patient awareness and treatment acceptance can be encouraged with full evaluation, a consistent protocol and message, and through the use of technology.

Introduction

Patients' perceptions of dentistry and periodontal disease are evolving. As patients become aware of the oral-systemic link — in part as a result of marketing by consumer oral care companies, and are educated by clinicians about this, they are beginning to view periodontal health as an important component of their overall well-being. While there is increasing attention to periodontal health and the oral-systemic link, periodontal disease remains prevalent. Patient awareness and treatment acceptance — including in the earlier stages of the disease when it is often asymptomatic — can be encouraged with full evaluation, a consistent protocol and message, and through the use of technology. Given the importance of treating periodontal disease for both oral and systemic health, it is key that patients understand the necessity of accepting periodontal therapy when they are diagnosed.

Periodontal disease and periodontopathic bacteria have been found to be associated with cardiovascular disease, diabetes, respiratory disease, and low birth-weight.^{1,2,3,4} Severe periodontitis has been found to be associated with a 400 percent increased risk of stroke, and even gingivitis has been found to be associated with an increased risk.^{5,6} Diabetes increases the severity of periodontal disease, and conversely some studies have found that treating periodontal disease helps improve glycemic levels in patients.^{7,8}

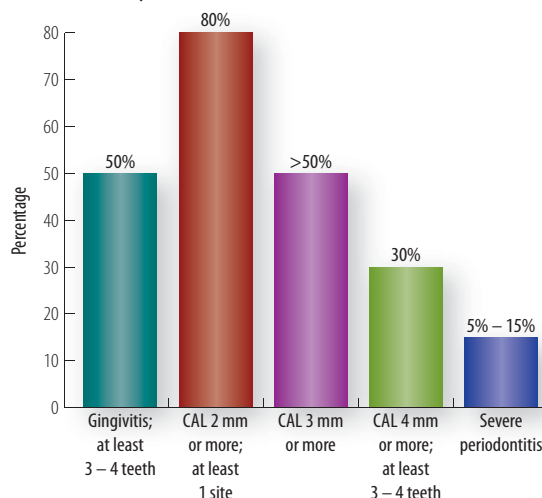
Periodontopathic bacteria, together with their by-products and cytokines, stimulate the liver and white blood cells to increase production of inflammatory proteins;⁹ they have also been found attached to blood vessel walls.¹⁰ The inflammatory response includes the release of neutrophils, antibodies and lymphocytes. Tumor necrosis factor alpha (TNF- α) and interleukin-1 — both released by leucocytes — are responsible for stimulating matrix metallo-proteinase (MMP), with resulting clinical attachment loss (CAL) and bone destruction.¹¹ Inter-

leukin-1 can be found inside atherosclerotic plaque; TNF- α antagonizes insulin.¹² Interleukin-6, which is also produced, increases the production of fibrinogen (which is also associated with the creation of thrombi).¹³ Unhindered, once pockets and subgingival plaque are present, home-care is ineffective, irrespective of the degree of care. Professional care is required.¹⁴

Periodontal Disease Prevalence

Periodontal disease is prevalent. Gingivitis around at least three to four teeth was estimated in the NHANES III study to be experienced by 50 percent of adults.¹⁵ The majority of the adult population suffers from mild to moderate chronic periodontitis, and advanced periodontal disease affects between 5 and 15 percent of adults.^{16,17} More than 50 percent of adults between 30 and 90 years of age have been estimated to have at least 3 mm of CAL.^{18,19} (Table 1) In particularly susceptible individuals, periodontitis is evident during adolescence and early adulthood.²⁰ The single most important determinant of disease progression is the host response.²¹ Individual determinants include genetic, systemic and behavioral factors.²²

Table 1. Disease prevalence in adults



Treatment Estimates and Needs

An estimated 28 million periodontal procedures, including 12 million quadrant scalings and root planings, were performed in 1999 in the United States, and an estimated 226 million prophies occurred.²³ Considering that at least 35 percent of the dentate population is estimated to have mild periodontitis, and another 12.6 percent to have moderate or severe periodontitis,²⁴ this is indicative of considerable undertreatment of periodontal disease.

There is a significant need for increased periodontal treatment acceptance and delivery.

Standard-of-Care

It should be the standard-of-care to probe every patient every time he or she is seen at recall by the hygienist. Every new pa-

tient must be screened and evaluated for periodontal disease. Evaluating and educating patients about their clinical situation and presenting them with therapeutic options to prevent, correct or manage disease is what is best for patients — the merits of diagnosing periodontal disease are ethical and required. By evaluating, diagnosing and educating patients, revenue, and ultimately profit, will increase. Although clinicians may feel uncomfortable mentioning profit and ethics in the same breath, the fact is that dental practices are businesses that must generate revenue and profit while providing excellent care.

It should be the standard of care to probe every patient every time he or she is seen at recall by the hygienist.

The Periodontal Examination

The only method of detecting and measuring periodontal pockets is careful exploration with a periodontal probe.²⁵ Pocket depth, clinical attachment changes, gingival recession, bleeding on probing and the presence of exudate (pus) must all be assessed. Alveolar bone levels are evaluated by clinical and radiographic examination, and mobility is graded according to the ease and extent of tooth movement. It is important to remember that pocket depth and attachment level measurements do not determine whether the disease is active or inactive, and inactive lesions may have little or no bleeding. Additional testing and information may also be indicated, such as microbiological findings. Ultimately, the objectives of probing and associated charting are to diagnose periodontal disease and to have patients accept treatment. Appropriate techniques and communication are essential to achieve these objectives.

The ultimate objectives of probing and charting are diagnosis and treatment acceptance.

Obstacles to Treatment

Patients are typically motivated to seek treatment by pain, esthetics and health considerations. Periodontal disease is often asymptomatic until it is advanced — the patient will have no pain, no associated esthetic concerns, and be unaware of health issues. Patients may lack awareness, recognition or acceptance of the need for treatment. More than 30 percent of patients in one survey saw no need for recommended treatment.²⁶ In some cases they may avoid treatment due to fear of treatment or specific procedures.^{27,28,29} Treatment obstacles prevent a patient’s shift from periodontal disease to health — they include resistant attitudes, communication gaps and limiting beliefs. Limiting beliefs are evidenced by statements from patients such as “I just want a regular cleaning — no frills.” Other considerations include the cost to the patient, a standard protocol and billing/insurance issues.



Lack of treatment and undertreatment result in the ongoing existence of disease, a threat to systemic health and a lost opportunity for the practice to provide optimal patient care while optimizing practice-building opportunities. They also expose dentists to the risk of being sued. An assessment of treatment provided over the previous 12 months using preventative and therapeutic codes will indicate the mix and level of periodontal treatment in an individual practice. (Table 2) These can be influenced by treatment obstacles, as well as appointment time being consumed with scaling and polishing. The vast majority of hygiene procedures are coded as adult prophies (1110),³⁰ which by definition would entail scaling and polishing in the presence of health. In addition, if most procedures are prophies, this leaves little chairside time for periodontal evaluations and treatment.

Table 2. Treatment Mix

12-month production by provider

Code	# Treatments
1110 Adult prophy	A
4910 Periodontal maintenance	B
4341 Periodontal therapy per quadrant (4+ teeth)	C
4342 Periodontal therapy (1–3 teeth)	D

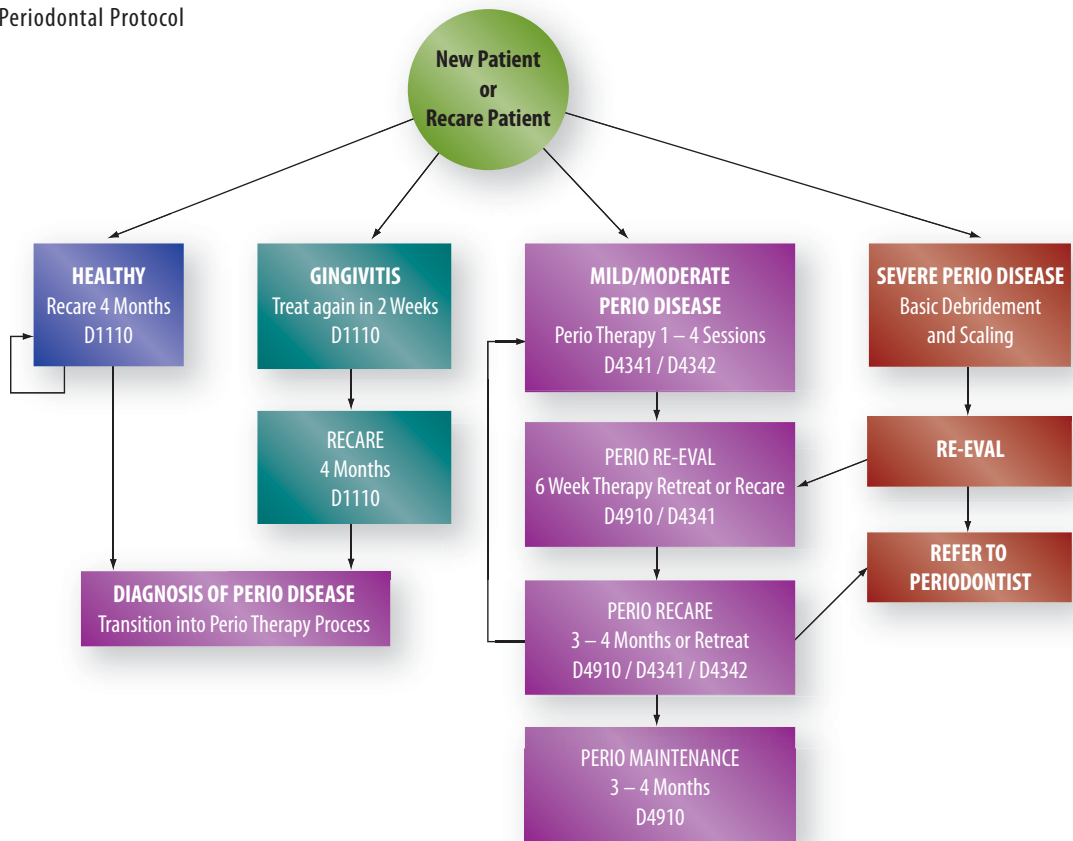
Calculations
A + B + (C + D)/2 = X
B + (C + D)/2 = Y
Y divided by X = Percentage of therapeutic periodontal treatments

Defining a Protocol

A defined protocol and integrated approach to periodontal examination, diagnosis and treatment help toward the goals of fully evaluating and treating all periodontal patients. Protocols must consider the risk and susceptibility of an individual patient and treatment should be planned for health as the outcome. It is important to make a clear distinction between preventive care and periodontal therapy. If periodontal therapy is provided but called a ‘cleaning’ and coded as a cleaning, it communicates to the patient that all is well (“only” a ‘cleaning’ is needed), the patient sees little difference in value between ‘regular cleaning’ and ‘periodontal therapy or periodontal recare’, and the practice loses revenue.

In a well-defined periodontal protocol, patients must be graded by their disease and risk level, the definition of disease must be clear, and the whole team must hold the belief that if disease is found it will be treated. Patients are triaged into ap-

Figure 1. Periodontal Protocol



appropriate treatment paths and, if specialized care is required, referred to a periodontist. (Figure 1)

An Integrated Approach

An integrated approach that includes full evaluation and diagnosis of patients, together with an appropriate periodontal protocol, helps pave the way for the provision of periodontal therapy tailored to the needs of individual patients. The central components of the periodontal examination involve probing and charting, achieved by one of several methods. (Table 3)

Table 3

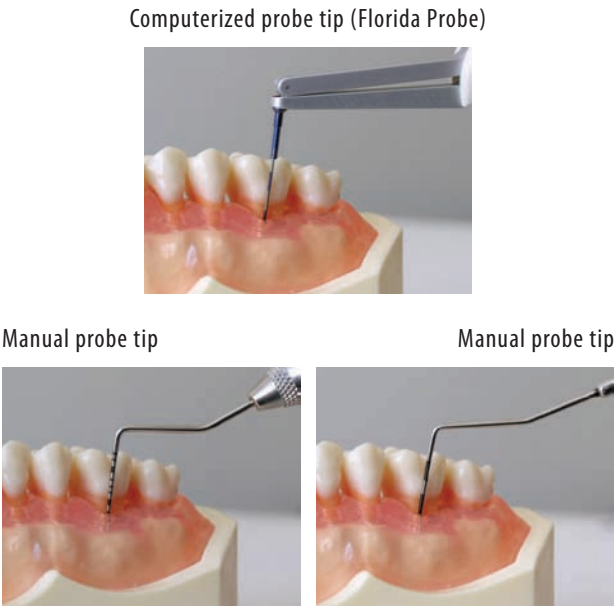
Manual probing	Manual paper charts
	Software-generated charts
Manual controlled-pressure probing	Manual paper charts
	Software-generated charts
Automated constant-pressure probing	Software-generated charts

Probing

Probing must be consistent and reproducible, regardless of the operator and/or experience level. With manual probing, accuracy and variability are influenced by the probe's size, direction of insertion, pocket and probing depth, resistance of the tissue, and shape of the crown (this influences the depth of insertion); inherent human operator factors include the level of expertise and the force with which the probe is used, as well as intra-examiner variations in measurements.^{31,32,33,34,35}

In addition, manual probes vary in markings, width of the tip and shape of the shaft. (Figure 2). Inter-examiner error has been reported to be as much as 2.1 mm, with an average of 1.5 mm, in the same areas.³⁶ One study found plastic manual probes with controlled-pressure to record shallower probing depths than either manual probes or computerized constant-pressure probes.³⁷

Figure 2. Probes



Computerized constant-pressure probes (Florida Probe[®], STM[®] probe, Pro-Dentec[®]) have been found to be quick and reliable and to standardize measurements between users. Computerized constant-pressure probes have been found to provide reproducibility.^{38,39} Care must be taken when calculus is present to avoid underestimating pocket depth and CAL.⁴⁰ Florida Probe[®] enables the clinician to choose and order a pre-set customized constant pressure as an alternative to the pre-set standard of 15 g of pressure. Both the Florida Probe[®] and the STM[®] probe have an override feature for pressure.

Charting

With manual charting, an assistant records the data or the examiner stops every few measurements to record the results (which can also result in poor infection control). Manual charting relies on the accuracy of paper notation, legibility and the ability to decipher the notations (particularly at a later date or with a different clinician).

Software-generated charting results in standardized, reproducible charts that are quicker, more legible, more easily accessible and a trustworthy legal document. These software systems may be completely hands-free or require manual input of specific pathological (or other) conditions. An assistant is not required. The charting is generated using voice-activation (PerioPal, Dentrrix Voice, EagleSoft), a foot pedal (Florida Probe[®]), or from the probe (STM[®] probe). (Table 4) Command-based voice-activated systems are more common than dictation charting systems;⁴¹ once the clinician has learned the commands, they speed up examinations compared to using speech. Similarly, foot pedals, once learned, are quick to use during examinations.

Table 4.

	Perio-Pal	Eagle-Soft	Dentrrix Voice	STM Probe	Florida Probe
Probing					
Manual	X	X	X		
Manual controlled-pressure	X	X	X		
Computerized standard-pressure				X	X
Charting					
Voice-activated (commands)	X	X			
Voice-activated (speech)			X		
Foot pedal auto-mated					X
Probe automated				X	

The software system used should ideally be able to record the main parameters of a periodontal exam, including the den-tition, missing teeth, crowns, implants, recession, mucogingi-

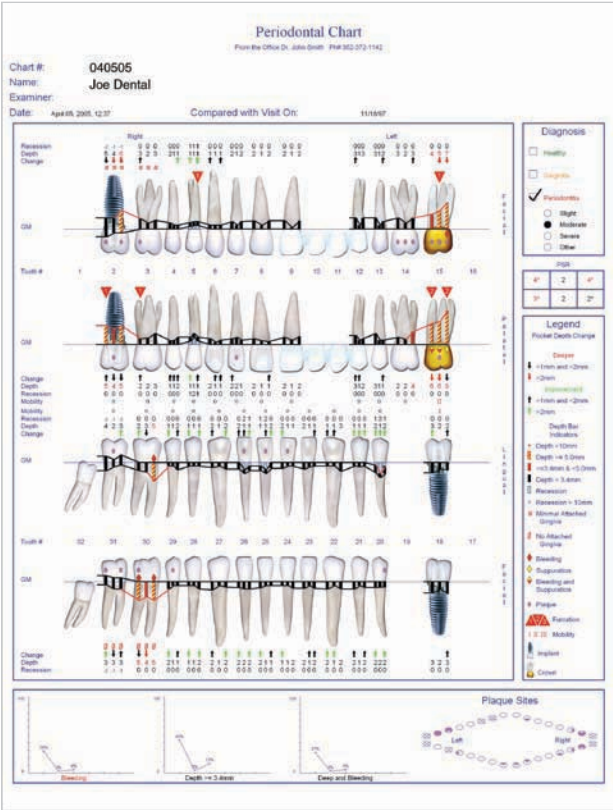
val junction, hyperplasia, pocket depth, bleeding, suppuration, furcation involvement, mobility and plaque assessment.

Diagnosis and Risk Assessment

Probing and charting form the basis for diagnosis, which also considers other parameters. Diagnosis and risk assessment determine treatment needs and the risk of future disease progression. Traditionally, these have been conducted by the clinician gathering patient information (medical history, microbiological analyses and other factors) and manual or printed charts and then studying them to determine the diagnosis and patient's risk before documenting these.

Computer-generated differential diagnosis and risk assessment have become an option (Florida Probe[®]; Previser). The software considers microbiologic and other factors (including systemic diseases, history of smoking, medications, behavioral, and home care), in addition to the traditional clinical and radiographic parameters, when assessing these. Print-outs with a classification of the patient's disease state and suggested treatments — including, where indicated, referral to a perio-dontist — are provided and can be discussed with the patient and stored in the patient's electronic file. Automated charts can also be e-mailed to the periodontist. (Figure 3)

Figure 3.



Patient Involvement, Communication and Treatment Acceptance

When a clinician probes a patient's mouth, he or she becomes educated about the patient's oral health. The resulting charts

and other compiled data form the basis for a diagnosis and risk assessment. The beliefs and protocols of your practice may be incredibly solid, but it is a mistake to assume that patients understand them. Involving and educating the patient paves the way for the patient to accept that there is a problem and that treatment is necessary. Ideally, this will involve the following:

- Knowing your patients and how they best receive information⁴²
- Understanding which motivators apply to individual patients
 - Pain
 - Health
 - Esthetics
 - Cost
- Engaging patients during the examination process
- Involving patients in the diagnosis
- Helping patients “own” their disease
- Developing a message that will be remembered and is practical and personal
- Informing your patients about your protocols
- Explaining to patients how you will treat them and what it means to them personally
- Using technology to enroll patients

The Role of Technology in Patient Acceptance

Technology can help patients “own” their disease and diagnosis. Responsive software systems generate verbal feedback during probing and charting, which helps keep patients involved — they can hear the message generated by an ‘objective third party’ (the computer). Systems that combine computerized probing with automated recording, screen imaging and response mechanisms, help address the issue of listening, touching and seeing for patients. During an exam, patients are able to watch the images on the screen and/or listen to the “voice call-outs.” Depending upon the system, “Warning!”, “Bleeding!” and probing depths can be heard if the examiner selects these options. A verbal “Danger!” feature can also be preset at a given depth which will alert patients to particular areas with more severe disease that require another level of treatment (Florida Probe®). Hearing computer call-outs differentiated between warning and danger levels helps patients realize the extent and severity of their (asymptomatic) disease and that different levels of treatment may be required. As exams are performed, patients hear an objective voice “scoring” their periodontal health. This produces a desired “co-diagnosis” effect. Patients, at that point, are not in a position to blame the clinician for the results, and the practitioner is free from the guilt often associated with telling patients bad news.

Computer-generated differential diagnoses, risk assessments and suggested treatments provide patients with ‘tangible impartial evidence’ that the clinician can review with them. Image-based charts that have troubled areas clearly

highlighted also help patients visually understand their disease, particularly color charts that highlight areas. The use of technology adds a high-tech “halo effect” and may further encourage patients to believe the message and accept treatment.

Computer-generated differential diagnosis, risk assessments and suggested treatments produce “disease ownership” and “co-diagnosis” in patients.

Patients have been educated about the evaluation with sound (audible probe readings), sight (the computer monitor) and touch (the paperwork with the exam details) in addition to discussion with the clinician. The educational experience is complete when patients watch video clips about the periodontal chart, treatment options, patient education and risk assessment. Video clips should be short to engage and keep the patient’s attention, preferably in the presence of the clinician. It is also helpful to show patients a short video clip prior to evaluation explaining this so that patients will be aware of what happens during the evaluation and will be ready to ask questions. Patients should be provided with copies of their customized print-outs including charting, diagnosis, educational materials for home care, and the proposed treatment. (Table 5) It is important to have patients sign an informed consent form, whether they accept or refuse treatment. Signing this form is an emotional experience for patients, and the act of signing may make individual patients that refused treatment reconsider their decision. It is also extremely important that the office retains a signed informed consent form in the patient’s records as documentation. A further benefit of technology is charting comparing areas from the previous treatment cycle, either that have deteriorated and require further treatment and care, or areas that have improved — which helps further motivate patients and empower their belief in treatment.

Table 5. Technology Features, Patient Involvement and Communication

	Previser	PerioPal	STM Probe	Florida Probe
Automated charting	No	Yes	Yes	Yes
Responsive voice features	No	Yes	Yes	Yes
Differential diagnosis	Yes	Yes	No	Yes
Risk assessment	Yes	No	No	Yes
Treatment planning options	Yes	Yes	No	Yes

Lack of treatment and undertreatment of patients result in the ongoing existence, and risk of, disease. They also result

in the practice being at risk of a lawsuit. Every patient must be evaluated according to the standard-of-care, educated about their clinical situation and presented with therapeutic options to prevent, correct or manage disease; this is what is best for the patient. The number-one reason dentists are sued is failure to diagnose periodontal disease. Proper screening and evaluation and offering treatment to patients will help protect against lawsuits (but not necessarily prevent them). It is essential that the full evaluation, full charting, diagnosis,⁴³ education process and treatment offered be well-documented. There is a better chance of prevailing in court if the records are in good order.⁴⁴ These should demonstrate that you informed the patient of his or her clinical situation and reinforced the condition with printed records and educational materials, which are also recorded and stored in an encrypted computer database. Charts and records from computer-generated software programs create a concise, legal record that is easily understood and difficult to dispute.

Practice Building

Periodontal therapy and the hygiene department are important components of the health of the dental practice. Hygiene departments can deliver up to 35 to 40 percent of production. Standard-of-care evaluation, diagnosis and therapy offer an opportunity to practice-build while providing the highest level of care to patients. An appropriate protocol, purposeful message, technology and empowering beliefs will result in predictably higher rates of diagnosis and acceptance of periodontal therapy.



A series of scenarios demonstrate the practice-building aspects of this state-of-the-art periodontal evaluation, diagnosis and treatment.

Scenario 1

The practice has 500 patients, sometimes probed and evaluated sporadically.

Number of patients	500
100% adult prophies (1110) twice yearly	1,000
Average fee for 1110	\$75.20
Total annual revenue	\$75,200

Scenario 2

This practice performs evaluations annually on patients using manual probes. Some patients have stated that the probing

seems self serving. A few have gone as far as to say, "I have been getting my teeth cleaned twice a year since I was a kid and that is how I want to keep it! I am not paying for the doctor's vacation! Anyway, my insurance only pays for two cleanings per year." The clinician has talked briefly with patients about the oral-systemic link but has no support material or videos to reinforce the information and no defined protocol, and utilizes only some technology. The practice has a 1:4 mix of quarterly perio maintenance patients and twice-yearly adult prophy patients.

Number of patients	500
80% adult prophies (1110) twice yearly	800
Average fee for 1110	\$75.20
Annual revenue from 1110	\$66,160
20% perio maintenance (4910) quarterly	400
Average fee for 4910	\$118.20
Annual revenue from 4910	\$47,280
Total annual revenue	\$107,440

Scenario 3

This practice has made a leap of faith and believes that investing in patient education and technology is investing in patients' health. The clinicians are motivated by doing the right thing for their patients and by providing better care. Their revenue numbers will continue to improve and do not include new patients that require full mouth scaling and root planing. 70 percent of patients are seen as perio maintenance four times per year and 30 percent seen as CDT 1110 twice per year. A number of treatments are also required for localized antibiotics and scaling and root planing of quadrants and one to three teeth.

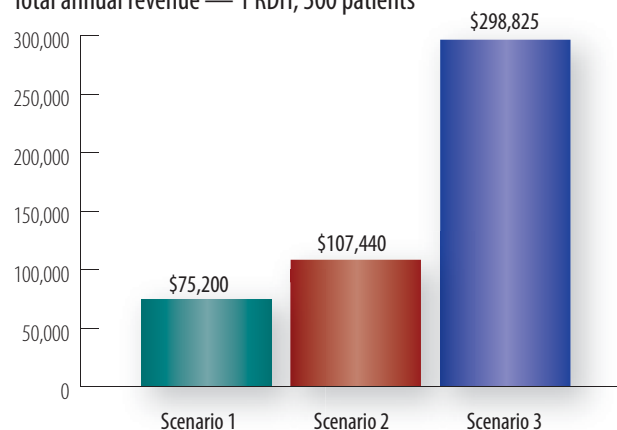
Number of patients	500
30% adult prophies (1110) twice yearly	300
Average fee for 1110	\$75.20
Annual revenue from 1110	\$22,560
70% perio maintenance (4910) quarterly	1,400
Average fee for 4910	\$118.20
Annual revenue from 4910	\$165,480
Localized antibiotics (4381)	700
Average fee for 4381	\$78.30
Annual revenue from 4381	\$54,810
Srp 1 quadrant (4341)	100
Average fee for 4341	\$223.90
Annual revenue from 4341	\$22,390
Srp 1 – 3 teeth (4342)	250
Average fee for 4342	\$134.34
Annual revenue from 4342	\$33,585
Total annual revenue	\$298,825

Average fees from Limoli. T, Limoli, Jr., T. 2006 Fee Survey. *Dental Economics*, October 2006.

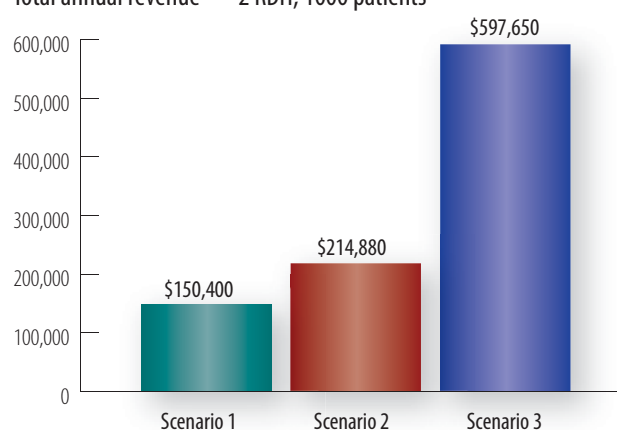
Fully evaluating, diagnosing and educating patients creates more awareness of treatment needs and treatment acceptance, improving the patient's health and well-being. The above three scenarios utilizing different mixes of periodontal diagnosis and therapy demonstrate the value from the perspective of practice-building benefits. The increase in revenue for a practice with two dental hygienists and 1,000 patients would be over \$447,000 annually. (Table 6) The use of laser therapy and other treatments may also be indicated for specific patients.

Table 6.

Total annual revenue — 1 RDH, 500 patients



Total annual revenue — 2 RDH, 1000 patients



Furthermore, patients routinely receive a take-home perio kit containing appropriate toothbrushes, floss, dentifrices and mouthrinses prescribed and dispensed by the practice — further improving their opportunity to improve home care and providing revenue for the practice that can be used to generate more profit or to help subsidize costs incurred in providing the highest level of care.

Summary

The association between oral and systemic health has highlighted the importance of periodontal health and treatment. While the majority of the population is affected by periodontal disease, significant opportunities exist to improve the health

of patients through thorough evaluation, diagnosis, risk assessment and patient acceptance of treatment. Current technologies offer standardized probing, automated charting, risk assessment, differential diagnosis and suggested treatment plans. Technology also enables clinicians to involve patients in the process, “own” their disease and “co-diagnose” their condition. Together with patient education, these factors improve the probability of patient treatment acceptance, which will improve oral and systemic health. Technology offers tools that help the clinician provide the highest level of care to their patients, enjoy the satisfaction of knowing the positive impact their treatment is having on their patient's current and future well-being, and — simultaneously — provide a practice-building opportunity.

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Author Profiles

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Dr. Balanoff received his dental degree from Northwestern University in 1983, and received his masters in craniofacial research from Nova Southeastern University in 2007.

He was an assistant clinical professor at Nova Southeastern University College of Dental Medicine teaching post graduate prosthodontics, specifically implant surgery and reconstruction to the prosthodontic residents.

Dr. Balanoff owns and operates a multilocation fee-for-service group practice with four locations in the south Florida area. He is on staff in the department of surgery at Broward General Hospital with privileges for implant surgery and reconstruction. Dr. Balanoff is on the editorial board of Compendium and is a consultant for Zila Pharmaceuticals.

Best of all...he has three wonderful children, 7, 8 and 12 and an incredible wife who allows his life to be a dream.

Cris Duval, RDH



Cris Duval is a private practice hygienist with more than 30 years experience. She is a full-time team member and provides clinical care in Dr. Brian McKay's practice in Seattle, Washington. As founder and president of Duval Consulting, she develops and implements strategic plans for dentists and hygienist to help them become peak performers. She is co-founder of Hi-Tech Hygiene and conducts in-office workshops on "Practical Application of the Diode Laser". Ms. Duval is also a national speaker and writer.

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Questions

1. Educated patients _____.
 - a. view periodontal health as important
 - b. view caries as unimportant to their oral health
 - c. understand the importance of periodontal therapy
 - d. a and c.
2. Both periodontitis and gingivitis have been found to be associated with _____.
 - a. a decreased risk of stroke
 - b. an increased risk of idiopathic pneumonia
 - c. an increased risk of stroke
 - d. None of the above.
3. More than _____ of adults between 30 and 90 years of age have at least 3 mm CAL.
 - a. 20 percent
 - b. 30 percent
 - c. 50 percent
 - d. 65 percent
4. _____ is experienced by 50 percent of adults.
 - a. Advanced periodontitis
 - b. Gingivitis
 - c. Palatinitis
 - d. None of the above.
5. The ultimate objective of probing and charting is _____.
 - a. to assess risk
 - b. diagnosis
 - c. treatment acceptance
 - d. b and c.
6. The sole method of measuring periodontal pockets is _____.
 - a. periodontal charting
 - b. careful probing with a periodontal probe
 - c. radiographic examination
 - d. All of the above.
7. The accuracy of manual probing has been found to be influenced by _____.
 - a. the shape of the crown of the tooth
 - b. the depth of the pocket
 - c. the size of the probe
 - d. All of the above.
8. Automated probing has been found _____.
 - a. to be reproducible
 - b. to standardize measurements
 - c. to avoid bleeding on probing
 - d. a and b.
9. Obstacles to periodontal treatment include _____.
 - a. patient lack of awareness of the need for treatment
 - b. patient fear of treatment
 - c. the absence of pain
 - d. All of the above.
10. Software-generated charting can be _____.
 - a. voice-activated
 - b. automated using a foot pedal
 - c. automated from the probe
 - d. All of the above.
11. _____ will result in predictably higher rates of acceptance for treatment.
 - a. An up-to-date protocol
 - b. Effective communication
 - c. Telling the patient to go away and think about it for a month
 - d. a and b.
12. A periodontal protocol should not include quadrant scaling and root planing.
 - a. True.
 - b. False.
13. Having patients watch a video clip before periodontal evaluation _____.
 - a. raises unnecessary concerns
 - b. educates the patient and gets them ready to ask questions during the evaluation
 - c. encourages patients to seek care elsewhere
 - d. None of the above.
14. Patient education videos should preferably _____.
 - a. be short
 - b. engage the patient
 - c. be viewed with the clinician present
 - d. All of the above.
15. Having the patient sign an informed consent form _____.
 - a. can be an emotional experience for patients
 - b. should be done whether the patient accepts or refuses treatment
 - c. is important for documentation purposes
 - d. All of the above.
16. Depending upon the software system used, call-outs can include _____.
 - a. "warning", "danger", probing depths
 - b. "help", "terminal"
 - c. "rechart"
 - d. None of the above.
17. All software-generated charting systems used for periodontal evaluation include a response feature for computer-generated call-outs.
 - a. True.
 - b. False.
18. Computer-generated call-outs during periodontal evaluation _____.
 - a. help the patient "co-own" the disease
 - b. can help the patient understand the severity of the disease
 - c. a and b.
 - d. None of the above.
19. Computer-generated reports can include _____.
 - a. Periodontal charting
 - b. Risk assessments
 - c. Treatment planning options
 - d. All of the above.
20. The disparity between the estimated number of periodontal treatments performed and the prevalence of periodontal disease is indicative of _____.
 - a. undertreatment of periodontal disease
 - b. an overestimate of periodontal disease prevalence
 - c. overtreatment of periodontal disease
 - d. b and c.
21. Ascertaining the treatment mix by producer will _____.
 - a. indicate the mix of treatment in an individual practice by clinician
 - b. indicate the level of treatment in an individual practice by clinician
 - c. indicate the mix and level of treatment in an individual practice by clinician
 - d. indicate the level of diagnosis in an individual practice
22. If the beliefs and protocols of your practice are solid _____.
 - a. patients will understand them
 - b. patients will always agree with them
 - c. it is a mistake to assume that patients will understand them
 - d. less treatment will be accepted
23. The use of technology _____.
 - a. adds a high-tech "halo-effect"
 - b. may encourage patients to accept treatment
 - c. is unwarranted
 - d. a and b.
24. _____ will result in predictably higher acceptance rates for periodontal therapy.
 - a. A purposeful message and empowering beliefs
 - b. The use of technology
 - c. Today's information and protocol
 - d. All of the above.
25. It is important that patients _____.
 - a. "own" their disease
 - b. are involved in the diagnosis
 - c. are engaged during the examination process
 - d. All of the above.
26. Image-based charts that have troubled areas clearly highlighted _____.
 - a. help patients visually understand their disease
 - b. help patients verbally understand their disease
 - c. only add value if the patient's hearing is not normal
 - d. All of the above.
27. Hygiene departments can deliver up to 35 to 40 percent of production.
 - a. True.
 - b. False.
28. There is a better chance of prevailing in court _____.
 - a. if the records are in good order
 - b. if the patient refused treatment
 - c. if an assistant witnessed the conversation
 - d. None of the above.
29. Having the patient hear an objective voice "score" their periodontal health can free the practitioner from guilt often associated with telling patients bad news.
 - a. True.
 - b. False.
30. More awareness of treatment needs and treatment acceptance by patients will _____.
 - a. improve the patient's health and well-being
 - b. increase revenue for the practice
 - c. decrease treatment needs
 - d. a and b.

The Role of Technology in Periodontal Evaluation and Treatment Acceptance

Name:	Title:	Specialty:
Address:	E-mail:	
City:	State:	ZIP:
Telephone: Home ()		Office ()

Requirements for successful completion of the course and to obtain dental continuing education credits: 1) Read the entire course. 2) Complete all information above. 3) Complete answer sheets in either pen or pencil. 4) Mark only one answer for each question. 5) A score of 70% on this test will earn you 4 CE credits. 6) Complete the Course Evaluation below. 7) Make check payable to PennWell Corp.

Educational Objectives

1. Know the prevalence of periodontal disease and understand treatment needs.
2. Be knowledgeable about treatment obstacles.
3. Understand the technology options available that assist in probing, charting and treatment planning and the advantages of these.
4. Understand the role of technology in patient treatment acceptance, practice-building and risk management.

Course Evaluation

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

- | | | | | | | |
|---|---------------|-----|----|---------------|-----|----|
| 1. Were the individual course objectives met? | Objective #1: | Yes | No | Objective #3: | Yes | No |
| | Objective #2: | Yes | No | Objective #4: | Yes | No |
2. To what extent were the course objectives accomplished overall? 5 4 3 2 1 0
 3. Please rate your personal mastery of the course objectives. 5 4 3 2 1 0
 4. How would you rate the objectives and educational methods? 5 4 3 2 1 0
 5. How do you rate the author's grasp of the topic? 5 4 3 2 1 0
 6. Please rate the instructor's effectiveness. 5 4 3 2 1 0
 7. Was the overall administration of the course effective? 5 4 3 2 1 0
 8. Do you feel that the references were adequate? Yes No
 9. Would you participate in a similar program on a different topic? Yes No
 10. If any of the continuing education questions were unclear or ambiguous, please list them.

11. Was there any subject matter you found confusing? Please describe.

12. What additional continuing dental education topics would you like to see?

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| 9. (A) (B) (C) (D) | 24. (A) (B) (C) (D) |
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| 11. (A) (B) (C) (D) | 26. (A) (B) (C) (D) |
| 12. (A) (B) (C) (D) | 27. (A) (B) (C) (D) |
| 13. (A) (B) (C) (D) | 28. (A) (B) (C) (D) |
| 14. (A) (B) (C) (D) | 29. (A) (B) (C) (D) |
| 15. (A) (B) (C) (D) | 30. (A) (B) (C) (D) |

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