

CLINICAL Impressions®



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Biomechanics

Dr. Patrick Turley Interviews Dr. Ravi Nanda

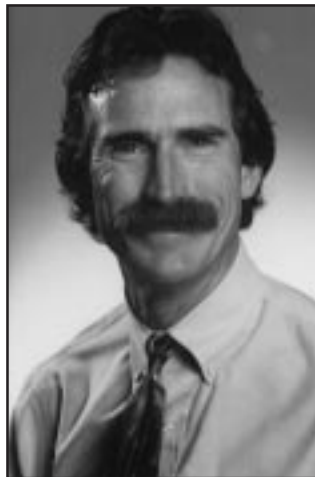


Dr. Turley: Ravi, biomechanics in orthodontics has taken a backseat for years, but recently, more and more orthodontists are paying attention to it. Where do you think we are headed in this area?

Dr. Nanda: Yes, Pat, I have noticed a keen interest in biomechanics by the orthodontic specialty in recent years. We are more and more curious about how our appliances work and what we can do to

improve them. The specialty is moving away from technique-oriented approaches that treat, for example, all Class II, division 1 patients with wire "X" and extraction cases with wire "Y." Now we want to know the "guts" of a wire, loop or a spring, such as magnitude, moments, constancy, direction of force, as well as side effects and methods to prevent and reduce them.

I have always said that we orthodontists



Dr. Patrick K. Turley received his D.D.S. degree from UCLA and his M.S.D. degree and certificates in both orthodontics and pediatric dentistry from the University of Washington. He currently serves at UCLA as professor and chairman of the Section of Orthodontics and director of the postgraduate program in orthodontics, as well as the combined orthodontic/pediatric dentistry postgraduate program. Dr. Turley is president of the Pacific Coast Society of Orthodontists. His interests have focused on the areas of early treatment (especially Class III malocclusion), treatment of traumatic injuries in children and the use of endosseous implants as orthodontic anchors.

Dr. Ravindra Nanda currently serves as professor and head of the Department of Orthodontics, University of Connecticut. He received his orthodontic training first at Lucknow University, India, then from the University of Nijmegen, The Netherlands, and the University of Connecticut. He also received a Ph.D. from the University of Nijmegen. Dr. Nanda has done extensive research, most recently concentrating on clinical orthodontic trials and the application of biomechanics in a busy orthodontic practice. He has authored and coauthored three orthodontic books and more than 100 scientific and clinical articles in major journals.

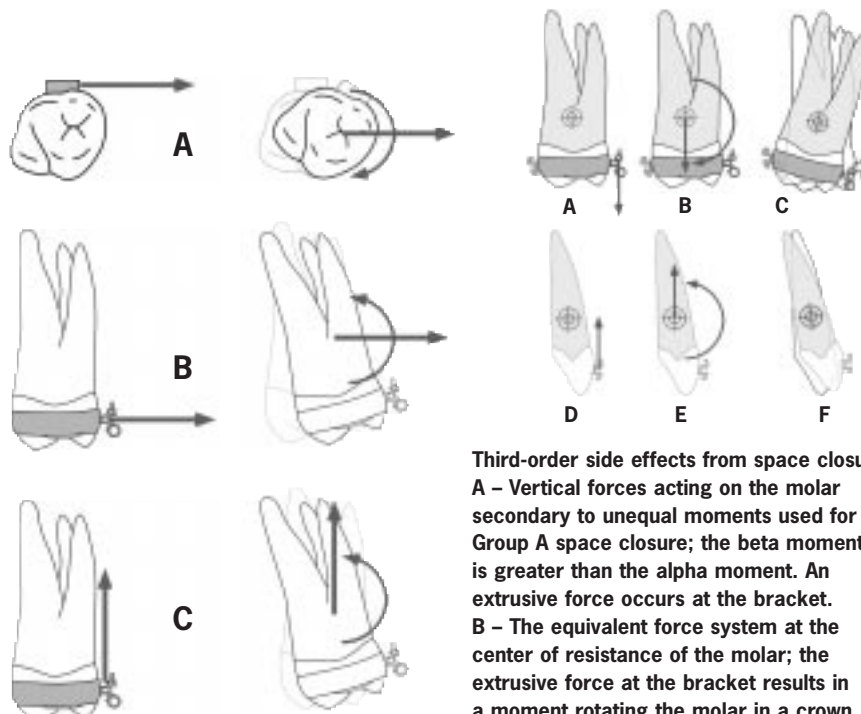
often spend half our time treating patients' problems and the other half correcting the problems we create, often due to inadequate mechanics. Such examples include loss of anchorage and faulty root inclination of incisors and posteriors. If we apply sound mechanics, side effects can be minimized, treatment time shortened, and chair time saved, not to mention the benefits of peace of mind.

Since Edward Angle invented the edge-wise appliance, there have been few, if any, revolutionary advances in mechanotherapy. Most of our progress has been made through improvements in and variations on bracket design and the clinical application of new wire alloys. Yet, 100 years later, we are still vexed by the same problems as our forefathers. Anchorage control, predictable and precise results, stability and compliance are still confounding difficulties in orthodontics. Many clinicians have offered solutions by making refinements in the appliance itself. The tremendous number of bracket prescriptions and orthodontic techniques advocated by the leaders in this field are evidence of our focus on the appliance. Perhaps the problems are not in the appliance, but in our analysis of its use. Incorporating biomechanical concepts into everyday patient care may be where we are headed and the source of the next generation of clinical advances.

Dr. Turley: A lot of clinicians find biomechanics difficult and too theoretical. Why?

Dr. Nanda: This has had a lot to do with us – educators, researchers and orthodontists active in the area of biomechanics. We did not describe principles and appliances in a user-friendly way. The terminology associated with learning biomechanics probably has limited the clinician's understanding. Sometimes simple ideas seem complex because of the language and terms used. Another problem is the quantitative nature of the field: the mathematics used to demonstrate the concepts often seems to intimidate the learner. But for the most part, the mathematics is simply based on

“Simple, sound principles of biomechanics can be applied to any technique.”



Clinical examples of moments of a force.
A – A mesial force at the molar bracket creates a moment tending to rotate the tooth "mesial-in." **B** – An expansion force on a molar creates a moment tipping the crown buccally. **C** – An intrusive force at the molar bracket creates a moment tipping the crown buccally.

Third-order side effects from space closure.

A – Vertical forces acting on the molar secondary to unequal moments used for Group A space closure; the beta moment is greater than the alpha moment. An extrusive force occurs at the bracket. **B** – The equivalent force system at the center of resistance of the molar; the extrusive force at the bracket results in a moment rotating the molar in a crown lingual direction. **C** – The predicted tooth movement from this force. **D** – The vertical forces acting on the canine secondary to unequal moments used for Group A space closure. **E** – The "equivalent force system" at the center of resistance of the canine; the intrusive force at the bracket results in a moment rotating the canine in a crown buccal direction. **F** – The predicted tooth movement from this force.

high-school level geometry. The more exotic analysis, such as finite element analysis, are used more in the engineering of appliances than in clinical practice. This is changing fast.

One should remember that biomechanics is not a technique. It is applicable to all the orthodontic techniques – any wire, spring or loop which delivers a force when ligated into the brackets. So a basic understanding of biomechanics is essential for all orthodontists in order to understand what forces we are applying and what sequelae to expect. We would not expect our internist to prescribe a drug without telling us the dosage, the frequency and the duration of intake. In orthodontics, we apply a force on teeth with only a minimal idea of that

force, its moments or its side effects. So the first order of business for all orthodontists should be to take a step back and try to understand from the standpoint of biomechanics what is working and what is not working and how to fix it.

With an understanding of biomechanics, we'll find that simple loops, cantilevers and a small bend at the right place in the wire are all that is necessary to improve our favorite technique. Simple, sound principles of biomechanics can be applied to any technique.

Dr. Turley: Why isn't biomechanics a bigger part of all orthodontists' training?

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Dr. Nanda

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Dr. Nanda: A good question, Pat. Our basic problem in this area has been a huge gap between the classroom and clinical practice. The students are taught all the details of forces, moments and couples, but in the clinic, there is little application of biomechanics. Many clinical approaches follow specific wire sequences or are taught as if there are “magical” properties incorporated into the bracket. The student becomes more concerned with the technical aspects of care and forgets about how the appliance is working. There is good news, however. Orthodontic departments are spending more time in educating their students about biomechanics, and several schools are moving away from technique-based approaches to orthodontics.

I must add that we at the University of Connecticut have contributed significantly by providing educators in various programs who can link biomechanics to clinical practice. Out of our 100+ graduates in the last 25 years, 20 are in full-time teaching, 20 are in part-time teaching, and four are department heads.

Dr. Turley: What are some examples of biomechanically oriented appliances?

Dr. Nanda: The best example is the intrusion arch. Although the name implies that it only intrudes, it can simultaneously correct Class II molar relationships, especially in adolescents. The same wire with a simple variation can close anterior spaces, flare incisors, correct occlusal planes or, if ligated upside down, extrude anterior teeth. On top of that, you know how much force you are using, what moments you are generating and what measures you have to use if you do not like the side effects. And this appliance can be used with any treatment approach. Actually, all appliances are biomechanically oriented; we just do not look at them that way.

As several chapters in our book *Biomechanics in Clinical Orthodontics* reveal, only three to four types of wire designs accomplish almost all types of

tooth movements. A given wire may look the same from the standpoint of its shape in the mouth, but a different placement of a bend or loop would deliver a completely different type of tooth movement.

Dr. Turley: What are the advantages of using biomechanically oriented appliances?

Dr. Nanda: The #1 advantage is that you can go from point A to point B in a straight line. Let's take a look at an example. In extraction patients with biomechanically oriented space closure, you can retract all six anterior teeth into the extraction site with minimal anchorage loss, excellent root alignment of the posterior teeth and ideal axial inclinations of the incisors. On top of that, you only have to activate the appliance once during treatment. The maximum force you need for space closure ranges from 300 to 350 grams, and you lose only 25 to 30 grams of force with each millimeter of tooth movement. Compare this with sliding mechanics: There you have unknown force values, continual elastic changes, uneven forces due to fast drop-off in force, force reactivation each time – I can go on and on.

Applying the principles of mechanics to appliance design and selection increases creativity and innovation in solving our patients' problems. How many times have we faced the perplexing problem of one of our patients not responding well to treatment? When we are dependent on “cookbook” techniques, these problems may never be solved. With careful analysis from a biomechanical perspective, unique solutions may be found.

In a nutshell, biomechanics allows you to design an appliance that will give you a *predictable* tooth response without guesswork.

Dr. Turley: Why should an orthodontist care about the specifics of forces and moments if a particular technique is clinically successful from an empirical perspective?

Dr. Nanda: Orthodontists *should* care about specifics of forces and moments. Orthodontics is little different, let's say, from driving a car and knowing the mechanics of an automobile. In our specialty, we *deliver* the forces, so it becomes imperative that we must know what we are doing.

I concede that 60 to 70 percent of the adolescent patients in our practices probably do not need specialized mechanics. The problem comes with patients who have complex problems such as open bites, deep overbites, midline discrepancies, asymmetric molar occlusion, moderate to severe crowding, critical anchorage, crossbites, etc. A simple straight wire and chain elastics are not going to solve these problems. These patients need a comprehensive treatment plan with a mechanics plan to achieve results. Use of biomechanically oriented appliances in these patients will help achieve tooth movement compatible with soft tissues, facial bones and jaw function. Let's face it. No one has perfect results every time. We love to show off our successes, but it's when we come up short that we lose sleep. When problems arise, for instance, when our tried-and-true approaches are failing, we must develop alternatives. Understanding biomechanics and applying these principles aid our problem solving.

Dr. Turley: What are some examples of commonly held beliefs in clinical orthodontics that make little sense from a biomechanical perspective?

Dr. Nanda: Simple examples would be the use of straight wires, step-ups and step-downs or reverse curve of Spee wires to correct deep bites. You often hear orthodontists say that they have intruded the incisors to correct the deep bite. Actually, all these wires correct the deep bite by extruding the posterior teeth and/or flaring the incisors. These approaches may result in bite opening, but predictable intrusive tooth movement may or may not occur. Unless you use specific intrusive mechanics, it is difficult

to achieve intrusion.

A straight wire or a flat wire placed in a crowded arch or one with a deep curve of Spee will invariably level the teeth by the process of extrusion and flaring. This has serious implications for a patient with a long face, a large interlabial gap and gummy smile. The straight wire will align teeth very well, but it will increase vertical dimension problems. This brings me back to your earlier question as to what is “clinically successful.”

Another example is the description orthodontists use for incisor torque. A hundred years ago, torque was described in degrees. Now, we have been to the moon and are moving on to the next millennium, and we still describe incisor root movement in degrees. Degrees is not the way to describe force magnitude. A twist in a rectangular wire can deliver significant stress at the apex, but we still use it without any idea of magnitude of force and moments.

Finally, all techniques are limited by Newton’s laws of motion, perhaps the most important being that for every action there is an equal and opposite reaction. This means for every distal force, there must be a “balancing” mesial force, or vice versa. Many times tooth movements are described without regard for the reactive forces. Distalization of molars with intraoral anchorage may often produce a reactive mesial movement of the anchorage teeth. In other words, there are no free lunches; the laws of physics apply to all our techniques.

Dr. Turley: In the book you recently edited, *Biomechanics in Clinical Orthodontics*, Class II treatment receives a lot of attention. Why?

Dr. Nanda: We had a symposium in Connecticut in 1993 on the correction of Class II malocclusions and another in 1995 on biomechanics. I invited speakers from the two symposiums to contribute chapters for this book. Leaders in the field of biomechanics and orthodontics such as

Drs. Bantleon, Burstone, Dermant, Gianelly, Graber, Kuhlberg, Kusy, Lindauer, Melsen, Mulligan, Ram Nanda, Pancherz, Pearson, Shroff and Siatkowski have all contributed excellent chapters to this book. The emphasis of the book is on Class II, division 1 treatment as it relates to biomechanics. However, the principles described in the book are applicable to every aspect of clinical orthodontics. We have deep bite, anchorage problems, extraction and nonextraction mechanics, etc., in all types of malocclusions. Overall,

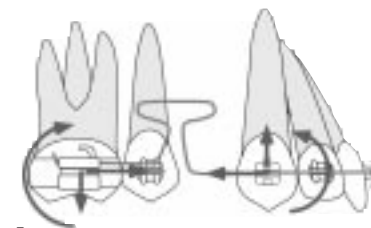
emphasis of various chapters has been to correct specific problems, rather than to describe a malocclusion on the basis of the molar occlusion.

Dr. Turley: Can these principles be applied to Class III treatment?

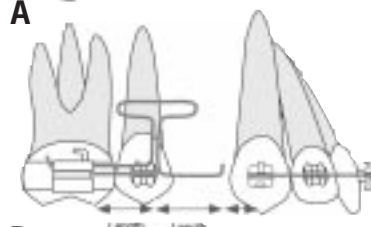
Dr. Nanda: Yes, Pat, you can apply the very same principles. As you and I have been active in improving methodologies to correct skeletal Class III in grow-

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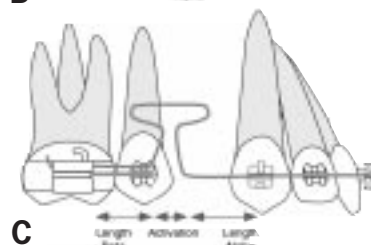
“With an understanding of biomechanics, simple loops, cantilevers and a small bend at the right place in the wire are all that is necessary to improve an orthodontist’s favorite technique.”



A

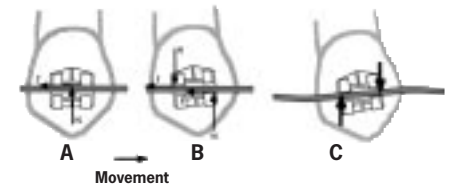


B



C

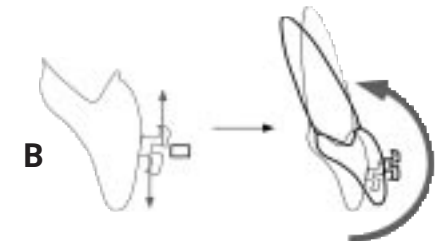
T-loop positioned off center for Group A space closure. A – The force system for Group A space closure, with greater beta moment than alpha moment. Note that there are vertical forces in conjunction with a moment difference. B – The length of the beta “arm” is shorter (by about 2 mm) than the length of the alpha “arm.” The activation of the spring is 4 mm. C – The fully inserted spring for Group A space closure.



Sequence of canine movement during retraction with sliding mechanics. A – The normal component of force (N) and the frictional resistance to movement (f). B – The bracket tips until the diagonally opposite corners of the bracket contact the wire. C – The wire deflects produce a couple to upright the tooth.



A



B

Clinical examples of couples. A – Engaging a wire in an angulated bracket. B – Engaging a rectangular (edgewise) wire in a bracket slot.

The Orthodontic Application System – Still More Ammu:

I

by Michael W. Scott, D.D.S., M.S.D.
Longview, Texas

In a previous issue of *Clinical Impressions*, I stated the list of my personal practice goals. That list of goals has remained one of the foundations of my practice for years and consists of:

- Producing consistent, predictable, high-quality orthodontic results
- Practicing with great efficiency
- Starting all the cases I care to start
- Making a reasonable profit
- Having fun

It is with the first two goals in mind that I would like to present an orthodontic problem that, at least for me, poses a treatment planning dilemma virtually every time it is encountered.

An eight-year-old patient is referred to your office by her general dentist. The patient's dentist is concerned that the maxillary permanent lateral incisors have not erupted and wants your evaluation. You take a panoramic radiograph and discover that the laterals are congenitally missing. In addition, the primary lateral incisors show significant root resorption, even though there are no succeeding permanent teeth. As you begin your explanation to the parents that "the patient is missing her maxillary lateral incisors," before the word *missing* is completely off your lips, the question is posed by the parents, "What are you going to do, Doctor?"

The answer to the question, of course, depends on myriad factors. In some cases,

the missing teeth are ultimately replaced by a removable partial denture, a fixed bridge or an implant. In other cases, it is best to close the spaces by orthodontically moving the teeth.

The latter situation will be the focus of this article:

- A patient presents with missing maxillary permanent lateral incisors.
- The primary lateral incisors are either missing or will be extracted due to root resorption or other considerations.
- After all factors are considered, a decision is made to close the spaces by moving the permanent cuspids, bicuspid and molars mesially.
- The cuspids will be cosmetically bonded after orthodontic treatment.

The numerous factors involved in the diagnosis and treatment planning are *not* the subject of this article. How one arrived at the decision to close the spaces is immaterial to this paper.

When tooth movement is the elected procedure, there are several ways to approach it. I will describe a method that I feel greatly increases my ability to achieve the goals of consistency, predictability, quality and efficiency. My experience has been that mesial movement of the cuspids, bicuspid and molars can be a very time-consuming, unpredictable and inefficient process. A solution to this problem came and bit me on my backside several years ago when, by chance, one of my facemask patients was seated next to a patient with missing maxillary lateral incisors. (You know where this is going,



Dr. Scott earned his D.D.S. from the University of Tennessee School of Dentistry in 1982 and his M.S.D. in Orthodontics from Baylor College of Dentistry in 1984. He has lectured in both the United States and abroad on the Orthos Appliance System, early treatment and facemask therapy. He is a board-certified orthodontist with a private orthodontic practice in Longview, Texas.

Application of an Orthopedic Force System for Your Operator!

Case Presentation: Patient S.A., female, 7 years, 6 months of age, congenitally missing upper laterals.



Figure 1.



Figure 2.

Figures 1-6. Pretreatment photographs and panoramic radiograph. Phase 1 treatment initiated in May 1989 and completed in May 1990.

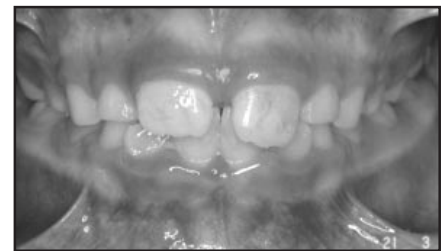


Figure 3.



Figure 4.

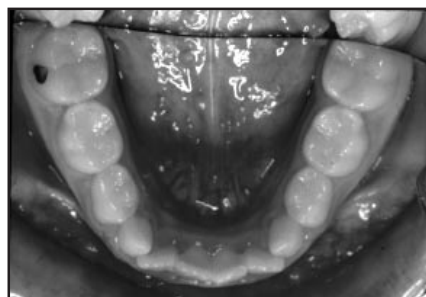


Figure 5.



Figure 6.

don't you?) To make a long story short, I began to use the A.D. Protraction Facemask™ in many cases where the treatment plan called for closing spaces.

The orthodontic application of orthopedic force systems is not a new idea. One example is the use of headgear to distalize maxillary molars. I can think of much better ways to accomplish that, i.e., Lokar™ Molar Distalizers, but that is what is often proposed.

Clinical Case Presentation

Patient S.A. The patient presented to my office in March 1989. At that time she was 7 years, 6 months of age. Summer was referred by her pediatric dentist for the evaluation and treatment of missing maxillary lateral incisors. Her mother was also concerned about a large diastema between Summer's maxillary central incisors. Pretreatment facial and intraoral photographs are seen in Figures 1-5. The pretreatment panoramic radiograph is

shown in Figure 6. A summary of significant findings from diagnostic records revealed:

- Balanced facial appearance in both frontal and profile views.
- End-on Class II molar relationship.
- Overjet of 4 mm.
- Missing maxillary permanent lateral incisors.
- Mild mandibular crowding.
- Maxillary and mandibular mid-

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Dr. Scott

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lines were coincidental.

- Skeletal Class II. ANB = 6°, NA - APo = 9°.
- Maxillary midline diastema.
- Roots of the maxillary primary lateral incisors were resorbing.

The principle concern was the long-term management of the missing lateral incisors. Summer and her mother were both very hesitant about placing implants or bridgework in her mouth. Secondary concerns were the crowding of the mandibular anterior teeth and the maxillary midline diastema.

move the maxillary posterior teeth mesially as time passed.

Phase 1 treatment was initiated in May 1989 and completed in May 1990. Summer was then seen every four months to monitor the integrity of her lingual arch. The lingual arch was removed in July 1991, upon the eruption of the mandibular cuspids.

Facial and intraoral photos taken in October 1991 are seen in Figures 7-11. A progress panoramic radiograph taken at the same time is shown in Figure 12. Note

- Skeletal Class I. ANB = 3°, NA - APo = 4°.
- Space excess in the maxillary arch of 10 mm.

The panoramic radiograph taken January 1994 is seen in Figure 13.

The Phase 2 treatment plan was as follows:

- Band/bond the maxillary arch.
- Bond the maxillary cuspid brackets in a position slightly more distal than normal to help rotate the teeth into more favorable positions for future cosmetic bonding.
- Bond the maxillary cuspid brackets *upside down* (Figure 14) to produce more favorable lingual root torque, because these teeth would ultimately be made to resemble laterals.
- On an .016 S.S. upper archwire, use sliding hooks distal to the cuspids and begin elastic traction from the sliding hooks to a facemask (Figure 15).
- Once the cuspids are forward, position the hooks distal to the 2nd bicuspids and slide both the 1st and 2nd bicuspids mesially at one time (Figure 16).
- The .016 S.S. archwire would be constructed with omega loops and be tied back to the 1st molars.
- Band/bond mandibular arch soon after facemask started.
- Class III elastics if needed.
- Cosmetic bonding of the maxillary cuspids posttreatment.

Cuspid brackets as opposed to lateral brackets were used on the cuspids simply because of the better fit.

Summer was instructed to wear her facemask 12 hours per day. Ormco Ram (1/4 inch, 6 oz.) or Impala (3/16 inch, 6 oz.) elastics were used for traction, one on each side. The facemask was adapted to the patient exactly as it would be used in maxillary protraction. (Please refer to my articles in *Clinical Impressions*, Vol. 2, No. 1, 1993, and Vol. 2, No. 4, 1993.) The only exception is the direction of pull of the elastics. Instead of pulling downward

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“The use of the facemask helped to close a 10 mm space excess in the maxillary arch that would have otherwise posed significant mechanical challenges.”

The diagnostic data, along with the concerns of the patient and parent, led to the decision to close the lateral incisor spaces over the course of time. A phase of early treatment would be undertaken to address the mandibular crowding and the maxillary midline diastema. Phase 1 treatment consisted of the following:

- Maxillary 2 x 2 to close the diastema and align the central incisors cosmetically.
- Lip bumper to relieve the mild mandibular crowding.
- Mandibular lingual arch after lip bumper.
- Selective extraction of primary teeth over time.
- Bonded lingual retainer for upper 1-1 posttreatment.
- The skeletal Class II and overjet were not addressed in Phase 1. No headgear was used because of the decision to

the favorable eruption pathway of the maxillary cuspids. Evaluation of the panoramic radiograph led to the decision to have the maxillary right and left primary laterals, cuspids and 1st molars (upper B's, C's, and D's) removed. Summer was then seen every six months for observation.

In January 1994, progress records were obtained and Phase 2 treatment was advised. A summary of significant findings included:

- Age: 12 years, 4 months.
- Missing maxillary lateral incisors (no divine intervention occurred).
- End-on Class II molar relationship.
- Overjet of 3 mm.
- Maxillary 1st bicuspids rotated mesially 45°.
- Maxillary and mandibular midlines coincidental.

Figures 7-12. Photographs and progress panoramic radiograph taken in October 1991. Evaluation led to the decision to remove upper B's, C's and D's, after which patient was seen every 6 months for observation.



Figure 7.



Figure 8.



Figure 9.



Figure 10.

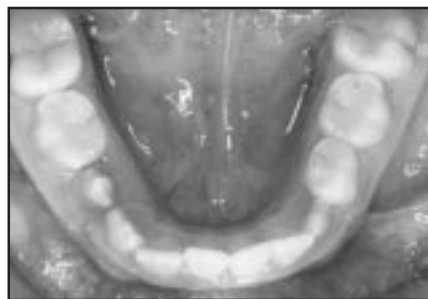


Figure 11.

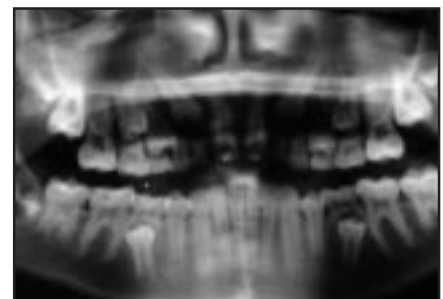


Figure 12.

Figure 13. Panoramic radiograph taken in January 1994.

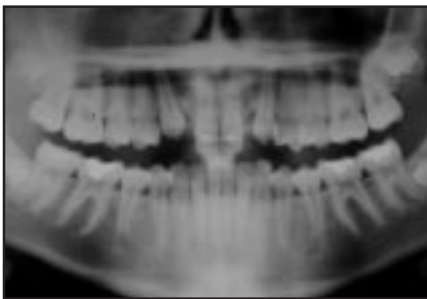


Figure 13.

Figures 14-16. Phase 2 treatment plan included:



Figure 14. Maxillary cuspid brackets bonded upside down to produce more favorable lingual root torque. Note that the "dot" (usually positioned distally and gingivally) is positioned mesially and occlusally.



Figure 15. Sliding hooks distal to cuspids used for elastic traction to facemask.

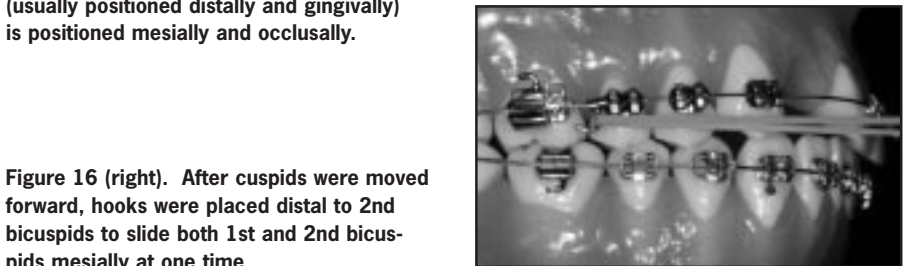


Figure 16 (right). After cuspids were moved forward, hooks were placed distal to 2nd bicuspids to slide both 1st and 2nd bicuspids mesially at one time.

Figures 17-19.
Intraoral progress photographs taken in May 1996, 20 months into Phase 2 treatment.



Figure 17.

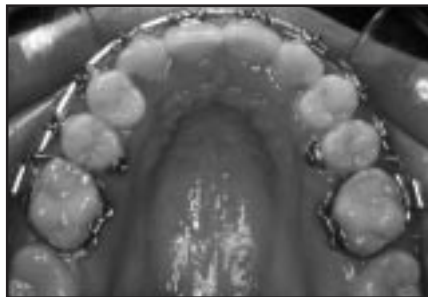


Figure 18.

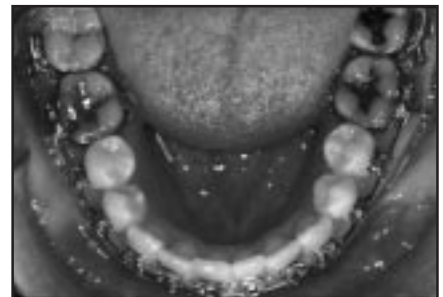


Figure 19.

Figures 20-22. Posttreatment photographs taken in November 1996 prior to cosmetic bonding.



Figure 20.



Figure 21.



Figure 22.



Figure 23.



Figure 24.

Figures 23-27.
Final photographs taken in
January 1997 after cosmetic
bonding.



Figure 25.



Figure 26.

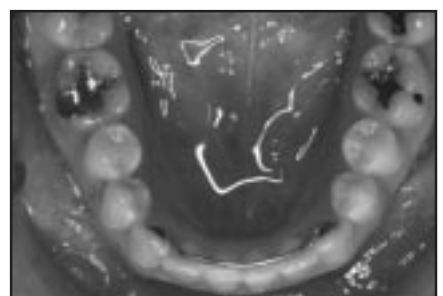


Figure 27.

Dr. Scott

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at a 45° angle, as in maxillary protraction, the direction of pull should follow the plane of occlusion.

Once the maxillary cuspids and bicuspid were forward, the maxillary 1st molars had to be moved. This was accomplished by wearing Class III elastics (Ormco Ram) from an .016 x .025 S.S. mandibular archwire to an .016 S.S. maxillary archwire *without* omega loops. The maxillary 2nd molars were *not* banded and followed very nicely.

Progress intraoral photographs taken 20 months into treatment are shown in Figures 17-19. Note the buttons placed on the lingual of the upper 2nd bicuspid. These were used along with power chain to maintain rotational control of the bicuspid as they were moved mesially.

Treatment proceeded well with the exception of six missed or canceled appointments over the course of treatment. Three of the missed appointments occurred in the first year of treatment and accounted for 25 weeks of excess time between visits. That might not be that critical in today's world of 35°C Copper Ni-Ti™ archwires. However, when you are in the 1994 world of braided D-Rect®, it makes a huge difference! The other three missed appointments accounted for nine weeks of excess time between visits.

Summer's treatment summary is as follows:

- Total treatment time = 29 months.
- Total number of visits to complete treatment = 19.
- Total time wearing facemask = 5 months.
- Total time wearing Class III elastics = 4 months.

Due to the explosion in archwire technology, the archwire sequence I used is not relevant. It is amazing how much has changed in less than three years. Intraoral photographs taken posttreatment are shown in Figures 20-22. These photographs were taken prior to cosmetic

bonding. Final facial and intraoral photographs taken after cosmetic bonding are shown in Figures 23-27.

Conclusion

As can be seen in the previous clinical example, the use of the A.D. Protraction Facemask as an *orthodontic* force delivery system can be a valuable tool in specific situations such as the one described. In considering how the use of this force system has impacted my practice goals, I have reached several conclusions. The results that can be expected from the use of this force system are predictable and consistent. The quality of the final result achieved in Summer's case was greatly improved by the fact that she was spared the need for major posttreatment restorative work. I feel that I delivered extremely

high-quality orthodontic care to a 12-year-old patient by providing her with the ability to go through life with an occlusion composed of all natural dentition. The use of the facemask helped to close a 10 mm space excess in the maxillary arch that would have otherwise posed significant mechanical challenges. This was also accomplished very efficiently in that the facemask was only worn for five months. This efficiency of mechanics resulted in the case being more profitable. Only 19 appointments were needed to complete treatment.

As you consider the treatment and results achieved in this case, I hope you will agree that the orthodontic application of orthopedic force systems truly adds more ammunition to *your* operatory!

The A.D. Protraction Facemask – Designed with Patient Compliance in Mind

The A.D. (Adjustable Dynamic) Protraction Facemask™ provides dynamic movement in the forehead rest while allowing the chin cup to slide vertically along the main frame. This means maximum patient comfort while sleeping, talking or any time the jaw is moving. Since the movement of the softly padded chin cup and forehead rest involves much less sliding contact with tissue, irritation is reduced and comfort is improved. Increased patient compliance equates to more efficient orthopedic and orthodontic therapy.

The A.D. Protraction Facemask is fully adjustable, so one size fits all patients. The horizontal arm for elastic hookup can also be positioned inside or outside the vertical bar to modify forces and vectors. In addition to the standard facemask design, a modification is now available for the Asian patient. The Asian

Profile Protraction Facemask has a more flattened forehead rest, a flatter and broader chin cup and less curvature in the vertical bar profile. Some orthodontists prefer the new design for their non-Asian patients as well. Both types are available as a complete package containing a choice of blue or lavender masks, three chin and three forehead replacement pads and a hex key for adjustments. Order information is provided on page H of the Center Section.



Perspective on Dental Managed Care Plans

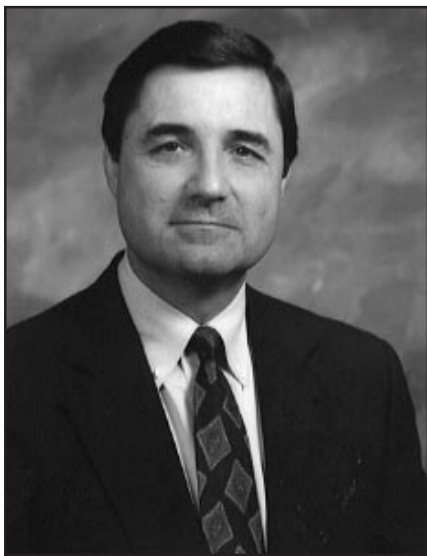
The Solution: “Don’t sign up!”

by Wayne McMahan
Montgomery, Alabama

A

couple of years ago, Dr. Marvin Zatts, a dental consultant for The Prudential Insurance Company, and I made separate presentations to the Middle Atlantic Society of Orthodontists in

Wilmington, Delaware. Later in the day, Dr. Zatts and I served on the same panel. At one point during the panel discussion, Dr. Zatts abruptly stopped defending all



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dental managed care plans and gave some advice to his audience. Dr. Zatts said, “The way for dentists to respond to bad managed care plans is simply not to sign up for them.” When I had a chance to respond, I observed that Dr. Zatts’ “don’t sign up” proclamation was one of the best arguments I had heard in defense of the Alabama Patient Choice Law (APCL).

In essence, the APCL allows individuals in managed care plans to seek care from any provider they choose, even if the provider is not under contract with the patient’s health plan. If the noncontract provider’s fees are higher than the contract allowance, then the patient, not the plan, is required to pay the difference. The contract payment allowance can be assigned by the patient to the noncontract provider.

How does Dr. Zatts’ “don’t sign up” advice substantiate the need for the APCL? Obviously, dentists have the option of not signing up for managed care plans that they feel are, in Dr. Zatts’ words, “bad plans.” But what about the patient who is an employee of company XYZ? Rarely are employees allowed any input into the selection of their company’s health plans. So what is the employee’s option if the company plan is a bad one? Without a law like the APCL, there is obviously no option. The dentist may elect to eschew “bad plans,” but the employee must acquiesce to the employer’s decision or pay for care out of his or her own pocket.

When the APCL legislation was being considered in 1994, lobbyists for Blue Cross and Blue Shield of Alabama (BCBSA) told legislators that the passage of the APCL would result in the demise of managed care in Alabama. Legislators did not buy BCBSA’s arguments, and the bill

was eventually passed by an overwhelming majority of both the House and Senate and signed into law by then Governor Jim Folsom, Jr.

BCBSA’s next step was to file suit in Federal District Court seeking to have the APCL overturned. The BCBSA challenge to the APCL was assigned to Federal District Judge Seybourn Lynne. Due in part to some serious health problems that Judge Lynne experienced shortly after the lawsuit was filed, the Birmingham Federal Judge did not issue his ruling in the case until January of last year. The decision was in favor of BCBSA.

Although the defendants (seeking to uphold the APCL) in the suit immediately determined that Judge Lynne’s order would be appealed to the Eleventh Circuit, the formal filing of the appeal proved to be a legal marathon. It now appears that a three-judge panel of the Eleventh Circuit will hear oral arguments regarding the APCL in either spring or early summer of this year. In addition to the briefs already submitted to the Eleventh Circuit by the attorneys representing the defendants, both the American and New Jersey dental associations have submitted written arguments supporting the defendants’ position.

The case before the Eleventh Circuit involves a number of complex legal issues. In essence, however, the court will review two facets of Judge Lynne’s earlier decision: first, that ERISA (self-insured) plans are preempted or exempt from complying with the APCL and, second, that the APCL is not applicable to any BCBSA plans.

Just Say It!

Creating the Upbeat Office

by **Barbara Brunner, M.A.**
Orange, California

ustin Hoffman, Robert De Niro, Meryl Streep, Susan Sarandon, Harrison Ford, James Earl Jones. Actors and actresses renowned for creating signature roles. But no director ever sent any of them before a camera with only inspiration and an abstract concept of how they were to develop their dialogue. They got a script.

Choirs sing from hymnals. Orchestras play from scores. Presidents speak from notes. They plan. They practice.

They practice. They practice. They practice.

Yet every day doctors send unseasoned staff members to represent them and their offices before the moms and dads, the youngsters and the teens of the world with only the most vague idea about how to translate their vision of quality patient care into day-to-day conversations and instructions. "We're a patient-oriented office, Mary Ann. You'll find that we do whatever it takes to make sure that our patients are happy to come here and are satisfied with their smiles when they leave." Some staff members are naturals, keen at transforming such abstract ideas into dialogue, picking up specific wording from you and other talented staffers. They are the peak performers. Others, at best, simply muddle by.

You usually find out about the worst muddlings inadvertently, perhaps when you overhear a particularly jarring verbal blunder, when repeated misunderstandings occur or when your best referring dentist relates an appalling comment one of your staff members made to a mutual patient.

Each staff member represents you and your practice in each and every interaction with a patient. With patient service being so inextricably tied to the perception of your clinical care, it seems curiously uncharacteristic of you (who fusses over tooth movement measured in fractions of millimeters) to leave critical communications to happenstance. One alternative is scripting.

Make Sure We're All Reading from the Same Sheet of Music

Scripts are working documents, not meant to have everyone marching in lockstep, but flexible models that provide key words and, more importantly, key philosophies about how to deliver specific messages or answer critical questions. Like mission statements, much of the value in developing scripts is the discussion that goes into them. Such discussion encourages buy-in from your staff. It also helps them internalize your philosophies by getting a clear understanding of the importance of key phrasings. With scripts, you and your staff will weave your individual brands of humor ("Retainers are pajamas for your teeth") and your chairside charm ("So, Christy [age 12],
continued on following page

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Just Say It!

continued from page 13

did you come with your husband today?”) with proven patient relations techniques. When they become second nature, you can *just say it* and know that the wording you’ve shaped will support and clarify the message you purposely mean to deliver.

“Restating problems in terms of challenges and opportunities with a solution approach encourages partnership in care.”

Your Relationship is Showing

There are at least two aspects to every communication: the *content* and the *relationship*. The relationship between people colors every aspect of the content. It’s why a good friend can say something rude and you chalk it up to a bad day. It’s why a person whom you distrust can give you a compliment and you wonder what they want. We often convey how we feel about someone through how we shape the content.

Every interaction should have the same objective: to have the patient clearly understand the content and have the relationship aspect continuously be saying, “You’re worthwhile. We care.”

While most of us have these intentions, we have often picked up our

habits of phrasing early in life. We may wish to espouse important values of being patient-centered, partnership-oriented, caring and positive in our outlook. Our language can often still connote myopia, condescension, control and even cynicism. Communication when handling persistent noncompliance issues should certainly be progressive, with greater brevity and more directness as discussion continues. First, however, let’s look at ways we can inject consistency between our philosophies and our language before the conversation needs to escalate.

No Buts About It

Ever been given a compliment only to have it taken away in the same breath? “Hey, Doc, nice job, but that space between these two back teeth always collects food.” What message did you hear? Certainly not the compliment.

A staff member is doing a particularly good job in one area. We’d like the approach modified for a particular aspect of the job, so we say something like this: “Cindy, I like the way you’re giving the tour, but I wish you’d give more emphasis to the sterilization area.” What does the staff member hear? Certainly not the compliment. She hears nothing except what is said after the *but*.

Why do we sandwich a *but* between a compliment and a criticism? Who knows? (Maybe we picked up the idea from Blanchard’s *One Minute Manager*.) It’s a skill. We learned it. We can unlearn it. If you truly want to compliment an individual, do so without the *but*. If the compliment is a well deserved one about important accomplishments and the constructive criticism is a trifling thing, you end up sounding picky. If someone is doing a good job in one area except for certain aspects, build on successes to change behavior in another way.

Compare: “David, you’re doing a great job wearing your elastics. That means you might get your braces off sooner, but your brushing hasn’t been very good. You’re

missing a lot of areas between the brackets and your gums.” *With:* “David, you’re doing a great job wearing your elastics. It means you might get your braces off sooner. Won’t that be super? Being a World Class Elastics Wearer, I know you can handle brushing with braces – getting between the brackets and the gums. Let’s have Jenny give you some tips on becoming a World Class Tooth Brusher, too.”

Jenny then follows up the discussion with: “You know, David, if you’ve got elastics down pat, you’ve done the really hard part. Now you can focus on a couple of tricky areas that your toothbrush seems to miss. Easy stuff for the Master of Elastics.”

Compare: “Jenny, you’ve really impressed me with having picked up so many essential chairside assisting skills in the short time you’ve been here, but I’d like to see more detail in your treatment cards.”

With: “Jenny, you’ve really impressed me with having picked up so many essential chairside assisting skills in the short time you’ve been here. Way to go! You know what I’d like your next challenge to be? Detail with treatment cards. Let me get Marcy to review with you what’s expected and why, so that by this time next week, you’ll have mastered that as well.” Not only have we built on Jenny’s successes to challenge her to the next level, we’ve also made our language more specific, making our expectations clear with a goal and a time frame.

Note: If you have a persistent performance issue, keep the message clean. Mixing messages about substandard performance with a compliment is misleading and unfair to your staff.

Patient Focus Starts with You

When you deliver a message from the perspective of listeners (e.g., McDonald’s slogan, “You deserve a break today.”), you help yourself see things from their vantage point. You will more likely, then, deliver the message with a patient-centered or staff-centered focus, reinforcing the emphasis on meeting their needs. Introductory patient letters and

brochures, for example, are peppered with *we, our, I* and *my staff and I* (e.g., “We are pleased to have the opportunity to explain the benefits of orthodontics,” or “We appreciate the trust you have shown by selecting us to help with your orthodontic needs.”). Anytime you can replace these pronouns with *you*, do so (e.g., “Your initial visit is a time for us to get to know you and what you want to accomplish,” or “Your decision to take advantage of the benefits of orthodontics is an investment in your child’s future.”).

The *you* perspective helps focus on the patient’s needs and can often keep you from spouting platitudes. Work the *you* perspective into your case presentation verbiage. It’s a good way to differentiate yourself. And it’s a theme that works with staff, too.

Note: Want to try an interesting exercise? Have everyone refrain from using the words *I* or *we* for ten minutes at your next staff meeting. It provides insight into the paradigm within which we all operate.

Pose Problems as Challenges to Focus on Solutions

Problems point out what’s wrong. Challenges position issues in terms of what can be done. Restating problems in terms of challenges and opportunities with a solution approach encourages partnership in care.

Compare: “Mrs. Jacobs, I’ve got a problem with David’s poor elastic wear. He’s not progressing as quickly as he should, and I know he’s going to be frustrated if we can’t take his braces off when we originally planned. He just needs to *understand* how critical wearing his elastics is to his progress.” Here the doctor owns the problem, is focused on attitude (*understand*) rather than behavior and has expended considerable breath without yet being directed toward a solution. *With:* “Mrs. Jacobs, we’ve got a challenge to help David improve his elastic wear so he’ll be able to get his braces off when planned. David mentioned that he forgets to put his rubber

bands back on after lunch. Is there some way we can help him remember – maybe by packing these Ormco Z-pak elastics in his lunch box? Or maybe he could wear his elastics on his little finger while he’s eating? Think either of these ideas could help? Or maybe you have another suggestion?” Now the discussion is oriented away from the problem and toward the challenge of finding possible solutions, focused on behavior rather than attitude and on shared ownership of the challenge.

What’s in It for Me?

Translating features into benefits. It’s a primary tenet of every case presentation and marketing course given. If the patient is still asking “So what?” after you’ve bragged about some aspect of your practice, you may still be focusing on a feature, assuming that your patients can translate features into benefits on their own. Don’t leave this to chance.

Feature: “We use the most advanced wire technology available.”

Benefit: “Because we use the most advanced wire technology on the market today, appointment times can often be scheduled eight to ten weeks apart rather than monthly as we did only a couple of years ago. This means less time away from school for Kristin and from work for you. And then there’s the comfort. These new wires move with so little force to do the same job as traditional stainless steel wires that Kristin should be quite comfortable throughout treatment.”

How You Get Started

Psychologists tell us that it takes 21 days to develop a new skill. If changing your team’s language is something you consider worthwhile, work in increments. Choose one script or one general language change on which to work. Concentrate on that change for three weeks or until you feel comfortable with it, then move on to another change. Make a game of it. Every time someone works creatively to eliminate an unnecessary *but*, ante up \$1 for pizza.

Scripts: Ten Easy Steps to Power Talk

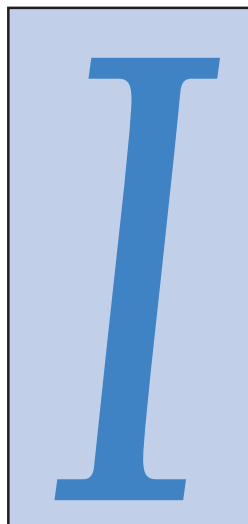
1. Brainstorm to identify every situation where communications are critical (e.g., recurring patient “compliance” discussions, your most unpopular policies, situations in which you know you tend to preach rather than partner).
2. Prioritize the top three.
3. Brainstorm all the ideas you already use (not judging them at this point).
4. Develop one or two scripts for each situation.
5. Check your phrasing against the do’s and don’ts listed here, using other techniques you know work well.
6. Rephrase where appropriate.
7. Role play using the script, putting the expressions into your own manner of speaking, adding humor.
8. Incorporate one script every three to four weeks.
9. Share results and alter where necessary.
10. Choose the next three priorities and repeat the process.

Just Say It! is a course offered through Ormco’s 1997 Practice Development Seminar Series that Ms. Brunner will conduct in Minneapolis, Minnesota, June 20, 1997, and Vancouver, British Columbia, August 29, 1997. For more information about this course, contact your local Ormco representative or an Ormco customer service representative at (800) 854-1741, Ext. 7001.

Tact is the Language of Strength

Almost every time we open our mouths to speak, we are attempting to influence another human being. These language skills are centered around tact. Tact is the language of strength. Exhibiting tact requires that you continually monitor what you are about to say, given your listener’s perspective and your relationship with that listener. It’s the art of making a point without making an enemy. As Zig Ziglar aptly puts it, “It’s difficult to offend people and influence them at the same time.”

Developing and Impleme



by Jerry R. Clark, D.D.S., M.S.
Greensboro, North Carolina

In the previous article* we discussed the importance of getting all your practice's systems in place prior to initiating the development of a marketing plan. This process is essential to providing such a wonderful experience for your patients that they will want to tell everyone they know about your practice. Only after all the appropriate systems have been established is it time to aggressively market the practice, to develop a strategy to increase the number of individuals who will demand your service. The plan, which will be outlined, is similar to the sophisticated marketing plans used by major corporations like McDonald's. You, too, can attract more customers just like they do and do it in a manner consistent with the highest levels of ethics and professionalism. There are three basic steps in developing the actual marketing plan:

- **Positioning**

Positioning (differentiation) involves the analysis of the determining factors, or as they are called in the marketing field, "influencing conditions," which cause consumers to choose one product or service over another.

- **Development**

Development of the marketing plan involves using those influencing conditions to develop goals and strategies to reach and attract patients through the use of specific internal and external marketing efforts.

- **Implementation**

Implementation of the plan involves the establishment of a marketing calendar and a budget for the marketing efforts. Staff members and the doctor are assigned specific responsibilities to make sure the marketing strategies are carried out as planned.

Positioning (Differentiation)

The decision of a consumer to choose one product or service over another is a complicated issue. However, that process

or those *influencing conditions* can be analyzed by using statistical research to provide the doctor a much better grasp of why people might choose his or her practice. This involves:

- *Practice Analysis*
- *Geographic Analysis*
- *Competitive Environment Evaluation*

From this analysis, conclusions are drawn and strategies developed to maximize the effectiveness of the plan and to allow the plan to be implemented in a cost effective manner. We will illustrate this process by developing an actual plan compiled for a practice by Orthodontic Management Group to show how the information gathered is used to mold and develop the plan. To be effective, accurate statistical data must be obtained and appropriate market research must be performed. The eventual marketing plan will be no better than the research information obtained, so take the time to do your research carefully; otherwise, you are probably wasting your time.

Practice Analysis

Evaluate the practice by thoroughly analyzing all aspects of the practice and benchmarking the practice at one point in time. These include the following:

Statistical Analysis – Involves the tracking of meaningful information about the practice over a period of time so trends can be determined and understood. See Figure 1 for an actual statistical analysis of a practice.

- **New-Patient Growth** – The number of new patients is growing nicely and indicates a positive trend.
- **Seasonality** – The practice reaches its peak season during June, July and August. People usually are not interested in spending money on orthodontics in December.
- **Start Rate** – There is a dramatic rise in patients getting ready to start treatment. This is an extremely favorable trend.

Conclusions: Continue to increase the



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Implementing the Marketing Plan

number of new patients by implementing a strong marketing plan. Do not concentrate on external marketing during the summer months or December. Investigate the new-patient exam and recall procedures and discuss any improvements which can be made.

Procedural – Based on the statistical information, many procedures which are already in place seem to be working well. However, some improvements can be made.

Conclusions: To improve current new-patient procedures:

- Make the new-patient “experience” more comprehensive and informative (minimum 30-minute exposure).
- Ask the new patient his or her primary concern and focus on it.
- Inform new patients of sterilization procedures.
- Give a thorough office tour before the new-patient exam.

To improve the consultation:

- Shorten consultation and make it more relevant to the patient.
- Begin the consultation by addressing the patient’s concerns.
- Use visuals – photographs, models, imaging.
- Provide the patient with a vision of completed treatment.

Image – What image does the practice present to potential patients? What is their perception of the office, doctor and staff members? How does the community view the practice? These are all assessed and evaluated.

Internal

- Physical facility – Has been completely remodeled and redecorated; grounds, parking lot and signage are very good.
- Staff appearance – Excellent, professional; uniforms project an unspoken unity among staff members.
- Doctor’s appearance – Excellent, pro-

	1992		1993	
	New Patients	Diagnostic Records	New Patients	Diagnostic Records
January	28	16	24	15
February	29	15	26	21
March	27	19	27	18
April	27	18	20	18
May	23	17	21	20
June	32	24	27	23
July	31	17	47	29
August	28	13	34	31
September	27	18	24	10
October	20	20	31	30
November	22	11	34	20
December	21	7	18	14
TOTAL	315	195	333	249
Start Rate	62%		75%	

Figure 1

- professional; projects warm, caring attitude.
- Office atmosphere – Excellent and professional, yet light, friendly, warm and caring.

External

- Correspondence – Excellent; all brochures, letters and correspondence are professional in appearance and comprehensive, yet brief; everything is coordinated and is highlighted by an attractive, professional, distinctive logo.
- Positive outside perceptions – Very positive, good treatment, competent, friendly staff, patients seen on time, a fun place for patients to be treated.
- Negative outside perceptions – *Too expensive, doctor is often out of the office, doctor is perceived to be too tough on patients and parents for noncompliance.*

Conclusions: Concentrate on changing the outside perceptions of the practice from negative to positive. Address each issue in a strategic manner.

- *Too expensive* – Convey to patients at the new-patient appointment that

orthodontics is expensive. However, it is the responsibility of the practice to make sure that treatment is affordable and will be made so through flexible financial arrangements. Flexible arrangements should be provided only to those individuals who have demonstrated financial responsibility in the past, i.e., good credit rating. If the rating is good, provide sufficient options for payment to facilitate treatment acceptance.

- *Doctor is often out of office* – Doctor needs to inform staff of exact plans, and staff conveys to patients that the doctor is out of the office for legitimate reasons. Example – “Doctor is attending a continuing education seminar. He is constantly going to programs to allow him to keep abreast of all the latest developments in orthodontics.”
- *Doctor is too tough on patients and parents for noncompliance* – In the future, the doctor will only give positive feedback and leave it to the staff to discuss compliance issues. The staff will

Continued on following page

Current Referral Status

Doctor	No. of referrals	Doctor	No. of referrals	Doctor	No. of referrals
Anderson	4	Herbin	1	North	1
Best	2	Hewitt	2	Orr	1
Blair	4	Hicks	3	Owens	17
Blaylock	1	Hill	4	Parker	1
Boles	6	Jolly	4	Rabb	1
Campbell	1	Jones	1	Redding	1
Capps	1	Kiser	1	Riley	3
Cecil	15	Kramer	1	Sharp	2
Chandler	2	Lee	2	Smith	1
Church	19	Lewis	2	Snead	1
Costello	3	Lind	1	Taylor	1
Douglas	1	Lockhart	1	Watkins	1
Earl	1	Lowry	1	White	1
Fowler	4	McNair	6	Wilson	8
Fox	1	Meyer	1	Zales	19
Garrett	11	Mobley	1	Fr/Fam	128
Harper	2	Moss	1	PrevOr	15
Henson	1	Noble	3	Other	53

Figure 2

Financial Policy and Options

In an effort to help you in budgeting the financial portion of your orthodontic investment, we have organized several payment options:

- Option 1 – Ten percent off total fee for cash payment at the start of treatment
- Option 2 – Seven percent off total fee for full payment within 90 days from the start of treatment, divided into three equal payments
- Option 3 – Twelve equal monthly payments with no down payment for full treatment; six equal monthly payments with no down payment for Phase 1 and partial treatment
- Option 4 – Twenty-five percent down and 18 months to pay for full treatment; 25 percent down and 12 months to pay for Phase 1 treatment
- Option 5 – Ortho-Line financing with zero down and long-term payment of a minimum of 3 percent of the balance

NOTE: As in any financial arrangement, credit history may influence final arrangements. Extension of payments beyond 18 months may be possible with the addition of a small bookkeeping fee. It is our goal to maintain excellent financial relationships with our patients. The #1 reason for unhappy patients is unclear or unkempt financial arrangements.

Figure 3

discuss hygiene and noncompliance with patients/parents and keep the doctor out of the “fray.” If treatment is being extended due to noncompliance, the treatment coordinator will discuss, well in advance, the potential for increased charges or early appliance removal before treatment completion.

Current Referral Status – See Figure 2 for an example of patient referrals to a practice. From this information, important conclusions can be drawn that will guide you in the formulation of the strategy for marketing to referring doctors.

	No. patients referred into practice	Percent of total referrals
Doctor referrals	174	47
Friend/family referrals	128	35
Previous orthodontist	15	4
Other	53	14
Total	370	100

One hundred thirty referrals came from 16 doctors while the other 35 doctors referred only 44 patients. Seventy-five percent of the doctor referrals came from approximately 30 percent of the doctors.

Conclusions: The referring doctors should be divided into two tiers.

- Tier 1: The 16 doctors providing the largest percentage of referrals. The practice should also choose five doctors not in the current Tier 1 level and concentrate on bringing them into Tier 1 over the next year. *Market this group aggressively.*
- Tier 2: The doctors who only occasionally refer to the practice. Should receive only minimal marketing efforts at little or no expense to the practice.

Current Patient Base –

- Adults, 33 percent
 - Children, 67 percent
- Practice should concentrate on fulfilling the wants and needs of both patient bases.

Adult

- Needs: orthodontic treatment, affordable treatment.
- Wants: constant information on what is

happening to them; communication on progress toward completion; encouragement; “don’t waste my time;” want to know you care.

Children

- Needs: orthodontic treatment.
- Wants: to have fun; “How much longer?” (information); encouragement (compliance).

Conclusions: Provide ongoing information and encouragement about treatment and treatment progress that does not back the doctor into a corner of promising the exact time treatment will be completed. Make sure children have fun every time they come in for an appointment.

Fees and Financial Arrangements –

Fees must be fair for both the patient and the doctor. The entire patient experience must be one of excellence, not just the treatment being performed. After all, aren’t the beds at Ritz-Carlton the same as the beds at Days Inn? The difference in what these two companies charge for a night’s stay has nothing to do with why you are staying there (the bed) but everything to do with the experience (customer service and quality of the facility).

Conclusions: Establish your fee structure according to the experience, not just the treatment. Financial arrangements must be made affordable for patients to accept treatment. Several specific payment options should be presented to allow the patient to choose the most suitable. An example of financial options can be found in Figure 3. The doctor must also determine the practice’s discount policy. Are any individuals offered treatment at reduced fees? Clergy? Physicians? Dentists? Staff? This policy must be established and discounts given only to those predetermined to be eligible.

Current Marketing Plan – Figure 4 illustrates a marketing plan previously used by a practice.

Conclusions: Many marketing approaches are currently being directed toward patients and referring doctors. Ensure they are organized in a fashion to produce maximum productively and cost effectiveness. Omit some of the more expensive things such as T-shirts, water bottles and tooth erasers. Give away only coupons that can be obtained at no expense to the practice. A thorough and complete analysis of the practice is the most essential step in determining the final marketing plan. When diagnosing a case, your treatment can be no better than the quality of the diagnostic records and the research performed in devising a treatment plan. Similarly, your marketing plan will be no better than the initial research to devise that plan.

Geographic Analysis

The type of information shown in Figure 5 can be obtained from various information services such as your local chamber of commerce or a state department involved with census information. This will provide valuable information on how to target the age groups.

Conclusions: The natural demographics and economics indicate the population will not be growing. To increase the number of younger patients, the practice should provide information and education

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Previous Marketing Plan

Current Patients – Children

- Give away pencils with practice name and telephone number
- Water bottles with practice name and number
- Give away tooth-shaped erasers
- Sugarless gum
- T-shirts
- Gift certificates
- Video games in the office
- Occasional contests
- Cupcake on patient’s birthday
- Skating party
- Gift the day braces are removed

Current Patients – Adults

- Gift the day braces are removed
- Special adult day in practice (only adults scheduled)
- Christmas party

Outside Office

- Visit patients in the hospital
- Annual advertising in school yearbooks
- Sponsor softball team
- Speaking engagements

Referring Doctors

- Luncheon meetings
- Golf tournament
- Thanksgiving letter
- Gifts at Christmas
- Conferences to discuss difficult multidisciplinary cases

Figure 4

Demographic Analysis – County Population % by Age

Age	Current	Year 2000	Change
0-4	6.29%	5.36%	down
5-9	7.01%	5.98%	down
10-14	6.55%	5.82%	down
15-19	6.80%	5.99%	down
20-24	7.18%	6.22%	down
25-29	6.82%	6.56%	down
30-34	7.12%	7.41%	up
35-39	7.90%	8.14%	up

Figure 5

For remainder of the ‘90s, all age cells under 30 will be decreasing while the 30-40 age group will be increasing as a percentage of the population.

Economic Analysis:

According to the chamber of commerce, there are no plans for any major business moves either in or out of the area.

Competitive Environment

There are currently 11 practicing orthodontists.
The top four competitors are listed below along with their positive and negative perceptions in the marketplace.

Competitors

1. Dr. Galackowitz
2. Dr. J
3. Dr. Jeckell
4. Dr. Livingston

Positives	Negatives
Dr. Galackowitz	
Great doctor Great staff Excellent sterilization/high tech Lots of community involvement Good marketing/patient parties Nice office	Not flexible with payment plans
Dr. J	
Nice practice Good technically	Long waits for appts., up to 20 mins. Serious/stale atmosphere, not a lot of fun
Dr. Jeckell	
	Throws things and yells Not very friendly, rude Lots of staff turnover
Dr. Livingston	
	Lots of staff turnover No consistent pricing

Figure 6

Demographic Breakdown of Dental Community

Age	<35	35-44	45-54	55-64	65+	Total
GP	22	46	21	33	9	131
(%)	17	35	16	25	7	
Ortho	2	4	3	3	1	13
(%)	15	31	23	23	8	

Figure 7

Future Marketing Plan

	Estimated Cost
Adolescent Patients	
Birthday cards	\$350
Contests	160
Skating party	1,200
Adult Patients	
Birthday cards	100
Christmas party	250
Contests	160
Parents	
Cookies	40
Carnations	80
Thanksgiving treats	0
Luncheon	1,500
Christmas gifts	1,000
Referring Doctors	
Treats – cookies, fruit, pizza, candy, apples, etc.	500
Golf outing	1,000
Cruise on private boat	2,000*
Birthday cards	50
Appreciation luncheon	1,600
Referring Staff	
Treat same as above	500
Your Staff	
Trip to AAO	4,800*
Trip to dental society meeting	2,000
Trip to district orthodontic society meeting	3,000*
Birthday lunches	360
Barbeque dinner	200
Appreciation dinner	360
Community	
Special Olympics participation	0
Christmas gifts to families	100
TOTAL	\$21,310

*\$12,000 was budgeted; therefore, asterisked items were eliminated

Figure 8

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regarding the benefits of Phase 1 treatment. To take advantage of the increase in the older age cells, the practice should continue to aggressively market to adult patients, especially parents of children already in treatment.

Competitive Environment Evaluation

This is one of the most interesting aspects in the development of a good marketing plan and the third and final method of positioning your practice. Gather and compile information on all competitive practices. Talk to staff members, patients and former patients, parents and dentists. Use surveys to obtain the impression or perception people have of your competitors' practices. This data is then compiled as is shown in Figure 6. (The names have been changed to protect the doctors' privacy.) In all cases, fees were comparable and perceived to be "high."

Conclusions: Provide services the other

orthodontists are lacking. Address all the negatives of the other practices and make them your positives. In this case that involves:

- Flexible payment plans.
- Zero waiting time.
- Fun atmosphere.
- Friendly environment.
- Consistent pricing; explain value of orthodontics.

Also, since age plays an important role in referral patterns (you are generally referred to by dentists within ten years of your own age), it is important to know the breakdown of referring doctors by age. Figure 7 presents such a breakdown.

Conclusions: Gear the marketing plan to doctors in the 35-44 age segment. They have the more mature practices and the greatest number of child patients. Educate them concerning Phase 1 treatment.

Also market older dentists but concentrate on adult treatment and the benefits of preprosthetic orthodontics in complex

restorative cases, periodontal considerations, surgery and esthetics.

Development

Now, and only now, a plan can be developed to effectively market the practice. *This is analogous to the orthodontist's treatment plan.* At this point, it is imperative to establish the goals and strategies to be used in your marketing plan. However, if the practice analysis has been done well, this portion is easily accomplished because the entire marketing plan, both external and internal, has already been devised for you. It consists of the *conclusions* that were reached through the study of each area of practice analysis. Your research makes it very clear exactly what needs to be done; now it is merely a function of prioritizing and implementing those findings.

Implementation

Now it's time to put all your research, continued on following page

Marketing Calendar

Month	Adolescent	Adult Parents	Referring Patients	Referring Doctors	Staffs	Community	Your Staff
Jan	Birthday cards throughout year		Birthday cards throughout year	Birthday cards throughout year			Birthday lunches all year
Feb	Groundhog contest	Valentine cookies	Contest				
Mar	Easter egg contest		Contest				Bowling lunch
Apr	Best mom contest			Appreciation lunch			
May	Smile contest	Mother's Day carnations	Contest				
Jun	Olympic contest # of USA gold medals		Contest			Participate in Special Olympics	
Jul	Trivia contest		Contest				
Aug	Trivia contest		Contest	Golf outing			Barbeque at doctor's house for staff & family
Sep	Back to school skating party						Attend district ortho meeting
Oct	Candy corn contest		Contest				
Nov	Christmas contest	Thanksgiving treat	Contest	Thanksgiving letter	Deliver treats	Collect gifts for Christmas	Appreciation night
Dec	Christmas contest		Christmas party	Christmas gift		Collect gifts for Christmas	Secret Santa gift exchange

Figure 9

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analysis and planning into action. The doctor should already have refurbished the practice facility so it is attractive and clean. The staff should now be thoroughly trained in the technical aspects of their job, as well as all aspects of quality customer service. Practice systems should all be in place so everything runs smoothly. The four steps to implementing a marketing plan are:

1. Decide what you want to do
2. Determine cost
3. Develop schedule
4. Delegate responsibility

Let's look at these one at a time:

Decide

You know what you've done in the past. What has been successful? What has not? Use a brainstorming session to record on a flip chart any idea to market the practice to adolescent patients and their parents, adult patients, referring doctors and their staff, the community and to your own staff. Then go back and eliminate duplications and ideas that are inappropriate, impractical, complicated or expensive. Narrow down the suggestions to specific ideas that all staff members feel good about and to which they can willingly pledge their involvement. The plan requires everyone's commitment and enthusiasm to make it work. Figure 8 provides an example.

Determine Cost (Budget)

Now that you know exactly what you would like to do, it's time to see if it's affordable. A budget for practice promotion must be established that will keep costs within the parameters of the income of the practice. Don't just throw money into a plan. Designate a specific amount of money you plan to spend and make the plan fit that target amount. Look carefully at all the proposed marketing ideas and estimate a specific cost for each one. The costs involved in the example marketing plan we are developing are also listed in Figure 8.

Develop a Schedule

Establish a grid (Figure 9) with the months of the year in the left column and the seven major groups marketed across the top of the page. Now complete the agreed-upon marketing ideas and space them strategically during the year to keep the flow of new patients as level as possible. Build up the weak months and keep the strong months strong. The calendar allows you to space out your efforts so all marketing energy is not expended at one or two times during the year. Now your calendar should be in place and ready for the last step in implementation.

Delegate Responsibility

Just like major corporations, every practice should have a director of marketing to coordinate the marketing efforts, keep projects on schedule and hold people accountable for their marketing responsibilities. Analyze the entire marketing schedule and have people volunteer for the portions of the marketing plan for which they would like to be responsible. Everyone should share in this aspect of the practice in order to learn to appreciate the importance of continually building the name and reputation of the practice in the community. *It is everyone's responsibility to help market the practice.*

Conclusion

The implementation of an organized marketing plan, with the commitment of the doctor and total involvement of the staff, can have a dramatic impact on the growth of the practice, even a mature one. A well-conceived, properly orchestrated approach to marketing the practice will allow it to grow beyond your wildest dreams. It is not unusual for practices with which Orthodontic Management Group has worked to grow 20 to 50 percent the first year the plan is implemented.

As you can see, marketing does not necessarily mean advertising. *Marketing a practice to increase patient flow can be done in an ethical, professional manner consistent with quality orthodontic care.* As a matter of fact, advertising is the least cost effective way to market your practice.

Mr. McMahan

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The largest dental managed care plan in Alabama is operated by BCBSA in the form of a PPO. Statewide, approximately 50 percent of all practicing dentists are contract providers for BCBSA. A review of the BCBSA directory of "Preferred Dentists" reveals that participation in BCBSA's dental PPO is not uniform throughout the state nor is there widespread specialty participation except for oral surgeons.

For example, nearly 70 percent of the practicing dentists in Birmingham are listed as contract providers, while only two of 35 general dentists in Decatur are participants.

Orthodontists are one of the specialty groups that have basically elected not to become contract providers for the BCBSA PPO. Most of the dental plans offered or administered by BCBSA do not include any orthodontic benefits.

The failure of most of the BCBSA plans to adequately address orthodontic coverage is epitomized in a communication to some of BCBSA's insureds:

"Although Orthodontists and Periodontists are listed in the directory, they are covered only for routine Standard Option dental services.

"We hope you will find that your Preferred dental benefits are convenient and easy on your wallet."

Well, to paraphrase Dr. Zatts, perhaps there is a solution for orthodontists who wish to become contract providers for BCBSA. They need to shift their focus from traditional orthodontics to setting up "prophy parlors." Dr. Zatts was correct in saying that dentists have options regarding managed care plans. However, only if laws like the APCL are upheld by the courts and subsequently passed either by the Congress or state legislatures will patients enjoy a basic right to which they should be entitled – the right to determine who will provide their dental care.

Dr. Nanda

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ing patients, we are both well aware that biomechanics is extremely helpful in achieving predictable results. For example, I designed a reverse headgear bow to be used with a facemask to deliver force to the maxilla to achieve a predictable response. This replaces conventionally used elastics which cannot be biomechanically applied due to lip opening. We all know that elastics with protraction headgear often increase the vertical dimension of the face due to the extrusion of the teeth and cause the mandible to swing downward and backward, giving us an illusion that we have achieved forward displacement of the maxilla.

Dr. Turley: What about the “bio” in biomechanics? Do biomechanically oriented appliances give a more optimal biologic response for tooth movement than other types of appliances?

Dr. Nanda: Pat, “bio” is a big part of biomechanics. Indeed, biomechanics teaches us to use force values which deliver tooth movement in the shortest possible time with the least amount of nonreversible damage to the tissues. It also allows the use of appliances which have low deflection rates, are active for a long time and need small force values per millimeter of tooth movement.

Unfortunately, our understanding of mechanics is presently well ahead of our understanding of the biology of orthodontics. The physics of our appliance design is comparatively simple relative to the biological response of the tissues. But I think our knowledge of the biology of tooth movement (at the patient level) has been limited by our inability to precisely apply mechanical principles to treatment.

Dr. Turley: Can biomechanics be applied to innovations by manufacturers for improving our appliances?

Dr. Nanda: Orthodontic manufacturers play a major role in the field of biomechanics from the design of brackets to the

development of new orthodontic wires. In recent years, wires such as nickel titanium and TMA® have allowed delivery of lower and longer activating forces. In the future, I see more precalibrated orthodontic springs, wires and loops which will deliver predictable orthodontic tooth movement.

Dr. Turley: Where is the field of biomechanics going in the 21st century?

Dr. Nanda: I feel market pressures will make it imperative for all orthodontists to understand the wires they put into the mouth. The future of biomechanics is very bright, especially in the area of orthodontic materials and development of new appliances. Even in this age of managed care, HMOs and increased practice efficiencies, I am confident the specialty will keep the quality of results always in the foreground.

Dr. Turley: Ravi, the last question, who are/were your mentors in this field?

Dr. Nanda: I have been lucky to be associated with leaders in the field of orthodontics. My brothers, Ram and Surender, come to the forefront as my mentors. Both have contributed tremendously to the specialty as researchers, educators and prolific writers. In the late ‘60s, I had the fortune of having Frans van der Linden as my teacher, and for a period, Allan Brodie, who was on sabbatical in Nijmegen, Holland. My last 25 years have been at the University of Connecticut, and I have had the fortune of being associated with Charlie Burstone, who is unquestionably the leader in the field of biomechanics. Needless to say, I also have had the opportunity to be a teacher and mentor of excellent orthodontic graduates who are now leaders in our field in their own right.

Dr. Turley: Thank you.

Dr. Nanda: I want to thank you, Pat, and at the same time, I want to congratulate you for your excellent contributions to our specialty.

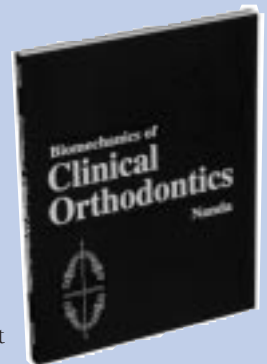
Biomechanics in Clinical Orthodontics

Edited by Ravindra Nanda, B.D.S., M.D.S., Ph.D., professor and head, Department of Orthodontics, School of Dental Medicine, University of Connecticut Health Center

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