Mgmt. 478 – Customer Information Strategy

Customer Lifetime Value Analysis for Dental Patients

Prepared by:

Allen Etherton
Eddie Facey
Ron Many
Michelle Weetman

Traditionally, the prevailing attitude among US dentists has been that "all advertising is taboo, you shouldn't even have big print on your business cards," and "your own good work is your best advertising." This thinking, prevalent among the dentists of as little as 10 years ago, is giving way to more progressive attitudes towards advertising. Dentists are realizing that they are not getting all the patients that they want, and that they can increase their patient flow and make their businesses more profitable through advertising.

Most often, a dentist starts looking for advertising when he or she notices an acute need for patients, hoping for a short-term influx of new work. Any branding in the community, long-term patient flow, or results taken over the immediate future are often regarded as irrelevant. If the advertising is successful in bringing in patients, it is often terminated – at least until the next time the practice is not attracting enough new patients. Similarly, new patients are deemed monetarily unrewarding if their service includes only standard cleaning and examination procedures. This lack of long-term focus is perpetuated by the absence of any meaningful material in the industry on the value of a dental patient.

There are several key benefits to the development and retention of a long-term patient relationship including reduced acquisition costs, referral opportunity and recurring revenue. In addition to price, long-term relationships are fostered by qualitative factors such as customer service, commitment level and communication skill. By applying a lifetime value model, dentists can reveal the total estimated worth of their client base and focus both internal processes and advertising efforts accordingly.

The Dental Industry in the United States

In the United States, certain health care services – including the practice of dentistry - are among the few industries that has not been merged, consolidated and combined into a

market defined by two or three large competitors. Once a dentist earns a degree, he or she will find low barriers to entry, readily available financing, affordable malpractice insurance rates, and a capital equipment requirement that is quite affordable (a new office can be equipped sufficiently for an investment of about $200,000). Based on these factors, a substantial majority of the dentistry in the United States (about 74% in 1995[1]) is performed by dentists that are either sole proprietors or in partnerships with one other dentist. The small size of these businesses severely limits the amount of emphasis, resources, and talent that can be devoted to marketing the practice to potential patients in the community.

According to the American Dental Association, the United States contains approximately 150,000 dental practices, 81% of which are smaller offices containing 1-2 dentists[2]. Over 500 million dental visits are made each year by 66% of the total US population aged 2 years of age and older[3]. These numbers have continued to increase for the past ten years. Metropolitan centers reflect higher dental visit rates than non-metropolitan areas and an increasing number of American households enjoy private dental insurance[4].

The most recent data from the US Census Bureau estimates revenues for the dental industry as $54 billion in 1998[5]. The average US dental practice has revenues of less than $400,000[6] per year; while the average US sole proprietor practice has annual revenues of $225,775[7]. Annual per capita expenditures for dental services were at $193 in 1998 and this figure continues to grow[8]. Health care services expenditures in total grew an average of 5% year-over-year during the last decade[9].

One significant market factor is the diffusion curve for dentistry. While dental services have been offered for a long period of time, only about 68% of American adults visited a dentist last year (although this number varies widely from state to state, as shown in

Exhibit A). The number includes both people who sought regular, periodic dental care and those who reacted to some triggering event (such as a severe toothache) to visit the dentist. If we look at the market for *regular, periodic* dental care in the United States, it would appear that the US is in the early phases of the 'late adopter' stage of the product diffusion cycle. This should indicate to dentists that the opportunity exists to expand the market for regular dental care to customers who currently are not purchasing and utilizing this service.

The Dental Market as seen by a Sole Practitioner - Dr. John Doe

Since most dental offices in the US tend to be small, entrepreneurial businesses, they tend to cater to the local communities and the demographic data between dental offices can vary widely. For the purposes of this study, we have recognized that the demographics of each dental office are somewhat unique; therefore, we will base our results on actual data from a test office – Dr. John Doe in Portland, Oregon. In choosing a single office, we understand that the value calculated will be unique to his particular situation. However, we have designed a model to incorporate available data from a dental practice, so we can apply this model to other practices.

Dr. Doe has installed the 'Dentrix' software program, which is a readily available package sold to dental offices nationwide. All of the practice-specific data we were able to obtain was derived from his computer system. While the number of dental practices employing these types of systems is growing, many practices do not yet have these systems or any other means of tracking customer/patient information. We would anticipate that a dentist would not easily be able to obtain the data without the use of a comparable system. With the exception of data availability, we anticipate this model would be able to be applied to most general dental practices in the US.

Analysis of the home zip codes for the patients in Dr. Doe's practice show that 58% of his patients reside in four specific zip codes. This is designated as his primary market. A demographic analysis of this area shows a population of 157,689 with a median income of $50,917. There are 91 dentists practicing in this area, equating to one dentist per 1732 people, (the national average is one dentist per 1931 people[10]). 41% of the population is college educated, compared to a national average of 26%. As found in the overall medical industry, there is a positive correlation between higher incomes, college education, and regular visits to a dentist to get checkups and maintain dental health.

In assessing the size of the patient base of this practice, we first looked at how many patients have been seen. The practice identified that the office had seen 3716 unique patients since its inception. However, like many dental practices, there is no process for identifying inactive patients. We performed further analysis that revealed that in the last twelve months, there were 699 unique patients who had visited the practice. Of these 699 patients, 333 were returning patients. In looking at the rate of dental visits for Oregon (67%) and multiplying by the ratio of population to dentists (1732 to 1), it would appear that Dr. Doe's proportionate share of patients would be 1160. This indicates there is probably good potential for Dr. Doe to expand his patient base in his area.

Elements of the Model

We developed a valuation model specifically for Dr. Doe's practice. In doing this, we separated the valuation of the initial treatment from subsequent treatments, factored in the retention rates provided, and calculated the present value of the cash flows we would expect from a new patient (discounted at the applicable interest rate). The formula we used was

$$R_0 \cdot m + \sum_{i=1}^{40} \frac{R_1 \cdot t_0 \cdot t_1^{i-1} \cdot m \cdot (1+f)^i}{(1+r)^i}$$

$R_0 \equiv$ first year's revenue	$t_0 \equiv$ first retention rate
$R_1 \equiv$ successive year's revenue	$t_1 \equiv$ successive retention rate
$m \equiv$ average margins	$f \equiv$ referral rate
$i \equiv$ years since first visit	$r \equiv$ discount rate

The components of this model were determined as follows:

Retention

We found that Dr. Doe's retention rate was about 50%. After discussing patient retention with Dr. Doe, he indicated that his existing data was not representative, even for his practice. The reason is that he has physically outgrown his space, and is moving to another building. Due to his space limitation, he is only able to have one hygienist cleaning teeth, and has hard time fulfilling his patients schedule requests. These patients (especially most of the children) are referred to other dentists and specialists. He is moving into a practice more than twice the size of his current practice in January of 2004. At that point, he expects his patient retention to significantly increase.

In order to assess what a more standard patient retention might be, we surveyed three other dentists, and found average rates of retention as follows:

- New Patients (people in for the first time) – 75% will return after receiving their treatment
- Existing Patients (prior history) – 85% will return after receiving their treatment
- Referral Rate – of 100 patients, 2.5 new patients will come in because they were referred by an existing patient

We discussed these figures with Dr. Doe, and he agreed that these numbers looked like what he might expect at the new practice.

Revenue

For the first 11 months of 2003, Dr. Doe's practice has earned $242,400. The breakdown of procedures he performed to obtain this revenue is shown at Exhibit B. This revenue was earned from seeing 366 new patients (representing about $148,446 in revenue, or $406 per patient) and 333 patients that had previously visited the practice (representing about $93,953 in revenue, or $282 per patient). This phenomenon is common in dentistry; when patients see a dentist regularly, the often only require checkups and cleaning, where a new patient often requires more extensive care in the initial few visits, which is often in response to some specific problem.

While many dental patients visit their dentist regularly, and come in at least once a year for teeth cleaning and an exam, many people (especially those whose upbringing did not include regular dental care) come in only for emergency treatment. Dr. Doe indicated that there were many cases where a patient would come in with emergency dental needs, have the problem taken care of, and not come back until years later when the next dental emergency arose. For these patients, it is difficult to assess whether they are going to be retained, or whether they are lost patients.

Costs

Dr. Doe office has little variable cost, which is typical for most dentists. The majority of his costs, such as rent, utilities, salaries, malpractice insurance, and equipment depreciation are fixed. The only variable costs involved in seeing a new patient are increased use of dental supplies and laboratory fees. In our evaluation of Dr. Doe's customer

lifetime value we did not consider any of his customer acquisition costs, mainly because he did not spend on much more than yellow pages listings until the last 3 months, when he started to consider additional marketing. This limited marketing effort amount for negligible acquisition costs. One of the insights we hope to provide is the value of bringing in a single patient, so Dr. Doe can assess what productivity levels would be required for advertising to be worthwhile.

Contribution Margin

The average contribution margin in Dr. Doe's office is 85.5% of revenue. We calculated this by finding that his dental supply cost is 5.5% of total revenue, and lab costs of 9% of total revenue. Theses average costs where very similar in the previous two years. We consider all other costs fixed.

Discount Rate

As mentioned earlier, it is relatively easy for dentists to obtain practice loans. There are many finance companies specializing in dentistry that will offer a dentist practice loans up to 125% of the value of the dental equipment. A common rate today for these under-secured loans is 9%. While Dr. Doe may have other sources of funding available to him at a lesser rate, we are using a discount rate of 9% as representative of the rate the practice can incrementally borrow funds.

Findings and Analysis

Based on our evaluation, the value of a new patient to Dr. Doe is $560.86 (Exhibit C). Within the current framework of the practice, he would need to bring in 17.82 patients per $10,000 spent on advertising to break even on the proposition.

In analyzing the data, we considered some changes to the assumptions that we made, and how factors inherent in his practice might affect the patient valuation. In looking at the sensitivity of the data within our model, one very important assumption that we made is that Dr. Doe will increase his patient retention by moving into a new office with suitable space. The retention of patients is extremely important to a dental practice, and focusing on making sure the retention rates actually meet the expected retention rates we used for the analysis is perhaps the single most important thing Dr. Doe can do to effectively manage his practice.

We ran the valuation model with a 50% patient retention rate, which approximates the current rates of retention in the existing practice. Use of the projected retention rate increases lifetime value to $1,194.42 from $560.86, an increase of 112%, (Exhibit D). This difference demonstrates the importance of the practice's ability to maintain patients as a key driver in valuing the recruitment of new patients. Adverse fluctuations in the patient retention number make a substantial difference in the valuation of a patient to the practice.

We also reviewed the types of specific dental procedures performed each year within this practice. Dr. Doe has only begun offering cosmetic whitening in October of 2003. At the time we collected this data, he had only done six procedures. For many practices, cosmetic services such as whitening are among the highest margin items offered. These items don't have to be discounted to insurance companies, since they are almost never covered by insurance and it is strictly up to the patient to choose this procedure.

While we do not know what percentage of the patient base would choose to have Dr, Doe professionally whiten their teeth, we modeled the effect of adding this service to the practice using an estimate that 5% of the people visiting his practice will elect this service.

For 2003, this would have resulted in 35 whitening procedures performed on the group of 699 patients. Given that he has performed 6 procedures in the first month (an annual rate of 9%, but probably including people asking him for this before he decided to offer it), use of the 5% estimate appears reasonable. Using a 5% acceptance rate for whitening, it is estimated that Dr. Doe will add $120.87 per patient in lifetime value merely by offering this procedure (Exhibit E).

Another prospective opportunity for Dr, Doe exists with the potential to do root canal treatments. Within the dental profession, there is a specialist (endodontist) who receives additional training to perform root canal treatments. However, it has becoming increasingly common for general dentists to perform all but the most complex of these procedures. Within the dental industry, there are many 1-2 day continuing education courses that teach general dentists to perform most root canals.

The American Association of Endodontists estimates that 24 million root canals are performed each year[11]. This number represents about 8.6% of the US population. At present, Dr. Doe refers out all but the simplest of these procedures. In 2003, he performed a total of 3 root canals, referring out all the rest to an endodontist. Based on his average rate structure, he could earn about $455 per root canal procedure. If Dr. Doe were to incorporate most endodontics into his practice, and refer out only the most complex cases to the specialist, we estimate that he could do 75% of this work, equating to 0.045 root canals per new patient. The addition of this revenue, as calculated by our model, would reflect an increase in lifetime value of $78.10 per patient, (Exhibit F).

Further, 30% of Dr. Doe's practice is currently serving Medicaid patients. The reimbursement for these patients is set by the State of Oregon, and it is up to individual

dentists whether to accept Medicaid or not. In comparing the Medicaid reimbursement rates to the private pay rates and private insurance reimbursement rates, it is evident that Medicaid patients contribute substantially less value than other patients. Many practices express a desire to eliminate services to low-margin payers like Medicaid. In determining whether this would be beneficial to the practice, we ran the valuation model for Medicaid patients.

To estimate the value of a Medicaid patient, we calculated the discount per procedure that Medicaid gets versus the average fees from all other payers. Since we know that 30% of the practice is Medicaid patients, we took 30% of the revenues from each service that Medicaid reimburses and applied the Medicaid discount to the category. This resulted in average revenue from first year patients of $226.37, and from recurring patients of $157.60. We also considered that dental supplies and lab fees, which are 5.5% and 9% of the overall practice revenues, would represent a higher percentage of Medicaid fees. We calculated the ratio of overall fees versus Medicaid fees, and found this to be 1.79. By applying this to Medicaid services, we calculate a variable cost rate of 24%. The resulting patient value for a Medicaid patient is $577.31 (Exhibit G), representing 38% of the value of a non-Medicaid patient. (Calculated at $1502.27, and adjusted to $1623.14 when taking into account the offering of whitening services).

Recommendations

Dr. Doe has an opportunity to segment his market and use properly targeted advertising to actually increase his customer value. He is in a good position to impact his practice by the introduction of advertising. His market is not oversaturated with dentists, and he is serving an area that includes a higher than average percentage of college educated people making a higher than average income. In this market, his advertising is likely to yield

the type of patients that would provide high value. While private pay patients may offer the most revenue, he should segment his advertising towards any patients besides Medicaid patients. With the understanding that the lifetime value of a non-Medicaid patient is somewhere around $1120, he can and should consider advertising, as long as the advertising is able to bring in patients at less than the lifetime value. At some level, as he nears his capacity constraint in the new office, he should consider eliminating Medicaid services from his practice. He is doing well to offer whitening services, and should emphasize this in the promotion of his practice.

Operationally, he should strongly consider doing most of his own endodontic work, which will further augment the value of the patients he is able to bring in. He also needs to strongly consider a program that will maximize patient retention, which is the key to the entire value calculation. If he continues to struggle with a 50% retention rate in the new practice, he should consider the benefits of hiring a practice management consultant to help design and implement a program to keep patients returning to the office.

Another key success factor in operating his dental practice is the ability to retain patients once they come in the door. Whether it is making sure that the patient comes back in six months for their regular checkup or making sure the patient comes back in three years needing their next extraction or emergency procedure, the practice's ability to retain patients is critical to the practice's ability to operate profitably. By focusing on this long-term value, he can enjoy higher returns from his existing client base.

Notes

[1] Economics of Dental Practice Improve in the 1990s, H Barry Waldman, *Journal of the California Dental Association,* April 1998

[2] *Key Dental Facts*, American Dental Association, September 2002

[3] *Key Dental Facts*, American Dental Association, September 2002

[4] *The Future of Dentistry*, American Dental Association, 2002

[5] *Current Business Reports, Service Annual Survey*, U.S. Census Bureau, Table 181, 1998

[6] *The 2000 Survey of Dental Practice*, American Dental Association, 2002

[7] Economics of Dental Practice Improve in the 1990s, H Barry Waldman, *Journal of the California Dental Association,* April 1998

[8] *Current Business Reports, Service Annual Survey*, U.S. Census Bureau, Table 115, 2000

[9] *National Health Interview Survey*, Centers for Disease Control and Prevention, National Health Center for Health Services, 2002

[10] *Key Dental Facts*, American Dental Association, September 2002

[11] American Association of Endodontists, "AAE – Fact Sheets". 9 December 2003 <http://www.aae.org/newsfacts.html>.

Exhibit A

Dental Visits

Percentage of people who visited the dentist or dental clinic within the past year, 18+ age-adjusted to the year 2000 population.

Source: Centers for Disease Control.

	Yes	No
National	67.9	32.1

	Yes	No		Yes	No
Alabama	60.7	39.3	Montana	63.6	36.4
Alaska	70.2	29.8	Nebraska	72.5	27.5
Arizona	66.0	34.0	Nevada	56.8	43.2
Arkansas	58.9	41.1	New Hampshire	72.4	27.6
California	67.0	33.0	New Jersey	72.3	27.7
Colorado	67.8	32.2	New Mexico	62.5	37.5
Connecticut	78.2	21.8	New York	70.1	29.9
Delaware	71.3	28.7	North Carolina	67.2	32.8
DC	73.1	26.9	North Dakota	66.2	33.8
Florida	67.1	32.9	Ohio	68.9	31.1
Georgia	66.3	33.7	Oklahoma	59.1	40.9
Hawaii	74.7	25.3	**Oregon**	**67.0**	**33.0**
Idaho	65.0	35.0	Pennsylvania	71.3	28.7
Illinois	71.0	29.0	Rhode Island	75.0	25.0
Indiana	67.0	33.0	South Carolina	69.6	30.4
Iowa	70.5	29.5	South Dakota	66.2	33.8
Kansas	68.3	31.7	Tennessee	69.3	30.7
Kentucky	63.0	37.0	Texas	59.7	40.3
Louisiana	60.6	39.4	Utah	73.0	27.0
Maine	67.9	32.1	Vermont	72.5	27.5
Maryland	72.3	27.7	Virginia	71.9	28.1
Massachusetts	76.2	23.8	Washington	67.1	32.9
Michigan	77.2	22.8	West Virginia	56.4	43.6
Minnesota	72.7	27.3	Wisconsin	74.5	25.5
Mississippi	58.9	41.1	Wyoming	63.5	36.5
Missouri	60.6	39.4			

Exhibit B

Summary of Dr. Doe Revenues for 2003, by Procedure.

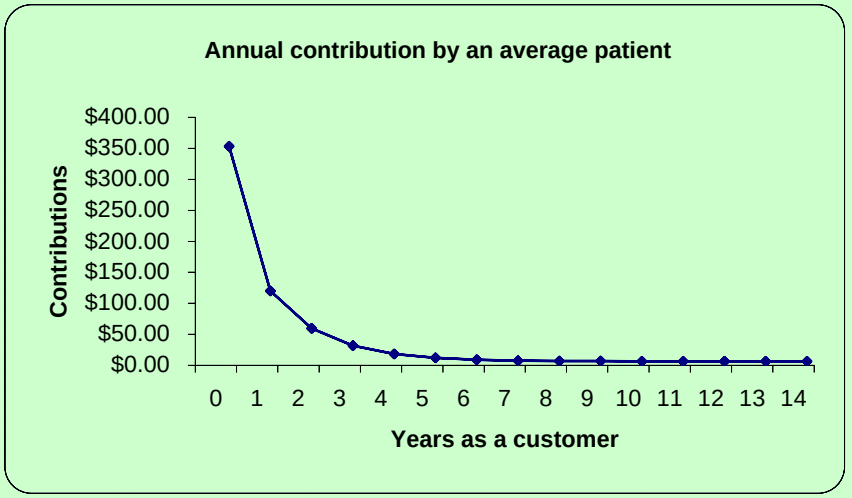
Procedure Code	Description	Your Charge	Average CA	Average WA	Average Pacific	Procedures Performed	No Insurance	AETNA	Blue Cross	Delta PPO	UNT CCD	CSD STD	Oregon Medicaid
							10%	20%	10%	15%	5%	10%	30%
0150	Exam	$ 37	$ 55	$ 59	$ 47	708	$ 50	$ 35	$ 55	$ 50	$40	$ 42	$ 23
0210	Full Mouth X-Ray	$ 78	$ 93	$ 88	$ 78	59	$ 79	$ 56	$ 83	$ 78	$80	$ 72	$ 50
0220	Additional Intraoral X-rays	$ 12				844	$ 17	$ 12	$ 19	$ 16	$15	$ 10	$ 7
0274	Bitewing X-Ray	$ 40	$ 48	$ 46	$ 37	228	$ 53	$ 35	$ 50	$ 60	$35	$ 37	$ 21
1110	Adult Cleaning	$ 61	$ 72	$ 85	$ 60	351	$ 69	$ 49	$ 68	$ 44	$63	$ 55	$ 41
1120	Child Cleaning	$ 59	$ 60	$ 56	$ 43	74	$ 48	$ 37	$ 50	$ 43	$43	$ 38	$ 48
2150	Amalgam Filling	$ 75	$ 107	$ 141	$ 96	181	$ 91	$ 62	$120	$ 92	$98	$ 75	$ 49
2386	Composite Filling	$ 108	$ 160	$ 180	$ 135	325	$ 123	$ 88	$145	$109	$112	$119	$ 48
2543	Gold Onlay	$ 636	$ 655	$ 804	$ 633	2	$ 589	$ 442	$680	$627	$571	$538	
2610	Resin Onlay	$ 494	$ 605	$ 865	$ 650	1	$ 470	$ 231		$522			
2750	Crown	$ 696	$ 750	$ 827	$ 700	67	$ 695	$ 524	$690	$671	$680	$633	$ 692
2950	Crown Build-Up	$ 104	$ 181	$ 206	$ 170	70	$ 140	$ 84	$155	$155	$155	$112	$ 64
2962	Laminate Veneer	$ 764	$ 730	$ 856	$ 680	1	$ 728	$ 344		$613	$600	$560	
3310	Root Canal (1 Surface)	$ 658	$ 453	$ 530	$ 422	3	$ 627	$ 294	$410	$390	$420	$318	$ 179
3320	Root Canal (2 Surfaces)		$ 550	$ 644	$ 504	0	$ 748	$ 398	$500	$460	$495	$402	$ 221
3330	Root Canal (3 Surfaces)		$ 680	$ 794	$ 641	0	$ 851	$ 512	$723	$605	$660	$529	
4341	Root Scaling	$ 151	$ 170	$ 155	$ 160	111	$ 185	$ 123	$181	$160	$135	$116	$ 68
5110	Complete Upper Denture		$ 1,039	$ 1,143	$ 985	0	$ 952	$ 682	$950	$875	$875	$777	$ 412
4211	Gingivectomy	$ 86				30	$ 80	$ 64	$104	$ 79	$120	$ 64	$ 53
6750	Retainers	$ 699				10	$ 695	$ 524	$690	$654	$685	$623	
7210	Extractions	$ 121				175	$ 162	$ 119	$174	$159	$182	$144	$ 84
-	Whitening	$ 550	$ 150	$ 203	$ 150	6	$ 500	N/A	N/A	N/A	N/A	N/A	N/A

* 699 active patients in the last 12 months

Exhibit C

Life Time Value of a Dental Patient - Existing Retention

Average revenue per patient on first year	**$406**
Average revenue per patient on successive years	**$282**
Discount Rate	**9.0%**
Retention rate for 2nd year	**50.0%**
Retention rate for successive years	**50.0%**
Average Referral Rate	**2.5%**
Average Margins	**85.5%**



	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$346.78	$113.42	$53.33	$25.07	$11.79
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$5.54	$2.61	$1.23	$0.58	$0.27
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$0.13	$0.06	$0.03	$0.01	$0.01
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$0.00	$0.00	$0.00	$0.00	$0.00

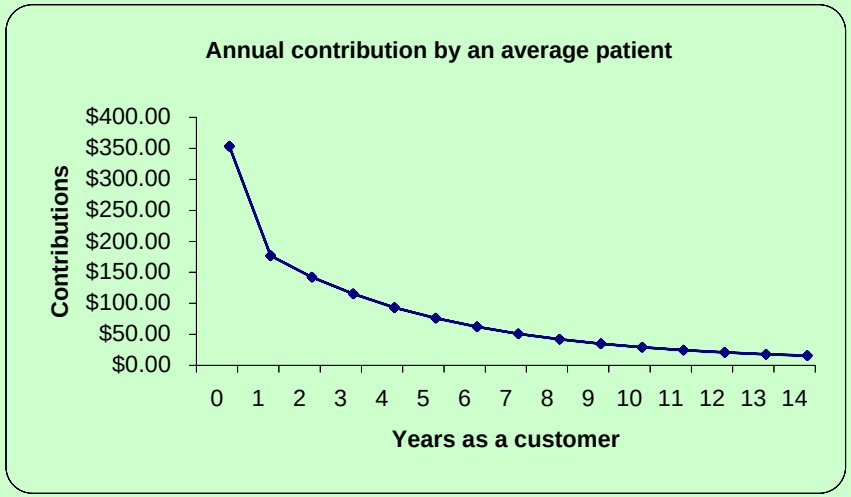
Total Value of a new patient:	**$560.86**

Value based on Estimated Retention	**$1,194.42**
Loss of value due to lower retention	**$633.56**
Percentage of Value Lost by low retention	**53%**

Exhibit D

Life Time Value of a Dental Patient - Estimated Retention

Average revenue per patient on first year	**$406**
Average revenue per patient on successive years	**$282**
Discount Rate	**9.0%**
Retention rate for 2nd year	**75.0%**
Retention rate for successive years	**85.0%**
Average Referral Rate	**2.5%**
Average Margins	**85.5%**



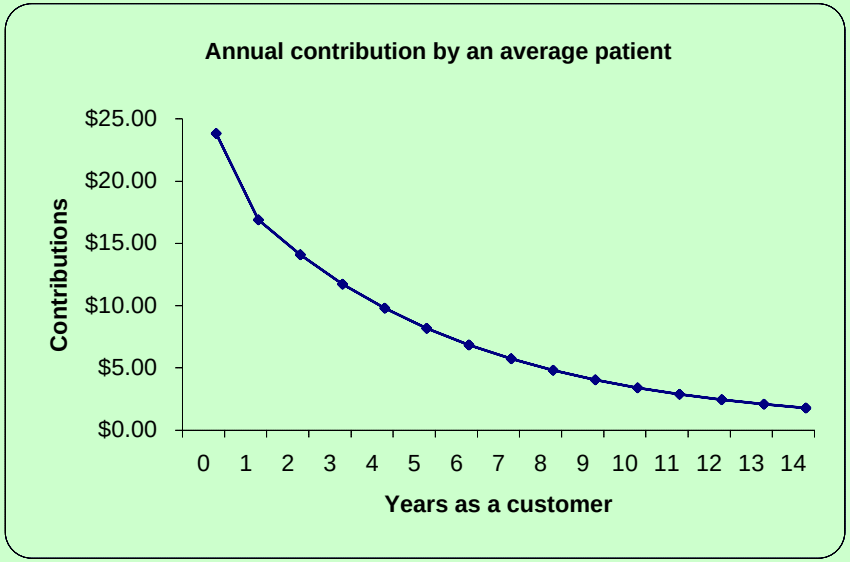
	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$346.78	$170.13	$135.99	$108.70	$86.88
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$69.45	$55.51	$44.37	$35.47	$28.35
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$22.66	$18.11	$14.48	$11.57	$9.25
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$7.39	$5.91	$4.72	$3.78	$14.93

Total Value of a new patient:	**$1,194.42**

Exhibit E

Life Time Value of a Dental Patient - Offering Whitening

Average revenue per patient on first year	**$550**
Average revenue per patient on successive years	**$550**
Percentage of Patients Accepting Service	**5%**
Discount Rate	**9.0%**
Retention rate for 2nd year	**75.0%**
Retention rate for successive years	**85.0%**
Average Referral Rate	**2.5%**
Average Margins	**85.5%**



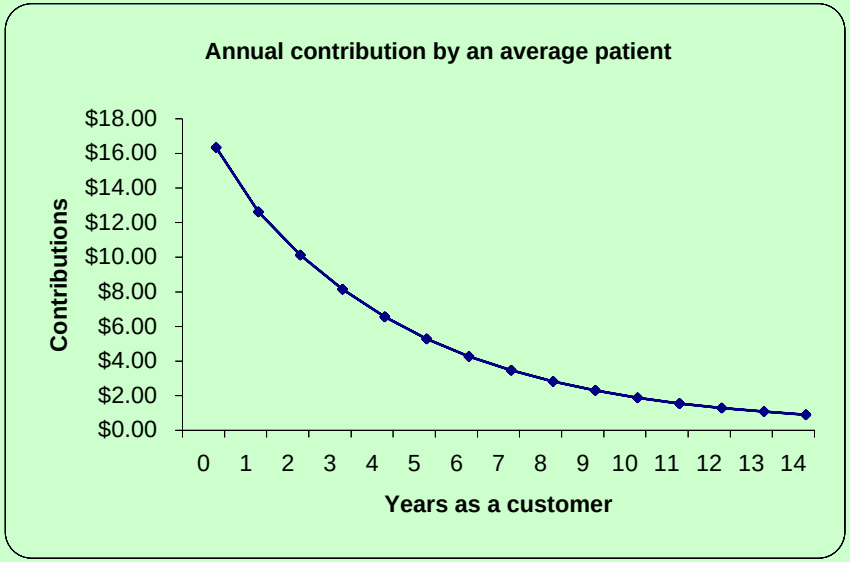
	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$23.51	$16.58	$13.76	$11.42	$9.47
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$7.86	$6.52	$5.41	$4.49	$3.73
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$3.09	$2.57	$2.13	$1.77	$1.47
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$1.22	$1.01	$0.84	$0.69	$3.33

Total value of offering whitening to indicated percentage of patients	**$120.87**

Exhibit F

Life Time Value of a Dental Patient - Perform Own Endodontics

Average revenue per patient on first year	**$455**
Average revenue per patient on successive years	**$455**
Percentage of Patients Accepting Service	**5%**
Discount Rate	**9.0%**
Retention rate for 2nd year	**75.0%**
Retention rate for successive years	**85.0%**
Average Referral Rate	**2.5%**
Average Margins	**85.5%**



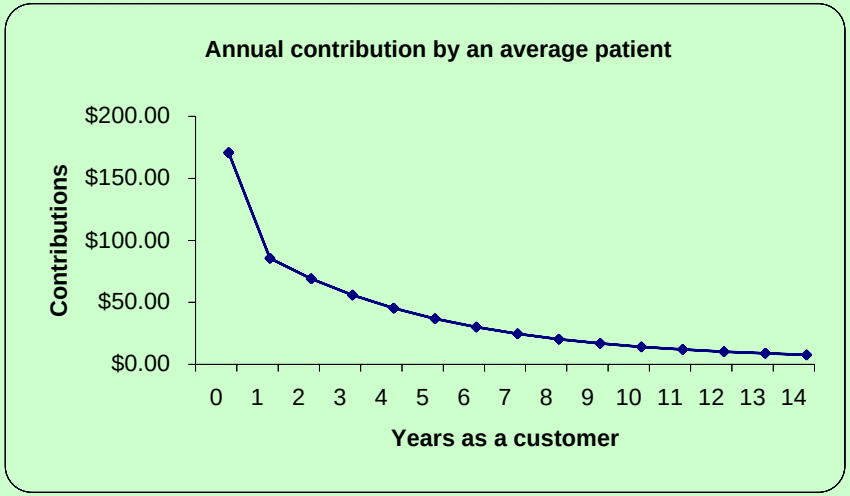
	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$16.11	$12.39	$9.90	$7.91	$6.33
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$5.06	$4.04	$3.23	$2.58	$2.06
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$1.65	$1.32	$1.05	$0.84	$0.67
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$0.54	$0.43	$0.34	$0.27	$1.35

Total value of offering whitening to indicated percentage of patients	**$78.10**

Exhibit G

Life Time Value of a Dental Patient - Medicaid Only

Average revenue per patient on first year	**$226**
Average revenue per patient on successive years	**$158**
Discount Rate	**9.0%**
Retention rate for 2nd year	**75.0%**
Retention rate for successive years	**85.0%**
Average Referral Rate	**2.5%**
Average Margins	**74.0%**



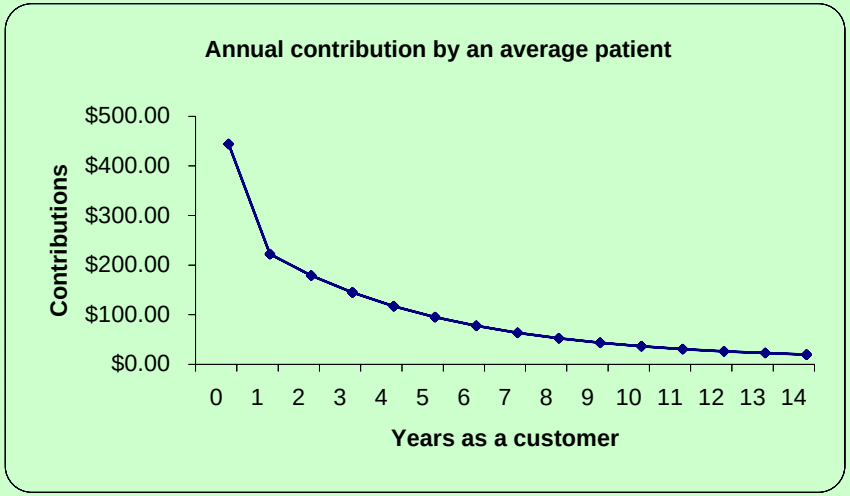
	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$167.51	$82.25	$65.75	$52.55	$42.00
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$33.57	$26.84	$21.45	$17.15	$13.70
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$10.95	$8.76	$7.00	$5.59	$4.47
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$3.57	$2.86	$2.28	$1.83	$7.22

Total Value of a new patient:	**$577.31**

Exhibit H

Life Time Value of a Dental Patient - Non-Medicaid Only

Average revenue per patient on first year	**$483**
Average revenue per patient on successive years	**$336**
Discount Rate	**9.0%**
Retention rate for 2nd year	**75.0%**
Retention rate for successive years	**85.0%**
Average Referral Rate	**2.5%**
Average Margins	**90.4%**



	0	**1**	**2**	**3**	**4**
PV of Revenue per year (0-4)	$436.27	$213.96	$171.02	$136.70	$109.27
	5	**6**	**7**	**8**	**9**
PV of Revenue per year (5-9)	$87.34	$69.81	$55.80	$44.60	$35.65
	10	**11**	**12**	**13**	**14**
PV of Revenue per year (10-14)	$28.50	$22.78	$18.21	$14.55	$11.63
	15	**16**	**17**	**18**	**19-40**
PV of Revenue per year (15-40)	$9.30	$7.43	$5.94	$4.75	$18.77

Total Value of a new patient:	**$1,502.27**