BRIEF COMMUNICATIONS

Assessing the Viability of the Independent Practice of Dental Hygiene – A Brief Communication

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Abstract

Background: *This paper deals with the economics of the independent dental hygiene practice.* ***Methods:*** *Using historical data from dental practices in Cincinnati, Ohio, we developed a business model for an independent hygiene practice. We tested the sensitivity of the model to variations in key assumptions (initial capitalization, interest, employee salary, and owner's draw). We described the profitability on the basis of the breakeven point.* ***Results:*** *Under the most permissive regulatory and financial environment, the practice would breakeven after 26 months. However, the owner would not equal the earnings of a salaried hygienist until the initial loan is paid off after 7 years. The model was not sensitive to 20 percent changes in the key assumptions.* ***Conclusions:*** *Under ideal circumstances, an independent hygiene practice could be profitable.*

Key Words: delivery of health care, dental economics, dental hygienists, dental public health, models, economic, professional practice, public policy

Introduction

In the late 1970s, the American Dental Hygiene Association (ADHA) began to support alternative practice methods that would allow the dental hygienist to become the primary provider of preventive services in order to meet the health care needs of the public in accordance with state dental and dental hygiene practice acts (1). In response to this, the American Dental Association (ADA) passed a resolution reaffirming that dental hygienists are auxiliaries who must work under the supervision of a dentist (1). The ADHA Committee on Governmental Regulations in 1978 issued a position paper, "Placing Dental Hygiene in Perspective" (1), which was concerned with the dental hygienist's role in the dental care delivery system. The economics of independent practice is one component in this discussion.

In states that allow the independent practice of dental hygiene there is no legal guidance as to what really constitutes independent practice (2), particularly regarding procedures performed and supervision. Moreover, supervision issues differ from worker status (employer–employee relations). For example, independent dental hygienists in Colorado (3) and New Mexico (4) must have an agreement with a dentist to provide some supervision. California requires the patient to have a prescription from a dentist or physician (5).

Three states (California, Colorado, and New Mexico) permit a dental hygienist to own a dental hygiene practice (2). California has a designated title for the Registered Dental Hygienist in Alternative Practice – RDHAP (5). The California Dental Practice Act (5) requires that the RDHAPs have: a) a Bachelors degree or its equivalent; b) 3 years of clinical practice experience; and c) successful completion of a 150-hour course. They are also restricted to general supervision by a dentist for oral prophylaxis, root planing, applying pit and fissure sealants, charting, and examination of soft tissues. Only fluoride and sealant application in a government administered public health program may be performed without supervision (5). From 1987 to 1990, nine independent dental hygiene practices were permitted to operate in California under the Health Manpower Pilot Project 139 (HMPP 139) (6) and the 16 dental hygienists involved in the project worked in various settings. They were able to consistently attract new patients and were more available to Medicaid patients than dental offices. Ninety-eight percent of patients expressed satisfaction with their treatment (7,8).

Colorado has no restrictions on hygiene practice, and a dental hygienist may be an owner (2,3). However, these practices must have an agreement with a dentist to provide direct supervision for local anesthesia and general supervision for x-rays (3). New Mexico allows dental hygienists to engage in collaborative practice based on a written agreement with one or more "consulting" dentists. The dental hygienist may own or manage a dental hygiene practice in any setting, but must refer patients for a dental exam annually (4).

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In Table 1 we list some services independent dental hygienists might offer in their practice based upon the curriculum at many schools of dental hygiene. We have also indicated which services are allowed, according to our interpretation of the states' dental practice acts, in the three states that permit independent practice.

This article examines the economic aspect of an independent hygiene practice, by modeling a notional independent hygiene practice, to further understand the economic sustainability of an independent hygiene practice.

Methods

This article explores the financial viability of a notional independent dental hygiene practice in Cincinnati, Ohio, an area for which the most complete data are available. Seeskin, Paas, Blackburn and Costandi, Inc. (SPB&C) is an accounting and consulting firm that represents approximately 10 percent of the dentists practicing in southwestern Ohio and primarily in Cincinnati, Ohio. Over the past 12 years they have collected data from their clients about employee staffing, salaries, and other compensations. This information is then complied, analyzed, and shared with all of its clients. The identities of the dentists are not disclosed and only historical data are released to the participants. The data used are based on the responses of approximately 100 general dentists in the greater Cincinnati area. The variable and fixed expenses given in the spreadsheet are based on information garnered from those practices. The assumptions are based on 12 years of SPB&C data. We feel that the expenses given are complete and that there are no other material expenses.

Table 1
Services Offered by Independent Dental Hygienists

Procedure	CA	CO	NM
Prophylaxis	N/U	N	N/U
X-rays	N/U	N	N/U
Local anesthesia	P	P	P
Topical anesthesia	N/U	N	N
Fluoride	N/U	N	N/U
Pit/fissure sealants	N/U	N	N/U
Root planing	N/U	N	N/U
Soft tissue curettage	P	N	N/U

P, physical presence of dentist is required; N, physical presence of dentist is not required; CA N/U, maybe provided without supervision if done in a public health setting; NM N/U, requires a prescription/order from a consulting dentist.

Model Assumptions

Regulatory Environment. The hygienist will be practicing without the supervision of a dentist in a location that is not part of a dental practice; the state in which this practice is operating has a permissive regulatory environment which allows the hygienist to give local anesthesia, take and interpret radiographs, and delegate the application of sealants and the taking of radiographs to a dental assistant.

Location. The office is located in a suburban strip mall in a thriving area of the community, in an office space previously used as a dental office. It is fully plumbed for two dental operatories, with adequate electric outlets and infrastructure. The only leasehold improvements required will be cosmetic (i.e., minor painting and cleaning). While dental offices vary greatly in size, we assume that the existing office is 1,200 square feet, with a monthly rental of $\$18.00/ft^2$, making the monthly rent payment $1,800.

Competition. The practice is located in an area where there are no other independent practice hygienists and, while there are general dentist competitors in the vicinity, their numbers are too small to effectively accommodate all the available patients.

Costs. One dental assistant will be hired to clean and sterilize instruments, answer the phone, make appointments, and clean the operatories between patients. The salary will be $16.00/hour, which includes benefits such as sick days and vacation days. This is based in part upon a salary survey done by the *Dental Practice Report*, which gives a national average salary for a clinical assistant to be $15.46/hour and for an office manager to be $19.40/hour without benefits (9) and the information obtained by SPB&C, which found the average wage for a dental assistant to be $14.93/hour and an office manager to be $20.95/hour in the Cincinnati area. The dental assistant will perform the duties of both a dental assistant and business manager; therefore, a higher salary might be warranted.

Fixed Costs. The equipment quotes were provided by Patterson Dental in Dallas, Texas, which we assume to be representative of the prices throughout the country. The dental equipment costs to set up a two-operatory office would be approximately $65,000. We have estimated another $12,500 for business office furniture, computers, dental practice management software, miscellaneous supplies, and general cleaning and preparation of the office space. The practice will also require working capital, which we have set at $47,500. This would then require a commercial loan of $125,000.

Scope of Practice. One individual will practice as a sole proprietor, with no dentist supervision required. The owner and other employed hygienists will have their own patients and will not depend on referral of patients from dentists.

Production. In a full-service general dentistry practice grossing $50,000 per month, we assume that the hygienist will produce 25 percent of the total production: $12,500 per month, or $625 per day (10). Glasscoe (11) hypothesized that in a solo, unsupervised hygiene practice a hygienist could produce $1,930 per day. Neither of these papers was persuasive because one (10) did not break down the production by procedure, and the other (11) inflated the number of procedures that could be done in an 8-hour day. Therefore, the daily production of the dental hygienist has been determined by using information in the SPB&C survey, which shows that, at best, a dental hygienist in the Cincinnati area can produce $800.00 a day. We

have also assumed that the practice will have a 95 percent collection rate, as this is the collection rate seen in the dental practices who are clients of SPB&C. Further, we assume that the practice will be at 25 percent of capacity the first month and will increase by 2.5 percent a month until 100 percent of capacity is reached in the 31st month. This is a best estimate projection and is representative of what SPB&C has seen in start-up dental practices. After the first year, monthly production will be at 52.5 percent of capacity. We have kept the costs fixed for the 3 years of projection for modeling purposes.

Another factor is canceled and broken appointments. A recent article reported that the average dental practice will have 3.7 no-shows and 4.8 cancellations a week (12). If we extrapolate that to the notional dental hygiene practice and assume that each failed appointment constitutes a loss of 1 hour of production, this would add up to 8.5 hours of downtime, or approximately a 20 percent decrease in production in the practice.

Salary. The dental hygienist will have to include salary or draw as part of the expenses of the office. The model assumes that the hygienist's annual salary or draw from the practice will be $35,000.

Initial Capitalization. Commercial loans to dental practitioners are usually 1 percent above the prime rate and are payable over 5 to 7 years. Based on 2005 rates, a commercial loan rate was estimated at 5.25 percent. If a 7-year payment period is chosen, the monthly payment will be $1,781 (principal and interest) for a $125,000 loan.

We used Microsoft Excel to model the profitability of the notional practice, first using the previously described assumptions, and later changing the assumptions one at a time. To assess the robustness of our model to variations in our assumptions, we test its sensitivity to a 20 percent increase and decrease in commercial loan amount, interest rate, rental costs, assistant's salary, and hygienist's draw. To see how robust our model is to changes in our key assumptions, we varied each key assumption one at a time by 20 percent to see if such changes materially affect the results of the model.

Results

Table 2 shows the cash flow projection for years 1, 2, and 3, respectively, based on the previously described assumptions. The practice will experience negative cash flow after the hygienist's draw until the 26th month (Table 2). At that point, the practice will be working at 100 percent capacity – a 40-hour workweek with essentially no time off. If we assume that the practice will have approximately a 20 percent decrease in production as a result of failed appointments, the breakeven point will not occur until after the 7-year commercial loan is repaid.

Variations on Assumptions. We performed a sensitivity analysis on our model by varying four of our major assumptions one at a time. Decreasing the commercial loan amount, interest rate, rental costs, assistant's salary, and hygienist's draw by 20 percent changed the breakeven point from 26 to 25 months for each assumption. Similarly, increasing the commercial loan amount, interest rate, rental costs, assistant's salary, and hygienist's draw by 20 percent changed the breakeven point from 26 to 27 months, no change, 28 months, and 28 months, respectively. Clearly, the model is robust to these changes.

We assumed that the space used had been a dental office and would not require major modification. While the likelihood that such space would be available is remote, we wanted to see if the practice could survive under optimal circumstances. In reality, the hygienist would probably have to build out space. This would most likely incur a cost of $\$75/ft^2$ or $90,000 for an office of 1,200 square feet, moving the breakeven point to 30 months.

Discussion

The practice will begin to see a positive cash flow after the hygienist's draw in the 26th month when production capacity has reached 87.5% (Table 2). The average dental hygienist in Cincinnati, Ohio, makes $30.00 per hour, with more than half receiving retirement and health insurance benefits. This would give the hygienist an annual income of approximately $60,000 with none of the responsibilities of maintaining the practice. An independent hygienist would have to assume all the associated risks and responsibilities of running a practice including a) maintenance and repair of the equipment; b) downtime resulting from failed appointments, inclement weather, and the need for personal time off; and c) issues of dealing with employees. If the dental hygienist-entrepreneur draws $60,000 from the practice as income every month, the practice will not reach the breakeven point until after the commercial loan is paid.

After 7 years, the initial commercial loan will be paid in full. At this point the dental hygienist may need to hire additional staff, replace equipment, and perhaps hire an associate. This may require the borrowing of additional monies. We can also look at the practice as a valuable asset that could be sold.

We chose the Cincinnati area for the practice location because we had good data for that area. This included dentists in both urban and suburban locations. While the individual salaries, rent, and equipment costs may vary slightly from an urban to suburban location and from one area of the country to another, for the purposes of the model, higher costs in one area will be offset by higher fees for service and lower costs may lead to lower fees for service.

We have assumed the most lenient regulatory environment; one that does not exist in the United States. Hygienists are not allowed to diagnose oral diseases, even though they may be taught diagnosis in their education programs. Absent the changes in the regulatory environment, independent hygiene practitioners will have to direct patients to

Table 2
Independent Practice of Dental Hygiene Cash Flow Projection

			Year 1			Year 2			Year 3	
Daily production	$800									
Monthly production	$16,000									
Collection rate	95%									
Month		12	**Total ($)**	%	24	**Total ($)**	%	36	**Total ($)**	%
Production capacity		52.50%			82.50%			100.00%		
Total charges		$8,400	**74,400**		$13,200	**132,000**		$16,000	**183,600**	
Collections		$7,980	**70,680**	100.00	$12,540	**125,400**	100.00	$15,200	**174,420**	100.00
Variable expenses										
Dental supplies	3.70%	$311	**2,753**	3.89	$488	**4,884**	3.89	$592	**6,793**	3.89
Office supplies	2.10%	$176	**1,562**	2.21	$277	**2,772**	2.21	$336	**3,856**	2.21
Fixed expenses										
Salaries		$2,773	**33,276**	47.08	$2,773	**33,276**	26.54	$2,773	**33,276**	19.08
Professional fees		$417	**5,004**	7.08	$417	**5,004**	3.99	$417	**5,004**	2.87
Rent		$1,800	**21,600**	30.56	$1,800	**21,600**	17.22	$1,800	**21,600**	12.38
Auto		$150	**1,800**	2.55	$400	**4,800**	3.83	$150	**1,800**	1.03
Payroll taxes		$277	**3,328**	4.71	$277	**3,328**	2.65	$277	**3,328**	1.91
Insurance (professional liability, property, and casualty)		$250	**3,000**	4.24	$250	**3,000**	2.39	$250	**3,000**	1.72
Employee health insurance		$583	**6,996**	9.90	$583	**6,996**	5.58	$583	**6,996**	4.01
Repairs and maintenance		$200	**2,400**	3.40	$200	**2,400**	1.91	$200	**2,400**	1.38
Hazardous waste disposal		$50	**600**	0.85	$50	**600**	0.48	$50	**600**	0.34
Interest and principal		$1,781	**21,372**	30.24	$1,781	**21,372**	17.04	$1,781	**21,372**	12.25
Telephone		$333	**3,996**	5.65	$333	**3,996**	3.19	$333	**3,996**	2.29
Utility		$200	**2,400**	3.40	$200	**2,400**	1.91	$200	**2,400**	1.38
Meetings and conferences		$200	**2,400**	3.40	$200	**2,400**	1.91	$200	**2,400**	1.38
Promotion expense		$500	**6,000**	8.49	$250	**3,000**	2.39	$200	**2,400**	1.38
Advertising		$500	**6,000**	8.49	$250	**3,000**	2.39	$100	**1,200**	0.69
License expense		$10	**120**	0.17	$10	**120**	0.10	$10	**120**	0.07
Meals and entertainment		$500	**6,000**	8.49	$250	**3,000**	2.39	$100	**1,200**	0.69
Dues and subscriptions		$67	**804**	1.14	$67	**804**	0.64	$67	**804**	0.46
Total expenses		$11,079	**131,411**	185.92	$10,857	**128,752**	102.67	$10,419	**124,544**	71.40
Net cash flow before draw		–$3,099	**–60,731**	–85.92	$1,683	**–3,352**	–2.67	$4,781	**49,876**	28.60
Owner's draw		–$2,917	–35,004		–$2,917	–35,004		–$2,917	–35,004	
Net cash flow		–$6,016	–95,735		–.1161,234	–38,356		$1,864	14,872	
Cumulative cash flow		–$95,735			–$134,090			–$119,219		

dentists for initial examination – making their "independent" practice dependent on the cooperation of a partial competitor.

Will the American public be willing to accept this new paradigm of dental care? Patients would have to accept going to two practitioners instead of only one for their dental care. Independent hygienists will have to depend upon patients coming from sources other than a dentist-employer, and referrals from dentists might be unlikely. The dental benefit companies will most likely have to accept this new paradigm in the delivery of dental care. For that to happen, employers will have to demand that dental benefit companies provide for coverage of services by an independent dental hygienist. The dental insurance coverage will have to be at the same rate as given to dentists if the independent hygienist is to be competitive.

Regulatory changes either by dental boards or direct legislative action are on the critical path for independent practice of dental hygiene. These changes, however, are necessary but not sufficient. A viable independent hygiene practice is dependent on a) referrals from dentists and other health providers, b) patient acceptance, and c) insurance availability. Assuming the viability of an independent hygiene practice, what effect is this new type of practice likely to have on oral health manpower – and even more important, on the public's health? For independent dental hygiene practice to have an impact on the public's health, it must create a new market of patients who, because of financial constraints, fear of the dentist, or lack of geographic access, seek alternative venues for oral health care rather than simply compete with dentists for patients who can already access care. It is the extent to which independent dental hygiene practitioners can develop such a market that will determine whether the independent hygiene practice is a fad or a harbinger of a major change in oral health manpower.

Dental care for many patients is price-sensitive (13); therefore, independent hygienists can gain a competitive advantage over a dentist by charging lower fees or working where there is a shortage of dental practices (13,14). If lowered fees attract patients who cannot afford preventive care from a dental practice, the oral health of the nation will benefit. However, it is arguable whether the fees will be appreciably lower. Moreover, even with a price advantage, the independent hygienists will have the problem that their services have traditionally complemented the diagnostic services of the dentist, giving the patient the advantage of essentially a "one-stop" visit (14). Now the patient will have two visits, the cost of which will no doubt be higher than what the patient would pay in the traditional dental care setting when one considers that the dentist may use the hygienist's services as a loss leader (13), the patient's increased time at a dental office, travel time and expenses (14), and associated loss of income.

Another way to increase the independent dental hygienist's income would be to allow an expansion of the services available. If the hygienist could perform minor restorative therapy, this would allow another opportunity to increase income and eliminate the second trip to the dentist for this service. Some dentists and hygienists may also wish to consider the mutually beneficial practice of the hygienist leasing space from the dentist. This would decrease the expense of leasehold improvements and equipment purchase. It could also open the door to more, new referrals to the dental practice. This type of arrangement is not a true independent practice but rather a subsidized or symbiotic arrangement.

The case can be made that under the best of circumstances a truly independent dental hygienist could be economically viable. However, the success of an independent practice depends on a range of factors such as the regulatory environment, acceptance by organized dentistry, availability of dental insurance, patient willingness to accept a two-tiered dental care system, and dental hygienists with a burning desire to be entrepreneurs. We do not see this alignment of circumstances as being likely. We acknowledge that our model is based on many assumptions. We have endeavored to make them explicit and we invite others to improve on our approach.

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