Insurance: Part 2
The Journal of the American College of Dentists (ISSN 0002-7979) is published quarterly by the American College of Dentists, Inc., 8391 Quince Orchard Boulevard, Gaithersburg, MD 20878-1614. Periodicals postage paid at Gaithersburg, MD. Copyright 2001 by the American College of Dentists, Inc.

Postmaster: Send address changes to:
Managing Editor
Journal of the American College of Dentists
8391 Quince Orchard Boulevard
Gaithersburg, MD 20878-1614.

The 2001 subscription rate for members of the American College of Dentists is $30 included in the annual membership dues. The 2001 subscription rate for nonmembers in the U.S., Canada and Mexico is $40. All other countries are $50. Foreign optional air mail service is an additional $10.

Single copy orders: $10.

All claims for undelivered/not received issues must be made within 90 (ninety) days. If claim is made after this time period, it will not be honored.

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For bibliographic references, the Journal is abbreviated J Am Coll Dent and should be followed by the year, volume, number, and page. The reference for this issue is J Am Coll Dent 2001; 68(2):1-48.

Mission

The JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS shall identify and place before the Fellows, the profession, and other parties of interest those issues that affect dentistry and oral health. All readers should be challenged by the Journal to remain informed, inquire actively, and participate in the formulation of public policy and personal leadership to advance the purposes and objectives of the College. The Journal is not a political vehicle and does not intentionally promote specific views at the expense of others. The views and opinions expressed herein do not necessarily represent those of the American College of Dentists or its Fellows.

Objectives of the American College of Dentists

THE AMERICAN COLLEGE OF DENTISTS, in order to promote the highest ideals in health care, advance the standards and efficiency of dentistry, develop good human relations and understanding, and extend the benefits of dental health to the greatest number, declares and adopts the following principles and ideals as ways and means for the attainment of these goals.

A. To urge the extension and improvement of measures for the control and prevention of oral disorders;

B. To encourage qualified persons to consider a career in dentistry so that dental health services will be available to all and to urge broad preparation for such a career at all educational levels;

C. To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;

D. To encourage, stimulate and promote research;

E. To improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;

F. To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

G. To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public;

H. To make visible to professional persons the extent of their responsibilities to the community as well as to the field of health service and to urge the acceptance of them;

I. To encourage individuals to further these objectives, and to recognize meritorious achievements and the potentials for contributions to dental science, art, education, literature, human relations or other areas which contribute to human welfare—by conferring Fellowship in the College on those persons properly selected for such honor.
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This economy is killing us. A generous gift is explained, "The stock market has been good to me." Thirty-year-olds are buying houses for cash. As a nation we have never eaten out so much. How can I then say that the economy is terrible?

The most dangerous dog to have around children is the Saint Bernard. They don’t bite their young playmates; they suffocate them. They are not vicious: they are just big, and perhaps a little insensitive to their impact. Consider the Silicon Valley, the high-technology heartland south of San Francisco. Fifty percent of the homes in Santa Clara County at the beginning of 2001 fetched a price in excess of $380,000. That is good news for real estate agents, but civic leaders are gnashing their teeth. They cannot find police and firefighters, sanitary workers, nurses, and schoolteachers who can afford to work there. It’s not a matter of having to add a few dollars more in salary. Workers simply cannot afford the housing. And dentists are being turned out of the practice locations they have rented for years to make way for the dot.coms. And then when the start-ups miss their IPOs, the patients have already left.

The economics of dentistry also paint a terrible picture. Expenditures for oral health care and dentists’ incomes have increased at roughly twice the general inflation rate in this country for ten years. This amounts to a pretty nifty increase in the buying power of dentists’ dollars. This amounts to a pretty nifty increase in the buying power of dentists’ dollars.

Expenditures for oral health care and dentists’ incomes have increased at roughly twice the general inflation rate in this country for ten years. The terrible economy is hurting the oral health of children. It is generally understood that oral health is not uniformly distributed. Over 50% of caries are in 20% of the children. There are also pockets of ability to pay for care, typically associated closely with caries burden. A thriving economy does not increase caries, but it does increase the difficulty of access for children with the poorest oral health. The reason is that dentists can earn a respectable return by treating the children of parents who are doing well in the economy. The relative ability to pay of children who are on state or federal support decreases in good economic times.

The recent economy has been good to dentistry, but not equally good to all parts of it. The young practitioner and dental education have not benefited as much as the rest of the profession.

The educational debt load of students has risen over the past ten to twenty years at approximately the same rate as the increases in net dental income—faster than the ability to earn tuition. Educational debt would only be a problem if young practitioners did not participate in the benefits of private practice to the same extent that their seniors have. The evidence is hard to gather, but it appears this is not happening. Fewer dentists are beginning their practices in an equity position or achieving an equity position during their lifetimes. The number of dentists working for other dentists has more than doubled during the past fifteen years. The cost of purchasing a dental practice rose steadily for some time and has now leveled off. The reason for declining purchase prices of practices is not educational debt but earning potential of young practitioners. Currently it costs a lot more to buy a practice than to finance an education, and the loan rates are
Another reason for the shortage of buyers is related to education. The new economics have been especially hard on non-specialty trained individuals out of economic necessity. Many dentists are generous with their time and talent, teaching in dental schools and serving those who cannot pay at the customary rates. The leaders in the profession are especially well-represented in programs such as Donated Dental Services, health screenings, and on visiting teams to provide care in underdeveloped countries. The American Association of Orthodontics has established a $16M fund for education; the Endodontists are approaching $10M.

The American College of Dentists Foundation plays a vital role in promoting excellence, ethics, and professionalism throughout dentistry and dental education. There has never been a time better than these economics for those who have benefited so much to invest in our country's oral health and the future of the profession.

David W. Chambers, EdM, MDA, PhD, FACD
Editor

Currently it costs a lot more to buy a practice than to finance an education, and the loan rates are higher and the payback periods shorter for practice purchase.
How does someone become a Fellow of the American College of Dentists? This is an often-asked question by those who desire Fellowship. This question is also occasionally asked by members of the College who don’t understand or remember the process involved. From the comments and questions that continually circulate about the College, it is obvious that Fellowship in the College is much sought after and held in the highest esteem by those who are already Fellows. (The terms “member” and “membership” are used interchangeably with the terms “Fellow” and “Fellowship,” respectively.)

Fellowship in the American College of Dentists is by invitation and it is based on a proven, confidential, peer-review system that has remained intact since the inception of the College in 1920. Before commenting on the membership process, it is important to understand why the concept of Fellowship was established. The College was founded by the president, vice president, and secretary of the American Dental Association (then called the National Dental Association) and by the president of the National Association of Dental Faculties (forerunner of the American Dental Education Association). At the time of its founding, dentistry was plagued by a variety of problems, particularly in the areas of education, journalism, and research. The College was specifically conceived “to elevate the standards of dentistry, to encourage graduate study, and to grant Fellowship to those who have done meritorious work.” Fellowship was instituted to promote excellence within the profession by recognizing it. Outstanding dentists were singled out and honored as positive role models to the profession. Fellowship reinforced the highest ideals of dentistry. Fellowship was not designed to circulate honors among a small clique.

Qualifications for Fellowship
What qualifies a dentist to be a Fellow of the American College of Dentists? In its most fundamental sense, Fellows of the College have records of leadership, excellence, and meritorious achievement in dentistry or public service. For dentistry, these credentials may be reflected in professional organizational involvement, dental education, dental research, dental journalism, or other areas. Additionally, candidates must be members of the American Dental Association or an equivalent foreign organization if applicable. There is also an ethical component to Fellowship as specified in early College records, “The candidate…must be of good moral character, and have a reputation for ethical conduct and professional standing that is unquestioned. Personality, integrity, education, unselfishness, and high professional ideals as well as freedom from mercenary tendencies shall be considered.”

Fellowship in the American College of Dentists is a distinct honor and it is often the high point in a dental career. Only about 3.5% of dentists in the United States have been granted Fellowship in the College. Fellows of the American College of Dentists truly are an elite group. Fellowship is bestowed only if the accomplishments of the nominee are truly outstanding and epitomize excellence.

How Do Dentists Become Fellows?
Candidates for Fellowship must be nominated by two Fellows in good standing, a nominator and a seconder. The nominator should be reasonably confident that the candidate is a member of the American Dental Association; this will be officially checked later in the process, but it saves time at this stage. The nominator is responsible for ensuring that a completed nomination package is submitted by January 15th to the Executive Office in Gaithersburg, Maryland. The nominator is also responsible for using official forms and for reviewing the forms for quality and completeness prior to submission. The nomination process has been greatly simplified during recent years and the nominee may optionally fill out much of the information required. Lastly, the nominator must complete a Nominator’s Support Statement and include it in the package. The Nominator’s Support Statement is one of the most important elements of the process as it often contains information not included elsewhere, particularly as the information relates to leadership. In other words, it can answer the ques-
Nominator

Provide Input

Local Consultants

ACD Office

Administrative Processing of Forms

Credentials Committee

Nomination Reviews

Board of Regents

Final Approval

ACD Office

Administrative Processing of Results

• Identify potential nominees
• Obtain background information (biographical profile)
• Identify “seconder”
• Prepare support statement

• Administrative review for missing information
• Process for committee review
• Identify local consultants from Fellowship database

• Peer review of nominations based on individual member and committee review
• Recommend nominees for approval
• Determine deferred or not approved status

• Final consideration of approved nominees

• Notify nominators and seconders
• Process invitation materials for selected candidates

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credentials, reputation, or influence of the nominator. This process also ensures that Fellowship is based on individual qualifications, not on who one knows.

Local Consultants

The credentials process involves giving local consultants—Fellows of the College—an opportunity to provide input to the Credentials Committee for candidates in their communities. Local consultants fall into two categories, those in the local geographic area and Section officers. Local consultant reports are often misunderstood as having potential “blackball” authority. This is not the case. Local consultants provide recommendations and applicable supporting information to the Credentials Committee. The Credentials Committee in
Credentials Committee

The Credentials Committee is composed of five Fellows who have a history of participation in College activities and who also represent broad, balanced interests. Committee members encompass a variety of professional backgrounds, including private practice (both generalist and specialty), education, research, government service, and other areas. The review process by the Credentials Committee requires hundreds of hours of work to evaluate the 250 to 400 or so nominees reviewed each year. The committee thoroughly evaluates the record of each nominee before forwarding recommendations to the Board of Regents for final action. The Executive Office oversees the review process. Although this is an elaborate, time-consuming process, many feel it has established and maintained the American College of Dentists as the premier honorary organization in dentistry.

The Credentials Committee reviews hundreds of nominations each year over a brief period. When completing the official nomination form, directions must be followed carefully and all applicable areas must be addressed. Deficient applications may be rejected or deferred until the next meeting of the Credentials Committee the following year. In cases of deferred applications, additional information will be sought. An electronic nomination portfolio is also available from the Executive Office. It is important to remember that curriculum vitae, reprints of publications, news clippings, and other supplemental materials should not be included with the nomination forms.

In most cases the Credentials Committee is not personally acquainted with nominees and cannot make assumptions about the individuals being nominated. As in any review system, Committee members cannot read between the lines, so the nominator may want the second or another College member to review the nomination for clarity and completeness before submission. Nominators, seconds, and approved nominees are notified of the review process outcome in late April of each year. Nominees are then inducted into the College at the annual Convocation ceremony that takes place in conjunction with the ADA Annual Meeting.

When the Credentials Committee reviews each nominee, committee members pay particular attention to indications that the nominee is or has been in leadership roles, both in organized dentistry and in public service. The Credentials Committee is especially concerned about the ethics and professionalism of the nominee. The Credentials Committee's focus is one of identifying meritorious achievements, demonstrated leadership, a record of excellence, and potential above the level expected of most professionals at a similar career stage. General areas evaluated for all nominees include career development, professional achievements, dental organization involvement and leadership, civic and community achievement and leadership, publications, presentations, honors and awards received, and ethics and professionalism. Age, race, ethnic background, gender or other similar criteria are not considered.

From time to time individuals who have not been elected to Fellowship in the College, as well as College members themselves who have unsuccessfully nominated a candidate, are heard to say that someone must be “blackballing” the nominee. Under the system used by the College to review nominees, no one individual can prevent a nominee from being elected as a new Fellow. In fact, only a majority of the members of the Credentials Committee or the Board of Regents can reject or elect a nominee. There is a high level of agreement among Committee members regarding their individual evaluations of nominees indicating that the Committee is consistent in its evaluations.

Statistics

A few statistics about the American College of Dentists and the nomination process are appropriate. There are currently 6,991 members of the American College of Dentists. For the past ten years an average of 306 new members have been elected to Fellowship each year. During this same ten-year period, an average of 356 nominations has been reviewed with an average 82.7% approval. In the past five years this approval percentage has continued to increase to 87.1% indicating more highly qualified nominees are being nominated each year. This speaks well for those members doing the nominating, and it also indicates that most nominees are elected into the College. The ages of those elected into membership in the College also provides some interesting insights. Over the past ten years the mean age of those elected into the College is in the 50 to 54 age group. For the past five years we have seen an increase in the number of younger individuals being elected with a higher number of new Fellows in the 40 to 50 year age group than in the 50 to 60 year age range. For the nominee class of 2000, the youngest elected nominee was 32 and the eldest was 76, with the mean age being 53 years of age.

It is important for Fellows of the American College of Dentists to remember that the lifeblood of our organization is a strong membership that exemplifies leadership and excellence. The College must continue to seek qualified new members. Some Sections have established membership committees to evaluate and identify members of the profession that should be considered for nomination. Often times qualified and deserving individuals are “overlooked” and, for whatever reason, are never nominated for Fellowship. The College could benefit from these “overlooked” individuals. The American College of Dentists will continue to be made up of
the best of the best if we fortify our ranks by nominating qualified and deserving individuals. Most Fellows recognize and understand that the addition of new, highly qualified, and respected individuals into our membership enhances our personal prestige and that of the College. In addition, association with such individuals creates a synergism that helps us all to be better. Nominators take special pride in walking with their candidates at the Convocation, and afterwards are also expected to introduce their new Fellows at Section meetings. Completing nomination forms is not all that is expected of a nominator.

Nominations for Fellowship are encouraged of all College members. Most members of the College recognize that part of their responsibility to the College is to identify and nominate other leaders who are qualified for Fellowship in the College. If you know of someone deserving of College membership, you should contact the Executive Office of the American College of Dentists for a nomination portfolio. You will be surprised how easy it has become to nominate someone for Fellowship. Fellowship in the American College of is a great honor. Let's keep it that way!
Insurance

The Impact of Insurance on Oral Health

Stephen A. Eklund, DDS, DrPH

Abstract

Evidence from correlation and experimental studies support the view that availability of dental insurance increases both utilization of services and oral health. These effects are most pronounced for individuals with middle or low incomes—those most in need of care. Defining optimal levels of care and the most effective distribution of resources remains, however, an evolving and still unanswered question.

A fundamental question in health care is whether or not receiving health services improves a person's health. Is there a cause-and-effect relationship between receiving health services and being or becoming healthier? This is, of course, a complex question. Many people who follow healthy lifestyles can go for long periods of time with little or no health care and remain quite healthy, while a person who is not so fortunate may consume large quantities of health care and still be in fragile health. It is a complex relationship and clearly is not a simple matter of the consumption of health care being equal to better health.

To add to the complexity is the issue of insurance. If insurance makes it more likely that a person will receive health care, is that person as a result more likely to be healthy? Focussing on the specific instance of oral health, the question of the impact of insurance on oral health really is a question of two parts: (a) does dental insurance increase the use of oral health care, and if so, (b) does more oral health care improve oral health?

Insurance and Use of Care

Conventional wisdom, and a large amount of evidence showing associations between having insurance and more frequent and regular use of dental care, makes a compelling case for insurance leading to increased use of care. Just one of many examples is from the Health Interview Survey series, conducted by the National Center for Health Statistics. Data from these surveys show quite clearly that people who report having dental insurance also report receiving more dental care than those who do not have insurance (Jack & Bloom, 1988; Bloom, Gift, & Jack, 1992). However, persuasive as this kind of information is, there is the possibility that some or all of the apparent effect of having insurance could be attributable to some of the other characteristics of the people who have dental insurance, rather than to the insurance itself. This possibility arises because having dental insurance is not a random event. Virtually all privately-sponsored dental insurance in the United States is associated with employment. People who have dental insurance therefore have jobs, a characteristic that by itself is associated with more frequent use of dental care. Also, the jobs that are most likely to have dental insurance as a benefit also tend to be higher paying jobs, and therefore as a group, people (and their dependents) who have dental insurance also tend to have higher incomes, another factor, that by itself is associated with more frequent use of dental care. Further, to qualify for these better paying jobs, these people tend to have higher levels of education, yet an-

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The current low utilization under Medicaid may be a problem with the level of payment, rather than an inherent problem with the insured population.

The evidence from Rand shows that with full coverage, paid at market rates, use of care by low income individuals increases substantially. Taken together, the evidence from correlations, bolstered by this experimental evidence from the Rand Health Insurance Experiment, allows us to conclude that dental insurance does indeed increase the likelihood that a person will use dental care and that the greatest effect is in the lowest income individuals, the people who generally are most in need of dental care.

For children having insurance results not only in the treatment of obvious need, but it also results in an actual reduction in the disease itself.
The total of decayed, missing, and filled primary teeth was also lower in those with coverage that required no copayment ("free" care) (Balilt et al, 1986). This finding has important implications, for it suggests that for children, having insurance results not only in the treatment of obvious need, but that it also results in an actual reduction in the disease itself.

The magnitude of the effect, and evidence of an actual reduction in disease, diminished with increasing age of the subjects. For adolescents with "free" care, there were fewer decayed teeth and generally better periodontal health. For adults under age thirty-five, the main effect was that those in the "free" plan had fewer decayed teeth and more filled teeth than individuals who where assigned to coverage with copayments. This diminishing effect with age seems logical. The condition of the dentition and the habits in the use of dental care have accumulated longest in the older individuals. It seems reasonable that experimental provision of free dental care for just a few years will produce relatively less effect on older individuals than it will on younger ones. The effects of disease and behaviors are more firmly established in older individuals, and thus will take more time to modify.

What is also of great importance from the Rand study is the finding that the insurance benefits on oral health and treatment tended to be greatest in individuals from middle and lower income families and for those in the worst initial oral health. This picture also is consistent with theory and observational evidence. Wealthier individuals who are able to pay for dental care, and tend to seek care on a regular basis with or without dental insurance, show modest gains from insurance. On the other hand, for those individuals for whom the cost of care is significant, the effect of dental insurance is larger. Taken together, these findings show that insurance can lead to improved oral health, and the benefit is greatest in those with the greatest economic and oral health need.

Discussion

While the evidence from the Rand Health Insurance Experiment is of the strongest kind, and the conclusions are well-supported by the data, it must be acknowledged that the nature of dental disease has evolved in the more than twenty years since the study was conducted. There is no doubt that the overall level of oral health in virtually all developed countries has improved over the past several decades. Since the Rand study was conducted, dental caries in children has declined further, extraction of teeth has become much less common, and many of the low-caries children have become adults with fewer dental needs than their parents' and grandparents' generations (Eklund, 1999; Eklund, Pittman, & Smith, 1997).

While for many needs there is no practical alternative to professional care, it remains uncertain just what constitutes optimal use of professional care. While there is no doubt that factors such fluorides and advances in clinical dentistry have contributed mightily to these increased expectations, the role of dental insurance in advancing oral health to a level of importance comparable to overall health and the economic encouragement that it provides, likely has contributed as well.

There also is the possibility of an indirect constructive role for insurance through a facilitating role for evidence-based research. Because dentistry is practiced in relatively isolated individual
offices, it often is difficult to evaluate patterns of care and outcomes on a widespread basis. There is no equivalent in dentistry to the hospital, which allows observation of practice patterns and those services that improve oral health, in the people who need them most, while guarding against inappropriate and excessive use of care that provides little or no benefit. To expend large amounts of money on less effective procedures will make less money available for the more effective care. This is and will continue to be a moving target and will require constant monitoring and adjustment to maintain optimal value in improving oral health.

In summary, the available evidence strongly supports the conclusion that relatively generous dental insurance increases utilization and, especially for middle- and lower-income individuals, improves oral health. What is less clear is whether all dental services are equally valuable, and how the generally improving oral health of the American public is affecting this balance. The picture is a dynamic one—oral health continues to improve, expectations continue to rise, and standards of care evolve. The challenge is to continue to design and provide dental insurance that will also evolve appropriately to maximize the use of outcomes across large numbers of patients and providers. If, through analysis of the patterns of care and outcomes from insurance claims, a better understanding can be developed of what kind and intensity of care is most beneficial, the efficiency of improving oral health could be further accelerated.

The challenge is to find ways to bring adequate dental care to middle and lower income individuals, the people who are likely to benefit most from it.

References


Access to Dental Care: 
A Call for Innovation

Richard J. Manski, DDS, MBA, PhD

Abstract
For many Americans dentistry not only works but works very well. Most Americans receive the care that they need and want. However, dentistry’s success has not been whole or uniform and it has not reached every corner of America. In a society as prosperous as ours, it is incumbent upon us, as a profession to help make sure that dentistry’s success is accessible to each and every American. While recent efforts to address dental services use disparities may result in some improvements, most likely no single national effort will be globally effective. New ideas, including innovations that are local in design and market sensitive, will be needed to make the kinds of improvements that are desired.

Overall, most Americans appear to be receiving the oral health care that they need and want.

T he recently released report of the Surgeon General, Oral Health in America, has resulted in new and added interest in the oral health of poor Americans (U.S. Department of Health and Human Services, 2000). According to this report, “In spite of the safe and effective means of maintaining oral health that have benefited the majority of Americans over the past half century, many among us still experience needless pain and suffering, complications that devastate overall health and well-being, and financial and social costs that diminish the quality of life and burden American society.” The report further notes that “what amounts to a silent epidemic of oral diseases is affecting our most vulnerable citizens: poor children, the elderly, and many members of racial and ethnic minority groups.”

For several years the American Dental Association has spread the message “Dentistry: Health Care That Works” (Palmer, 1994). As a profession that emphasizes preventive and primary care and is characterized by professionals dedicated to service, dentistry has established an exemplary national health care paradigm that not only works but is also successful at meeting the needs of most Americans.

Dentistry’s success is important to us because we need dental care. In fact, expressed as a need over a lifetime, a report of the Public Health Services noted that 96% of U.S. adults have experienced dental caries (White, Weintraub, Caplan, Hollister, & McKaig, 1993). Analyzing a National Health Survey for the period between 1971 and 1974, Kelley estimated that about 64% of the population needed some kind of dental treatment (Kelly, 1979). More recently and concentrating on untreated caries, Vargas et. al. (1998) described the need for dental services among children. Accordingly, they found that almost 24% of six- to twelve-year old children had at least one primary tooth with untreated caries.

Americans not only need dental care, they apparently seek it in considerable numbers. During 1996, Americans visited a dentist about 294 million times corresponding with about $48 billion in total dental care expenditures (Manski, Moeller, & Maas, in 2001; Health Care Financing Administration, 1997).

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Whether and how often individual Americans obtain dental care has most often been studied as a function of access. Access is a combination of several factors including but not limited to professionally determined need for care, ability to pay, perceived value of oral health, and local supply and availability of providers. While access may be a composite factor that is more encompassing than just a retrospective measure of use, most reports have focused on the extent, determinants, and likelihood of dental visits (Macek, Manski, Vargas, & Moeller, 1999; in press; Manski, Moeller & Maas, 2001a). Measured as the number of visits per year or the number of individuals with at least one visit during the previous year, these studies have nonetheless provided important information about dental services use. Depending upon the source of data analyzed, anywhere from about 43% to about 75% of Americans are estimated to visit a dentist annually (Brown & Laza, 1999; Manski, Moeller, & Maas, 2001a; Macek, Manski, Vargas, & Moeller, 1999; in press). Reasons for these varying estimates may relate to sample differences, a variation of recall under the different circumstances of the interview conducted for each study, differences in the questions asked, and differences in the definition of the specific reference period. However, more importantly, while use rate estimates may vary in absolute terms, the relative rates appear to be somewhat consistent within surveys and among various socio-economic and demographic categories.

Overall, most Americans appear to be receiving the oral health care that they need and want. For many Americans, dentistry not only works but also works very well. On the other hand, a closer examination of usages suggests that dentistry’s success has not been uniform and has not reached every corner of American society. For some Americans, too many Americans in a society as prosperous as ours, obtaining needed dental care can be difficult. For some of the poorest among us, obtaining dental care may not only be difficult it may be nearly impossible.

While poorer Americans are most often affected by oral disease when compared to higher income Americans, they show evidence of utilization rates which are substantially below those with more income (Vargas, Crall, & Schneider, 1998; Manski, Moeller, & Maas, 2001a). For instance, according to one recent national survey, while 56% of high income Americans visit a dentist annually, only 28% of low income Americans annually visit a dentist (Manski, Moeller, & Maas, 2001a). Other surveys suggest similar findings (Macek, Manski, Vargas, & Moeller, 1999; in press). An examination of income, controlling for other possible explanatory factors of use, reveal that during the past twenty years the use rate gap between Americans with more income and those with less income has increased (Manski, Moeller, & Maas, 2001a).

According to a recent report published by the United States General Accounting Office (U.S. General Accounting Office, 2000b), low-income adults make fewer visits to dentists than their higher-income counterparts. The report further notes that “adults living at or below the federal poverty level are less than half as likely to have been a dentist in the past year as adults earning more than four times the poverty level” (U. S. General Accounting Office, 2000a). The impact of income on utilization appears to be even greater for children. The GAO report notes that low-income children were largely not receiving regular dental care during 1996. Accordingly, “about 36% percent of six- to eighteen-year-olds living at or below the federal poverty level had visited a dentist in the preceding year compared with about 71% living in families with incomes higher than 400% of the federal poverty level.” Additionally, “at all ages, children in the highest income group were about twice as likely to have made a dental visit as children at or below the federal poverty level” (U. S. General Accounting Office, 2000a).

While an inability to pay may be among the most influential factors associated with low dental care services use among low-income persons, states provide Medicaid coverage in an attempt to somewhat mitigate this financial barrier. Not withstanding the availability of Medicaid coverage for dental care, low dental services usage persists among low-income persons (Manski & Moeller, 2001a). As such, these disparities exist in spite of states’ efforts to provide comprehensive dental coverage for most low-income children and some coverage for adults (U. S. General Accounting Office, 2000b). According to the GAO, “While several factors contribute to the low use of dental services among low-income persons who have coverage for dental services, the major one is finding dentists to treat them” (U. S. General Accounting Office, 2000b). This report...
continues, “Some low-income people live in areas where dental providers are generally in short supply, but many others live in areas where dental care for the rest of the population is readily available.” Several contributing factors were identified by providers for their decision not to participate including low reimbursement rates, perceived bureaucratic and difficult administrative requirements, and frequently missed appointments by patients.

It is not surprising that attempts to improve dental access with Medicaid have produced mixed results at best. As currently designed, Medicaid programs exist as a set of determinants that are difficult to reconcile. State plans direct that all eligible persons be covered and that for each person who is covered a full complement of services be made available. While laudable, this set of goals necessarily results in programs that are potentially very expensive. While this cost can be actuarially determined and is therefore knowable, this cost seems to be ignored when funding decisions are made. As such, since no one has advocated that the number of eligible persons be reduced or that the number of services that are covered be limited, the consequence has been to drive the reimbursement rate to a level far below what the market would have otherwise set. It is therefore not surprising that dentists have been somewhat reluctant to participate as providers.

While dentists appear to be fairly reluctant to participate in Medicaid programs, they do appear to be willing to provide treatment to patients who may be covered. In fact during 1987, dentists provided about $390 million in care to low-income persons for which they were not reimbursed (Manski, Moeller, & Maas, 1999). In addition, dentist volunteers have been providing care as part of state society sponsored Donated Dental Services (DDS) programs (Fox, 2000). According to the National Foundation of Dentistry for the Handicapped (NFDH), DDS programs are active in twenty-six states, include about 8,000 volunteer dentists, and have provided free care to about thirty-thousand persons at an approximate value of $34 million.

While dentists have much to be proud of for their service, too many low-income persons are still unable to obtain necessary care. According to the GAO, to address this problem states have undertaken various steps to improve access to dental care among Medicaid populations (U.S. General Accounting Office, 2000b). Remedial action has included raising payment rates, streamlining administrative processes, and conducting outreach activities to both dentists and patients. The report notes, “Despite these steps, most states—including those reporting improvements in dental access—reported that low utilization remains a problem.” Initial empirical evidence appears to suggest that state efforts to improve low-income persons’ usage through program changes have resulted in mixed outcomes. Mayer et. al. (2000), in providing an assessment of a North Carolina program designed to increase Medicaid reimbursements to dentists by 23% determined that the program was only marginally successful.

While recent efforts to address dental services use disparities, including attempts to expand coverage through State Child Health Insurance Programs (SCHIP), are too recent to assess, improvements in reimbursement rates and attempts to minimize administrative obstacles or burden should result in some improvements. On the other hand, a consequence made apparent by recent efforts to improve access is that most likely no one uniform national effort will provide an outcome that is generally desirable, appropriate, or effective. Perhaps, several different targeted programs designed to specific local or regional needs are preferred. Locally inspired changes are more likely to include reimbursement rates that are more market sensitive, administrative requirements that are less onerous, extension of coverage to include more poor adults, and a more accurate assessment of local dental labor markets. Fifty states provide fifty unique opportunities for innovation in design and implementation. In fact, several states have already implemented new policies and procedures to help improve access. While most efforts have focused on improving reimbursement rates, some states have also enacted programs to increase the number of available providers in local shortage areas by providing financial inducements to dental students and recent graduates. Unfortunately, it may take several years to determine if these efforts are successful. On the other hand, even if these efforts are successful, they are likely to make for just a good beginning.

Additional provider centered innovations may also be needed. For instance, dental school student slots could be contractually reserved for students who pledge to practice in local shortage areas. In addition, states could choose to subsidize the entire cost of dental education and subsidize the cost to establish a practice for those willing to serve in designated local shortage areas.

**Most likely no one national effort will provide an outcome that is generally desirable, appropriate, or effective.**
To further encourage dentist participation and to address the problem of frequently missed appointments by some patients, states should consider providing a reasonable reimbursement for these missed appointments. The opportunity cost associated with these missed appointments can be substantial. Expecting providers to double or triple their efforts to ensure timely access to care may be considered a fair, adequate, or reasonable remedy. Additional efforts by case workers, including efforts to educate covered patients about the importance of timely care, may help to improve the efficiency of available resources. However, the willingness to allocate appropriated dollars according to a priority schedule may help to improve the efficiency of Medicaid and SCHIP programs. Accepting in advance that funding is fixed for each given year and designing programs accordingly can help administrators only assist those who are enrolled. According to one recent study, many eligible persons who may need care may never get it because they do not enroll (Manski & Moeller, 2001). Efforts to assist eligible persons to better navigate the barriers to enrollment would also help to ensure that persons with need can access care.

References


Dental Insurance: A Purchaser Perspective

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Abstract

Principals in a dental health purchasing organization report their views and those of interviewed purchasers on dental insurance packages. Purchasers make their decisions in a market context, balancing cost with employee benefits needed to attract qualified employees. While having a dental plan is important, the financial and coverage details are not usually scrutinized by employees. Issues of access and freedom from hassle are important considerations. There is growing cynicism among purchasers that dentists are driven by a profit motive and a desire for attractive work hours.

The benefit manager in today's corporation lives among and manages both complex and competing interests. The generally tight labor market experienced by many employers means that the dollars used for compensation and benefits must be used efficiently to achieve their targeted results. These targets include attracting and retaining a competent workforce. At the same time the executives in the human resources departments are acutely aware that every dollar they spend, whether on direct compensation and benefit costs or on human resources infrastructure, has an impact on the bottom line of the organization.

The benefit package used to attract employees in the marketplace is no longer an arbitrary set of basic benefits that are provided across the board. The element of choice has been introduced through a variety of methods. Often the choices provided to employees include not only dollars the employer provides but also a means for employees to set aside and use pre-tax dollars. Employees may have choices in different levels of coverage. While most employers require some minimum level of medical and perhaps dental coverage, the employee may exercise significant discretion when it comes to life, disability, childcare, retirement planning, and other benefits. Paid time off is often added into this equation and competes for the employee's benefit dollar.

The role of the human resources executive has evolved along with the complexity of the compensation and benefit strategies of the companies they work for. In addition to crafting a coherent benefit strategy they are responsible for the maintenance of a human resources infrastructure to manage and track individualized benefit choices and information. They have become experts in tax law, communication strategy, and human resource information systems. Along with choice in levels of coverage comes a responsibility to manage the impact on the risk pool. While not every human resources executive can be an actuary, they must have the knowledge to draw sound conclusions from the advice they receive related to the economic performance of their plan in an environment that includes employee choice.

Dentistry As Part of the Package

What do benefit managers think about dental benefit plans in this milieu? To answer the question we drew on the extensive consulting experience of one of the authors. We interviewed human resources executives with benefit responsi-
bility in three large employer organizations. And we reviewed requests for dental plan proposals that had been developed by five different nationally known consulting firms to look for common themes. The answer we received to that question was remarkably consistent. "Please ... no headaches, no hassles, no complaints, and stable predictable costs."

A dental benefit plan is an important asset for employers to use in attracting and retaining employees. The vice president of human resources for one large employer said, "If you want to do the right thing in health and welfare benefits, then you really should include dental coverage. But the reality is if we did not have a dental benefit plan we would just not be competitive." That sentiment was consistently expressed. In many markets a dental benefit plan is necessary to compete for employee recruitment.

While having a dental benefit plan is important to employee recruitment, the specifics of the plan design and coverage appear to be less so. A potential employee will ask, "Do you have a dental plan?" A potential employee may ask, "Does your dental plan cover orthodontics?" That's about it. Our experience, confirmed by the human resources executives we talked with, indicates that the dental benefit plan is no longer considered a luxury. At the same time dental benefits are not at the top of the list of concerns for many potential employees. When considering a position, potential employees will study the details of medical plan coverage and the retirement plan. With the exception of the earlier stated orthodontic question, they are less inclined to pay attention to the details of dental plan coverage. The specific details of dental plan design do not appear to be a key factor in the decision of an employee to accept or stay with an employer.

Employers understand that there is a relationship between access to dentists and the cost of the dental plan. In discussing dental benefit plans with many employers there is increased focus on dental access. This is consistent with the no headaches, no hassles, and no complaints theme. Human resources executives and their employers do not want to deal with unnecessary headaches and so will pay a little more for dental access—maybe. This is, however, a dynamic relationship.

Employers generally make independent purchasing decisions related to their medical benefit plans and their dental benefit plans. However, often these decisions are related and the dental benefit plan follows the employer's medical plan.

Decisions related to dental benefit plans are often made within an economic context that is built by the employer's experience with the medical benefit plan. The factors that drive an employer's attention to the performance of their dental plan are aggregate cost and cost trend. Dental benefits, as a standalone component of health care are relatively expensive. They do not compare, however, to an employer's aggregate medical expense.

Looking to the Future

In the near term the accelerating cost trends for the employer's typical medical plan may consume the attention of benefit managers and human resources executives. Employers today are facing cost trends of 17%-20% in pharmacy and 12%-16% in outpatient hospital services. A dental trend of 7% will not be the first focus of an employer's attention. As stated by one human resources executive, "We have too many things in play to even think about tackling a dental issue."

There are two countervailing factors that the human resources executives we talked with were sensitive to. First, they are aware that dental trends, though lower than current medical trends, are accelerating. Second, they are aware that they are making decisions within a general business climate that will cause them to examine every expense and its impact on the company's economic performance. In our opinion these factors may be significant enough to bring the dental benefit plan into review and may contribute to an increased focus on the costs associated with the plans.

Ease of administration of dental benefit plans is important. While electronic connectivity may be important to dental plan administration, it does not appear to be critical to purchasers. The general sense is that dental claims "seem to get paid with reasonable speed so it is probably fast enough." Likewise benefit managers we work with and interviewed have a lower level of interest in data reporting for their dental plan than compared to their medical plan. In their medical plans, they see an obvious connection between the implementation of preventive strategies and interventions in chronic illness with improved health; and, they require data to document their medical plans performance in these areas. They do not draw a parallel conclusion for their dental plan.

A review of recent requests for proposals yielded several consistent themes. Assuming this process represents the in-
Employers understand that there is a relationship between access to dentists and the cost of the dental plan.

Listening to What Purchasers Want

As we talked with human resources executives for this article and in our usual work life there are several comments that are made with some regularity related to dental plans and dentists. It is probably useful to report those as a means of completing a picture of the business landscape within which human resources executives operate.

There is a general sense that there is an increasing shortage of dentists. There are regularly heard comments about the number of dentists that are leaving dental plan networks. Human resource executives indicated that this is most obvious and problematic for them outside of metropolitan areas. They see this as a significant pending issue for them and their dental plans.

There is a related, though tangential concern being raised by an increasing number of purchasers. It is becoming more common to sense a developing level of sarcasm related to the dental profession and their desire to increase income while decreasing the professional work week. As stated by one benefit manager not interviewed for this article, it seems like “all dentists want to do is make more money and work a three-day week.” This appears to foster some sense of resentment. That may be compounded by the apparent notion of many dentists to attempt to educate their patients about their dental plans in a manner that causes employees to complain to their employers. In fact, two of the three human resources executives interviewed for this article, mentioned that they had been lectured by their personal dentists about the negative aspects of network participation. From a public relations perspective it will be interesting to observe the positioning of the dental profession within the purchaser community in the coming years.

Employees and employers struggle with the very significant difference between the structure of dental benefits and medical benefits. When patients visit a physician they are typically subject to coverage provisions that include limitations, alternative benefits, and annual maximum benefits.

The pace of technology development and technology transfer within dentistry has increased the volume of coverage issues brought to employers by their employees. The question of “dental necessity” is problematic for many employers as it relates to the application of benefits to the dental care recommended to them by their dentist.

We would conclude, based on the information we reviewed in preparing this article that:

• Providing a dental benefit plan is an important recruitment and retention tool for many employers. The specific benefits provided are less important.

• Attention paid to dental benefit strategies is often inversely proportionate to the level of attention paid to manage the employer’s medical plan.

• In the presence of a reasonable cost trend and in the absence of hassle and headaches, most employers would choose to leave well enough alone.

• The present tight economic environment may cause some employers to review all expenditures more closely, including dental plan expenses. Employers who do not now offer a dental benefit plan will be less likely to add coverage in the future.

• Employers are beginning to take an interest in issues related to dental manpower and its secondary effects on dental access and cost of care for their employees.
ADA Council on Dental Benefit Programs

The American Dental Association’s Council on Dental Benefit Programs is the profession’s primary national level liaison between the practicing dentist and the third-party payer industry. The Council also houses the Association’s Office of Quality Assessment and Improvement, manages the Association’s Dental Practice Parameters Committee, and the Joint Council Committee on SNODENT (the new dental descriptive codes). The Council also manages the Association’s Dental Content Committee dealing with electronic transaction standards. In these roles the Council addresses a variety of dental benefit industry related issues, such as plan design, plan administration, claim form design, e-commerce issues, procedure code maintenance, quality assessment resources, and peer review guidelines.

The Council’s work is divided into three areas of interest to dentists: code and third-party issues; quality assessment and improvement; and the dental benefit information services. A council subcommittee is responsible for each of these three program areas. The following is a brief overview of these activities.

Code and Third Party Issues

As a primary part of its mission, the Council works to improve dentistry’s dealings with third-party payers. Typical issues addressed by the Council include, design of dental plans, timeliness of claims payment, reasons for benefit denials, the wording of EOBs (explanation of benefits), and the interaction between dentists and dental insurance consultants. The Council meets with individual third-party payers and with their national organizations in an effort to find workable solutions to day-to-day problems that are encountered by both dentists and payers alike. The Council promotes standardized and efficient administrative procedures and materials, such as local peer review services and the uniform dental claim form, in an effort to improve interaction between the profession and the payer industry for the ultimate benefit of the public.

The Code on Dental Procedures and Nomenclature contains the procedure codes that dental offices and payers use for recording and reporting treatment provided to patients. Publication and maintenance of the Code is one of the Council’s major responsibilities. Staff in the Council’s Chicago office receive up to one hundred and fifty phone calls each week from dental offices seeking information on the proper use of the Code. To make use of the Code easier for dental offices, the Council produces a user's manual called Current Dental Terminology or CDT. This user's manual lists every dental procedure code with detailed descriptions to assist the dentist in filing accurate dental claims. The most recent version of this manual B called the CDT3 B contains revised codes effective January 1, 2000. The manual is revised on a regular basis and can be obtained by calling ADA Catalog Sales at (800) 947-4746. It is also available on CD-ROM. The Council strongly encourages dentists to obtain this resource for easy reference when completing claim forms and other paperwork. The ADA's Code has been named as the national standard for electronic dental transactions in the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

The Council is currently providing coding workshops hosted by state dental associations. These workshops serve to explain new and revised codes and to answer questions about proper coding of dental procedures. More than fifteen such workshops were conducted in 2000 and a like number is expected this year.

In addition, the Council has primary authority for maintaining and revising the ADA's uniform dental claim form. The
current uniform dental claim form was revised in conjunction with the year 2000 revision of the Code and is available through the Department of Saleable Materials at the number above.

For the past several years the Council has been developing a codified descriptive and diagnostic taxonomy for dentistry. Known as the Systematized Nomenclature of Dentistry or SNODENT, this taxonomy is expected to assist dental offices in more precisely documenting clinical findings and circumstances associated with individual patients. When in operation, SNODENT will facilitate completion of the electronic patient record. The initial set of SNODENT codes numbers over 4,000 unique terms covering disease and diagnostic entities, anatomy, morphology, and social factors that may affect a patient's health or treatment. The Association's Joint Council Committee on SNODENT is charged with conducting field testing of the new codes and educating the profession on their value and use in the private dental office. These efforts are under way and no date has been set for general release of SNODENT to the membership.

The current set of thirty-four practice parameters is maintained by the Practice Parameters Development Committee of the Association. Peer review is the process by which the dental profession reviews and resolves problems, misunderstandings, or disputes regarding actual dental treatment. Ideally, these disputes are resolved through mediation conducted by trained members of the local peer review committee. If necessary, however, formal review is done by the full peer review committees. Such a review includes examination of the patients' records and may involve a clinical examination of the patient. Peer review provides an impartial, easily accessible, and relatively quick way to resolve patient and third-party disputes over the quality and appropriateness of care. A recent survey conducted by the Council indicated that over half of peer review decisions favored the patient or the third-party payer.

Nearly every state dental association has a peer review system to resolve such
disputes. The Council’s Office of Quality Assessment and Improvement offers workshops to state dental associations and provides recommendations on how to establish and conduct mediation and peer review. These workshops are conducted for dental societies eight to ten times per year, upon request by constituent dental societies.

Dental Benefit Information Service

The Council’s Dental Benefit Information Service is a resource for employers, employee benefit managers, benefits consultants, and dentists who are seeking information about dental benefits. This Council service offers free information about all kinds of dental benefit plan designs, including indemnity plans, managed care plans, and direct reimbursement. For example, the Council has produced a booklet entitled, Buyer’s Guide to Dental Benefits, which explains the various models of dental benefits in the market. It provides basic questions for employers to ask before changing or selecting a new plan. It addresses coordination of benefits and also contains a glossary of basic terms.

The Dental Benefit Information Service also oversees the ADA’s direct reimbursement national advertising and marketing campaign. Direct reimbursement (DR) is a self-funded, freedom-of-choice dental plan that reimburses patients based on dollars spent on dental care, not on the type of treatment received. DR is a simple and flexible way for companies to control costs and still offer comprehensive coverage.

The ADA has been promoting DR since the early 1980s. In 1996 the House of Delegates first voted to approve special funding for a national advertising campaign. Thanks to the support of its membership, the Association now spends $2.5 million annually on national marketing efforts, such as direct mail to more than 560,000 companies each year and print advertising in trade publications and business magazines reaching 18 million readers. In 1999, the House of Delegates voted to continue the campaign for another three years.

ADAs advertising of DR is seen in many national business and trade publications throughout the year, but the direct-mail pieces are only sent to employers in states with participating dental associations. In 2001, forty-five constituent (state) dental societies elected to participate in the direct-mail campaign. This means that twice each year, employers in these participating states receive direct-mail marketing pieces. Dental society staff and designated brokers follow up on leads that are generated by the national marketing efforts.

As a result of the national marketing effort approximately 450,000 individuals have been added to the ranks of those who enjoy the benefits of a direct reimbursement dental plan. The Council estimates that over 3,400 employers offer a direct reimbursement plan benefiting nearly 1.5 million employees and dependents nationwide.

The Dental Benefit Information Service has a variety of free materials for dentists to use when promoting DR locally. These include brochures, ad slicks, envelope stuffers, slide presentations, case studies, and other marketing pieces.

Summary

If you have additional interest in the activities of the Council on Dental Benefit Programs, please contact the office at (800) 621-8099, extension 2759.

Members of the profession are strongly invited to use the Council’s services and resources.
A Four-Year Curriculum in Professional Ethics and Law for Dental Students

Pamela Zarkowski, MPH, JD and Bruce Graham, DDS, MS MEd, FACD

Abstract

The four-year sequence of ethics courses at the School of Dentistry, University of Detroit Mercy is described in this article. A course blending lectures and small group discussion is taught each year, focusing on the issues facing students relevant to the students' stage of professional development. The sequence concludes with an Ethics Round in which students present a personal patient-based ethics case.

This curriculum was designed in and has been offered since 1993. It has proven itself an effective means of meeting the American Dental Association's Commission on Dental Accreditation (CODA) Accreditation Standards for Dental Education Programs. The accreditation standards establish three competencies for predoctoral dental program graduates under the title "Ethics and Professionalism":

2-20 Graduates must be competent in applying ethical, legal and regulatory concepts to the provision and/or support of oral health care services.

2-21 Graduates must be competent in the application of the principles of ethical reasoning and professional responsibility as they pertain to patient care and practice management.

2-22 Graduates must recognize the role of lifelong learning and self-assessment in maintaining competency.

The Commission's Self-Study Guide for Dental Education Programs instructs the educational institution to describe how students "are deemed competent"...
in reference to these three standards. The Commission on Dental Accreditation holds dental educators responsible for providing learning experiences, which facilitate the achievement of professional ethics competency by their students. The CODA defines “competent” as “the level of knowledge, skills, and values required by a new graduate to begin practice.”

**Curriculum Design**

The UD Mercy curriculum integrates learning experiences in professional ethics with the legal aspects of dental practice. While the authors recognize that laws represent the lowest acceptable societal standards for professional behavior, the authors believe that the legal principles that impact the practice of dentistry belong in the curriculum in order to address the full scope of accreditation Standard 2-20 and to provide the context of the full continuum of professional responsibility, “from legality to morality.”

The curriculum is designed as a sequence of four courses, one in each year of the four-year dental curriculum, so that the development of professional ethics competence is accomplished gradually. The content of each course is presented in a manner that is relevant and meaningful to dental students at each progressive stage of their learning, with particular reference to the students’ level of knowledge and experience with patient care in each year. This careful sequencing of the content of the courses follows Gagne’s (1995) theory of learning which holds that learning is most effective when the information is relevant to the learner’s past and current learning experiences, facilitating the integration of new information and concepts into the existing cognitive network of the learner’s brain.

The UD Mercy School of Dentistry uses a term system and each of the four courses occurs in a single term of its assigned year. A total of seventy-four contact hours has been assigned for this curriculum over the four years, plus time in each year’s final exam schedule.

**Instructional Methods**

The course sequence uses lecture, large group discussion, written case analysis, and small group dialogue. Feedback from students and faculty facilitators indicates that the small group discussions are the most highly rated of these learning experiences. Ozar (1989) has stated that “objectivity (and the move away from subjectivity) in ethical judgments is increasingly achieved as one’s ethical judgments are grounded in a broader and broader base of human experience — both one’s own personal experience and the experience of other humans shared in dialogue.” The authors believe that small group dialogue about realistic case scenarios best operationalizes Ozar’s premise that the student is more likely to develop “objectivity in ethical judgments” through dialogue, and we regard objective ethical judgments as the foundation of competence in ethical reasoning. Accordingly, the University of Detroit Mercy invested the institution’s resources in faculty development workshops to train faculty members as small-group dialogue facilitators. The workshops included a review of ethical principles, Ozar and Sokol’s ethical decision-making model, and strategies for facilitating dialogue and evaluating cases. Faculty facilitators for the dialogue groups represent the biomedical, behavioral, and clinical disciplines. They initially participated in a faculty development program to prepare them for their facilitator role and to provide them with professional ethics learning experiences. These trained faculty members also serve as effective role models of professional ethical competence in the institution’s patient care clinics. Faculty members unable to participate in the initial faculty development workshops meet with the course director to receive one-on-one training.

The Ozar and Sokol text, _Dental Ethics at Chairsde (1999)_ is the source of many of the assigned readings for the course. Lectures, used primarily for synthesis and to reinforce the introduction to professionalism and the legal content, are also supplemented by additional handouts. Dialogue groups consist of eight to ten students and a faculty facilitator.

Cases for discussion and writing assignments in the first year focus on dilemmas occurring as part of the dental school experience, including professional misconduct and interpersonal issues. Beginning in the second-year course, patient care scenarios are presented at a level appropriate for the students. Students’ developing competence is assessed by the evaluation and written feedback on weekly written assignments in which the student uses Ozar and Sokol’s ethical decision-making model to decide a course of action to resolve the ethical dilemmas embedded in that week’s patient care scenario. The case scenarios have been compiled from Ozar and Sokol (1999), Hasegawa (1993-2001), Weinstein (1993), Bebeau, Spidel, and Yamoor (1982), and Rule and Veatch (1993).

**Student Learning Outcomes and Course Content**

Each of the four courses has a student learning outcome, which is tested by written examination at the conclusion of the course. A description of these learning outcome, a brief overview, and a listing of course topics follows for each year’s course. The student learning outcome, progress to more advanced levels of ethical reasoning as the curriculum progresses. The fourth-year (graduating) student learning outcome requires the
Course content in the University of Detroit Mercy School of Dentistry ethics sequence.

**First Year**
- Discussion of ethical, legal, and moral definitions
- Introduction to ethical principles
- Developing a Class Code of Ethics
- Professional behavior in dental school:
  - Diversity Issues
  - Sexual harassment
  - Academic integrity
  - Professional misconduct
  - Mock student disciplinary trial
- Misconduct consequences

**Second Year**
- Review Class Code of Ethics
- Substance Abuse
- Professional obligations
- Patient-dentist relationship
- Central values of dental practice
- Ethical decision making model
- Multicultural issues in dental practice

**Third Year**
- Introduction to the law, its relationship to dental practice
- Principles of contract law
- Principles of tort law
- Informed consent and refusal
- Review of ethical decision making model
- Patients with decreased capacity
- Education and cooperation
- Bad outcomes/bad work
- Working together
- Social justice

**Fourth Year**
- Transitions: Review of ethical and legal concepts
- Risk management principles
- Peer review: Process and case review
- Employer/employee relationships
- Federal and state laws impacting practice
- Dental Practice Act
- Mock state board of dentistry disciplinary hearing
- Review ethical decision making model

Student to apply what they have learned about professional ethics to their clinical experiences by leading a dialogue described as “Ethical Rounds.” Ethical Rounds requires the student to present a patient care scenario from their own experiences and carefully evaluate the outcome of the scenario, including their actions and faculty, staff, and patient actions in the scenarios. Student colleagues and faculty participate by discussing the ethical and legal issues involved in the specific case.

**First-Year Course**

**Learning Outcome:** Given a written case scenario, the student will, in writing, identify, describe, and explain the ethical issues and principles which apply in the scenario.

**Overview:** First-year dental students participate in an orientation called, “Strategies for Success Week,” prior to the start of the formal curriculum. A White Coat Ceremony, with family and faculty invited, occurs at the end of the Success Week. The primary theme of the speakers at the event is to discuss the qualities of a professional and the transition of the student into a professional educational atmosphere. The students publicly recite an oath highlighting professionalism and ethical behaviors. The
first professional ethics development course is conducted in the Fall term of first year. It consists of ten sessions of two hours each, plus the final examination. The course uses lecture, small group discussion, and small group consensus activities in order to orient students to the dialogue format that will occur during the four-year curriculum. Students are divided into groups of approximately eight to ten class members. Lecturers in the course use the small group discussions to develop a Class Code of Ethics, discuss diversity issues, and identify solutions to case studies related to academic integrity.

Second-Year Course

Learning Outcome: Given a written scenario of a patient care ethical dilemma, the student will, in writing identify the professional values, obligations, and ethical principles involved and apply them using the ethical decision-making model to analyze the scenario and decide on a plan of action to resolve the dilemma.

Overview: The primary focus of the course is to introduce the ethical decision-making model. As a group, the dental students review the Class Code of Ethics drafted during the first-year course. The code may be modified through class consensus. Guest speakers highlight a state dental society program on substance abuse and professional assistance. The topics of multicultural communication and diversity issues are also incorporated. The second-year course is the first that uses the Ozar and Sokol text and introduces students to the ethical decision making-model and allows them to practice applying the model to case scenarios. Students are divided into groups consisting of eight to ten class members and assigned to a faculty facilitator. In addition to the textbook, a packet of cases with themes parallel to the assigned chapters is distributed. Students are assigned to read the chapter and an additional case for discussion. Once the students are introduced to the ethical decision making model in Ozar and Sokol, a handwritten assignment using the model is required each week. Students are expected to discuss both assigned cases using the model. The written assignment due each week applies the model to the additional assigned case. Written responses are evaluated by facilitators and returned to the students with formative feedback. This course is given in the third term of second year and consists of seven sessions of two hours each, plus the final exam.

Third-Year Course

Learning Outcome: Given a written scenario of a patient care ethical dilemma, the student will, in writing, identify the professional values, obligations, ethical principles, and legal concepts involved in the scenario and apply them in an ethical decision-making model to analyze the scenario and decide on a plan of action to resolve the dilemma.

Overview: The first half of the third-year course is a series of lectures introducing an overview of legal principles. Legal concepts including civil and criminal law, intentional and unintentional torts, and negligence are presented. The concepts of informed consent and informed refusal and topics in patient management are also addressed. Students are given a brief overview of the Ethical Rounds assignment that will be required as part of the fourth-year course and are reminded to remain sensitive to ethical dilemmas they face as they continue through the final phase of the predental dental education. The second half of the course uses more of the Ozar and Sokol textbook. Students are again divided into small groups and meet with faculty facilitators to discuss the ethical decision making model as it applies to the cases in the textbook and, where applicable, to address legal issues that may apply. In dialogue groups, students raise ethical issues faced in clinic, and facilitators and student colleagues use the model to discuss the cases presented. The course is offered in the third term of the third year. It consists of eleven sessions of two hours each, plus the final exam.

Fourth-Year Course

Learning Outcome: The student will identify a patient care situation that occurred during student dental experience and, using the ethical decision making model and knowledge of professional ethical and legal concepts, present the case scenario as an Ethical Rounds to a group of peers and a faculty member. The student will lead a dialogue with his or her peer group, providing analysis (orally and in writing) of the scenario and its actual and recommended resolution.

Overview: The fourth-year course begins with a lecture titled, "Transitions," a theme first introduced during the White Coat Ceremony and now looking to the environment of dental practice following graduation. The "Transitions" lecture begins a series of lectures sensitizing the dental students to the legal and ethical dilemmas frequently faced in private practice. Legal issues focusing on the dentist in private practice are discussed throughout the course. The emphasis in this part of the course is on the ethical, legal, administrative, and professional structures in place that assist dentists in their decision making.

Four sessions of the course are dedicated to Ethical Rounds presentations. Students select an issue concerning one of the patients they have treated in their third and fourth years as the source of their Ethical Rounds case. All full- and part-time dental faculty members are invited to attend at least one Ethical Rounds session in order to enhance the discussion. Students must also submit a written copy of the Ethical Rounds case presented. Both the discussion and the
paper must use the ethical decision-making model. Schedules for the Ethical Rounds are distributed as part of the announcement which invites all faculty members.

This course is given during the second term of the fourth year and consists of twelve sessions of one and a half-hours each. The student's Ethical Rounds presentation takes the place of the final exam.

Curriculum Outcomes
The ethics curriculum has been offered since 1993. During this whole time period, only five students have failed the learning outcomes test of one of the courses. In each instance, these students successfully passed a subsequent written learning outcomes test after individualized remediation sessions with one of the authors. Three factors appear to have contributed to their initial failures to achieve competency:

For one student, undergraduate college education had provided very limited experience with written expression of knowledge and ideas. For two students, their cultural moral norms were significantly divergent from North American dental professional ethical norms and the remediation process had to uncover these incongruities and facilitate the students' conscious reconciliation between personal and professional mores.

The curriculum has gone through some slight modification. For example, there has been an increase in the number of class sessions emphasizing cultural diversity and multicultural communication over the years. All courses have been evaluated by students as part of the dental school's standardized course evaluation process. The results of these evaluations have led to modifications in course content during the first two years of the curriculum, particularly with respect to content relevance to the students' stage of learning about the patient care process.

In sum, this four-year curriculum in professional ethics and law has proven itself very effective in achieving the specific learning outcomes established for each of the four years of the program and in meeting the Accreditation Standards for Dental Education Programs established by the Commission on Dental Accreditation.

References
Does This Integrated Law and Ethics Curriculum Promote Ethical Thinking?

Muriel J. Bebeau, PhD, FACD

Abstract

In an invited response, the Detroit Mercy, School of Dentistry combined ethics and law four-year curriculum is analyzed. Previous models combining law and ethics have shown more success in the former than the latter. Additional concerns include the lack of an explicit measure of ethical outcomes such as moral reasoning and the assumption that ethical activities engaged in by novices such as the White Coat Ceremony and early written assignments demonstrate competence.

Zarkowski and Graham describe a curriculum for dental students that integrates law and ethics, rather than treating them as separate courses as is more commonly done. Those who have been involved in dental education for more than twenty years will recall that prior to the recent ethics movement, law and ethics were combined. The problem, of course, was that ethics usually got short shrift under such an arrangement.

Minnesota dental school faculty members were convinced to add separate ethics courses because the course developers (see Bebeau & Thoma, 1994) were able to show that Minnesota's combined law and ethics curriculum, albeit with minimal attention to ethics, did not promote ethical thinking as measured by the Defining Issues Test (see sidebar), even though it did enable students to pass the jurisprudence licensing exam. More compelling than the lack of effect as seen on the DIT, was the evidence that students who completed the dental program were not able to adequately identify, reason about, or resolve common ethical problems of the profession. Performance assessments similar to the ones used by Zarkowski and Graham (2001) were used to collect baseline data. Subsequent evaluations of the Minnesota ethics curriculum (Bebeau, 1994; Bebeau, 2000) have repeatedly demonstrated that a separate ethics course can promote the desired ethics outcomes. The empirical question is whether course validation and outcome assessment procedures would show that law and ethics courses can be combined without sacrificing the ethics outcomes.

The Context for Combining Ethics and Legal Instruction

Before addressing questions of assessment, it may be helpful to speculate as to why the health professions have typically separated ethics from jurisprudence, whereas legal education has combined law and ethics, referring to it as professional responsibility instruction. In legal education, the focus of "ethics" instruction tends to be on learning a very detailed, prescriptive code of professional responsibility. Provided by lawyers, rather than ethicists, instruction prepares students for licensing examinations required in most states. Some legal educators wonder whether such an approach unduly focuses attention on protecting the self, rather than on promoting ethical thinking. In fact, Maury Landsman, Professor of Law at the University of Minnesota, is currently engaged in a study to determine empirically whether his professional responsibility curriculum promotes ethical thinking, as measured by the Defining Issues Test, in addition to promoting knowledge of the code. His initial studies (Landsman & McNeel, 2000) show that entering law students with high DIT scores show greater preference for legal careers that focus on public service.

In contrast, ethics instruction in the health professions usually is provided by persons with training in ethics rather than law. The focus is on moral ideals and how they would apply to current and emerging problems in the profession. In fact, the concern, and probably the ex-
experience of ethicists who have tried to combine the two, is that inevitably students will focus their attention on the legal or minimum standard for conduct, rather than on the aspirational principles and ideals that one would hope would guide professional actions. Because legal arguments are often very compelling, especially for the novice, focusing on what is legal can quickly close down an ethics discussion. Zarkowski and Graham acknowledge this problem when they comment “laws represent the lowest societal standards for professional behavior...” Yet, they argue that legal principles impact the practice of dentistry and therefore both represent the full scope of Accreditation Standard 2.20, as well as contribute to the full continuum of professional responsibility.

Clearly, combining the two does represent the full continuum of professional responsibility. What is less clear is that the course developers have implemented procedures or assessment practices that provide assurances that the pitfalls ethicists may worry about have been averted. My purpose is to suggest remedies that might be used to assure that the goals of both are met. I should hasten to add that I do not think that the purpose of the Zarkowski and Graham (2001) manuscript was to elaborate the full range of considerations that impact on the effectiveness of the experience for students. Rather, the idea was to sketch out a combined law and ethics course that has been in place for several years and that has been judged to be successful. I expect the authors will continue to refine their course and to elaborate upon this initial description. My comments and suggestions are those that pertain to all educators who have the responsibility to provide assurances that instruction is effective.

...students who completed the dental program were not able to adequately identify, reason about, or resolve common ethical problems of the profession.

Issues for Improvement

A strength of the course description at Detroit-Mercy is the authors’ attentiveness to the learning outcomes to be achieved as well as the methods of assessment. Examining the learning outcomes, we notice that they focus on ethics outcomes for the first two years, then add attention to legal concepts in the third year. In the first three years, students respond in writing to dilemmas that are provided. In the fourth year, students identify (orally and in writing) values, obligations, principles, and legal concepts as they apply to the analysis and action plan for a patient care dilemma they personally encountered. The course developers have used their learning outcomes tests as a basis for making course modifications, and students are expected to pass the tests as a condition for course completion. Perhaps the early emphasis on ethics outcomes addresses the ethicists concerns. What would be helpful to readers who worry about this issue or to those who want to model their courses after this description, is further detail about the number of cases the student is asked to submit for critique, the kinds of issues that the cases address, a description of the assessment criteria, the frequency and effectiveness of feedback, and some indication that two evaluators can achieve reliability in rating student performance. Addressing such questions, in addition to information on pre- to post-test change, would further validate the effectiveness of the curriculum.

Now let's consider the question related to combining law and ethics. Are there methods of outcome assessment that could be used to further verify the effects of instruction and to assure the developers that combining law and ethics doesn't diminish the intended outcome? Indeed, are students distinguishing among the different rationales that might guide their action? Are they showing preference for arguments based on ethics rather than law? Are they able to implement action plans?

Research on moral judgment development (Rest, Narvaez, Bebeau, & Thoma, 1999a) indicates that people distinguish three broad clusters of rationales for decision making when confronted with moral dilemmas: (1) rationales that appeal to personal interests; (2) rationales that appeal to maintaining existing laws or norms (characteristic of legal thinking); and (3) rationales that appeal to moral ideals or procedures (referred to as postconventional rationales). Persons in professions apply postconventional rationales more often than the average adult, but not as often as persons with training in moral philosophy or political science. Research also shows that competence in reasoning is related to a wide range of pro-social behaviors, including clinical performance in nursing and medicine. Further, Baldwin observed a relationship between the number of malpractice claims and moral judgment scores, noting that a high DIT score had a kind of protective effect, insulating one from claims (Self & Baldwin, 1994).
Issues in Dental Ethics

Defining Issues Test

The DIT (Rest, 1979) measures life-span development of moral reasoning and judgment. The DIT is the most widely used test of moral judgment development and is often used as an outcome measure for intervention studies, because it has an exceptional validation history. See Rest, Narvaez, Bebeau, & Thoma (1999a) for a discussion of recent challenges to Kohlbergian theory and our approach to a theory of moral judgment development that is not grounded in a particularistic moral theory—as was Kohlberg’s—but is grounded in empirical evidence illustrating that as individuals develop, so do the basic understandings they bring to resolving complex moral problems. The book also summarized the latest literature on the construct validity of the DIT and provides references to the 400 published studies using the DIT. The DIT is available through the University of Minnesota’s Center for the Study of Ethical Development (www.coled.umn.edu/CSED/default.html).

DIT, which indicates the proportion of times students select postconventional moral arguments, the developers could learn whether instruction is effective in promoting ethical reasoning. Bebeau and Thoma (1994) have been able to show change in dental students’ moral judgment development that can be attributed to a dental ethics curriculum. Even if the authors’ curriculum doesn’t show change on the P Index, recent work at the Center for the Study of Ethical Development (Rest, Narvaez, Bebeau, & Thoma, 1999b; Bebeau, 2000) indicates that additional indices can be constructed that would create profiles of performance that would show shifts in preferences from personal interest arguments to maintaining norms arguments. Thus, even if students do not achieve the desired changes in postconventional reasoning, profiles would show change that would result from the shift from rationales of personal interest to rationales that maintain norms, which would be positive. Then, by analyzing profiles of performance, the course developers could assess whether the curriculum enhances both legal thinking (preference for maintaining norms rationales) and ethical thinking (preference for rationales that appeals to moral ideals or procedures). In addition to determining whether their intervention brings about change in thinking, the course developers can also compare the effect size from their intervention with effect sizes derived from a meta analysis of intervention studies (Bebeau & Thoma, 1994).

Two additional observations warrant further consideration. The White Coat Ceremony, a common practice in medical education, is presented here as an event that takes place at the end of the first week of dental school. As an ethics educator who has assessed students’ conception of role and responsibility after a short exposure to lectures on professionalism (Bebeau, Born, & Ozar, 1993; Bebeau 1994), I would say it is quite clear that more time is required for students to develop sufficient understanding of what commitment they are making. Perhaps delaying the ceremony until at least the end of the first year, after students have formulated their own code of ethics and had opportunity to engage in more reflection of the profession’s values, would make the White Coat Ceremony more meaningful and students’ commitment more reflective.

Asking students to put in writing their understanding of what is expected of them as health care professionals would inform the course developers of the effectiveness of their instruction, as well as to enable them to speak personally with students who have misperceptions about their role and responsibility as health care professionals. Even if this kind of assessment were not done on a regular basis, employing an outcome measure of this type would inform the course developers of common misperceptions about professional responsibilities.

Secondly, the course developers ask students to prepare action plans as part of the written ethics assessment. Working out an action plan attends to part of the fourth component in Rest’s Four Component of Morality (Bebeau, Rest, & Narvaez, 1999). It does not attend to another common failure of novices—the inability to communicate their intentions in an effective manner. Many a student recognizes an ethical issue, knows what ought to be done, and is committed to doing it. However, the words that are chosen undermine all of their good intentions. Requiring students to implement action plans through role play exercises or written dialogs that can be critiqued for effective problem solving and interpersonal communication is a way of assuring that students will feel more confident in tackling the tough problems they will face in their profession.

Zarkowski and Graham present an interesting challenge to reconsider the separation of law and ethics in dental curricula. For those of us who worry that combining courses will weaken the ethics outcomes, we challenge them to provide us with more compelling evidence.
References


Abstract
Survey data were obtained from 144 dentists and 116 patients concerning their attitudes and preferences toward direct composite and amalgam restorations in the posterior segment. Some dentists report that they take the initiative in recommending direct composites in these cases and others report that patients request them. Selection criteria for direct composite posterior restorations are similar to those advocated in the dental literature. Those characteristics of alternative materials emphasized in obtaining informed consent mirror the characteristics of the materials dentists report most often performing. Patients report an interest in tooth-colored restorations and trust dentists’ professional opinion, but also express a strong desire for full information as part of informed consent.

Informed Consent: Direct Posterior Composite versus Amalgam

M. Dlugokinski, DDS and W. D. Browning, MS, DDS

Abstract
Survey data were obtained from 144 dentists and 116 patients concerning their attitudes and preferences toward direct composite and amalgam restorations in the posterior segment. Some dentists report that they take the initiative in recommending direct composites in these cases and others report that patients request them. Selection criteria for direct composite posterior restorations are similar to those advocated in the dental literature. Those characteristics of alternative materials emphasized in obtaining informed consent mirror the characteristics of the materials dentists report most often performing. Patients report an interest in tooth-colored restorations and trust dentists’ professional opinion, but also express a strong desire for full information as part of informed consent.

It has been a standard of medicine and dentistry since the 1950s that health care providers have an obligation to inform patients of the risks of recommended treatment, all reasonable alternatives, and the risks of having no treatment at all (Gilbert, 1988; Warner & Segal, 1980). Monetary court awards to patients whose consent was not based upon a true understanding of the procedure to be performed have motivated the medical profession to develop written forms specific to each procedure. Dentistry has traditionally approached the issue of informed consent more informally, especially for routine procedures (Doyal & Cannell, 1995).

The use of amalgam in the posterior and composite in the anterior aspects of the mouth is generally accepted as simple, safe, and relatively inexpensive. However, resin-based dental restorative materials are gaining popularity by clinicians for posterior restorations. These resin materials have the advantage of bonding to tooth structure and a rapid set time. Their potential for premature failure due to technique sensitivity is a drawback to their use. The greatest potential for failure stems from poor isolation and poor marginal adaptation during their initial placement (Feridianakis, 1998; Knight, Berry, Barghi, & Burns, 1993).

A systematic review of current restorative material was published recently in an evidence-based journal (University of York Group, 1999). The review contained data from one hundred fifty-eight clinical research projects. The use of composite resin in posterior restorations was found to be a generally successful procedure. However, in twenty-six studies where composite and amalgam restorations were directly compared, the authors found that in every case the amalgam exhibited a statistically significant advantage over the composite. They also estimated that, considering cost per tooth per year, composite was 1.7 times as expensive in the short run, five-year time period, and 3.5 times as expensive over the long term, ten-year period.

As posterior composite restorations gain in popularity and improve in performance as an alternative to amalgam, even dentists who believe amalgam is far superior will have an obligation to present patients with both options and gain their informed consent to place one.

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Table 1. Dentists’ views on initiative for placement of direct posterior composites, considerations in case selection, and attitudes and practices regarding informed consent.

<table>
<thead>
<tr>
<th>A. Initiative for placement of DPCs</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The majority of DPCs done in my office are at the patient’s request</td>
<td>30%</td>
<td>38%</td>
<td>21%</td>
<td>11%</td>
<td>0%</td>
</tr>
<tr>
<td>In the majority of instances, DPCs are placed at my recommendation rather than the patient’s request</td>
<td>0</td>
<td>20</td>
<td>25</td>
<td>31</td>
<td>24</td>
</tr>
</tbody>
</table>

| B. Case selection criteria for placement of DPCs (*I recommend DPCs …*) | | | | | |
| Predominately for lesions on premolars | 11 | 37 | 30 | 22 | 0 |
| Predominately for lesions that are less than one-third of the intercuspal width | 22 | 43 | 20 | 14 | 1 |
| Predominately for those patients who exhibit good oral hygiene | 23 | 44 | 23 | 10 | 0 |
| Predominately for those patients who return regularly for periodic exams | 19 | 47 | 34 | 0 | 0 |
| Only where there is a functional reason to replace an existing restoration (recurrent caries, fractures, etc.) | 16 | 21 | 20 | 22 | 21 |
| To replace existing restorations for functional and/or esthetic reasons (tooth discoloration, visible metal) | 11 | 48 | 19 | 11 | 11 |

| C. Attitudes toward the informed consent process in the case of DPCs | | | | | |
| With the materials and techniques I use, DPCs can be recommended without negative concerns | 11 | 49 | 19 | 11 | 10 |
| Patients should receive the care the dentist feels the most comfortable providing | 21 | 48 | 19 | 14 | 0 |

| D. Routine practice regarding informed consent in the case of DPCs | | | | | |
| Verbal only, no specific record of the conversation is made | 59% | | | | |
| Verbal, with an accompanying entry in the patient record | 41 | | | | |
| Written, using a separate form signed by the patient that becomes part of the record | 0 | | | | |
Figure 1. Advantages and disadvantages of direct composite and amalgam used in the posterior region dentists routinely present to patients.

**Characteristics of Amalgams**

- Probability of fracture
- Decreased wear
- Less likely to fail
- Poor esthetics
- Lower cost
- Greater longevity

**Characteristics of DPC's**

- More recall visits
- Minimize fracture
- More rapid failure
- Higher cost
- Shorter longevity
- Good esthetics

The purpose of this study is to investigate the opinions and attitudes of both dentists and patients and to compare them where possible. Specifically, we investigated the confidence these dentists and patients have in the benefits of composite as a posterior restoration relative to amalgam. We also investigated the opinions of dentists regarding
appropriate case selection and what information should be included in a comparison of amalgam and composite. Finally, we investigated the opinions of both dentists and patients regarding the use of written versus verbal informed consent.

Methods and Materials
A stratified, random sample of dentists from the Medical College of Georgia, School of Dentistry, Alumni Association list was chosen to receive questionnaires. A comprehensive list of alumni was stratified into three groups: dentists practicing in small, medium, and large cities within the state of Georgia. Large cities were defined as those areas with more than 1,000,000 people in the metropolitan and surrounding area. Medium was defined as less than 1,000,000 but greater than 400,000, and small as less than 400,000. A second questionnaire was mailed four weeks after the first one to improve the response rate.

The questionnaire consisted of fifteen questions. The first question asked the dentists what percentage of their patients received direct posterior composites (DPCs) rather than amalgam. Where appropriate, a Likert response scale ranging from “strongly disagree” to “strongly agree,” with a “not applicable” alternative available. The questionnaire may be grouped into the following broad categories of interest: (1) Two questions pertaining to dentists’ attitudes about the level of confidence in the benefits of composite as a posterior restoration relative to amalgam; (2) six questions pertaining to dentists’ opinions regarding appropriate case selection for DPCs; (3) a single item regarding benefits and risks typically included by these dentists in a discussion of amalgam vs. composite restorations for posterior teeth; (4) three questions identify attitudes of the dentist toward the informed consent process; and (5) an open-ended opportunity for clinicians to address any other issues or topics that were not covered in the questionnaire.

Figure 2. Distribution of dentists who believe their materials and techniques obviate the need to mention the potential for negative consequences with direct posterior composites.
formed consent, relative to their frequency of using DPC restorations. It appears that esthetic considerations are discussed most often (92% of the time) patients need to be informed that insurance coverage for DPCs is often less than that of amalgam. The majority of dentists who commented remarked that the
dentists who place DPC as a lower or higher percentage of restorations for posterior teeth have different attitudes?

Table 2. Dentists’ use of direct composite vs. amalgam in the posterior region cross tabulated by size of city where practice is located.

<table>
<thead>
<tr>
<th>Use of DPC</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25%</td>
<td>24</td>
<td>31</td>
<td>31</td>
<td>86</td>
<td>60%</td>
</tr>
<tr>
<td>26-50%</td>
<td>16</td>
<td>7</td>
<td>7</td>
<td>26</td>
<td>18%</td>
</tr>
<tr>
<td>51-75%</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>15</td>
<td>10%</td>
</tr>
<tr>
<td>76-100%</td>
<td>12</td>
<td>5</td>
<td>6</td>
<td>23</td>
<td>16%</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>48</td>
<td>45</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>35%</td>
<td>33%</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

regardless of frequency with which DPCs are used. Longevity, cost, and potential for fracture are discussed in about two cases of each three. Failure potential is mentioned in one-third of the cases. The twenty-three dentists who report placing DPCs in more than 75% of cases show a different pattern of informed consent than do other dentists in this survey. They are less likely to discuss cost and longevity and claim that they do not mention potential for failure at all. The group of fourteen dentists who place DPCs frequently but not routinely (between 50% and 75% of the time) is more likely to include a discussion of cost and fracture potential in their informed consent than all other groups of dentists. (These differences are all statistically significant at p < .05 or less by the Chi-square test.)

Although respondents did not comment frequently to the open-ended question, a few stated they would be interested in knowing the percentage of their colleagues who use a rubber dam when placing DPCs. Others noted that a greater likelihood of postoperative sensitivity with DPCs should be discussed with patients.

For questions using the Likert scale the responses represent quantitative data rather than categorical data. The response labeled neutral is given a value of 0.0. The responses agree and disagree are assigned a value of 1.0 and -1.0 respectively, and strongly agree and strongly disagree a value of 2.0 and -2.0. In this manner each respondent’s answers to ten of the questions can be analyzed statistically to determine: (a) which questions were best able to predict dentists’ responses; (b) whether the fact that the respondent practices in a large, medium, or small city was significantly associated with the dentist’s responses; and (c) whether the fact that the dentist was in the first, second, third, or fourth quartile for usage of DPCs was significantly associated with his or her answers. In other words, do practitioners in small cities have substantially different attitudes about DPCs than those in large cities, medium cities, etc.? Similarly, do

There was no statistically significant difference in usage of DPCs between dentists living in large, medium, or small cities (Table 2; Chi square analysis; p > 0.05).

Regression analysis of the data also indicated that five questions were significant in predicting dentists’ answers to the Likert scale questions (Linear regression analysis; p < 0.001). Dentists’ usage of DPCs was significantly associated with their answers to the Likert scale questions. While this finding would be expected, it was interesting to note that only respondents who reported usage in the lowest and highest quartiles had significantly different answers (multiple linear regression; p < 0.05). In addition, dentists differed by usage group as to which discussion items they included or did not include in the informed consent process, Table 4 (Chi-square; p < 0.001).

Patient Questionnaire. Responses from patients regarding benefits of posterior composite restorations are found in Table 5. This table also displays pa-
Table 3. Differences in initiative and case selection criteria between dentists who place direct posterior composites infrequently and routinely.

<table>
<thead>
<tr>
<th>Initiative or Case Selection Criteria</th>
<th>Infrequent</th>
<th>Frequent</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the majority of instances, DPCs are placed at my recommendation rather than the patient’s request</td>
<td>-0.85</td>
<td>0.61</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I recommend DPCs predominately for lesions on premolars</td>
<td>0.18</td>
<td>0.57</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I recommend DPCs only where there is a functional reason to replace an existing restoration (recurrence caries, fracture, etc.)</td>
<td>-0.21</td>
<td>-0.13</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>I recommend DPCs to replace existing restorations for function and/or esthetic reasons (tooth discoloration, visible metal, etc.)</td>
<td>0.08</td>
<td>0.090</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>With the materials and techniques I use, DPCs can be recommended without negative concerns</td>
<td>-0.082</td>
<td>1.04</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Values are average scores on the Likert scale in each group, where -1.0 = agree, 0.0 = neutral, and +1.0 = disagree. Statistical significance was tested by correlation analysis. All appropriate survey responses were tested, but only those showing statistically significant differences are reported.

Summary

In the majority of instances, DPCs are placed at my recommendation rather than the patient’s request. I recommend DPCs predominately for lesions on premolars. I recommend DPCs only where there is a functional reason to replace an existing restoration (recurrence caries, fracture, etc.). I recommend DPCs to replace existing restorations for function and/or esthetic reasons (tooth discoloration, visible metal, etc.). With the materials and techniques I use, DPCs can be recommended without negative concerns.

Discussion

The case selection criteria for using direct posterior composites reported by dentists in this survey are generally consistent with guidelines in current textbooks on operative dentistry (Marzouk, Simonton, & Gross, 1985; Sturdevant, 1995). There was apparent disagreement on the appropriateness of limiting the placement of DPCs to functional reasons. When placement is for both functional and esthetic reasons, a clear majority of respondents, 82%, agreed with the statement. When the reason for placement of a DPC is limited to function only, there is ambivalence among those surveyed.

This survey provides information on the level of interest patients have in tooth-colored restorations, as perceived by the dentist. This can be inferred from examining the extent to which placement of a DPC is initiated by the patient. Sixty-eight percent of responding dentists indicated that, in the majority of cases, the patient requested treatment, while 11.4% indicated that it was the dentist. It is interesting to note that when the question is asked in reverse order the responses differed. When the question is asked in the reverse fashion, 49.3% of dentists indicated that it was the patient who initiated the placement of a DPC in the majority of cases, while 25.7% indicated they initiated the treatment.
When surveyed, patients indicate a strong desire, 96%, for a DPC if “there were a chance a tooth-colored filling would keep my tooth from breaking.” Similarly, 82% of the respondents would not choose a DPC to replace an amalgam restoration that was performing acceptably. Thus it would appear that, at least among these potential patients, there is a great emphasis on function. Patient perception of cost as a factor in preferring composite to amalgam restorations in the posterior region were investigated by asking whether they would select the DPC if that restoration were one and one-half times as expensive and did not last as long as amalgam. Forty-three percent agreed that they would still prefer a DPC and 36% preferred an amalgam. This response is difficult to interpret.

The majority of the clinicians surveyed discuss with their patients the fact that, while DPCs are more esthetic, they have a shorter life span than amalgam and cost more. The available literature also supports these opinions (Chadwick, Dummer, Dunstan, submitted; Mjor, Jokstad & Qvist, 1990; Welbury & Murray, 1990; Heymann, Wilder, May & Leinfelder, 1986). The responses given by the survey dentists indicate that most clinicians are aware of the relative merits of amalgam versus composite. In sharp contrast, the majority of dentists, 60%, believe that in their hands DPCs can be recommended without concerns for potential negative issues. This would seem to indicate that while these dentists recognize that the clinical data in the dental literature generally demonstrates that direct posterior composite restorations have important functional shortcomings relative to amalgam, they believe that their materials and techniques will yield equivalent results (see Figure 2).

The difference in attitudes toward the placement of DPCs between the high and low groups is demonstrated in their patterns of topics covered during informed consent. As Table 4 shows, the number and choice of issues addressed in informed consent is not independent of surveyed dentists’ frequency of placing composites in posterior regions. Those who use DPCs more often stress those characteristics that favor this technique and minimize unfavorable information presented to patients. When one compares these two approaches, it would seem there is little question that the attitude of the dentist has an important impact on the information the patients would be exposed to.

### Table 4. Topics included in informed consent regarding direct composite vs. amalgam in the posterior region cross tabulated by frequency of using DPCs.

<table>
<thead>
<tr>
<th>Use of DPCs</th>
<th>Lifespan</th>
<th>Cost</th>
<th>Failure tendency</th>
<th>Esthetics</th>
<th>Fracture</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0- 25%</td>
<td>94.2</td>
<td>72.1</td>
<td>75.6</td>
<td>88.4</td>
<td>22.1</td>
<td>70.5%</td>
</tr>
<tr>
<td>26- 50%</td>
<td>71.4</td>
<td>76.2</td>
<td>47.6</td>
<td>95.2</td>
<td>57.1</td>
<td>69.5%</td>
</tr>
<tr>
<td>51- 75%</td>
<td>35.7</td>
<td>92.9</td>
<td>14.3</td>
<td>92.9</td>
<td>92.9</td>
<td>65.7%</td>
</tr>
<tr>
<td>76-100%</td>
<td>30.4</td>
<td>52.2</td>
<td>0.0</td>
<td>91.3</td>
<td>60.9</td>
<td>48.7%</td>
</tr>
</tbody>
</table>

Total 76.4% 71.5% 53.5% 90.3% 40.3%

Values are proportion of dentists in each category of frequency of use reporting regular mention of each element in informed consent.
Table 5. Patients' views on use of direct posterior composites and informed consent.

<table>
<thead>
<tr>
<th>A. Use of DPCs</th>
<th>Strongly Disagree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would prefer a tooth-colored filling even if it were one and one half times as expensive as a filling and did not last quite as long</td>
<td>11%</td>
<td>49%</td>
<td>19%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>If there were a chance a tooth-colored filling would keep my tooth from breaking, which would be very important to me</td>
<td>21</td>
<td>46</td>
<td>19</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>I think the dentist knows which type of filling is better and should place the one he or she thinks is best</td>
<td>21</td>
<td>36</td>
<td>29</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>I would not have a silver filling removed and replaced just to make the tooth look better</td>
<td>39</td>
<td>43</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Attitudes toward informed consent</th>
<th>Strongly Disagree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I prefer the dentist told me about the cost of both types of fillings before doing either of them</td>
<td>66</td>
<td>34</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>If either a tooth-colored filling or a silver filling would be good for me, I would expect my dentist to tell me about both, not just the one he or she preferred</td>
<td>68</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I would prefer an explanation be written rather than simply telling me about the two fillings</td>
<td>33</td>
<td>42</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I would prefer the dentist told me about all aspects, negative and positive, of both types</td>
<td>72</td>
<td>28</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
tient receives. The issue for the profession is whether this selective disclosure of information is justified. Certainly the desire for complete information on the part of those laypersons surveyed is quite clear.

Patients overwhelmingly agreed, 97% to 100%, that the dentist should disclose the cost, the fact that either an amalgam or a composite would be an acceptable restoration, and the pros and cons of each type of restoration before proceeding with treatment. Three-quarters of the patients expressed a preference for this disclosure to be written. By contrast, less than 1% percent of dentists routinely handle the essential elements of informed consent with a written form. About one in four dentists do not include cost as part of the informed consent process, and only half do so when they use the more expensive DPC alternative on a regular basis.

Sixty-five percent of dentists and 57% of patients agree that, in the last analysis the dentist has the expertise. It is clear that patients expect to have full disclosure and to make the final decision, but value the opinion of their dentist highly.

References
Technical Glossary

Editor's note: In an effort to make research papers that contain technical concepts more "user friendly," the Journal will attach a technical glossary to these papers where it seems useful.

Likert Scales: Rensis Likert is well-known in management circles for his views on organizational climate and communication. He characterized management systems in four categories: exploitive-authoritarian, benevolent-authoritarian, consultative, and participative. He is known as a strong advocate for the advantages of participative management systems. He also developed a notion of organizational communication called the "lynch pin." In this concept, information and representation are promoted by having the leaders in a group at one level participate as members in the next higher level in the organizational hierarchy. By repeating the structure throughout all levels, communication should flow freely in both directions.

Likert worked at the University of Michigan where there is a famous public opinion survey organization. They are the folks who do the Consumer Confidence Survey that Mr. Greenspan watches so carefully. Likert helped design the questionnaires used by this group and standardized the item format, which makes a statement and asks the respondent to indicate the degree to which he or she agrees with that statement. This survey item format has become known as the "Likert format."

Although Likert items are everywhere in surveys, they present a major problem for researchers. It has become conventional to assign a number scale to Likert items, such as "Strongly Agree" = 1, "Agree" = 2, "Neutral" = 3, "Disagree" = 4, and "Strongly Disagree" = 5. Researchers typically treat these numbers as though they had the same properties as physical length, time, or temperature; they add, divide, and average them. Treating the numbers assigned to Likert scales in this fashion makes an assumption that the differences between points on the scale are all of the same magnitude. For example, it is conventionally assumed that the average of two "Agrees" and one "Strongly Disagree" is the same as three "Neutrals." Making this assumption simplifies the researcher's task of data analysis. If the assumptions are correct, powerful statistically tests such as t-tests and correlation coefficients can be used.

It is possible to treat Likert scales as though they represent nothing more than the rank order of agreement with statements. "Agree" is more positive than "Neutral," but may not be the same order of magnitude as the difference in preference between "Disagree" and "Strongly Disagree." There is a different set of statistical tests for researchers who make this more conservative assumption. There is a large body of technical investigation and several methods that can be used to test whether researchers should be liberal or conservative in their interpretation of Likert data. As a generally rule, it is safer to be liberal and use the powerful statistical tests when the data are normally distributed and when the sample size is large.

It is even technically permissible to collapse Likert scales. For example, "Strongly Agree" and "Agree" are often combined into a single category and "Strongly Disagree" and "Disagree" are grouped into a second category, with "Neutral" being omitted from analysis. This approach to managing the data can clarify distinctions when they are present. When collapsing is done, however, it is customary to use more conservative statistical tests such as Chi-square.
Leadership

Technology Innovation

David W. Chambers, EdM, MBA, PhD, FACD

Abstract

Technology is the way dentistry is practiced—the materials and methods, characteristics of the dentist and staff, and nature and values of patients. Innovation is a conscious process of improving that technology. Dentists, not researchers or manufacturers, are the source of most innovation in dentistry. Characteristics such as innate curiosity, sophistication, discretionary income, and practice isolation contribute to innovativeness. Innovation diffusion has a characteristic S-shape, with few early and late adopters and a rapid spread in the middle phase. Much is known regarding the personality and behavior of early and late adopters and those types of innovations that are likely to diffuse rapidly.

Dentists tend to be innovators in technology. Certainly not everyone, but there are more than a fair share of putters, computer mavens, designers of slick office systems, and gadgeteers in the profession. It is part of dentists' personalities—they score high on tests showing that they value the practical and useful. It is also part of the profession—dentists work alone.

A definition: technology is the regular means and methods used to add value in one's work. Endodontic procedures—in all their generic variety and individualized approaches—are technology. So are various dental materials, equipment, and supplies. Technology also includes standing orders for radiographs on new patients, the way accounts receivables are handled, and scheduling protocols. The total of the way dentistry is regularly performed in each office is its technology.

But there are other important factors in the delivery of oral health care. The two big ones are variations among patients on the one hand and variations among dentists and their staffs on the other. Offices using very similar materials and methods can have differing outcomes depending on the number of staff employed or the skill level of the dentist. Professional development, whether through formal continuing education or careful observation of the outcomes of practice, can improve the effectiveness of practice just as surely as purchasing new equipment. In many cases, the introduction of new technology requires changes in dentists' skills and even hiring new people or rearranging their job responsibilities.

Dentists are great innovators. No one has done the research, and it might lead to wrangling over definitions, but my belief is dentists in practice regularly out-innovate educators, researchers, and manufacturers combined by several orders of magnitude. The sidebar lists just a few of the innovations I have been devised. But as we learned in the 1970s, very few patients are up for this sort of routine. Age characteristics, socioeconomic status, and proportion of patients with insurance or on MediCare benefits all impact the kind of dentistry performed and the technologies that are likely to be effective.

The current revolution in dentistry—the one where health is being taken out of oral health care—is a patient revolution. Somebody discovered that a segment of the population feels quite passionately about beautiful smiles, white teeth, and good breath. Composite materials, bonding techniques, bleaching, halitosis protocols, and all of the continuing education courses needed to establish these technologies in offices are secondary and driven by a new marketing relationship with patients. There is even a patient segment that has unrealistic fears of dental materials such as fluoride and mercury and exaggerated hopes that dental interventions can promote systemic health. Some of the technology and skills of dentists and their staffs is also pretty amazing.

Technology Users as Innovators

Dentists are great innovators. No one has done the research, and it might lead to wrangling over definitions, but my belief is dentists in practice regularly out-innovate educators, researchers, and manufacturers combined by several orders of magnitude. The sidebar lists just a few of the innovations I have been
Leadership

A Few Examples of Practice-Based Innovation

Vacuum system — Elbert O. Thomson
Reclining dental chair — Sanford Golden
Orthodontics — Edward Angle
Periodontics — Thomas Hartzell
Endodontics — Harry Johnston
Prophylaxis — Alfred Fones
Facial plastic surgery — Varazrad Kazanjian
Gutta percha — Asa Hill
Rubber dam — Sanford Barnum
First mechanical drill — Beall Morrison
Toothpaste tube — Washington Wentworth Sheffield
Lost wax method — William Taggart
Water fluoridation — Frederick McKay
Use of compressed air — C. Edmund Kells
Dental laser — Terry Myers

able to discover that come from dental practice. Nor is it surprising that this should be the case. MIT researcher Dr. Eric von Hippel has studied innovations in fields such as electronic measurement equipment in medicine and reports that something like 75% of innovations come from users rather than manufacturers of this equipment.

There seem to be four reasons behind most technology innovations. Some people are naturally curious and they want to do something they have never been able to do before or do it better, and the limitations of available technology stand in their way. Some of these innovators exhibit pure curiosity; they like making new technology. Some are instrumental innovators. They want to practice dentistry differently and they need a technology no one else can offer in order to make it happen. A famous example of the latter is William Morton, a dentist who developed the use of ether as an anesthetic. It seems he had earlier developed a snug-fitting palatal plate for holding prosthetic teeth. To work, surgical extraction of residual roots was required, and his patients frequently declined the plate because of the pain of surgical extraction.

The second class of innovators do it for the prestige and reputation. This includes most academics and other researchers. They are bound by a professional code to share their knowledge with other professionals and seek job security and status through the promotion and tenure that such innovation brings. Those on the continuing education circuit who expect greater rewards from talking about innovations than from using them to treat patients also fall into this category.

Another stimulus to innovation is the image of market leadership. Being the first to offer something new, even when others later copy you, creates an identity that confers status and stability. Think of Kleenex, Xerox, Cadillac, or Post-It. Some dentists have a reputation in the community for being technologically advanced, others have a reputation for friendly care, etc.

Most of the research on innovation has focused on the fourth motive, sustainable economic advantage. Innovation is usually prompted by an expectation of being able to provide goods and services with more added value for which higher fees can be charged, that increase market share, or can reduce cost of providing care. This does not explain, however, why in many areas such as dentistry the preponderance of innovation comes from users rather than producers.

In order to understand why dentists rather than researchers or manufacturers lead technological innovation, it is necessary to focus on the part about "benefits from innovation being sustainable." It does little good for researchers to develop innovations that they are expected to give away. Similarly, there is little advantage to manufacturers developing innovations that can be copied by the competition or by dentists themselves. There must be some mechanism for protecting the benefits of innovation on the part of those who create them.

A patent is misunderstood as a means of protecting innovations. The requirement of a patent is that it be a full, public disclosure in usable terms of the innovation—the adjective patent means "obvious or clear for all to see."

The current revolution in dentistry—the one where health is being taken out of oral health care—is a patient revolution.

In exchange for this disclosure that is registered in the patent office for the public good, the developer is granted a temporary period of exclusive use. Except for the area of pharmaceuticals and other industries related to chemistry, patents have been extremely difficult to defend in court and easy to circumvent through "co-discovery" or alternative
technologies. Trade secret agreements, which do provide some degree of security for sensitive information, have their limitations when manufacturers attempt to secure the cooperation of partners or illustrative. Although he did receive a to secure the cooperation of partners or technologies. Trade secret agreements, which do provide some degree of security for sensitive information, have their limitations when manufacturers attempt to secure the cooperation of partners or suppliers and when their sophisticated customers demand to know how technology works before investing in it.

Again, the case of William Morton is illustrative. Although he did receive a patent on anesthetic ether, enforcement of the patent bankrupted him and earned the censure of the professional community. Nitrous oxide and chloroform were developed as alternatives. Massachusetts General Hospital, where Morton first demonstrated ether, forced disclosure of the active ingredient as a condition for its continued use. And the worst abridger of Morton's patent was the U.S. Army which made extensive, unauthorized use of the discovery during the Mexican-American War.

Generally, the most powerful form of protection for an innovating individual or organization is the market lead-time necessary to copy the innovation. Complex innovations that require large manufacturing infrastructures might have a copy time of months to years. Intangible innovations such as an office culture could be sustained for many years. Perhaps the single greatest advantage that protects the innovations of dentists has to do with poor communication. Dentists are not expected to provide explanations about their technology to their customers. By contrast, manufacturers in the dental field must provide detailed information to the Federal Trade Communication, to dentists who could copy their innovations, and even in the form of research publications that are available to their competitors. Dentists do not normally communicate information about their technologies to other dentists either.

Dentists, because of their innate curiosity, the egos of some, and especially the sustainable economic potential of innovations that are protected by the professional and isolated nature of dental practice should be expected to out-innovate others in the field.

Innovation in technology does not always require an army of intellectuals or massive R&D facilities. Much of it can be done with off-the-shelf equipment and materials and knowledge that is in the public domain. Dentists have the discretionary incomes to do this easily. There is even a dynamic between manufacturers and sophisticated users that promotes low-tech innovation at the user end.

The market structure in America favors consolidation within industries as both a means of building infrastructure and a way to gobbling up innovations for advanced development through the acquisition of small firms. This pattern is very obvious in dentistry. An inevitable result of such consolidation is the need for higher rates of return or larger profit margins on products that are sold by larger firms. This is necessary to support the expanding infrastructures and react to stock market expectations for return on investment. As a consequence, most manufacturing firms concentrate on small incremental innovations that add features to their existing products. This is called moving a product up market. It is a rule of economics that up-market products have higher profit margins, thus encouraging established manufacturers to be conservative in their innovations. Another effect of up-market product migration is to create a vacuum for introducing new innovations at the lower end of the scale. Dentists, because they are extremely sophisticated consumers, naturally tend to fill this void at the low end of the market through their personal innovations. They are the first ones to become aware of these unserved market needs. It is also the case that this dynamic between manufacturers and their sophisticated users would favor innovations of certain types. Established manufacturers are more likely to make improvements in the functional capability of existing innovations. Users such as dentists would focus on the low-tech end of the innovation continuum and would stress innovations with characteristics such as ease of use and lower cost.

The kind of innovations that established manufacturers engage in are called sustaining innovations. Sustaining innovations are better ways of doing the same thing. New markets are not opened, but existing ones are better served. The alternative, the one that dentists most naturally pursue in their own practices, is called disruptive innovation. These offers something more than a result of such consolidation is the need for higher rates of return or larger profit margins on products that are sold by larger firms. This is necessary to support the expanding infrastructures and react to stock market expectations for return on investment. As a consequence, most manufacturing firms concentrate on small incremental innovations that add features to their existing products. This is called moving a product up market. It is a rule of economics that up-market products have higher profit margins, thus encouraging established manufacturers to be conservative in their innovations. Another effect of up-market product migration is to create a vacuum for introducing new innovations at the lower end of the scale. Dentists, because they are extremely sophisticated consumers, naturally tend to fill this void at the low end of the market through their personal innovations. They are the first ones to become aware of these unserved market needs. It is also the case that this dynamic between manufacturers and their sophisticated users would favor innovations of certain types. Established manufacturers are more likely to make improvements in the functional capability of existing innovations. Users such as dentists would focus on the low-tech end of the innovation continuum and would stress innovations with characteristics such as ease of use and lower cost.

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Interventions have been delegated at an increasing rate to auxiliaries. Tooth whitening is a disruptive innovation. Existing technology is used for a new purpose, and the patient plays a new role in both delivering care and determining the success of treatment. Other disruptive technologies might include changing the patient scheduling system to emphasize productivity rather than convenience to the dentist or using a newsletter and other approaches to developing patient relationships rather than focusing on building a pool of high income cases. (Remember, an innovation in technology need not be new to the profession, only new to the practice where it is introduced.)

**Diffusion of Innovations**

Innovations diffuse through social systems. This means that the characteristics of innovations influence the extent and the rate at which they are adopted by various individuals; but the nature of the social system through which they are defused is even more important. It is like pouring water or other liquids into various containers—the shape of the container matters more than the nature of the liquid.

Over and over again, the literature on diffusion of innovations shows an S-shaped adoption curve over time. Initially a few brave souls try a new way of doing things, and then a few more. Once a critical mass of between 10% and 20% of a group has adopted the new way of doing things, the future of adoption, both its speed and its extent, can be reasonably predicted. From the initial small number of slow adopters, a middle phase of rapid acceleration will eventually be followed by a tailing off as the last adopters come on board.

The S-shaped curve of innovation defusion gets its form from different behavior and personality patterns of adopters. For example, the roughly 15% who adopt an innovation after everyone else has gotten aboard, tend to be among the last to adopt other innovations as well. These laggards are often social isolates, orient towards the past, have few resources, and are also the first to drop an innovation and revert to former patterns.

At the other end are the innovators. This is a very small percentage, perhaps 3% to 5%, who are typically obsessed with innovativeness rather than the particular benefits of each innovation. They want to be the first to have or do whatever is new and will often abandon an innovation for the sake of another simply because others have joined them and thus they are no longer “avant guard.” Innovators tend to be technologically sophisticated, well connected to sources of information, and have the resources to try things that may not work very well. Surprisingly, first-adopters are not especially influential among their peers. Colleagues watch the experience of innovators in order to learn the technical outcomes of innovation, but they are seldom persuaded by the testimony of innovators.

The real power of peer persuasion comes from the second wave of individuals to pick up an innovation, called early adopters. This is the roughly 15% who bring an innovation to its critical mass. Early adopters generally have some combination of the following characteristics compared to later adopters: higher education, higher socioeconomic status, greater awareness of the media, high prestige in their group, surplus resources, and are in command of larger units (larger practices or political office in larger organizations). The personality of early adopters is high on empathy, ability to think abstractly and tolerate ambiguity, a scientific or rational orientation, and low on dogmatism and fatalism. Socially, early adopters are well connected with their peers and cosmopolitan. This later term means that they travel and read widely, they have friends and interests outside their major area of focus, and they take a broad perspective.

There is even a theory in innovation research called the “power of weak ties.” It has been proven, for example, that most individuals find their jobs through acquaintances and distant friends rather than through family or close friends. Those who are similar to us know the same things and value the same things we do, so it is hard for us to grow through their influence.

The early adopter group contains those who are most powerful in ensuring the spread of innovation. These are called opinion leaders and they operate through personal contact rather than reaching out to large audiences in a superficial fashion. In conservative organizations, such as American dentistry, opinion leaders are likely to be cautious regarding innovations in contrast to innovators who are sometimes regarded as indiscriminately optimistic. This is why Gordon Christensen and Robert Anderton have so much more power in the profession than do the gurus who have commercial interests in new products.

Regardless of where one is on the S-shaped curve that describes adoption of innovations, generally the same five-stage
A n innovation need not be new to the profession, only new to the practice where it is introduced.

(d) implementation, and (e) confirmation. An exception to this rule is the case where an innovation is considered and rejected. In this case, only the implementation phase is eliminated.

The steps that support a decision on changing technology involve knowing and feeling. Becoming aware that alternative ways of doing things are possible and learning about their potential advantages and costs are typically passive processes. They involve exposure to media, opinion leaders, change agents, and peers. It is very unusual to discover individuals, even among the early adopters, who show evidence of systematic search strategies for information about innovations. Even among the high-tech sophisticates, there is a reason why we talk about “browsing” the web. Awareness is principally a function of the richness of one’s media and social contacts, not the strategies one uses to mine them.

But innovation adoption is only partially a rational matter, and attitudinal factors are significant in the persuasion phase. The principal source of feelings about innovations come from one’s peers. This is especially the case among professionals. Early innovation research on the defusion of Tetracycline showed that the largest influence on adoption by physicians was the opinion of their close colleagues. My own research with dentists shows that the most frequently cited source of influence for adopting new procedures is the opinion of other practitioners.

Innovators tend to be technologically sophisticated, well connected to sources of information, and have the resources to try things that may not work very well.

lookup is the final stage called confirmation. If a new way of doing things has been compared with the traditional approach in any serious fashion, there are bound to be conflicts of thought and feeling regardless of whether the innovation is implemented or rejected. Arguments and emotions have been discovered and weighted on both sides. The action taken does not in itself reduce these conflicts. Once a course of action has been committed to, additional information and empathy will be sought in order to reduce the remaining dissonance. Normally this information and empathy seeking is strategic—it is designed to confirm the action taken. Good dentists know that the final stage of treatment presentation to patients is to confirm whatever decision the patient made in order to reduce “buyer’s remorse,” and help patients become enthusiastic about their choices.

Although the stress in this column has been laid on the culture through which innovations are spread rather than the innovations themselves, there are some characteristics of changes that make them more or less likely to be adopted or to be adopted with greater or less speed. The most important of these characteristics is the relative advantage of the new way of doing business compared to the current way. This criterion must be clearly understood to refer to the advantage in outcomes to the adopter rather than the physical properties of the change. For example, quick setting times for cements are helpful to seasoned veterans placing single units. Rapid setting times could present problems for multiple unit restorations or for dental students.

The second most important characteristic of innovations that influences their likelihood and speed of defusion is compatibility with current practices and values. With the possible exception of innovators, adopters of change prefer small and familiar increments rather than radical departures from current practice. The ability to test an innovation before committing to it completely and the ability to observe results from one’s own trials or the experiences of colleagues also enhance spread of innovation. The single characteristic that has been identified as retarding innovation is complexity. Innovations that have multiple parts, that require multiple changes by the user, that are difficult to understand, or are difficult to learn face a harder push up the S-shaped curve of the spread of innovation.

The evidence from dentistry that one's peers are the primary source of influence in adopting new practices.


Technology defined is the processes by which an organization transforms labor, capital, materials, and information into products and services of greater value. ... Innovation refers to a change in one of these technologies. Some innovations are sustaining in the sense of better serving existing customers functioning in the same value structure; some are disruptive because they create new markets. Established firms are locked by their customers and their own economic value structure into sustaining technologies. Over time, they tend to offer more than the customer wants as they reach for the big margins at the high end of the price/value curve. This creates markets for disruptive technologies that use simpler processes, have lower margins, and open new markets (uses). Offers the analogy of man learning to fly. It did not come about by mimicking what birds do but trying harder; it was a result of understanding the fundamental nature of flight and discovering new ways to put that knowledge to use. Five principles: (a) companies depend on customers and investors for resources, (b) small markets don’t solve the growth needs of large companies, (c) markets that don’t exist can’t be analyzed, (d) an organization’s capabilities define its disabilities, (e) technology supply may not equal market demand. Develops these ideas through analysis of computer disk drive and other industries. Christensen is a professor in the Harvard Business School and a former member of the Boston Consulting Group—the folks who invented the “cash cow.”


The classic studies in diffusion of innovation (tetracycline) among physicians. The critical role of personal contact among colleagues was established by this research.


The dean of innovation studies summarizes his own work and the accomplishments of the whole field over the past sixty years in a comprehensive and straightforward book. It is large and comprehensive, with 864 references in the bibliography. He argues that the adaptation of innovations goes through predictable stages and the extent of adoption is dependent on characteristics of the innovation and characteristics of the adapter community, as well as diffusion strategies such as the use of media, opinion leaders, etc. Innovation is a social process. The text is filled with rich case studies.


A bit of discouraging news for specialists who have participated in and value the process of consensus conferences for establishing standards in a field: few practitioners seems to be aware of current consensus, and they don’t pay much attention to it anyway. This is the finding from research in medicine, the only healthy care field to be studied.


The researcher who developed the concept explores the intricacies of individuals trading action and rationalization to maintain the appearance of consistency. This is where the notion of post-decision dissonance came from. Well researched.
<table>
<thead>
<tr>
<th><strong>Recommended Reading</strong></th>
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A classic and comprehensive treatment of the generalization that the social system through which an innovation diffuses is more important in determining the spread and extent of diffusion than are characteristics of the innovation itself. |
Less a trade book than a rewriting of published papers and research notes in the field, von Hippel used this format to make the points that users create more innovations than do suppliers or manufacturers in industries such as medical instrumentation, that professionals freely share technological information—even trade secrets—if they perceive this to be in their reciprocal, personal best interests, and that innovation is driven by an expectation of sustainable economic advantage. This is heavy reading, and half of the book is technical details of the research. von Hippel is a professor at MIT. |

**Editor’s Note**

Summaries are available for the three recommended readings preceded by an asterisk. Each is about four pages long and conveys both the tone and content of the book through extensive quotations. These summaries are designed for busy readers who want the essence of these references in fifteen minutes rather than five hours. Summaries are available from the ACD Executive Office in Gaithersburg. A donation to the ACD Foundation of $15 is suggested for the set of summaries on technology information; a donation of $50 would bring you summaries of all the 2001 leadership topics.