

Innovation and Entrepreneurship

Credibility:

The Future of Dentistry Depends On It

As is often the case, the first sign of trouble was a front-page article in a respected newspaper. On November 22, 2002, *The New York Times* published an article entitled, “Madison Ave. Plays Growing Role in Drug Research.”¹ The reporter, Melody Peterson, detailed how the three largest advertising companies in the United States “spent tens of millions of dollars to buy or invest in companies . . . that perform clinical trials of experimental drugs. . . .”

Of special interest to the dental profession was the article’s beginning. The reporter described how Bextra[®], a drug for the treatment of acute pain, had been marketed to dentists via publication of research study results in the *Journal of the American Dental Association*.² Ms. Peterson reported that 6 months before publication in the journal, federal regulators had rejected the claim that Bextra[®] offered relief from acute pain following dental surgery. This fact had not been reported in the research paper.

As Ms. Peterson continued in her article, the research reported in the study had not been conducted by academics, but by Scirex—a research firm owned partly by Omnicom, one of the world’s biggest advertising companies. The reporter noted that sales of Bextra[®] had soared 60% over the 3 months that followed publication.

Who could fault the dentists for prescribing Bextra[®]? A scientific paper had appeared in a peer-reviewed journal published by their national association. Shouldn’t this be enough to establish credibility for the dental community? Is it a conflict of interest for a scientific study to be sponsored by an advertising agency? Why hadn’t the editors of the journal required the authors to disclose this relationship?

The nagging questions this article generated suggested that when the objectivity of science is questionable, it undermines the credibility of the product (Figure 1). Ms. Peterson’s article raised questions we should be asking: “Is there an impartial resource for health care professionals to contact to confirm the validity of these reports? And if not, why not?” Apparently, something like this was needed before the use of Bextra[®] (Figure 2).

While such a center would benefit providers, it would also help manufacturers. Introducing a new service, technology, equipment, or product to market, especially the dental market, is expensive and risky. Establishing credibility is therefore a critical element of any marketing strategy. The effects of SUV accidents on tire sales, for example, and recalls of contaminated ground beef on hamburger sales, illustrate the importance of credibility in establishing and maintaining product value.

In a recent article, Robert Ganley wrote, “We have seen more change in dentistry in the last 10 years than we have in the previous 25 We have seen changes in the products we use, the education we promote, the techniques we employ, the markets we serve, and even the industry as a whole.”³ Similarly, Jeffery Lavers has observed, “Today more than half of the economic

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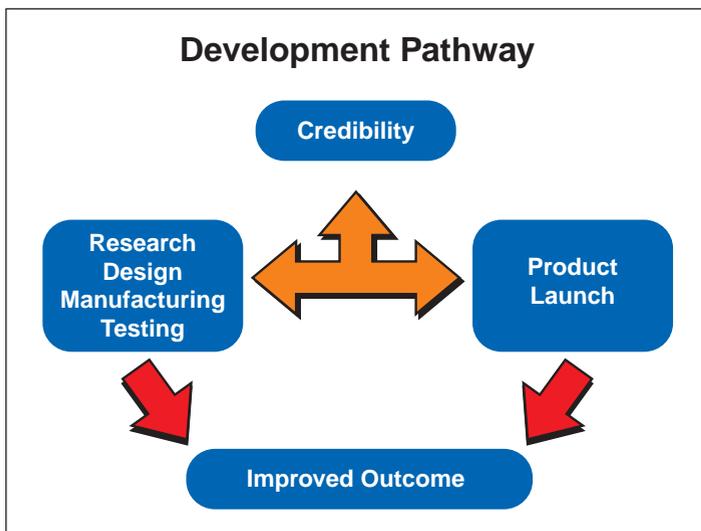


Figure 1—Establishing credibility during each step of a product's development increases its chance for wide acceptance.

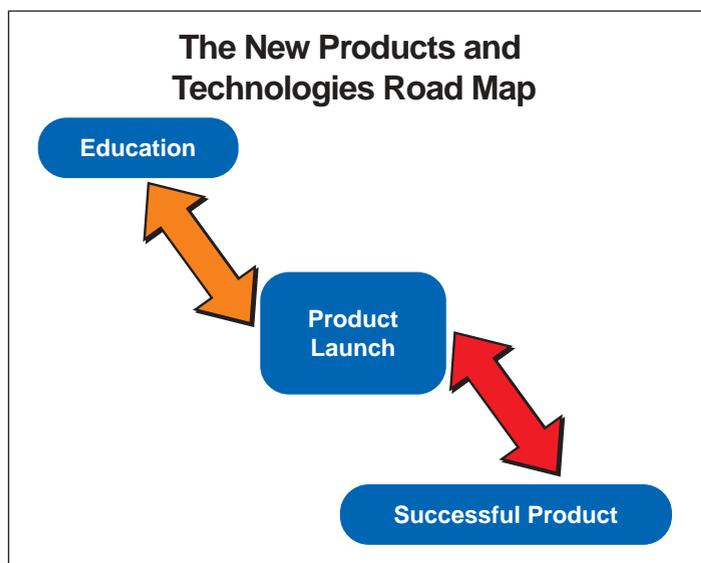


Figure 2—Dentists need an educational resource center to confirm the validity of new drug studies.

value of dental care comes from procedures and treatments that were not available 20 years ago."⁴

These comments suggest two facts: One, new products are being introduced into the profession faster than ever before, and dentists are using them to maintain or enhance their income. Two, because of the rapidity with which new products are being used, and their importance on the economic health of the profession, the dental industry should expect the demand for new products to continue.

What types of new products might dental professionals expect? They have only to scan the titles of recent symposia and seminars at dental meeting to realize the profession is mov-

ing rapidly from a surgically based discipline to one that is medically based. This suggests that for dentists to provide medically based services, they will need to acquire biochemically- and biologically-based diagnostic and therapeutic products and technologies. Fortunately, these bio-based products are already in the discovery pipeline awaiting commercialization. If, as anticipated, the demand for these products grows, the dental industry will no doubt pull such products and technologies from the pipeline and begin their push into the marketplace. The introduction of new products, especially those with which the dentist is unfamiliar, often requires the distribution of educational information, including the results of research studies published in reputable scientific journals.

But because of *The New York Times's* exposé, and the concern it has engendered in the minds of dental professionals and the public, the dental industry will require a credible source to quote and a resource where dentists and the public can turn for verification and peace of mind. In other words, establishing credibility will be critical for a product's successful entry into the market place.

Monsanto's experience following the introduction of genetically engineered crops, illustrates how the failure to consider credibility affects marketing of a new product. Monsanto's marketing efforts were met with hostility, especially in Europe. While many scientific factors might have justified this negative response, had Monsanto first campaigned to inform the public of the crops' advantages, discussed their potential dangers, and sought input from the groups, including environmentalists, that would be asked to evaluate the products, the response might have been different. Instead of a campaign to establish credibility, Monsanto charged forward with marketing the product—a strategy that caused significant financial hardship for the company and alienated the public that might actually have benefited from the new product.

The issue of credibility will be especially important in the marketing of new bioproducts, those based on biological findings of the last 10 years (Figure 3). The science underlying these new products most likely is outside the scope of the educational paradigm of most dentists in practice today. This makes it diffi-

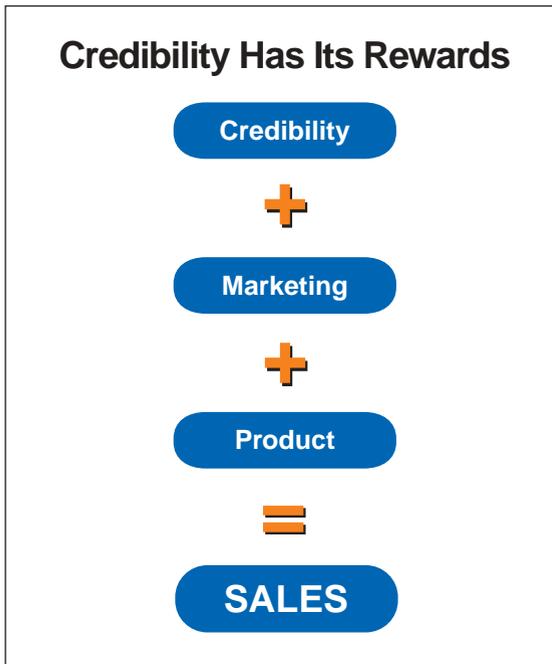


Figure 3—Credibility will be especially important in the marketing of new bioproducts.

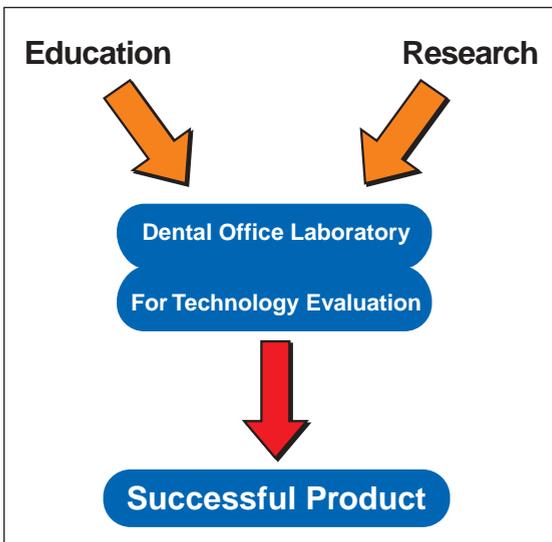


Figure 4—Establishing a dental office technology laboratory would allow the study of a product's interaction with participants in the commercialization process.

cult to evaluate the product. In addition, dental schools do not offer courses in technology evaluation, so that graduates have no framework within which to evaluate manufacturer claims, especially conflicting ones. As a result, they delay purchasing new products until some colleague or study convinces them. Clearly, if the manufacturer could point to a generally agreed upon credible source, the sale might occur more quickly.

Of course, the need to educate dentists about new products is not new to the dental

industry, as evidence by its plethora of workshops, seminars, and printed and electronic materials. Clearly, the dental industry is well aware that the ability of dentists, or dental office personnel, to evaluate products and technologies is critical to sales. However, the need for credible educational materials and objective product evaluation will become more acute, because, for those new products not evaluated in academic institutions and the Food and Drug Administration (FDA), dentists must rely on results produced by a patchwork of testing organizations that are not regulated and that operate in the absence of oversight by any accrediting body. As a result, decision-making about the purchase of a new product is guided by reports that are

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usually prepared without scientific rigor or oversight and therefore, are for the most part, verging on anecdotal. For the purchase of new products based on genomic manipulation, for example, the dentist must be confident that the product or technology was tested using best practices and methods in a setting independent of any influence.

Evaluation and Testing Options

The *New York Times*' revelation that a research organization can be owned wholly or in part by an advertising firm, and that a study published in a respected scientific journal could be unreliable, suggests that the dental industry should consider alternatives for product evaluation and testing. As I see it, the dental industry has several options:

- Outsourcing testing to an outside agency.
- Supporting a testing laboratory owned by the dental industry.
- Encouraging dental schools to develop evaluation centers.

Outside Agency

The dental industry has several opportunities for outsourcing testing. One possibility would

have products tested through collaboration with a government agency, such as the National Institute of Health (NIH) or the National Institute of Dental and Craniofacial Research (NIDCR), through a mechanism called a Cooperative Research and Development Agreement (CRADA). Another opportunity would be through the National Institute for Standards and Technologies (NIST), which performs such a function for other industries.

For the dental industry, the Paffenbarger Research Center at NIST, sponsored in part by the NIDCR and the ADA Health Foundation, and ably directed by Dr. Fred Eichmiller, performs such functions, usually on a contract basis. Another option would be for-profit contract research organizations and not-for-profit testing facilities. While both have served the industry well in the past, it is not clear whether either can provide sufficient credibility for today's consumer.

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Testing and Evaluation Facility

The establishment of a wholly-owned testing and evaluation facility is another possibility, and has enjoyed success in other industries. In 1953, Ford opened a research center; in 1956, General Motors opened the Warren Research Center. IBM created Watson Labs in 1956, and AT&T established Bell Labs in 1925. While these industries companies had sufficient financial resources to develop their own research facilities, they opted to share financial responsibility.

One example of successful industry cooperation was the computer chip consortium, International Sematech, created in 1980 as a joint venture among American chipmakers IBM, Intel, Texas instruments, Hewlett-Packard, and Advanced Micro Devices, and the federal government. A key purpose of the consortium was to set industry standards to ensure that products were compatible and interchangeable. Another was to develop materials and tools necessary to

manufacture chips, and methods and procedures for testing them.

This option may have only limited application to the dental industry. Except for some companies like Procter and Gamble, Colgate-Palmolive, and 3M, most could not financially support a research, testing, and evaluation laboratory. Although the formation of a consortium might be possible, the products developed by the dental industry would face regulatory issues by agencies such as the FDA—issues that the automotive or computer industries do not face. Thus, because of these and other differences between the automotive, computer and dental industries the formation of a consortium might not be a viable alternative.

Collaboration With Dental Schools

This leaves a third option: collaboration with a dental school to develop a technology evaluation center. This would offer many advantages. First, both the dentists and the public consider academic institutions and their faculty to be credible. Second, there is need for academic programs to train dental students in technology evaluation to better prepare them for the acquisition of new products. Third, there is a need for research programs to determine the variables affecting the acceptance of new products by dental office personnel. Finally, the presence of a center at a dental school would provide manufacturers with a venue for introducing new products to dental faculty and students.

The unique relationship between the dental industry and its primary customer—the dentist—cannot be ignored. Industries such as the automotive, computer, or telecommunications, do not have academic institutions exclusively dedicated to the education of their customers. As in medicine and pharmacy, the dental academic system not only controls what each customer learns, but it controls the number of customers in its market through regulating the total number of dental graduates each year.

As discussed in my last column, in the December 2002 issue,⁵ today's dental students are exhaustively trained in the scientific method, and in the application of this method to research studies on dental procedures. However, dental programs do not teach how to apply the analytical skills used

so effectively in evaluating research studies, to the scrutiny of new products. By collaborating with dental schools, the industry could encourage the offering of research and educational programs that would link the evidenced-based process used in clinical dentistry to a similar evidenced-based process useful in evaluating new products and technologies.

While the mission of this center would be to incorporate the scientific method (the sequence of “observation → hypothesis → experiment”) into the technology evaluation process, it would develop a unique approach to conducting research in this area. The center’s research laboratory would be designed as a “dental office,” which generally serves as a gatekeeper to the flow of new products from the laboratory, to the manufacturer, and eventually to the public.

Research within the confines of a dental office laboratory would allow a study of the product’s interaction with most of the players in the commercialization process. This includes the office work force (dentist, hygienist, assistants, and appointment personnel), dental industry representatives, and patients (Figure 4).

The dental industry is well aware that the ability of dentists, or dental office personnel, to evaluate products and technologies is critical to sales.

Management of a dental office, often with a significant number of office personnel, can be a complex task, and because most dental school curricula omit this competency, dental school graduates are ill prepared to work efficiently and productively in the early days of their career. It is up to the dentist to acquire these skills, either through postgraduate programs or, sadly, by trial and error. The use of a dental office laboratory by this center would allow dental students to acquire a variety of management skills and enhance their office productivity.

The dental office work force rapidly develops a pattern of interaction that soon becomes routine. It is possible for the office routine to become so ingrained, that the routines themselves begin

to take on a life of their own—procedures are performed a certain way because that’s the way they were always done and no one knows, or remembers, exactly why. Thus when a new product is perceived as disruptive to the routine of the office, the office staff may immediately reject such products despite the fact that they might improve the oral health of the patients. A center is needed to conduct research on the “disruptive quotient” of a new product and to develop methods to reduce it.

The innovative use of the dental office as a research laboratory would allow for studies on other barriers to commercialization. For example, within the dental office laboratory, the center could study:

- The role of stakeholders (including industry representatives and patients)
- Identification of the barriers to acceptance of new products and technologies
- The magnitude of these barriers
- Development of strategies to overcome the barriers
- The type of technology (disruptive vs sustainable)
- Diagnostic and treatment philosophy of the dentist
- Practice management techniques in use

Such a dental office laboratory for product and technology evaluation would be unique in that it would combine the disciplines of human factors engineering, ergonomics, practice management, time and motion studies, dental office architecture and dental office psychology for the purpose of promoting the introduction of new product and technologies into the market place.

The dental industry already collaborates with a number of academic institutions for product evaluation. However, neither the dental industry, nor dental schools have a site or a program where dentists, and other dental professionals are taught the basics of entrepreneurship and technology evaluation. The establishment of a technology evaluation center as a collaborative effort between the dental industry and dental schools would provide an opportunity for these basics to be incorporated into the curriculum in a way that meets academic standards and industry needs of impartiality, objectivity, and credibility.

The organization of such a center would be critical to its success. The center should have

a board of directors, whose members represent various sectors of the profession, including the dental industry. In this way, the industry could have input into the policies set by the board, while the presence of others would preserve the impartiality of the board in the eyes of the dental profession and the public. Also, by operating within the authority of the dental school's administration, the center's efforts would be seen by the dentist and public as objective.

In addition to education and research in technology evaluation, such a center could act as a central repository of information and a place for members of the dental profession to contact for product and technology information. Because the center would be credible, it could provide the answer to the questions about conflicts of interest raised in *The New York Times* article.

So who could the dentist call to verify credibility in the future? The center, of course.

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References

1. Petersen M. Madison avenue plays growing role in drug research. *New York Times*, November 22, 2002:1.
2. Daniels SE, Desjardins PJ, Talwalker, et al. The analgesic efficacy of valdecoxib vs. oxycodone/acetaminophen after oral surgery. *J Am Dent Assoc.* 2002;133:611-621.
3. Ganley RA. Linking up for success. *Dental Economics.* 2002:56-62.
4. Lavers JR. Market trends in dentistry. *Dental Economics.* 2002:64-72.
5. Rossomando EF. Desperately seeking: an educational program to integrate entrepreneurship with clinical dentistry. *Compend Contin Educ Dent.* 2002;23:1160-1162.

Columnist's Note: Thank you to those who contacted me about Biodontics and about the next Entrepreneurial Venture Fair. Your comments are always welcome especially those requesting information about entrepreneurship and innovation.