



**Figure.** Map of six input components of dental care shown in the gray circle. These input components are supported by the skill and knowledge disciplines shown in rectangles.

A map (Figure) was developed to demonstrate input components of dental care arising from a variety of skills and knowledge disciplines. Students are encouraged to consider how the care they deliver to patients is impacted by six input components:

1. "Evidence" supported by evaluation and literature search skills
2. "Ethics" supported by personal/moral skills
3. "Financial considerations (dollars)" supported by business skills
4. "Quality considerations" supported by assessment and management skills
5. "Outcomes of care" supported by measurement skills
6. "Clinical decisions" supported by decision theory and testing skills.

Students are further encouraged to seek "life-long learning" in these underlying skills as they continuously improve the quality of care delivery to patients.

While the map provides a context for long-term skill

development, the course focuses short term on developing library skills necessary for evaluation of clinical evidence. Two projects actualize this goal. In one project students complete a qualitative exercise in which they identify a clinical dental procedure and use Medline search protocols to identify and retrieve at least one article from the refereed dental literature in each of the following categories: case report, laboratory experiment, clinical trial, epidemiologic study, guideline or protocol paper, and literature review, or meta analysis. Based on this cursory review, the student writes a statement summarizing the evidence associated with the topic and makes a recommendation to dental practitioners regarding the degree to which the literature objectively supports the procedure. Students also complete a quantitative exercise in which they construct a decision matrix based on data from a refereed journal. These 2-by-2 tables compare clinical diagnostic findings against gold standard diagnostic measures in order to identify false positive and false negative rates of the clinical test. Based on these tables, students calculate sensitivities, specificities, predictive values, and accuracy measures and develop written advisories to practitioners on the test's clinical utility.

These exercises provide learning experiences through which the abstract concept of evidence-based practice is translated into concrete activities of direct clinical relevance. It is our institutional goal that such activities will encourage students to actively incorporate objectivity into their current learning and future careers.

In sum, "Scientific Inquiry" is an attempt to heed G.V. Black's advice to dental practitioners. He stated clearly, "Professional life is an exhibit of helpfulness. This can be best accomplished by giving judicious and careful advice."

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## The scientific basis for treatment and the Texas Medicaid experience

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This story begins on Sunday morning, October 1, 1995, when the front page of the *Houston Chronicle* was devoted to the first of a series of articles about the Medicaid system in Texas. The focus of the articles was the practice patterns of Texas pediatric dentists who were Medicaid providers. Large color photographs of two children who had died as a result of treatment by pediatric dentists were the lead-off for a story charging abuse, fraud, and lack of oversight in the Texas Medicaid system. A 3 1/2-year-old died as a result of sedation complications, and a 13-

month-old died during a general anesthetic in the hospital. The article claimed that the main perpetrators of the alleged fraud were pediatric dentists who were greedy and overused stainless steel crowns and behavior management codes. Pediatric dentists also were accused of using dangerous sedation and general anesthesia for their convenience. The reporter stated that authorities believe pediatric dentists "sedate children with potentially life-threatening drugs so that they can complete their work more quickly" and "put children in the hospital, under always-risky general anesthesia,

in part because a 'hospital call' puts \$75 in the dentist's pocket and in part because it's easier to put crowns on a child who's anesthetized than one who's awake and flailing in the chair." It also charged that "a small group of dentists [are] paid millions of tax dollars a year for procedures that may be unnecessary and dangerous". It was reported that the Department of Health had suspended on-site dental reviews [audits] in response to a large Medicaid provider [pediatric dentist] in central Texas who had threatened to quit the Medicaid program over the "Gestapo" tactics of an investigator.

The insurance company that runs the Medicaid program in Texas maintains profiles on all providers to show how they compare to their Medicaid peers for 40 selected procedures. The newspaper was given the profiles for the 30 dentists with the largest Medicaid incomes between 1992 and 1994. Seventeen of the 30 were significantly above their peers in at least one of four categories: crowns, behavior management, average amount paid per patient, and average number of services per patient. The 14 dentists who were accused of overuse of behavior management codes were identified by name, practice location, and three-year Medicaid income. Additionally, eight dentists were quoted defending their use of behavior management techniques. Twelve of the 14 singled out for this notoriety were pediatric dentists.

This attack seemed unrelenting and focused on pediatric dentists. There were eventually a total of six articles, and the Commissioner of the Texas Department of Health appeared before a special legislative hearing to answer the charges of lax monitoring. When the dust settled and the emotions of the moment subsided, we began to objectively analyze the articles. It was most enlightening to discover several very important issues that required action on the part of the Texas pediatric dentists and should be shared with the national pediatric dentistry community.

The first issue that became apparent was the lack of support we as pediatric dentists had from our dental community and from the government officials who oversee the programs we use. It became clear that they do not understand who we are, why we do what we do, or the problems we encounter in providing care to children. The following are several alarming examples from within the profession. One very important, highly respected member of the Texas dental community, a recent former president of the Texas State Board of Dental Examiners, was quoted in the article saying "I can't imagine a 1-year-old child having stainless steel crowns." Other dentists who were interviewed told the reporter, "it would be unusual, although not impossible, for a 13-month-old child's teeth to be in such bad shape that only crowns could preserve them." One Texas pediatric dentist was quoted as saying most children that age (13 months) "really haven't had their teeth long enough to have a cavity." When our fellow professionals do not support us, we have a great deal of educating

to do, both while they are in dental school and after they begin practice. We must provide them with a knowledge of the data which support our decisions.

The second issue, that we are perceived as making income-driven decisions, is further proof of a lack of knowledge on the community's part of the data behind our decisions and the outcomes of our efforts. Not one time did the article mention the thousands of children who received quality dental care and will have vastly improved chances for a healthy permanent dentition because of the services provided by pediatric dentists. Four hundred thousand children received beneficial treatment from dentists participating in the Texas Medicaid programs this past year. Pediatric dentists have made a major contribution in providing this care, because they report accepting Medicaid as payment for services more frequently than general dentists.<sup>1</sup> Those services were provided at fees that are approximately 50% of the usual and customary fee. Under less sensational circumstances, the individuals who were portrayed as such "money-driven providers" would be considered heroes for providing much needed services to segments of the population that many dentists are not willing to treat.

Another issue that became apparent during further analysis of the articles was the comparison of "provider summary profiles" for all dentists as "peers." This comparison is invalid because general dentists and pediatric dentists are not peers except that they are both dentists. McKnight-Hanes et al., have published numerous articles based on surveys of both types of practitioners, which give clear evidence that pediatric dentists and general dentists practice differently.<sup>2-6</sup> Pediatric dentists are different from general dentists in that they recommend exposing more diagnostic radiographs, restoring smaller interproximal lesions, placing more stainless steel crowns, and using a broader spectrum of management techniques including oral sedation, general anesthesia, and physical restraint. The difference in dental services recommended by pediatric dentists is based on several facts. They report treating younger children and perceive them to have more severe dental caries than those treated by general dentists.<sup>7</sup> They are familiar with the literature reporting the superior durability and life expectancy of stainless steel crowns in the young child 4 years of age and younger.<sup>8</sup> They are more comfortable with the use of stainless steel crowns as a result of their training. In an increasing number of dental schools, predoctoral students have limited opportunities to place stainless steel crowns on primary teeth.<sup>9-11</sup> Therefore, it is reasonable to expect that many general dentists have little experience with stainless steel crowns, and as a result, are more likely to place amalgam restorations.

Additionally, recent U.S. studies of the epidemiology of caries indicate different geographic patterns of concentration.<sup>12-13</sup> South Texas has one of the largest populations of children at risk for nursing bottle car-

ies.<sup>12</sup> A comparison of "provider summary profiles," without a knowledge of the distribution of caries by geographic locale, could make some practitioners appear to overuse general anesthesia for dental rehabilitation in the hospital. Pediatric dentists recognize that their obligation as specialists is to see the children the general dentists is not willing or able to treat. These include the very young child, the uncooperative child, and the child with extensive disease and more complicated restorative needs. The combination of young age and more extensive disease will result in more aggressive use of stainless steel crowns and pulp therapy than in the older child typically seen by the general dentist. Also, there has been considerable shift in parental, legal, and professional attitudes toward behavior management techniques with respect to their acceptability.<sup>14-17</sup> It is no longer considered to be in childrens' best interest to hold them down or scare them into submission to perform dentistry in a clinical setting. Changing informed consent standards require much greater disclosure of details of behavior management techniques such as hand-over-mouth.<sup>15, 17</sup> These changing attitudes have led to increased use of sedation and general anesthesia by pediatric dentists. We must have provider profile comparisons based on like practitioners, pediatric dentists to pediatric dentists, on patient treatments in similar geographic locations with similar caries risks and experiences, and on comparable age groups of patients. It is impossible to judge the appropriateness of the dental care rendered without a knowledge and an understanding of the many factors referenced in the dental literature that affect behavior management and restorative decisions for the young child.

The final issue driven home by all of this is the importance of having a scientific basis behind the treatments we render. On every instance of attack, I went to our literature to search for data to defend our actions and decisions. Sometimes it was there, and sometimes not. It is particularly alarming to search for the evidence and find it essentially nonexistent. Our students are being attacked for practicing according to the treatment philosophies we taught them, and it is our duty as academicians and program directors to defend them. We must increase the base of literature that supports the curriculum in our programs. We must collect data from our practices and analyze it for outcomes.

As an academician and part-time researcher, never before now have I felt as strongly about the need for the science behind our treatment decisions. The strength of this feeling is based on this harrowing year of attack and seeing the power of the press to forever alter lives. It has been hard to watch people suffer, both practitioners and patients, and to realize that the only

defense was with the science in our literature. We must have documentation available to educate those who have the power to control the practice of dentistry.

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