



Journal *of the* American College *of* Dentists

How the Future of
Dentistry Looks to
Young Practitioners

Winter 2020
Volume 87
Number 4



Journal of the American College of Dentists

**A publication advancing
excellence, ethics, professionalism,
and leadership in dentistry**

The *Journal of the American College of Dentists* (ISSN 0002-7979) is published quarterly by the American College of Dentists, Inc., 839J Quince Orchard Boulevard, Gaithersburg, MD 20878-1614. Periodicals postage paid at Gaithersburg, MD, and additional mailing offices. Copyright 2020 by the American College of Dentists.

Postmaster—Send address changes to:
Managing Editor
Journal of the American College of Dentists
839J Quince Orchard Boulevard
Gaithersburg, MD 20878-1614

The 2020 subscription rate for members of the American College of Dentists is \$30 and is included in the annual membership dues. The 2020 subscription rate for nonmembers in the United States, Canada, and Mexico is \$40. All other countries are \$60. Foreign optional airmail service is an additional \$10. Single-copy orders are \$10.

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

While every effort is made by the publishers and the Editorial Board to see that no inaccurate or misleading opinions or statements appear in the *Journal*, they wish to make it clear that the opinions expressed in the articles, correspondence, etc., herein are the responsibility of the contributor. Accordingly, the publishers and the Editorial Board and their respective employees and officers accept no liability whatsoever for the consequences of any such inaccurate or misleading opinions or statements.

For bibliographic references, the *Journal* is abbreviated *J Am Col Dent* and should be followed by the year, volume, number, and page. The reference for this issue is: *J Am Col Dent* 2020; 87 (4): 1-44.

Member Publication
AADEJ
American Association of Dental Editors & Journalists

Communication Policy

It is the communication policy of the American College of Dentists to identify and place before the fellows, the profession, and other parties of interest those issues that affect dentistry and oral health. The goal is to stimulate this community to remain informed, inquire actively, and participate in the formation of public policy and personal leadership to advance the purpose and objectives of the college. The college is not a political organization and does not intentionally promote specific views at the expense of others. The positions and opinions expressed in college publications 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 potential 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.



Editor

David W. Chambers, EdM, MBA, PhD
dchamber@pacific.edu

Managing Editor

Theresa S. Gonzales, DMD, MS, MSS

Editorial Board

Rick Asai, DMD
Phyllis Beemsterboer, EdM, MS
Greg Chadwick, DDS, MS
R. Bruce Donoff, MD, DMD
Nancy Honeycutt, CAE
Robert Lamb, DDS
Philip Patterson, MA, PhD
Ken Randall, DMD
Lindsey A. Robinson, DDS
Harriet F. Seldin, DDS
Robert Sherman, DDS
Ronald Tankersley, DDS

Design and Production

Annette Krammer, Forty-two Pacific LLC

Correspondence

Address correspondence relating to the Journal to:
Managing Editor
Journal of the American College of Dentists
839J Quince Orchard Boulevard
Gaithersburg, MD 20878-1614

Letters from Readers

Comments concerning any material appearing in this journal are welcome at dchamber@pacific.edu. They should be no longer than 500 words and will not be considered after other letters have already been published on the same topic. The editor reserves the right to refer submitted letters to the Editorial Board for review.

Business Office

Journal of the American College of Dentists
Tel. (301) 977-3223; Fax. (301) 977-3330

Officers

Leo E. Rouse, President
Richard E. Jones, President-elect
Robert M. Lamb, Vice President
Robert A. Faiella, Treasurer
Stephen A. Ralls, Past President
Theresa S. Gonzales, Executive Director
David W. Chambers, Editor

Regents

Paula K. Friedman, Regency 1
Peter H. Guevara, Regency 2
Carole M. Hanes, Regency 3
Terry L. Norris, Regency 4
Thomas E. Raiman, Regency 5
Douglas W. Bogan, Regency 6
Gary S. Yonemoto, Regency 7
Lance M. Rucker, Regency 8
Joseph Crawley, At Large
Teresa A. Dolan, At Large
Stephen M. Pachuta, At Large
Toni M. Roucka, ASDE Liaison

Michael C. Meru, SPEA Liaison
Toni Roucka, ASDE Liaison
Andrea Fenton, Regent Intern

2020 ACD Annual Meeting

5 Duty

President-elect's Address: Leo Rouse, DDS, FACD

7 That's What Leaders Do

Convocation Address: Richard Thomas, DDS, MD, FACD

11 2020 ACD Awards

16 2020 Fellowship Class

How the Future of Dentistry Looks to Young Practitioners

21 The Sky Is Not Falling

Christian Piers, DDS, MS, MFA

27 Forecasting the Future

Brooke Elmore, DDS, FACD

30 The Secret to Our Future: Leadership

Daniel A. Hammer, DDS, FACD

33 Dentistry 2040: Rise of the Algorithm

Ken Randall, DDS, FACD

37 Dentistry in the ACD's Second Century

Erik G. Klintmalm, DMD, MPH, MA, FACD

Departments

2 From the Editor

Ethical Tough Love

41 2020 Article Index



Cover image The future of the profession belongs to those who will live there.

© 2020 alphaspirt, crushpixel.com. All rights reserved.

From the Editor

Ethics Should Fit the Scope of Practice

One of the ethics substitutes on offer today may be very solid talking about ethics without checking to see what difference that makes in practice.

Let's be honest about it. Being ethical is going to cost you something. You may lose friends by suggesting even a slight disapproval of their behavior. Others are taking advantage of insurance loopholes but you are forgoing that benefit. There is a big hit associated with practicing in a community with a high need for oral health care instead of one with preferences for high-end treatments. It would be better if someone else called out a misleading advertiser. Overtreatment is almost becoming widespread enough that we should not "leave anything on the table."

Talking about ethics is always easier. It is a sound bet that dentists know ethical behavior when they see it. I believe this because people tell me that they heard or read good ethics stuff. We are proud to have made presentations at a school. We are learning to talk the language of ethics.

American firms spend annually \$90 billion to bring and keep employees up to the standard of performance. This does not include the military, the nonprofit sector, or CE programs for independent professionals. Donald Kirkpatrick, a leading name in the field, has misgivings about the wisdom of that investment. The cost is obvious; the payoff is not so clear.

The Kirkpatrick model identifies four levels in training. The most immediate effect, called "reaction" or Level I, is reflected in how participants feel about the experience. Did the speaker appear knowledgeable, was the material interesting, were the Danish fresh? CERP and PACE require that organizations sponsoring CE programs collect this information, which is why all the forms filled out immediately following the course look so similar.

Level II in the Kirkpatrick model is "knowledge." Can participants answer questions about what was covered? The link between reading an article and then answering a few multiple-choice questions is designed to get at this. I have never seen this approach used at a live presentation. Many times dentists already know the answers to the questions, so it is not necessarily a test of "learning." It is an "open book" test, and some game the system by marking A for all answers, recording the correct responses from the feedback, and then reentering the keyed responses—all without ever looking at the material. You would be shocked to learn how many have earned their CE credits for ethics on the ACD web page this way.

The third level in the model is "performance." What behavior is different following the training? Now we are getting somewhere. All those course objectives that say the participant will "understand X" show

we have given up before we start because understanding is not a behavior. Perhaps the first research paper I published followed dentists who had attended a CE course on four-handed, sit-down dentistry. I literally followed them, visiting their offices about a month after the course. Not much had changed and there was no association between making changes and ratings of liking the course or on the test of knowledge we administered. But one participant was enthusiastic about the suggestion that blue was a soothing color and repainted his office. His chairside assistant pulled me aside and motioned to the amalgam triturator beside the chair. I raised my eyebrows in a questioning way. She gestured toward the lab and said, “It used to be in there before he took the course, didn’t he mention that?”

Level IV cannot be determined by getting the participants’ reactions, testing their knowledge, or even observing their behavior. Does the training make any difference to the “outcomes” of the organization or, in the case of dentistry, to oral health? Those on the CE circuit sometimes imply that the dentists’ bottom line will bend in the right direction based on the presentations. But hard evidence of the actual outcomes are rare. Practice-wide changes in patients’ mouths just never seem to be measured.

The dental CE industry should not be faulted for nearly exclusive emphasis at the low end of the

Kirkpatrick model. That *is* where the payoff is for CE providers. Filling the seats is the fourth level for presenters and their sponsors. One of the ethics substitutes on offer today may be very solid talking about ethics without checking to see what difference that makes in practice.

It is not easy to determine the value of talking ethics because there are so few ethics courses, and most of them are requirements for dental students, not choices of practitioners. There is an average of 34 hours of this attendance during the four years of school, and since most courses are ungraded, it would be a matter of faith to say we are aiming any higher than understanding, perhaps.

Occasionally a colleague in practice will send me a note saying he or she just heard an excellent speaker on ethics. I keep a list, but what is clear is that the same names seldom recur. That makes me wonder about the depth expected of ethics experts.

In dentistry there is a celebration of Kirkpatrick’s entry level in ethics training. State boards regularly penalize scofflaws by requiring that they participate in a set number of hours of training. Boards also feel good about the prospect of mandatory CE on the state’s practice act (called ethics training). It almost seems as though ethics training is a penalty.

It is not easy to determine the value of talking ethics because there are so few ethics courses, and most of them are requirements for dental students, not choices of practitioners.

I salute all dentists, and there are many, many of them, who are willing to pay the cost to act more ethically.

I am sympathetic to my friends working in dental ethics who say, “Well, you have to start somewhere, and getting them in the room to learn some theory about ethical principles establishes the necessary foundation.” I wish there were evidence to support this. I know of none. Some years ago a friend let me try a little test in his dental school ethics class. Students filled out a survey on James Rest’s *Four Component Model of Ethics*. Rest’s idea, much like that of Kirkpatrick, was that ethics has to rise above the level of good thinking to be noticeable. His four components are (a) recognizing when ethical issues exist; (b) reflecting on theory; (c) integrity or being the kind of person who values ethics; and (d) moral courage, the guts and interpersonal skills to do something specific that others would notice. I also asked students to nominate one or two of their classmates whom they regarded as being especially ethical. Three of the four components were predictive of being recognized by one’s peers as being ethical. Only theoretical knowledge, what we teach in school and CE courses at the second level in Kirkpatrick system, failed to auger for being ethical.

I realize that this may be an offensive message to some. Is Chambers really saying it is wrong in some sense to be putting an emphasis on ethical training? And if so, shame on him. Yes, this is a hard message. I am worried about the few with every good intention, struggling with severely constrained resources in competition with commercial and other “success” messages. Because this is part-time work for us we must of necessity work at the low end of

Kirkpatrick’s model. This may be a signal that the profession has had enough. I accept this. My fear is that the novelty of Level I and II ethics (motivational talk and theoretical analysis) has run its course and interest has turned to other topics. The choice is whether we pay less attention to the talking about ethics or more attention to performance and outcomes.

I salute all dentists, and there are many, many of them, who are willing to pay the cost to act more ethically. What do they get in the bargain? Surely they feel better about themselves and sleep better at night. Not wanting to diminish the value of this, so do many of those who just talk about being ethical. And so do many of those who tarnish the reputation of the profession.

In the end, there may be only one justification for BEING ethical: one makes the world around oneself better. The reward is to live in a healthy community, to work among upstanding colleagues, to contribute to and be a part of the kind of community you would like to live in. The great reward for being ethical is to live among others who are ethical.



President-elect's Address

Duty

Leo Rouse, DDS, FACD

October 15, 2020
Washington, D.C.

Good afternoon colleagues, it is a privilege to address you today as the president-elect of the American College of Dentists. You have a home in the college. You have earned it by your leadership in the profession.

Leaders Show the Way

Some of you know that I spent a few years in the U.S. Army as a dental officer, which was for me personally a great professional development opportunity. In 1981, I had the experience of a lifetime—I was assigned as the dental clinic commander for the 1st Brigade of the 8th Infantry Division, U.S. Army, Mainz, West Germany. Believe you me it was an experience. My commander was none other than Brigadier General H. Norman Schwarzkopf. He was the assistant division commander of the 8th Infantry Division and commander of the Mainz Military Community. I recall several impressive things General Schwarzkopf said: “Leadership is a potent combination of strategy and character. But if you must be without one, be without the strategy” and “The truth of the matter is that you always know the right thing to do. The hard part is doing it.”

The major responsibility of my job was the dental readiness of the 1st Brigade, and little did I know at the time that General Schwarzkopf was keenly aware of the value of oral health or lack thereof to the brigade’s oral health readiness status. My challenge was educating the four battalion commanders to the importance of

preventive dentistry. We were successful with the brigade’s oral health readiness and I am reminded often, and sometimes daily, of the quote from General Schwarzkopf—it is not that difficult to see what needs to be done, but what separates leaders from the others is getting it done. So yes, my battalion commander colleagues already knew the value of oral health readiness. And you can see what part of the job I inherited.

New Challenges— Same Mission

Colleagues, that short story and experience is a segue into the balance of my conversation with you as current and new fellows in the American College of Dentists. Little did we know this time last year that we would be celebrating the hundredth anniversary of the American College of Dentists virtually because of Covid-19. To quote our esteemed Executive Director Dr. Theresa Gonzales, “From early March to the present we have been in what has been referred to as suspended animation.” Well, here we are and guess what? It was a hard decision but it was the right thing to do. The last time we suspended in-person meetings of the college was during World War II. This illustrates another important aspect of leadership and this is agility. Agile leaders actively engage diverse stakeholders, influencing and studying them, while simultaneously learning from them.

Dr. Rouse is Dean Emeritus of Howard University College of Dentistry and recipient of the ADA Distinguished Service Award; lerousedds@gmail.com.



And as we say in the military, they do the hard right and lead from the front and most importantly, they take responsibility for their actions. Your ability to lead and influence others brought you this far.

Congratulations on your nomination and invitation to fellowship in the American College of Dentists. This is, in my view, a tribute to your outstanding professional qualities and devotion to the dental profession. An active fellow understands the value of ethics, leadership, and professionalism. We expect you to become fully engaged in the activities of your regency and section. We have a great deal of work to do as we engage the “new normal” of the dental profession. Covid-19 has created a change in how we practice, educate the next generation of dentists, and conduct research. Yes, “we have faced a disruption that has forced us to adapt quickly, creatively, and collaboratively.” That is a quote from a May 2020 *Journal of Dental Education* article entitled “Covid-19: Finding silver linings for dental education.” We need leaders who will persevere in challenging times and exhibit intellectual honesty with transparency and at the heart of collaboration.

More specifically, the time is now to look seriously at the integration of dental and medical education. After all we are a community of primary care providers committed to evidence-based outcomes. We understand prevention of disease and the critical timing of therapeutic intervention. This is what we do.

How can we position our expectations for the next century of the college in today’s uncertain context? Here is what I do know: yes, we will continue our mission of advancing

excellence, ethics, professionalism, and leadership in dentistry. Many of you know the college is widely regarded as the “conscience of dentistry.” We must recognize the importance of diversity to the success of the American College of Dentists. As a college we represent the fabric of our profession, reflective of the diverse citizens we are asked to treat.

Duty to Lead

As leaders we must face these questions, Can we do it? Should we do it? and Why? Now is not the time to dither over the nuances of the challenges. Now is the time to get on with our duty.

To use a quote from Congressman John Lewis, we must step into “good trouble.” As an individual who has regularly engaged in good trouble, I know that we cannot shy away from the many issues that affect us as healthcare providers on different levels and on multiple fronts. We must look at the opportunities and responsibility to move the needle to health equity. We need leaders in our college who understand the imperative to eliminate disparities in health and achieve health equity, we need leaders who care enough, who understand the social determinants of health and have the courage to do enough, and who will persevere until the job is done.

Colleagues, there is an old quote “People don’t care how much you know until they know how much you care.” Recently *Healthy People 2030* was released with objectives for oral health. We need to continue inspiring remedies to what U.S. Surgeon General David Satcher referred to as the “silent epidemic” of untreated oral disease in American. Many of you are aware of recent documents where a plan was proposed to lead a multifaceted integration of oral health

into overall health. Several studies and recent interest strongly suggest that inclusion of oral health in primary care improves access to care and general health outcomes while reducing healthcare costs. At the risk of appearing insistent on my message, the American College of Dentists reflects the tenets of leadership, ethics, and professional behavior, and we must engage and lean forward in the fox hole as healthcare providers to influence and advocate for sustainable partnerships with those organizations that share our mission and goals.

The Call

As I close my conversation with you I must share a pearl of wisdom I received as a freshman dental student in 1969, 51 years ago, from Dr. Joseph L. Henry, dean of the Howard University College of Dentistry. I have shared this pearl as a speaker at five commencement addresses, and I feel that it is important that I share it with you as new fellows and current fellows of the American College of Dentists. Dean Henry called it the Five Fingers of Dentistry and I have taken the liberty of renaming it the Five Fingers of Healthcare Providers:

1. Become and remain socially conscious
2. Remain community oriented
3. Stay civically active – advocacy
4. Be politically informed
5. Always be professionally competent

Thank you very much, and I wish you well as a new fellow in the American College of Dentists. Let us continue to make a difference in our outstanding profession.

Welcome home—we have been waiting for you. ■

Convocation Address

That's What Leaders Do

Richard Thomas, DDS, MD, FACD

Abstract

Leadership is not a natural gift given a few at birth. It is the combination of hard work and a purposeful program of leadership development. The Uniformed Services University of the Health Sciences trains physicians, dentists, nurses, and allied health professionals for leadership positions. It is a consciously designed program that has been tested recently by the Covid-19 pandemic. The faculty and students stepped up to meet this challenge and to help others do so as well. That is the measure of leadership.

Dr. Thomas is the sixth president of the Uniformed Services University of the Health Sciences and a fellow of the American College of Surgery and the American College of Dentists.



I am honored to deliver this convocation address. And although it almost seems routine to say by now, I only wish I could be with you all in person in Orlando to offer my congratulations in a more personal way.

However, even given these unprecedented events that currently challenge our lives, we must embrace and retain the most positive focus possible—not only to set the example for our families, profession, and in fact our country, but because that is what leaders do. You have been recognized by the American College of Dentists, an organization that was founded more than 100 years ago, and even at its founding listed “leadership” as one of the core components of its enduring mission. I will quote the ACD web page that describes leadership as the “single common thread” that determines ACD Fellowship selection. You have all been identified as leaders.

Now I know that you are all exceptional dentists, clinicians, and accomplished healthcare professionals. In fact, the ACD says that only 3.5% of U.S. dentists are selected for fellowship in this prestigious organization. But isn't it fascinating that the one characteristic that sets you apart from the other 96.5% isn't only professional knowledge, skills, or business acumen? No... it is leadership.

We've all been involved in discussions of whether leaders are born or created. Vince Lombardi, arguably one of our country's greatest coaches and sports leaders, is reported to have said, “Leaders aren't born,

they are made. And they are made just like anything else, through hard work. And that's the price we'll have to pay to achieve that goal, or any goal.”

USUHS

The mission of the organization that I lead, the Uniformed Services University of the Health Sciences (USU), is to educate and develop uniformed health professionals, scientists, and leaders. In fact, we call ourselves the Leadership Academy for the Military Health System. Graduates of USU, no matter what the profession, must be prepared for a dual role: one as a military officer and leader and one as a healthcare professional. They step into that leadership role as soon as they leave our institution. Most initially lead as practitioners in the clinical setting. But they may be called upon to practice that leadership in a state-of-the-art military hospital or clinic, or in a deployed setting located halfway around the world. And now with the Covid-19 pandemic, you see they can even be deployed to locations within our own country to provide care where it's critically needed. As our graduates mature, many go on to become leaders in academics and research, first within our military programs, but later in national civilian institutions that include medicine, dentistry, and nursing. And others become leaders within their military services, providing guidance and

direction for the military health system. In fact, we have had 42 graduates of USU who went on to become flag officers, meaning generals or admirals. So it shouldn't come as a surprise to hear that I agree with Coach Lombardi—well almost.

Where Coach Lombardi and I differ just a bit is with the word “made.” At USU, we believe that our students undergo a process of “intentional leadership development” and that the process is blended into the entire fabric of their educational experience.

A Foundation in Leadership

Let me illustrate by briefly describing intentional leadership development as it happens with our students in the school. Students at USU participate in a comprehensive, four-year leadership curriculum called the Leadership Education and Development Program, or LEAD. Students are introduced to the concepts of leadership and leader development during the summer of their first year through various lecture and classroom activities that cover topics such as Introduction to Leadership Principles, Leadership Styles, Leadership in Medical and Military Settings, Communication, Teamwork and Organizational Experience, and Patient Experiences. This first summer experience culminates in the entire class participating in a six-mile road march across the Antietam National Battlefield to learn of the beginnings of military battlefield medicine. Later, in the fall, the students “deploy” to a

nearby military installation and train in a field environment where they learn and practice critical skills used during military field operations. This includes basic land navigation and practicing medical skills, such as starting IVs under simulated combat conditions. Throughout the remainder of the first year as well as their final three years, students continue participation with lecture classes and field training exercises. Lecture topics during their latter years progress to include topics such as Leadership Self-Assessment, Historical Leadership Lessons, Peer Evaluation, Inter-Professional Team Building, Cultural Awareness and Cross-Cultural Communication, and finally Tactical, Operational, and Strategic Dimensions of Medical Leadership.

The students gain additional leadership experience through exposure to USU's General Ronald H. Griffith Institute for Military Medical Professionalism. This institute was chartered in 2018 and named for one of our country's great leaders. General Griffith was a long-serving member of the USU Board of Regents, former vice chief of staff of the Army and a decorated combat commander. This institute serves an integrating function for leadership activities within the entire university and collaborates with all of the schools and colleges within USU to support curriculum development. The Griffith Institute operates at the strategic level to ensure the delivery of a comprehensive leadership experience. As a result, students are frequently exposed to nationally recognized military and civilian leaders who visit the university as invited speakers. While the value of classroom education cannot be diminished in the early stages of intentional leadership development, practical application serves to solidify concepts, instill confidence, and

prepare students for independent practice as military officers, leaders, and health professionals. Our students are encouraged to take advantage of time made available during their four-year curriculum to pursue additional military training and certifications in programs such as the Expert Military Field Medical Badge, Army Airborne School where they can earn basic military parachutist qualification, and completion of Dive Medicine Training.

The culmination of our student leadership training occurs at the fourth year field practicum known as Operation Bushmaster. This field experience solidifies the comprehensive leadership training and knowledge gained during their entire time at USU. It serves as their “final exam.” Students serve in various leadership roles as they practice medical treatments, teamwork, and organizational principles under combat conditions in a simulated deployed environment. It is also worth mentioning that our faculty train right alongside of our students and become better leaders through mentorship of the students. It truly reinforces a leadership culture within the entire university. From students to faculty and staff, all are vested in it.

Taking Care of Our Own

Now you might ask, with all that leadership training, when do they find the time to make them into healthcare professionals? Rest assured, we do that as well, but learning time management and how to operate under austere and near-impossible conditions is what our graduates will someday be called on to do. And we've all seen, and are still seeing with the Covid-19 pandemic, it doesn't have to happen

in some far-off place. It can happen in our own backyard.

If what I've been telling you about being committed to the process of intentional leadership development is valid, it should have served USU well as we addressed the challenges of this pandemic. So let me take a few minutes to describe how and what we did.

It's often been said that one of the first principles of leadership is to "take care of your people and your people will take care of the mission." With that in mind, we immediately confirmed our lines of communication. In the military we call that the chain of command. That enabled us to ensure that everyone has accurate, up-to-date information (at least as we knew it), which goes a long way toward alleviating anxiety and controlling rumors. The number one message that we communicated was safety for our entire organization. With that in mind, we ensured that to the greatest extent possible, people were trained and able to work from home. Faculty quickly adapted to modify courses for delivery in an exclusively distance learning environment. This enabled us to continue our educational mission in a safe environment.

In order to make that happen, our faculty had to demonstrate flexibility and show willingness to accomplish major course changes within a short time frame. And they did. But it couldn't have happened without the incredible dedication of our IT and instructional design specialists. Everyone stepped up and led the change in their area. We established a biweekly Covid-19 update briefing, or CUB (we love our acronyms in the military). The CUB consisted of USU leaders representing all major educational organizations, including medical, dental, nursing, and allied health. Also included were subject matter experts representing the major

functions within USU, such as our military brigade, communications, public health, research, with an emphasis on clinical research, occupational health, facility management, and IT. Updates within each area were presented by the subject matter experts and information was then disseminated throughout the university using various methods. Information was updated regularly on the USU website along with applicable resources, such as links to CDC guidance. The Faculty Senate sponsored regular virtual chat sessions where information was passed along and wellness of personnel could be assessed.

The Covid Test

We were very pleased that our medical school student leaders independently launched what they called the Covid Cup Wellness Challenge—a virtual exercise and wellness competition to keep them connected, focused, and motivated and physically, spiritually, and emotionally fit. That initiative showed not only leadership, but a genuine concern for their classmates.

Although there are many instances I could point to that illustrate leadership in action during this crisis, I'll give you examples of two specific categories of events. As I mentioned previously, we adopted a maximum telework policy in order to safeguard our personnel. However, it was imperative that some on-campus functions had to be continued. Essential personnel from our Facility Management staff, Department of Laboratory Animal Resources, and our Armed Forces Radiobiology Research Institute continued to work, but showed immediate flexibility as they modified their procedures and processes to do so in a safe manner as it applied to the pandemic. Those

individuals were real heroes during a very tumultuous time.

The second area I would like to highlight is the crisis assessment, response, and national crisis contributions made by our subject matter experts. The DoD Medical Ethics Center that is aligned with USU created a video on ethical and legal considerations during Covid-19 that was widely disseminated. The university's four deans (medical, dental, nursing, and allied health) kept everyone informed on student welfare, accreditation, and educational implications caused by the pandemic. Our public health experts kept everyone informed about the latest epidemiological information from the local, regional, and national perspectives and also passed along current strategies for remaining healthy and safe. Our researchers quickly rose to the occasion and initiated major efforts in the areas of vaccine research, therapeutics, Covid biomarkers, novel treatments such as working on a blood filter device, and the collection of epidemiological information in a comprehensive case registry. All these are areas where they continue to work and make important scientific advances today. There were additional areas of contribution by our students and faculty.

Both the School of Medicine and the Graduate School of Nursing were able to certify the competency of their senior class so they could graduate early in order to allow these new physicians and advance practice nurses to augment needed manpower requirements in the medical facilities throughout the national capital region.

Our goal will always be to do it better, faster, and more efficiently the next time. We strongly believe that time invested on intentional leadership development will certainly prepare us for success.

A team of our faculty collaborated on authoring a Covid-19 practice management guide that was made available to all Department of Defense health professionals and extended to the civilian community. And a team of USU faculty, along with one of our medical students who was rotating through the Department of Surgery, designed and built what they called the Covid-19 airway management isolation chamber. This is a device that may prove to help protect providers from viral infection during patient care. Our students, faculty, and staff saw the need and they responded. No one told these people to do these things; they did them because they were developed as leaders within a system that is leadership focused.

As the Covid-19 situation began to moderate in our area, our entire organization immersed itself in developing plans for a safe and responsible phased return to work. And currently we are actively engaged in documenting a volume of lessons-learned in our USU after-action-report and in creating our operations plan for future pandemics or crises. We know that this won't be the last time we'll need to respond quickly.

Our early engagement in these areas caught the attention of the assistant secretary of defense for health affairs, and consequently, we have assumed a key role in documenting an after-action-report for the entire military health system. Although we're proud of our efforts, we're never satisfied. Our goal will always be to do it better, faster, and more efficiently the next time. We strongly believe that time invested on intentional leadership development will certainly prepare us for future success.

Develop Your Leadership Potential

I'd like to leave you with one final thought. If you accept my premise of intentional leadership development, then it only follows that the process is continuous throughout our careers and our lives. ACD fellowship is not the end of your leadership journey... there's so much more we all can do. So what's next for you? I challenge you to reflect not just on past accomplishments but future opportunities to develop and to contribute as a leader. Maybe for some that will mean expanded roles within the dental profession. Others may choose to contribute through service to your communities or beyond. You may even serve in multiple arenas. I can assure you, however, that there continues to be a growing demand for good leaders in our profession, our country, and our world. I am confident that each one of you being honored here today will rise up to help meet that demand. After all, that's what leaders do.

Again, please accept my congratulations on being inducted as fellows in the American College of Dentists. Thank you for giving me the honor of being with you today and the opportunity to share some thoughts. I wish you and your families the best of success, health, and happiness in the future. ■

2020 ACD Awards

William John Gies Award

In 1939, the leaders of the American College of Dentists sought the means to recognize exceptional efforts and accomplishments by its fellows. This recognition became the William John Gies Award, named in honor of the man who shaped the profession through his untiring efforts. The Board of Regents recognizes fellows who have made truly unique and exceptional contributions to advancing the profession and its service to society. This is the highest honor of the American College of Dentists. This year there are two honorees.



The first award is presented to **Dr. Jeanne Craig Sinkford**. Jeanne C. Sinkford, dean emeritus of the Howard

University College of Dentistry, is a distinguished administrator, educator, researcher, lecturer, and clinician. She broke race and gender barriers in her rise to the top of her profession. She graduated first in her class at Howard University and became the first woman to serve as dean of an American dental school.

Committed to community service and social responsibility, Dr. Sinkford has reached out and responded in full to the demands of her profession,

striving to meet the needs of her patients and students as well as those of various dental research associations and government and community groups devoted to dental education and study.

Dr. Sinkford has been widely praised for her efforts to recruit women and minority students to the dental profession and has a long, well-established reputation as a disciplined educator, administrator, clinician, and community advocate.

Dr. Sinkford was appointed associate dean at Howard College of Dentistry in 1967. She became the first female dean of any dental school in the nation in 1975 when she was appointed dean of Howard University College of Dentistry. After 16 years of distinguished service in that position, Dr. Sinkford retired in 1991.

From 1992 to 2011, Dr. Sinkford was responsible for diversity programming and initiatives at the American Dental Education Association (ADEA). Under her leadership, ADEA created numerous opportunities for the advancement of women and underrepresented minorities.

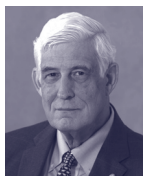
She holds many honorary degrees and many distinguished awards, including Alumni Achievement Awards from Northwestern University and Howard University in 1970 and 1976, one of the first Candace Awards from the National Coalition of 100 Black Women in 1982, the 1984 Award of Merit from the American Fund for Dental Health, the 2007 Trailblazer Award from the National

Dental Association, and the 2010 Fauchard Gold Medal.

In 2015, Dr. Sinkford received the Distinguished Service Award from the American Dental Association. Thereafter she was presented with the Outstanding Lifetime Achievement Award by the Friends of the National Institute of Dental and Craniofacial Research. This award honors an individual who has demonstrated a longstanding dedication to fostering health through oral and craniofacial research.

In 2015, Dr. Sinkford became a senior scholar-in-residence with ADEA, her work focusing on recruitment and promoting growth of minority and female students and faculty. She also initiated international women's leadership programming for women's health and oral health of the world population.

Dr. Sinkford shows no signs of slowing down and she continues to work for our profession, serving on numerous committees, advisory boards, and councils of national significance and she regularly publishes in peer-reviewed literature. She is legend, and so very many of us are the beneficiaries of her unique brand of advocacy.



The second William John Gies Award is presented to our esteemed editor, **Dr. David W. Chambers.**

Dr. Chambers is regarded by most as an “educator’s educator” and for more than five decades, he has enjoyed a reputation as a gifted lecturer, an outcomes-based educator, a fiercely independent thinker, and a curriculum innovator. Throughout his illustrious career, he has been engaged in a wide variety of research interests to include ethics, leadership, and moral reasoning.

He has presented hundreds of invited lectures, both nationally and internationally, and he is recognized as an expert in the fields of philosophy and ethics, with a particular emphasis in healthcare ethics. He is a prolific author, having published more than 700 articles in peer-review journals in his areas of interest, which include competency-based education, ethics, evaluation, and critical thinking. He has written four books, including the *ACD Ethics Report: The New Professionalism*.

Dr. Chambers has served the college as editor since 1994. He promptly changed the mission of the *Journal of the American College of Dentists* to “identify and place before the fellows, the profession, and other parties of interest those issues that affect dentistry and oral health” and substantially enhanced its format and readability. This publication is now regarded as one of the most respected journals addressing policy issues in dentistry.

As editor, Dr. Chambers is a non-voting *ex officio* officer of the college and attends the biannual meetings of the Board of Regents. His input on college matters is frequently sought and highly valued, and his contributions have been absolutely crucial to our success.

Dr. Chambers has served as moderator for four Ethics Summits sponsored by the college. These summits have brought together leaders from as many as 60 dental organizations at a time to address issues such as organizational ethics, cooperation among oral healthcare organizations, and truth claims in dentistry.

Dr. Chambers has served as an ambassador to other organizations in dentistry, especially the American Dental Association, the American Association of Dental Editors, the American Society for Dental Ethics, and the American Dental Education Association. His impact has been highly significant and indelible. He has been a consultant to most national dental organizations and dental schools in the United States and Canada, as well as being an examiner for the Malcolm Baldrige National Quality Award and with service on the Commission on Dental Accreditation.

During his tenure with the American College of Dentists, he has endeavored to develop and deploy current dental ethics curricula designed to enhance students’ levels of satisfaction with different teaching approaches and to mitigate reported difficulties in learning dental ethics concepts. The teaching materials that he has developed seek to reinforce the overall aims of dental education by creating responsible clinicians who will enhance and promote the general health and oral health of the people they serve in ways that fairly and justly

respect their dignity, autonomy, and individual rights.

Dr. Chambers has always sought ways to make it easier to be ethical and thereby allow us to reinvest the trust dividend between the dental workforce and the communities we serve. Thank you for helping us improve as professionals, thank you for making us think differently about complex issues, but most of all, thank you for being you. Indeed, we owe you a great deal of gratitude.

Outstanding Service Award



The Outstanding Service Award, given since 1995, recognizes fellows for specific, outstanding

service to dentistry, the community, or humanity. This award is presented through a special recommendation of the Board of Regents. The 2020 recipient is **Dr. B. Charles Kerkhove.**

Activist and social reformer, Jane Addams famously opined that “action is the sole medium for the expression of ethics” and action is precisely what Dr. Kerkhove brought to the American College of Dentists.

Dr. Kerkhove started practicing pediatric dentistry in 1966, the same year that he began serving organized dentistry with the Indiana chapter of the American Society of Dentistry for Children. He has contributed to Indiana organized pediatric dentistry at every level, including president. He served the Indianapolis District Dental Society in many capacities, culminating in the presidency in 1974.

Dr. Kerkhove’s greatest avocation in dentistry has been with the American College of Dentists. First serving in 1985 on the Board of the Indiana Section, his diligence and

contribution led to his becoming ACD president in 2004. He has contributed his skills to the college continuously for 35 years.

What is unique and distinguished is that his service has continued unabated. He is retired and no longer resides in Indiana, but still contributes valuable leadership to the Indiana Section. Having completed his official section responsibilities 25 years ago, Dr. Kerkhove still attends Indiana Section meetings. He has been responsible for the section contribution to the Annual Silent Auction for many years and is president of the Foundation of the Indiana Section.

Beyond private practice, teaching, and remarkable service to organized dentistry, he has found time and energy to serve his community, church, and humanity. Dr. Kerkhove has spearheaded and served programs such as the Greenwood Mayor's Prayer Breakfast, Wheeler Mission's Ministry for Homeless Men, and the Asian Free Exchange Mission.

Perhaps his most pervasive and enduring quality is mentorship and leadership. Dr. Kerkhove is quiet and humble but leads and mentors at every opportunity.

This diligent servant-leader has contributed to the American College of Dentists, the profession, and society with continuous service for decades, and we gratefully acknowledge and celebrate those contributions.

Ethics and Professionalism Award

Since its founding in 1920, the American College of Dentists has championed ethics, ethical behavior, and professionalism in dentistry. In keeping with its historical mission and its longstanding role as the "conscience of dentistry," the Board

of Regents desired a tangible means of recognizing exceptional contributions by individuals or organizations for the promotion of ethics and professionalism. This effort became the Ethics and Professionalism Award of the American College of Dentists. It is supported by the Jerome B. Miller Family Foundation.

This award specifically recognizes ethics and professionalism and is the highest honor the college can bestow in this important area. The recipient of the 2020 Ethics and Professionalism Award is **Dr. Robert E. Barsley**.



Dr. Barsley was an internationally renowned and well-published expert consultant and sought-

after lecturer in the field of forensics, a professor and division head at the Louisiana State University School of Dentistry (LSUSD) in New Orleans, and director of hospital and community dentistry for the LSUSD Department of Oral Health Services. He understood ethics and the law and he taught us how to help in the context of disasters, manmade or otherwise.

A 1977 graduate of LSUSD, Dr. Barsley became a full-time faculty member in 1982, one week after the crash of a PanAm jet at Moisant Field. He worked with faculty and students in a successful effort to aid law enforcement in identifying the more than 150 victims of that tragedy.

As a member of Disaster Mortuary Operations Response Team Region VI (United States Public Health Service), he served an extended tour of duty in the dental section of the hurricanes Katrina and Rita morgues in St. Gabriel and Carville, Louisiana, where he directed scores of dentists from all

over the United States in identifying the hundreds of victims of these disasters. This six-month detail, using virtually all forms of forensic science, resulted in the identification of all the victims and repatriation to their families for disposition.

Dr. Barsley was co-chair of the Odontology Section of the Scientific Working Group on Disaster Victim Identification funded by the National Institute of Justice and the FBI. He was a fellow of the American College of Dentists and the Odontology Section of the American Academy of Forensic Sciences, for which he served as its sixty-fifth president and received the Reidar Sognaes Award for Excellence in Forensic Dentistry.

In 1998-99, Dr. Barsley served as a Robert Wood Johnson Foundation Congressional Health Policy Fellow in the office of Senator John Breaux. He served as a delegate to the American Dental Association House of Delegates and was the former chair of the ADA Council on Access, Prevention, and Interprofessional Relations.

In 2015, Dr. Barsley was awarded both the LSU School of Dentistry Alumnus of the Year Award and the New Orleans Dental Association Honor Dentist Award. He was a devoted public servant and fully committed to his community and he exemplified devotion to duty. This award is presented to his family in recognition of his commitment to public service and humanity.

Honorary Fellowship

This is a means to bestow fellowship on deserving nondentists. This status is awarded to individuals who would otherwise be candidates for fellowship by virtue of demonstrated leadership and achievements in dentistry or the community except that they are not

Congratulations to all
ACD award winners.

dentists. Honorary fellows have all the rights and privileges of fellowship except they cannot vote or hold elected office. This year there are three recipients of honorary fellowship.



The first recipient of Honorary Fellowship is **Dr. Judith Albino**.

Dr. Albino is widely known as a supremely talented educator and administrator. A four-time dean and former university president, Dr. Albino has shown us over the past four decades how to lead effectively. More than most, she understands that the responsibility of professionals extends well beyond the treatment room into the global community.

To this end, Dr. Albino has lectured extensively nationally and internationally in her specialty field of leadership development and she has participated in the leader education of more than 5,000 dentists. Dr. Albino has worked alongside many dental educators and organizations to enhance leadership, culture, and capacity. She is a well-established researcher in her disciplines. As a senior consultant with the Academy for Academic Leadership since 2005, she has provided training within that organization's programs for leadership development, chairing academic departments, focused programs for deans, and other emerging administrators.

She has worked with dozens of academic institutions and professional organizations on strategic planning and implementation, change management, and leadership team development.

Dr. Albino is a community leader and a disciplined scholar committed to outcomes-based health care and the delivery of evidence-based health care. Her credentials and experience give her the confidence to challenge the status quo and to advocate fearlessly. She is deeply committed to developing an inventory of actions, which begins with a macro view of discipline, communications, and commitment. Moreover, she understands that organizational systems must be continuously assessed to determine the degree to which the mission is met.



The second recipient of Honorary Fellowship is **Mr. Frank Bevilacqua**.

As the executive leader of the Ontario Dental Association (ODA), Mr. Bevilacqua brings a very strong commitment to the interests of the dentists of Ontario and the patients they serve. He does this by working diligently at the grassroots level, supporting the 39 dental component societies across the province, always in a very professional and ethical manner. In working with municipal and provincial governments, his calm and organized manner has greatly helped ensure that the Ontario Dental Association's message is clearly delivered.

As the face of the ODA over many years, Mr. Bevilacqua earned the respect of Ontario's legislators and government officials and played a key role in promoting the ODA and the dental profession at all levels of government.

Mr. Bevilacqua's work with the Ontario Dental Association's Remote Areas Project providing dentistry to the indigenous population of northern Ontario, his advocacy for the underprivileged in Ontario for better dental health benefits from the

Ontario Government, his work with the Canadian Dental Association on the Future of Dentistry in Canada, and his outstanding leadership at the Ontario Dental Association, whose strategic priorities include promoting the highest ethical and professional standards, make him a most deserving candidate for this recognition.



The third recipient of Honorary Fellowship is **Dr. Amy Brock Martin**. Dr. Martin serves as the chair of the Stomatology Department at the Medical University of South Carolina and deputy director at the South Carolina Rural Health Research Center at the University of South Carolina, Arnold School of Public Health.

An epidemiologist, Dr. Martin is an experienced evaluator and researcher who is dedicated to improving the lives of vulnerable populations. In her role at Health Sciences South Carolina, she focuses on research to improve healthcare quality and clinical effectiveness in rural health settings.

Dr. Martin's approach to public policy and advocacy stresses the interrelationship between oral disease and systemic health, and the recognition of populations at risk. Her expressed intent is to develop her students' clinical competence such that her graduates can manage patients with systemic implications for dental treatment, including those who must be managed in nontraditional dental healthcare settings.

Dr. Martin has established a reputation as a disciplined educator, administrator, clinician, and community advocate. In her role as an oral physician in the public health arena, she has advocated fearlessly to

improve access to care for disenfranchised populations and demanded outcomes-based healthcare delivery for all those who enter the healthcare system through the dental ambulatory outpatient portal. Dr. Martin meets the requirements for fellowship and has a demonstrated record of service, scholarly activity, and community advocacy that is worthy of emulation.

Section Newsletter Award

Effective communication is a prerequisite for a healthy section. The Section Newsletter Award is presented to an ACD section in recognition of outstanding achievement in the publication of a section newsletter. The award is based on overall quality, design, content, and technical excellence of the newsletter.

The **Washington Section** is the winner of the Section Newsletter Award for 2020. The editor of the Washington Section Newsletter is Robin J. Henderson.

Model Section Designation

The Model Section Designation is actively pursued by sections. The purpose of the Model Section program is to encourage section improvement by recognizing sections that meet standards of performance in four areas: membership, section projects, ACD Foundation support, and commitment and communication.

This year the **Atlantic Provinces, Hudson-Mohawk, Kansas, Louisiana, New England, Oklahoma, Ontario, and Washington** sections earned the Model Section designation.

Lifetime Achievement Award

The American College of Dentists Foundation honors fellows who have completed 50 years of fellowship in the college. The individuals named below were inducted in 1970 and were honored during the annual business meeting of the college on 15 October 2020. This award consists of a medal and certificate and is supported by the Samuel D. Harris fund.

Anthony L. DiMango
Manalapan, NJ

Arnold S. Feldman
Boynton Beach, FL

Rupert E. Fixott
Stockton, CA

Dominick C. Larato
Golden, CO

Cesare Luzi
Rome, Italy

Victor H. Mercer
Fishers, IN

Henry I. Nahoum
Laguna Woods, CA

John B. Pike
Saint Cloud, MN

Evelyn M. Strange
Portland, OR

Hugh B. Tilson
San Antonio, TX

Vern M. Tueller
Provo, UT

2020 Fellowship Class

Regency 1

Atlantic Provinces Section

Robert J. Cochran
St. John's, NL

Suzanne Drapeau-McNally
Grand-Barachois, NB

Ferne Kraglund
Halifax, NS

Terrie Logue
Halifax, NS

Alan J. Robinson
Charlottetown, PE

Hudson-Mohawk Section

Maybelle J. Hwang
Saratoga Springs, NY

Patrick B. Smith
Clay, NY

New England Section

Carol Aiken
Boston, MA

Steven A. Brown
West Greenwich, RI

Susan Camacho
Marion, MA

Pelly Chang
Quincy, MA

Andrea C. Fallon
Westfield, MA

E. Elon Joffre
Boston, MA

Mary V. Karish-Dodge
Attleboro, MA

John Paul Kiang
Providence, RI

Takashi Komabayashi
Scarborough, ME

Celeste Kong
Boston, MA

Michael J. Melkers
Hanover, NH

Michael P. Monopoli
Boston, MA

Joseph E. Pezza
Cranston, RI

Kathryn T. Ragalis
Northbridge, MA

Robert S. Ruhl
Wilmington, VT

Lisa Simon
Somerville, MA

James D. Spivey
Portsmouth, NH

Michael A. Ungerleider
Cranby, CT

Richard E. Vachon
Manchester, NH

Ancy Verdier
Holden, MA

Howard M. Zolot
North Andover, MA

New York Section

Golda A. Erdfarb
Teaneck, NJ

James J. Fitzgerald
Garden City, NY

Ana B. Giglio
New York, NY

David A. Koslovsky
New York, NY

Charles D. Larsen
Stony Brook, NY

Steven M. Morgano
New York City, NY

George Romanos
Setauket, NY

Michael H. Schwartz
Lake Success, NY

Evan Schwarz
New York, NY

Steven M. Zove
Stony Brook, NY

Quebec Section

Elham Emami
Montreal, QC

Bassel Kano
Montreal, QC

Western New York Section

Sidney L. Bourgeois, Jr.
Manlius, NY

Stephen R. Burgart
Rochester, NY

Christopher Calnon
Rochester, NY

Vincent D. DiMento
Syracuse, NY

Michael W. Fallon III
Camillus, NY

James Wanamaker
Syracuse, NY

Regency 2

Federal Services Section

Young Suk Kang
Fayetteville, NC

Anthony C. Kight
Fort Drum, NY

Rebecca O. Lee
Vienna, VA

Michael R. Mansell
Belton, TX

Joseph D. Molinaro
Kensington, MD

Alexander Smith
Bethesda, MD

Richard W. Thomas
Silver Spring, MD

Azure L. Utley
Spring Lake, NC

Maryland Section

Hakan Koymen
Baltimore, MD

Harvey Levy
Frederick, MD

Metro Washington Section

Pierre M. Cartier
Washington, DC

Richard J. Green
Rockville, MD

Kevin G. Schwartz
Laytonsville, MD

Wesley D. Thomas
Washington, DC

Chris E. Tsintolas
Potomac, MD

New Jersey Section

Fabio G. Apolito
Freehold, NJ

Philadelphia-Delaware Valley Section

Jason M. Bresler
Horsham, PA

Tracey H. Bresler
Ambler, PA

Richard J. Clark III
Broomall, PA

Joseph P. Fiorellini
Merion Station, PA

Glenn P. Goodhart
Philadelphia, PA

Dale E. Scanlon
West Chester, PA

Andrew B. Steinkeler
Newton, PA

Virginia Section

Hugo A. Bonilla
Alexandria, VA

Peter K. Cocolis
Springfield, VA

Randolph A. Coffey
Chesterfield, VA

Melanie W. Hartman
Alexandria, VA

Christine D. Howell
Suffolk, VA

Herbert M. Hughes
Alexandria, VA

Fernando Meza
McLean, VA

William B. Munn
Mechanicsville, VA

Garry Myers
Midlothian, VA

Barrett W. R. Peters
Charlottesville, VA

Western Pennsylvania Section

Alene M. D'Alesio
Moon Township, PA

Marnie L. Oakley
Bethel Park, PA

Michael J. Parenti
Girard, PA

Regency 3

Alabama Section

Brandon H. O'Donnell
Spanish Fort, AL

Carolinas Section

Todd R. Barrett
Columbia, SC

Pinar Emecen-Huja
Charleston, SC

Alan R. Furness
North Augusta, SC

Isabel C. Gay
Greenville, NC

Daniel W. Hall
Easley, SC

Sohee K. Park
Columbia, SC

Lisbeth W. Poag
Sumter, SC

Nikki G. Tucker
Greenville, NC

Mike Webb
Greenville, NC

Florida Section

Robert W. Boyle
New Smyrna Beach, FL

Michael Brumm
Belleair Bluffs, FL

Ricardo E. Crawford
Davie, FL

Marcio Guelmann
Gainesville, FL

Timothy G. Herring
Sarasota, FL

Steven Hochfelder
Longwood, FL

Gail R. Holcomb
New Smyrna Beach, FL

W. Stephen Howard
Gainesville, FL

M. Reza Iranmanesh
Tampa, FL

Sandra J. Lilo
Seminole, FL

Jeffrey Ottley
Milton, FL

Jason Portnof
Parkland, FL

Jessica C. Stillely
Odessa, FL

Andrew I. Varga
Bradenton, FL

Stephanie Zastrow
Bradenton, FL

Georgia Section

Henry B. Benson, Jr.
Atlanta, GA

Kim L. Capehart
Evans, GA

Shirley Fisher
Warner Robins, GA

Cynthia L. Hipp
Augusta, GA

Ray S. Jeter
Augusta, GA

Carol A. Lefebvre
Evans, GA

Anthea D. Mazzawi
Atlanta, GA

Jeffrey M. Mazzawi
Atlanta, GA

Tara Schafer
Evans, GA

Kim B. Turner
East Point, GA

Nancy Young
Martinez, GA

Regency 4

Indiana Section

Nia A. Bigby
Indianapolis, IN

Tien-Min G. Chu
Indianapolis, IN

Lisa A. Conard
Indianapolis, IN

Charles Hine
Indianapolis, IN

Matthew S. Kolkman
Fort Wayne, IN

Katherine Patton
Indianapolis, IN

Tyler Vandeventer
Boonville, IN

Kevin D. Ward
Indianapolis, IN

Herb Yekel
Griffith, IN

Kentucky Section

Geoffrey S. Ball
Elizabethtown, KY

Emily L. Brown
Louisville, KY

Ashley N. Clark
Lexington, KY

Rachel H. Davis
Louisville, KY

Robert Flint
Prospect, KY

C. Mark Fort
Owensboro, KY

Sherry B. Melisizwe
Louisville, KY

John P. Rakutt
Louisville, KY

Stephen J. Remmers
Louisville, KY

Charles W. Rolph
Lexington, KY

William Scarfe
Louisville, KY

M. Samantha Shaver
Louisville, KY

Michigan Section

Samuel G. Blanchard
Grosse Pointe Park, MI

Michelle C. Dziurgot
Shelby Township, MI

Joseph C. Harris
Detroit, MI

Eric Knudsen
Escanaba, MI

Vincent P. Lizzio
Canton, MI

Catherine E. Nelson
Kalamazoo, MI

Marvin Sonne
Farmington Hills, MI

Ohio Section

Jeffrey R. Wessel
Cincinnati, OH

Ontario Section

Shervin Abbaszadeh
Toronto, ON

Joseph A. Belsito
Windsor, ON

Marco F. Caminiti
Toronto, ON

Anwar Dean
London, ON

Timothy F. Foley
London, ON

Manfred Friedman
London, ON

C. P. Giri
Richmond Hill, ON

Laszlo J. Kalman
Komoka, ON

Timothy M. Lee
Toronto, ON

Stephen E. Lipinski
Oakville, ON

Wayne H. Little
Niagara on the Lake, ON

Judy McCartney
Thunder Bay, ON

Dennis Medland
Guelph, ON

Valeria Pini
Ancaster, ON

Penelope Thornton
London, ON

John Tupper
London, ON

Barry White
Guelph, ON

Kenneth H. Wright
London, ON

West Virginia Section

Lance Pittman
Martinsburg, WV

Regency 5

Illinois Section

Asra Z. Ali
Willowbrook, IL

Mark A. Heiss
Long Grove, IL

Christa Hopp
Alton, IL

Gina M. Jacobsen
Naperville, IL

Katie Kosten
Edwardsville, IL

Astrid E. Schroetter
Naperville, IL

Stephanie Ward
Chicago, IL

Iowa Section

Steven P. Bradley
Cascade, IA

Martin C. Gleason
Fairfield, IA

Carolyn P. Larsen
Bettendorf, IA

James A. Larsen
Bettendorf, IA

Fabricio Teixeira
Iowa City, IA

Jessica C. Williams
Fairfield, IA

Kansas Section

Mariah L. Frazier
Wichita, KS

Tanya M. Gibson
Shawnee, KS

Gena Hendrickson
Topeka, KS

Michael S. Klein
Bucyrus, KS

Dean H. Langley
Kingman, KS

Christopher J. Leiszler
Lawrence, KS

Ted O. Mason
Wichita, KS

Crystal A. Obee
Kinsley, KS

Scott N. Rogers
Arkansas City, KS

Jason D. Wells
Salina, KS

Missouri Section

Michael W. Berry
Moberly, MO

Brett T. Durbin
Springfield, MO

Melynda Meredith
Kansas City, MO

Ashley D. Meyer
Springfield, MO

John H. Purk
Roeland Park, KS

Robert M. Tait
Grandview, MO

David E. Urbanek
Wildwood, MO

Ronald D. Wilkerson
Rolla, MO

Nebraska Section

Jennifer A. Hasslen
Papillion, NE

Upper Midwest Section

John E. Gulon
Minneapolis, MN

Renee M. Kinney
Afton, MN

Keith A. Mays
Minneapolis, MN

Elise W. Sarvas
Saint Paul, MN

Wisconsin Section

Cheska Avery-Stafford
Milwaukee, WI

Eric T. Childs
Menasha, WI

Russell Christian
Mount Horeb, WI

Ryan C. Dulde
Dousman, WI

Benjamin J. Farrow
Madison, WI

Chris J. Hansen
Manitowoc, WI

Lance Hashimoto
Brookfield, WI

Christopher Johnson
Eau Claire, WI

Eddie Morales
Milwaukee, WI

Conrad Nenn
Cudahy, WI

Sarah E. Quesnell
New Berlin, WI

Thomas Reid
Fitchburg, WI

Sheila E. Stover
Brookfield, WI

Michael P. Waliszewski
New Berlin, WI

Andrew D. Welles
Wausau, WI

Martin G. Williams
Green Bay, WI

Regency 6

Arkansas Section

Robert R. Carlisle
Benton, AR

Ryan W. Hanry
El Dorado, AR

Cynthia A. Landry
Lepanto, AR

Louisiana Section

Karen J. Bruggers
New Orleans, LA

Glen J. Corcoran
Mandeville, LA

Claude M. D'Antonio
Covington, LA

Jay Dumas
New Orleans, LA

G. E. Ghali
Shreveport, LA

Keith R. Kyler
Baton Rouge, LA

Russell P. Mayer
Hammond, LA

Mark A. Odom
New Orleans, LA

Gizelle P. Richard
New Orleans, LA

Daniel R. Shea
Joplin, MO

J. Jerome Smith
Lafayette, LA

Francesca C. Velasco
New Orleans, LA

Mississippi Section

Frank L. Conaway, Jr.
Diamondhead, MS

Harry E. Goza, Jr.
Hattiesburg, MS

Stephen Joe
Olive Branch, MS

James R. Lott
Madison, MS

Charles E. Ramsey
Raymond, MS

Oklahoma Section

David C. Bird
Edmond, OK

Blaire A. Bowers
Edmond, OK

Audrey L. Crawford
Grove, OK

Twana Duncan
Antlers, OK

Mathew D. Hookom
Atoka, OK

Scott T. Hubbard
Woodward, OK

Jay L. Kruska
Hobart, OK

Nicole Nellis
Tulsa, OK

Samuel Owens
Tulsa, OK

P. Justin Power
Edmond, OK

Tennessee Section

James E. Cade
Murfreesboro, TN

Anthony Carroccia
Clarksville, TN

Estella A. Irelan
Memphis, TN

Rajan D. Kshatri
Nashville, TN

Andrew B. McDaniel
Signal Mountain, TN

Julia A. Prince
Memphis, TN

M. Kenneth Randall
Chattanooga, TN

Larry K. Wells
Memphis, TN

Texas Section

Robert A. Kaminski
San Antonio, TX

Erik G. Klintmalm
Austin, TX

Travis Markle
Tyler, TX

Robert G. McNeill
Garland, TX

Charles W. Miller
Dalworthington Gardens, TX

Partha Mukherji
Fort Worth, TX

Alexandra B. Otto
Buda, TX

John M. Ray
Irving, TX

Andrew Read-Fuller
Dallas, TX

Adam C. Shisler
Houston, TX

Amerian Sones
Dallas, TX

Regency 7

Arizona Section

William Brachvogel
Phoenix, AZ

Alan P. Kawakami
Sierra Vista, AZ

Mindy Z. Motahari
Gilbert, AZ

Hawaii Section

Paul H. S. Yoo
Kapaa, HI

Congratulations to
all new fellows.

New Mexico Section

David J. Manzanares
Albuquerque, NM

Jennifer L. Thompson
Farmington, NM

Northern California Section

Blake W. Scott
Fresno, CA

Yogita B. Thakur
Foster City, CA

Southern California Section

Chethan Chetty
Los Angeles, CA

Anahita Dastur
San Diego, CA

Sillas Duarte
Glendale, CA

Ronald R. Garner
Vista, CA

Brian Y. Hong
San Marino, CA

Raymond Klein
Los Angeles, CA

Wayne S. Nakamura
South Pasadena, CA

Ramin Nograiean
Los Angeles, CA

Steven Olmos
Alpine, CA

Flavia Q. Pirih
Los Angeles, CA

Christopher P. Truhan
Westlake Village, CA

Regency 8

British Columbia Section

Blaine Cairns
Pitt Meadows, BC

Tasso Irinakis
Vancouver, BC

Diane Kjørven
Prince George, BC

Rolf Maijer
Victoria, BC

Frank K. Marasa
Surrey, BC

Nadia Stymiest
Nanaimo, BC

Kin-Kong Wan
Vancouver, BC

Eli M. Whitney
Vancouver, BC

Colorado Section

David H. Klekamp
Littleton, CO

Thomas Plamondon
Colorado Springs, CO

Steven F. Reck
Colorado Springs, CO

Amisha Singh
Aurora, CO

Tamara T. Tobey
Littleton, CO

Oregon Section

Thomas J. Holt
Coos Bay, OR

James G. McMahan
Bellingham, WA

Aaron Tinkle
Portland, OR

Utah Section

Kamran H. Awan
South Jordan, UT

James G. Hupp
South Jordan, UT

Washington Section

Brittany T. Dean
Edmonds, WA

Chris E. Dorow
Othello, WA

David E. Engen
Spokane, WA

Natasha Flake
Seattle, WA

Sarah D. Fraker
Mukilteo, WA

Beatrice K. Gandara
Seattle, WA

Manuel La Rosa
Tacoma, WA

Silvia La Rosa
Tacoma, WA

Ira B. McKinley, Jr.
Spokane Valley, WA

Marshall H. Titus
Seattle, WA

Ashley L. Ulmer
Spokane, WA

Western Canada Section

Dean A. Kolbinson
Saskatoon, SK

International Section

Ziad N. Al-Dwairi
Irbid, Jordan

Fahad A. Al-Harbi
Khobar, Saudi Arabia

Deborah J. Cockrell
Forrester's Beach, NSW

Ambreen A. Ehsan
Karachi, Pakistan

Emmanuel W. Francis
Nassau, Bahamas

Evet Ishak
Monterey, NSW

Ali Kazemian
Mashhad, Iran

Abdulghani I. Mira
Jeddah, Saudi Arabia

Brett L. Taylor
Penshurst, NSW

Aden Tran
Mosman, NSW

Anna M. Vierrou
Athens, Greece

The Sky Is Not Falling

Christian Piers, DDS, MS, MFA

Abstract

Here come the changes in dentistry: new technology, new practice models, and new delivery patterns. Whether we see these as opportunities or as the sky falling will depend on how we interact with this emerging world and when we stop learning.

As a second-year private practice orthodontist buying into a partnership, I think about the future all the time. I am not a futurist, but I love storytelling. I did a Master of Fine Arts in fiction before dental school. So I tell myself stories about the future all the time. Sometimes these stories are surprisingly accurate. Other times...not so much.

I have worked for the past year-and-a-half in two small cities in North Carolina as an associate for a senior doctor who has patiently and generously mentored me in classic orthodontic techniques. We bond our brackets to the teeth one by one, by hand, as our predecessors have done for decades. We use a *lot* of braces. This method of practice is teaching me skills that I know will help me in the future, no matter where technology takes us next. I like practicing this way. But I have no illusions about whether I will be practicing this way in a decade.

This is not because I believe the sky is falling on the dental profession. But I do believe there are changes on the horizon—three changes, specifically—that will slowly, inexorably turn our worlds upside down. As this happens each of us will either flatten ourselves to the ground and cling to the familiar or let go and dive into the exhilarating blue sky below.

What follows are my thoughts on those three changes and what I believe we will need to do to be successful as dentists in the exciting years ahead.

Part One: What Will We Practice With? Or Waves of Technology

The profession looks a lot different to a new dentist today than it looked in the 1980s. This is partly due to technology. I am really only familiar with the technological advancements in my own specialty, but orthodontics may be a useful example. Padhraig Fleming—a professor of orthodontics at Queen Mary University in London—argued in a September 2020 blog post that orthodontics has been at the vanguard of the technological innovations in dentistry. He writes:

We have seen full customization of fixed appliances, removable appliances, and archwires. Digital workflows have become integral to practice. Practitioners are increasingly judged based on the adoption of technology—what we use, rather than what we know or produce. Terms such as “digital orthodontist,” “Invisalign dentist,” and “Damon doctor” have been spawned and, given the direction of travel, may increasingly come to define us.

This last part is no doubt worrisome to some readers. Is it possible that dentists might be judged by the technology they use as well as their outcomes? The answer that most orthodontic residents in the country would give is, “Of course.”

Dr. Piers practices orthodontics in North Carolina and is on the editorial board of the *Journal of the American Dental Association*; christian.piers@gmail.com.



I treat my patients in a high-percentage brackets practice, as I have said. I trained to be equally proficient in braces and clear aligner therapy, but I am using more and more clear aligners in my practice today—not because I am particularly enamored with them, but because I know this is what my community expects of an orthodontist. To some extent there is always a voice in the back of my mind whispering, “*Adopt... or... perish.*”

This voice speaks with special persuasiveness to young clinicians. Those of us who are just starting out have understood from as far back as dental school that we would need to gain as much exposure as possible to new tech as soon as possible, because there would always be the danger that its cutting edge could leave us behind. In dental school we stood on the metaphorical coastline of our careers watching wave after wave of technology crash onto the shore, and we knew intuitively that we would live through more technological revolutions than any of our predecessors.

We also sensed that if technology’s cutting edge ever outstripped us, it could leave us unable to build easy bridges between our existing skill sets and the new techniques that had been developed. Sitting out too many technological leaps could make it challenging or even impossible to catch up again with the rest of the profession, and our deepest fear was that we could be left offering traditional techniques to a patient base that had stopped believing in them. We had seen this happen in the wallowing practices of late adopters we had shadowed as pre-dental students—fantastically talented

late-career dentists who were producing superior outcomes and could not understand why their practices were shrinking. To go back to the words of Fleming, the problem was not with their outcomes, but that “...practitioners are increasingly judged based on the adoption of technology—what we use, rather than what we know or produce.”

Before I went to dental school, I spent several years working in Hawaii, and I became a dedicated surfer during that time. I mention this because I have recently found myself picturing these approaching pulses of innovation from a surfer’s perspective.

Imagine, for a moment, sitting on a surfboard in the ocean and watching the flat curve of the horizon begin to bulge with a set of approaching waves. As the bulge draws closer, one mound of water rises up after another in a set of neat, clean lines, each peak glinting in the sun, and a moment of silent—almost religious—reverence descends upon the surfers in the lineup.

There absolutely have been times when I have been listening to a lecture on some emerging orthodontic technique and felt that same sort of reverence passing through the audience—that we are watching something massive and career-altering approaching from over the horizon, and that, just for a moment, it is important to breathe deeply and stare without blinking at this gleaming, glorious distortion of our realities.

Then it is time to start paddling. This is the moment when the surfers splash to their stomachs and glance at each other to begin positioning themselves strategically in the lineup. This is also the moment when those less experienced at catching waves (me) look to others for hints. This is the instant the lineup separates into three groups—the early, middle, and late adopters.

A select few clinicians will paddle to position themselves “in the pocket” to catch the wave at its steepest, most dangerous takeoff point. I hardly ever followed these surfers. Paddling into the pocket allows for maximum speed and maneuverability on the wave, but the takeoff also requires the greatest strength and skill. These early adopter clinicians know full well that they have little margin for error, and that the price of failure while beta-testing new tech can be measured in terms of both dollars and reputation in the community. Success, however, means shooting down a wave alone at board-chattering speed, far out ahead of one’s peers, in full view of the public and dental community. Listen to an interview with a surfer talking about paddling into a hollow pocket and an interview with an early adopter talking about using new tech and you will be surprised to hear them both using the vocabulary of exhilaration. You might just hear both of them say they are “stoked.”

A second group of clinicians will position themselves “on the shoulder” of the wave, readying themselves to launch on a safer, gentler part of the face, far away from the wave’s crashing lip. These middle adopters can watch the rides of early adopters and will not be the first to find out that this particular swell smashes directly into a reef, if indeed it does. They have a slower, safer ride, supplied with information from other surfers and plenty of time to make controlled decisions. The downside is that these rides offer fewer opportunities for the maneuvers and flourishes that set one apart from one’s peers, and there is always the chance that someone who took off earlier on the wave will make it indisputably “theirs.” (For example, somebody else may become known as

the “Invisalign doctor” in the community.) Limiting the risk, in other words, also limits the reward.

For me as a middle adopter, the question is often more about *how far out* on the shoulder I will drop in. In other words, how successful does a new technique have to be, and how much evidence needs to support it, before I am willing to commit to the wave and employ it in my practice. And at what point *must* I employ it?

A third and final group of clinicians will claw out into the calm beyond the breaking waves and let each of these pulses of innovation pass in turn. In positioning themselves further out, they may be readying themselves either to catch the next wave of innovation (which could pass un-riden while everyone else is occupied with the previous set) or paddle back to the safety of the tried-and-true techniques they were using before.

The work of catching a wave of innovation, riding it skillfully, and paddling back out to catch another is tiring. Even a young clinician like me can imagine how it could become exhausting to do this for years on end. And as the pace of innovation increases, the sets are coming closer and closer together.

This is the thing that is different about innovation today. Technology is not only more advanced than we could have imagined a couple of decades ago—it is also advancing at an ever-accelerating pace. And there is reason to believe that with the development of more powerful artificial intelligence (AI), this acceleration could increase exponentially. The endurance required to keep up with these new technologies was not required of dentists in earlier eras. So the masters of today’s technology will not necessarily be the most successful dentists of tomorrow. The most successful dentists of tomorrow will be the masters of

Digital workflows have become integral to practice. Practitioners are increasingly judged based on the adoption of technology.

mastering technology (and those with the will and endurance to keep mastering it).

Must these by definition be younger clinicians? Of course not. There are simply fewer clinicians who feel compelled to keep paddling all the way to the end of their careers. New technology can start to seem disruptive, in the negative sense, so that with each approaching wave, a more experienced practitioner might ask, “Is this something I need to learn before I retire? Or can I get by without it?”

Seasoned dentists have, of course, tried myriad techniques and technologies throughout their careers and settled on the ones that create the best outcomes in their hands. If it is difficult to imagine improving on one’s already-superior outcomes, it can be hard to motivate oneself to keep paddling—especially when keeping up with the state of the art no longer just requires sporadic hour-long CE courses. In the future, continuing to paddle could involve learning entirely different treatment paradigms multiple times throughout our careers—ones that may well have been unimaginable during our dental training.

In a dental world where these sweeping sets become more frequent and more powerful, it could also become easier to get caught in the impact zone—a place where clinicians are pounded by wave after monstrous wave of technology, held underwater and flipped head-over-heels in what surfers call the “washing machine.” Caught in a set of waves like this with so much technology to choose from—each wave upending our boards and often ridden by other clinicians in our communities—it will be easy to panic and make poor decisions about what to do next. In these moments, we will need to restrain ourselves from giving up and also from trying to catch whichever half-broken foam-ball of technology approaches next out of a sheer desire for escape and survival. My surfing mentor once watched me take a thorough drubbing in the impact zone and then catch a wave that crashed me straight into the rocks. He told me afterwards, “Keep your head up and don’t panic. Panicking is how you get hurt.”

As our stamina for this sort of thing wanes, there are really only two options—either paddle out beyond the breakers and let the waves wash past, using tried-and-true techniques until we paddle in, or keep clawing after waves until we catch our final ride in to the beach.

Will those who paddle without stopping be the only ones who find success? Certainly there will be exceptions, especially in less saturated markets. There is a difference between jockeying for a crowded wave at Pipeline and being the only surfer at a Lake Michigan beach-break. But the most successful dentists of the future will be the ones who not only learn new tricks no matter how old they get, but also never get *tired* of learning new tricks. They will be lifelong learners in the most literal sense.

Does it sound impossible that new technology could begin to arrive at a pace that is literally overwhelming? At the very least, I do not suspect these days are very far off for orthodontists.

Part Two: How Will We Practice? Or The Great Diversification

The second major change that will sweep the future landscape of our profession will be the diversification of dental practice models. Watching the explosive growth of large group practices and their challenge to private practitioners, I tend to think about the relationship that existed a decade ago between independent bookstores and the online bookseller, Amazon. Amazon, at a certain point, was just able to do everything more efficiently. It became a household name synonymous with service and convenience, and after that, the independent bookselling landscape changed in a big way. My opinion—and I will stress that this is only my opinion—is that the dental landscape will change to a similar extent.

Today, a lean, excellently run small private practice can still compete favorably with a large group dental practice. We see examples of this everywhere. Yet some independent practice owners have begun asking themselves how long this will be possible. Increasingly, solo practices and partnerships have amalgamated into small group practices, which are themselves being acquired by larger group practices, sometimes known as dental service organizations (DSOs), in a process that Dr. Chris Salierno, chief editor of *Dental Economics*, has called “The Great Consolidation.”

Just a few decades ago, independent practice owners looking to retire could

only sell their practices to other dentists or allow their practices to decline until it was possible to close the doors and walk away. Now for those who would sell to an associate or new graduate, there is also the option to sell to a large company for a higher price (usually some multiple of EBITDA, dentistry’s new buzz-acronym) in exchange for three-to-five years of well-compensated work as an employee dentist.

Yet it is also now easier than ever for dentists to own multiple practices and even create their own dentist-owned dental service organizations (DSOs). Salierno wrote in 2019, “For the entrepreneurial dentists among us who dream of trading chair time for executive duties, this is an incredible time to be in business. We have experts and resources like never before to help us grow from our one successful practice to many, many more.”

This, to me, is one of the most interesting developments in the rise of group practices—the speciation of small group practices. With their improved efficiency of scale and centralization of management, these practices can become streamlined as a group while preserving the nimbleness and community engagement that have always characterized small, private practices. They can also be led by leaders who spend a large percentage of their day, if not all of it, thinking about practice success strategies. This gives these practices an edge over solo practitioners who must spend most of their days treating—and thinking about treating—their patients.

And let us not forget the approaching waves of innovation. In both small and large group practices, dentists who do not want to spend the coming years getting washed around in the impact zone can leave the logistical problems of tech adoption to

There is always a voice in the back of my mind whispering, “Adopt... or... perish.”

The most successful dentists of tomorrow will be the masters of mastering technology (and those with the will and endurance to keep mastering it).

managing dentists. Mistakes in one location can inform deployment of technology in another, allowing executive dentists to troubleshoot problems from a far-seeing, high-altitude perspective. Each group practice size will also offer certain advantages that the other does not. In large group practices, for example, exclusive CE courses for employee dentists can be developed to aid in the adoption of specific tech in standardized ways. In small group practices, executive dentists with a nuanced personal knowledge of their employee dentists can spearhead the deployment of new tech in individualized ways for different locations.

In contrast to the Great Consolidation, I see this Great Diversification as exciting for several reasons. First, it means there are now more options than ever to chart one’s individual path to success. A dentist with an associate mindset can choose to work in a small private practice (solo practice or partnership), small

group practice (dentist-owned or not), or large group practice (DSO or DDSO). A dentist with an equity mindset can pursue ownership at any of these levels, as well: launch or buy into a solo practice or partnership; build a small group practice; or amass a DDSO practice empire. Hybrid DSO models even exist in which associate dentists can earn stock in their companies or purchase equity to become part-owners of one or more DSO practice locations. All of these paths are now possible for the same dentists who, in the 1980s, would have had exactly two options—to own or work for a small private practice.

This means that dentists in the future will be able to be more purposeful about chasing their individual career and work-life balance goals—whether those goals include owning one or 20 practices, or working two days a week as a professional water-skier and three days as a DDSO associate, or working for a DSO with locations in two states between which the dentist hopes to split his or her time.

As these practice models expand and diversify, it is also true that the slice of the pie chart traditionally occupied by small, independent practices must shrink. But this is not the death knell of the independent practice. Bart Walker, JD, and Diana Castro, JD, detail multiple bottlenecks that are slowing—and could continue to slow—the growth of DSOs in a 2019 *Dental Economics* article. They also note that experts in the dental industry estimate about 80% of dental practices will remain unaffiliated with DSOs.

So the independent practices are still out there. And while clinicians set on becoming independent owners may have to work a little harder to be successful, the exciting news is that there is now an entire new group of

associations, publications, and support professionals that exist to help clinicians take their practices to heights that were not imaginable even ten years ago. If these small practice and small group practice owners are successful, it may not matter if large group practices continue to increase their market share. We may yet see a future in which small bands of dedicated patients support independent dentists with the bumper-sticker-fervor of those who today support independent bookstores.

Part 3: AI and Auxiliaries, Or Who Will Be Practicing?

Teledentistry has exploded during the Covid-19 crisis. Virtual visits, exams, and treatments have become commonplace, and we have learned that while the doctor must be present during some appointments, others do not require a doctor to be physically present at all. We have also learned that our patients appreciate the convenience of remote visits, so long as their problems are effectively addressed. These developments have added pressure to what I see as the third major change occurring in our professional landscape—the delegation of “doctor tasks.”

I will speak about the field I am most familiar with—orthodontics. With the advent of customized CAD-CAM fixed appliances like Insignia, Incognito, LightForce, and others and the continued development of clear aligner therapies like Invisalign and Clarity, it now seems plausible that greater and greater percentages of orthodontic patient populations will be treated with customized CAD-CAM appliances that require a limited

number of in-person visits. The remaining in-person appointments will likely be overseen by orthodontists but conducted by technicians performing tasks like bonding clear aligner attachments or placing arch wires that were custom-bent by robots in faraway factories. Some traditional visits will no longer be necessary. For example, appointments to reposition brackets should not be needed if a clinician is using either robot-bent arch wires (which should correct for bracket positioning errors) or 3D-printed bracket placement jigs (which should prevent those errors in the first place). Other appointments will be conducted virtually using high-resolution, HIPAA-compliant remote monitoring services. Though they are not yet commonplace (or, for the most part, happening in my own practice), all of these things are happening today.

As these technologies improve and incorporate stronger algorithms developed by AI—including those already used by clear aligner companies to digitally align teeth—the dentist will take on a different but even more critical supervisory role. Frequent clinical contact will still be required for complicated cases, including the treatment of craniofacial abnormalities and malocclusions that require adjunctive exposure of impacted teeth or orthognathic surgery. But orthodontists of the future may also become incredibly skilled delegators and remote technicians.

Does such a future seem possible? Remember, the specialty of orthodontics has already changed drastically during the 110 years since its founder, Edward Angle, custom-formed bands for each of his patient’s teeth in order to straighten them. While many modern orthodontists

still need manual dexterity to bend wires and position brackets, the dexterity of today's orthodontists is nothing compared to the level of skill required for anyone practicing with Angle's "pin and tube" appliance in the early 1900s. The advent of straight-wire appliances, pre-adjusted brackets, and super-elastic arch wires have made orthodontics indescribably easier for specialists and increasingly accessible for generalists. This trend shows no signs of slowing.

Some of the technologies we depend upon today will also become obsolete. When I was 19 years old and working as a lab tech for an orthodontic office, I thought that the hundreds of hours I spent trimming white plaster study models and soaping them to a gleaming luster was building a skill set I would use for an entire career. That skill set came in handy for exactly six sets of plaster models during my first weeks of orthodontic residency, and I have not prepared another since. Only 15 years passed between the summer I learned how to trim models and the summer I became an orthodontist.

Is it sad to lose traditional parts of a specialty like this? I will tell you the truth: I grieve not for thee, plaster models. For me, the excitement comes from using the tools at my disposal to reach the best possible outcome for the patient. If there is some new tool that will help me to achieve that outcome more quickly, efficiently, or with less patient discomfort, I will gladly

surrender another to obsolescence.

It is possible that paradigm shifts like these may, over time, begin to attract different types of people to careers in orthodontics. If interactions between patients and dentists are increasingly digital—with patients appearing in person mainly at the beginnings and endings of their treatments, and for very occasional progress or repair appointments in between—then dentists who would enjoy this kind of work may begin to self-select for the specialty. Orthodontic training programs, for their parts, may begin to select applicants with skill sets more suited to digital manipulation of treatment outcomes, and one can imagine that the specialty will evolve with the influx of these new personalities and talents.

Would the expanded scope of mid-level or auxiliary dental personnel contribute to such a shift? Absolutely. If generalists were freed from performing routine restorative and surgical procedures, they might choose to focus on more specialized tasks like complicated orthodontic treatments, second molar endodontics requiring operating microscopes, and full mouth prosthodontic rehabilitations. It is also possible—*possible*—that orthodontists might at some point have a supervisory role overlooking general dentists who are themselves managing skilled auxiliaries. Of course, those two futures are a long way off—if they ever arrive, at all.

As someone whose research as a resident was used by computer scientists to train AI to recognize contact points on teeth, I also feel comfortable saying robots will not be replacing dentists anytime soon. At least, not with the program my colleagues were using. Teeth in human

beings are so unique—even if they are untouched by wear or trauma—that it is tough to automate their arrangement. In a specialty like orthodontics, which is concerned with not only objective function but also subjective esthetics, it still takes a human being to decide what looks "right."

Changing Our Technology or Changing Our Reaction to It

All of this is to say the sky is not falling. In fact, I hope you read this and feel that exciting changes are headed our way. This is how I see it. I am not suggesting that we let go of the tried-and-true and dash wildly into the future simply for the sake of running into the unknown. I am suggesting we embrace these changes in a measured, calculating way, with the intent to meet, challenge, or adapt to them in order to shape the future as we see fit.

While some of these forces are outside our control—technological advances, market and practice evolutions, advances in AI—large parts of our professional futures are still within our spheres of influence. How will we react to these changes? The only way we will lose our agency is if we cling to what is familiar until our fingers finally slip. Let us decide now how we will incorporate or not incorporate technology, diverse practice models, and delegation in the coming years. Let us not look back at this time and think about how the future "happened" to dentistry. Let us look back and think about how dentistry happened to the future. ■

Forecasting the Future

Brooke Elmore, DDS, FACD

Abstract

Forecasts, like diagnoses, are sometimes off. But it is unrealistic to assume that dentistry will not change and thus require that we ponder and prepare ourselves to be best positioned for what is coming. The focus here is on emerging trends in technology, licensure, practice models, remote communication, and whether dentists continue to participate in organized dentistry and to embrace core professional values. We do not have to foretell every coming change, but we do have to participate in responding to what will be different in the next couple of decades.

Dr. Elmore is in private practice in general dentistry in Waxahachie, Texas; loftisb@gmail.com. She was the Regent Intern of the college from 2013-14.



“Alexa, what is today’s temperature?”
“Alexa, will it rain today?” My oldest boys, Loftis and Kennedy (ages five and seven respectively) ask this every morning while I am trying to get them focused on eating breakfast before school. “See Mom, it’s going to be hot,” or “Oh no, I better wear my raincoat (it might drizzle).” Insert my eye roll here because we know in Texas this weather forecast is 90% likely to change before we even make it out of our driveway. There is also a 90% chance that raincoats will be left at school. When I was asked to write about the future of dentistry and where we are headed in my beloved profession, I had a hard time wrapping my head around what I want for dentistry and where we might actually be headed. It is not all doom and gloom, but there are definitely issues that should make us take pause and consider how we can be key players in shaping our profession’s future.

My Twenty-Year Forecast—alright, that is a blink of the eye! Twenty years ago, I was sitting in my freshman honors chemistry class on a Friday morning at 8:00 am. That had to be punishment for the pre-med and pre-dent students. It seems like yesterday. We had to prove we could show up for class and lab that early (Monday, Wednesday, and Friday) to earn the grade to get into medical or dental school. WOOF. That was tough but definitely helped prepare me for dental school and entering our profession.

Preparation is a great place to start. Let us consider some things that

are happening in our current time and where they could lead us in 20 short years.

Technology

No doubt the “Alexas” of the dental world are shaping our future. There is so much to learn, and the more I know, the more acutely I feel the need. Sometimes I feel overwhelmed or like I am falling behind. We get so accustomed to things the way we do them and find that it can be hard to change and adapt to new technology. In my residency program 13 short years ago, cone beam computed tomography (CBCT) was just starting to emerge in dentistry and I remember all the naysayers—“We don’t need that;” “It’s too expensive for dentists;” “I can place implants all day with a pano and PA.” Well today, I would not dare place an implant without a CBCT. Even if it is not CBCT-guided surgery, the wealth of additional information one can glean looking at a 3D image is mind boggling. Crazy to think 20 years ago we were not using this technology and people experienced successful implant treatment. With today’s technology, it is more streamlined, efficient, and our treatment outcomes are more predictable for our patients. I cannot imagine where we will be in the next 20 years with the developments we will see in technology today. Is it the digital workflow and perfecting the imaging systems of intraoral

scanners? Is it 3D printing in your office? Will robotics be placing implants? Digital smile design from treatment planning to patient morphology to delivery? Growing teeth in a petri dish? A vaccine for *S. mutans*? Is it something we have not even heard of? Maybe.

Automation is certainly on the rise. Look at Alexa. She is helping modern-day kindergarteners and second graders plan their attire for school. What key technology is going to help dentists and our patients? Will we even see our patients until they open their mouths in our operatories? To avoid germs, of course, they check themselves in, answer their Covid screening questions from their car on their phone, take their temperature, use the automated hand sanitizer station, and then unlock the front door with the digital key pad and head to op 5. Sound too far-fetched? I think it is right around the corner.

Currently the biggest player in my general dentistry practice is our intraoral scanner. It has made our fixed prosthetics process impressively fast. We are using the iTero scanner and I was cautiously optimistic at first. I did not trust the system. I was worried my margins were not going to be captured. Is it 100%? Absolutely not. In fact, I took a full arch PVS impression for an implant crown and a natural tooth crown today. It is a case-by-case decision, but I would estimate that 95% of our fixed prosthetics cases are sent to the lab using our intraoral scanner with digital impressions. What have I been impressed with most? The speed. It is about five business days before I have my lab-fabricated crown back ready to deliver to patients and sometimes faster. The contacts are usually perfect

and the occlusion needs minimal to no adjustments. My partner is planning and executing Invisalign cases with the iTero beautifully. I have used it to scan patients for occlusal guards, but my favorite is interfacing it with our CBCT scans and using our digital impressions to create printed surgical guides through Implant Concierge.

What has it done for our patients? Well, they do not spend ages in temporaries or have to come back in because one is broken or uncemented. Some might ask why we have not incorporated a milling process in our office. We are not there yet, but currently our digital workflow is extremely cost-effective and efficient. It is a welcomed system in our practice.

What are we considering for our immediate future? A 3D printer, planning and printing our own surgical guides or aligners? I know there are some of you out there already doing this. I think this may be an easy integration in many offices and help streamline the process even more in the near future.

Licensure Examination

Will we finally get a skills-based objective structures clinical exam-type (OSCE) exam for licensure in the next 20 years? For the past two decades (since 2001), the ADA has supported the elimination of “live patients” for licensure exams due to the unreliable and unpredictable nature of the current exam process. California approved the portfolio exam in 2007, but it took seven years for it to come to fruition. Then comes Covid and all of a sudden state dental boards are getting behind moving forward with an OSCE-format exam for licensure. Wow—I know things move slowly but seriously, this took a pandemic for change. There has to be a more reliable and valid way to evaluate a dentist and his or her technical skills

than the single encounter with a “board patient.” Personally I believe a mixture of OSCE and typodont exams and a portfolio record of representative achievement would be best to prove a student’s ability to deliver care and would protect patients far more than the current format. Medicine and every other health profession moved ahead years ago. Maybe, just maybe, the ship is turning, and we will see a valid and reliable method for certifying practice readiness of dental school graduates developed by 2040!

Practice Models

Managed care, group practice, private solo practitioner, educator, researcher—the options are endless in dentistry. There are many practice models available today and it can be a challenge for new dentists to find their path. Bottom line for me, DSOs are here to stay. A 2020 *AGD Impact* issue was titled “To DSO or Not to DSO?” I was intrigued. One article by Rehan outlined the different practice models and the pros and cons of DSOs. Another paper in the set, by Dr. Craig Armstrong, said, “It’s interesting to see the morphing of the desire of some young dentists to graduate and go into practice with the idea that they may never own a practice.” We must embrace the fact that some dentists may find it easier to be in a “corporate” model where someone else is managing the business aspects of practice. These dentists are not blameworthy. The DSOs are very good at figuring out the right equation to make a profit while taking the stress of practice ownership off of dentists. Also I find more and more dentists in private practices, including specialists, are selling their practices to managed care entities that will take over the business side of the dental practice. It

is time we realize that DSO or managed care is not synonymous with the scarlet letter. There are really good dentists involved with these practice models.

We have to maintain an open mind and remember we are all in this together for the greater good of our patients. But how do we bridge the gap and help ensure that those who choose this path are still serving the greater good and maintaining ethics at the core? It is up to the ACD to be a leader in encouraging these new dentists to hold firm to their core values. Maybe it would be beneficial for the college to engage the DSOs and form an alliance through which we provide training in ethical situations and outcomes for their dentists, staff, and owners. As for dentist-owned private practices, there might be a lot to learn from these models on efficiency and systems that could improve our practices.

Remote Work

Recovering from 2020 and the coronavirus crisis is tough on us all. But what have we learned for the future? Finding the new normal is a challenge. It is hard on our teams, our patients, and our families. (Personally, I am going to need hearing aids and an internal cooling fan for all that PPE.) I have seen many innovative solutions to decrease aerosols and protect our patients and staff. Technology and research about the virus will continue to allow us to modify our practices to be safe environments.

Most impressive to me during the shutdown has been my team. I learned that crises not only affect us individually, they change how we communicate and function as groups. My team was there each step of the way, ready to embrace the changes we made and adapt to delivering oral health care in cumbersome PPE.

There seems to be a lot of buzz about tele dentistry and how it fits healthcare delivery. Personally I am skeptical of how to evaluate a patient virtually. I cannot wrap my head around not being able to see the problem and perform tests to arrive at a diagnosis and recommendation. However, I do see how it would be helpful to be able to assess a patient's need for oral health care or follow-up of completed care. I do not know how we will be able to integrate this into our daily practices, but it will be interesting to see what the future holds for tele dentistry.

It was encouraging to hear and see the number of dentists attending online or virtual courses during the shutdown. That may be the birthplace of hybrid models for continuing education and returning a focus to lifelong learning. I predict we will start to see more opportunities to attend any session or event from the comfort of our homes. Maybe one day I can honestly say, "Gross, I can't believe I didn't wear a face shield before 2020!" Although Zoom has been convenient at times through the pandemic, I have missed the face-to-face interaction at professional meetings.

Professional Organizations

This is the tough one. I believe every organization I am involved in is experiencing a downward shift in our membership. Now that is scary. This trend could be very detrimental to the future of dentistry as a whole. Maybe the pandemic will lead colleagues to understand the importance of organized dentistry and being involved in professional organizations. Many new dentists do not see the long-term value in organized dentistry, and it is a challenge to be innovative and cutting-edge when viewed through their eyes. We must get our boots on the ground and let them

Preparation is a great place to start.

experience the value of belonging. I often think it may be because dentists can go anywhere online or virtually to get what they need in an instant in the palm of their hand. Professional organizations are offering services that many competitors, including commercial interests, can offer on comparable terms.

The American College of Dentists is the oldest major honorary organization for dentists. We have to be the path makers for the future by recognizing emerging leaders early in their careers and capturing their lifelong commitment to our organization. Our online ethics courses are used by many schools across the country, and they are excellent. But do we have a comparable program for the full range of practitioners and for helping organizations help their members be professionals? How can we engage the entire profession to continue to develop their ethics, leadership, and professionalism throughout their careers? Is there a continuum approach we can use to recognize a deeper commitment to our core values and ethics as dental professionals?

At the end of the day, the next 20 years is approaching like a fast-moving train. We must work together to ensure that the future of the college and our profession remains bright. It has been quite fun looking into my crystal ball. I will place this little piece up in the cloud in my virtual time capsule. In 20 years, it will be exciting to pull it out and give myself a grade. I hope I am better than the meteorologists in Texas! ■

The Secret to Our Future

Leadership

Daniel A. Hammer, DDS, FACD

Abstract

The pandemic caught all by surprise. Some like dentistry have recovered quickly; others are facing increasingly severe echoes. The prognosticators about the “new normal” are rehearsing the customary challenges of technology, delivery models, and student debt and are generally moving only so far as compiling a list questions to prove how serious they are. The one constant is that the only healthy future is one that will have leaders showing the way.

What will oral health and dentistry look like in 20 years? As I write this, the number of Covid-19 cases is rising throughout the country and the “third peak” is present in numerous regions throughout the United States and the world. As we all adjust to this continuously changing situation, to predict what dentistry may look like in six months, let alone 20 years, is extremely challenging. There is so much to be learned about the virus, its transmission, and overall behavior that regulators and practitioners alike cannot speak with absolute confidence regarding safety protocols or patient care delivery models. However, to date, there has not been any outbreak attributed to a dental office, and the infection rate among dentists is less than one percent. Dentistry has done an incredible job adapting to this ever-changing landscape and continuing to provide safe care to our patients.

The pandemic has undoubtedly changed everything. We will shape the future course of our profession by how we collectively evaluate and respond to the current threats and opportunities presented by the Covid-19 pandemic. The answers to our most pressing questions will not be solved by a single stakeholder or interest group. It will require extensive collaboration in order to foresee second and third order effects and to successfully navigate the emerging challenges.

The optimism I have for the continued adaptability and success of our profession is grounded in the fact that this is not the first time we have

been confronted by a pandemic of unknown severity or duration. In the 1980s, the HIV epidemic was at the forefront and dentistry responded with a concerted effort to ensure safety for both healthcare teams and patients. The emergence of HIV led to significant changes to all healthcare practices with the implementation of universal precautions, which are now standard operating procedure for all fields in dentistry and medicine. Adherence to these guidelines is the most effective way to protect ourselves and the patients we serve. These regulations took time to develop and their implementation in everyday practice was slow and deliberate, and we can predict similar changes in the post-Covid era regarding aerosolizing procedures.

In order to determine the most critical challenges and largest opportunities for our profession, we need to look at dentistry’s current state. According to the *Economic Impact on Dental Practices Report* released from the American Dental Association on October 19, 2020, our profession has made significant progress since the onset of the pandemic.¹ The report is the result of more than 13,000 dentists reporting the current trends within their practices. Nearly all (98.7%) of dental practices surveyed were open, although 59.3% of practices noted limited hours compared to prior to the pandemic. In addition a large number (64.2%) of dentists reported they are

Dr. Hammer is director of Research, Oral, Head and Neck Oncology and Maxillofacial Reconstructive Microsurgery and Director, Microvascular Surgery Training, Naval Medical Center San Diego; danielhammeroms@gmail.com. He was the Regent Intern of the college from 2015-2016.



seeing greater than 75% of their pre-Covid patient volume.

Many of our patients have shown a renewed confidence in obtaining care during the ongoing pandemic. According to a survey completed by the *Back to Normal Barometer*, which surveyed dental patients throughout the country, 79% of patients had already been seen by a dentist or would be comfortable scheduling an appointment for dental care.¹ The remaining 21% stated they would either need a medical breakthrough in order to schedule an appointment (14%) or need assurance from an outside source that it was safe to return to dental care (7%).

The “New Normal” and Its Questions

With practices opening and patients returning to regular care, we now have the ability to start predicting the stakeholders and influences that will determine where our profession might be in 20 years. The goal of the remainder of this manuscript is to discuss these influences and how they may shape our near future.

Without question, the post-Covid era will be full of new regulation on the federal and state levels for all healthcare practices. This is especially true for those who have been deemed “essential” in order to be well-prepared for our next pandemic. We will await new OSHA and CDC guidelines on professions that provide aerosolizing procedures once Covid-19 and similar pathogens are further

studied. These regulations will have economic and legal effects that will modify patient care standards. How will the additional regulations change the cost to provide dental care? How are these increased costs offset and how will we integrate the new regulations into our practices? Last, how will state dental boards regulate and ensure proper reporting and compliance with the new standards?

The pandemic changed delivery models in all healthcare professions. The pandemic accelerated the adaptation of teledentistry, while online retail of dental products and home remedies skyrocketed. In addition, differing models of healthcare delivery such as dental service organizations (DSOs), small group practice, and solo practitioners each experienced the impact of the pandemic differently. It is likely that the healthcare delivery model in dentistry has been forever changed by the pandemic. Will dentists deliver vaccines in the future? Will teledentistry continue to grow and become a permanent fixture in patient care? What is the standard of care for teledentistry and what can be completed for patient care in this remote setting? Will the constraints of the pandemic ultimately help or hurt the wide variety of differing practice models?

In addition to our delivery models, our workforce has dramatically changed in the wake of the pandemic.

If we continue to reflect and work together, as a united profession, to answer these tough questions, we will enter the post-Covid era stronger than before.

All team members with school-aged children have had to balance continued professional obligations with homeschooling and lack of reliable childcare. In addition, it has become increasingly difficult to recruit and retain both dental assistants and dental hygienists due to their concern for their safety in the office. Many dentists experienced demands from staff regarding safety and pay increases. According to the ADA, one-third of dentists are recruiting dental assistants and one-quarter are recruiting dental hygienists to their practices. However, 80% of dentists report it is “extremely” or “very challenging” to recruit dental assistants and dental hygienist to their practices.¹ How can dentistry ensure the safety of our teams in order to have a workforce ready to care for those in need? What happens if our supporting staff decides not to return to work in the dental office?

An influence that was present well before the pandemic and now has considerably more impact on the profession is the notion that dental care is a commodity. Consumerism has placed dental care in the same category as other discretionary income purchases for an individual. In a time when countless individuals have lost their jobs and federal program funding is inconsistent, the resources needed for patients to obtain dental care are unreliable. How can we best support these patients? How can we incentivize practitioners to care for this vulnerable population?

According to the American Dental Education Association, the average dental student graduates with

\$292,169 in debt. In addition, this debt is associated with high interest rates that are updated annually by the government and can be as high as 10.5%. Almost all loans are not subsidized, and income-based repayment and the Public Service Loan Forgiveness Program are always open to changes and cannot be counted on. Dental school tuition has only increased, and scholarships and other merit-based financial aid is fleeting. This debt burden does not include the additional expense from seeking specialty training. Additionally very few are able to refinance their loans due to the concern of having a fixed payment in an environment with variable net income. The enormous debt early-career dentists have is directly influencing their professional choices (type of practice, location) and personal choices (home ownership, starting a family) among others. How can we advocate and support our new dental colleagues? How will this debt burden and its influence on our personal and professional decisions form the future landscape of our profession?

We cannot live without technology. It has infiltrated all aspects of our daily life and its influence is only accelerating. Technology has advanced our procedural techniques and has led to improving patient outcomes, increasing efficiency and, in some cases, lowered cost. This combination directly speaks to the value proposition that has recently driven our healthcare economic decision making and that is to improve outcomes while lowering cost. In addition, technology has opened up new channels for communication, collaboration, and information sharing. How will dentistry be impacted by the rapid advances in technology?

Leaders Will Get to the Future before the Rest

The most nimble professions are those that are organized and value leadership. Although the patient is the end user of the healthcare system, decisions are made at the organizational level (government, industry, professional associations, etc.) that directly dictate our daily clinical practice. Similar to the HIV epidemic, Covid has challenged our profession to think bigger and take direct action in an attempt to ensure the long-term success of our profession and the health of the patients. Our professional associations have shown adaptive and agile leadership. If we continue to reflect and work together, as a united profession, to answer these tough questions, we will enter the post-Covid era stronger than before. If we do not work together to advance the profession, other influences discussed prior will write the rules of the post-Covid era for us. ■

Online Source

- 1 American Dental Association COVID-19 Report: Economic Impact on Dental Practices Week of October 19 Results. <https://surveys.ada.org/reports/RC/public/YWRhc3VydMv5cy01ZjhmNTg0MTYyNzFiyZAwMGUwZDI4NDQ0tVjFm3BaeGhzWm12TnNMdjB4>

Dentistry 2040

Rise of the Algorithm

Ken Randall, DDS FACD

Abstract

One feature of the emerging future that is likely to have significant impact on dentistry is artificial intelligence. AI is only equipment in the indirect sense. It is systems of algorithms that manage huge quantities of data nearly instantaneously. AI is designed to enhance and in some cases replace human judgment. It has already found its way into many fields, including medicine, with applications in diagnosis, treatment planning, treatment guiding, patient management, and continuous monitoring of patients' health biomarkers. To an unknown extent, AI has the potential for improving oral health, but it will likely do so by disrupting traditional staffing and work flow. No one can clearly see this future, but it is time to ponder some questions about the implications for these new capabilities.

Dr. Randall maintains a private practice in Hixson, Tennessee; ken.randall444@gmail.com. He was the fourth Regent Intern of the college from 2017 to 2018.



Back in third grade, I had to write a paper on what the world was going to look like in 2020. It was an exciting project to think about and complete because I could not wait to go into outer space! Surely by 2020 we would be traveling *Star Trek* style wherever we wanted in the galaxy. We already had a space program that took astronauts to the moon and a space station named Mir was being built to orbit the earth.

While we still had card catalogs in the library to find our books, there were these things called computer labs that were pretty cool. Just a few more years, I thought, and the nicest, newest computers would certainly enable us to have commercial space flight accessible to whoever wanted to walk up to the desk and buy a ticket.

We have made progress with commercial manned space flight as evidenced by the SpaceX DEMO-2 mission earlier this year. However, we still have a long way to go before my third grade vision of a world like *Star Trek* becomes a reality.

I wonder what thought dentists gave their future when I was in grade school. Could they have even envisioned the imaging devices, materials, record keeping, and other technology we take for granted these days?

There are so many aspects of the dental industry that could be discussed in an article about the future of dentistry that it is impossible to address them all in a single journal. While I am certainly no expert, I would like to investigate an emerging

technology that is likely to be one of the most influence across dentistry and society as a whole over the next 20 years—artificial intelligence (AI).

Defining Artificial Intelligence

AI refers to a spectrum of digital algorithms that attempt to recreate or improve upon the decision making of humans. Just as humans get more “intelligent” as they learn from experience, so does machine learning improve AI. AI will not replace what dentists do with their hands—although computer-guided surgery is well-established now in dentistry. AI will contribute to how dentists think about practice: marketing, patient management, diagnosis, treatment planning, and very likely, continuous monitoring of oral and medical conditions in real time on a continuous basis. It will change the definition of oral care.

Since IBM's Deep Blue beat world chess champion Garry Kasparov in 1997, the possibilities for machine learning have become evident to the world. Now, Amazon's Alexa functions continue to get smarter as one interacts with it over time. It is beyond the scope of this article to break down and define the spectrum of AI, but suffice it to say that there is a breadth of capability and sophistication to the way different computers are programmed to have AI properties.

Will the traditional roles of the dental workforce change or be eliminated as a result of AI solutions?

We have already seen AI creep into our lives in many ways. Tesla, for example, is widely known to have an autopilot function on its vehicles that has some self-driving capabilities. The company has designed its cars to be able to get more advanced in self-driving capabilities as technology improves. AI research is also continuing with a recent demonstration of an AI-controlled F-16 fighter jet successfully beating an experienced F-16 fighter pilot 5 to 0 in a series of simulated dogfights. In healthcare, AI has been used in a number of ways but is perhaps most advanced in radiology and pathology. In these fields, it is currently being used to enhance detection of disease on various imaging studies and under the microscope.

AI in Dentistry

In dentistry, AI has the ability to impact clinical systems as well as business systems. One example of an existing clinical application is a particular digital scanner that promotes AI-directed improvements in digital scans, automatically eliminating artifacts such as tongues or lips. Auto-chat features on some dental websites answer certain questions and even have the ability to schedule appointments. Many more AI-derived solutions are emerging to assist in clinical diagnosis, treatment plan development, claims review and reimbursement by third parties, and much more. Recently the formation of the Dental AI Council was publicly announced, focused on exploring and guiding the development and implementation of artificial intelligence in oral health care. This industry-led consortium will likely help lead efforts to streamline the adoption of effective AI solutions across the industry.

Over the next 20 years, we could very well see the integration of various pieces of hardware (digital scanners, digital x-ray sensors, intraoral cameras, 3D printers, milling units, and traditional computers) with software systems that enhance a clinician's ability to interpret multiple data points and come to clinically relevant conclusions. For example, what if a computer could evaluate all of the radiographs of a patient over time and identify areas of periodontal breakdown before it was clinically significant? Aggressive management of these areas with nonsurgical means or shorter recall intervals might prevent the need for more extensive treatments over time.

What if AI could track wear patterns on teeth by overlaying serial intraoral scans and advise the clinician what areas need to be adjusted and to what extent in order to perform a complete occlusal equilibration? Or could AI design a fully equilibrated occlusal guard when appropriate that is printed on your 3D printer before the patient leaves?

What if your software could predict the rate of caries growth in a tooth and advise the clinician and patient of the date beyond which pulpal involvement is all but certain? What if the software could automatically contact and schedule this patient appropriately based on the urgency of the need? What if it automatically sent the ideal caries management products to that patient's house to reduce their subsequent caries risk?

What if your software could track procedures you are doing and know when to order additional supplies at the most economical cost from your trusted suppliers?

AI-enhanced software is sure to address inefficiencies in administrative tasks within dentistry as well. This will likely encompass everything from

selecting the appropriate radiographs/photos/periodontal charting to submit with a claim to a third-party payer, to actual claims processing, to filling the schedule as efficiently as possible, to rescheduling patients at the most convenient times for them, and more. Chat bots could triage patient concerns and schedule them as appropriate 24 hours a day, thereby reducing the number of phone calls the office handles on a typical day.

Many of the aforementioned capabilities already exist, albeit mostly in developmental stages.

Implications for the Dental Workforce

One consideration that frequently arises with implementation of new technological solutions is the effect on the human workforce. Will the traditional roles of the dental workforce change or be eliminated as a result of AI solutions? It is fathomable that AI will decrease the number of administrative team members a practice needs to function as more of these roles are accomplished without human involvement. What will be particularly interesting to watch is the influence on the clinical workforce. Will advanced imaging, AI-based software and 3D printing change the role of specialists as procedures such as guided implant placement become more accessible to general dentists? Will there be a push for hygienists to practice without the direct supervision of a dentist if AI-based software is developed that can “read” radiographs and overlay that information with an intraoral scan in order to recommend a diagnosis and advise on the ideal treatment? Will there be a need for more IT staff

members to keep the technology operating optimally? Perhaps digital monitoring of actual improvements in the function in a patient’s mouth will become the new standard for value-based oral health.

Legal and Ethical Considerations

While there are many aspects of AI that are likely to make a positive impact on the dental industry and improve patient outcomes, there are also a number of legal and ethical considerations. These changes will be so widespread and significant in impact and they will alter the present way of working and who is employed to such an extent that new players will be involved and new standards for good outcomes are certain to arise. That sort of thing never happens without market disruptions and the politics of redistribution. It will be one thing when AI is used to augment existing clinical processes (e.g., eliminate artifacts on an intraoral scan). It will be another set of circumstances when AI highlights pathology on radiographs that suggests or attempts to make a diagnosis. The biggest jump in the ethical challenges related to AI will be when the system is capable of diagnosis and treatment planning that dentists will not be able to distinguish from those produced by the most respected experts in the field. This is the so-called Turing test.

As AI evolves to the point of “diagnosing” and “treatment planning,” will standards of care change in dentistry? Will clinicians perform treatment they may deem unnecessary just because the computer suggests it for fear of being accused of malpractice? Will the cost of care increase as coding changes to reflect the computer’s findings?

For example, if a patient has slight horizontal bone loss around a couple of molars will the computer algorithm suggest scaling and root planing and “force” the clinician to bill out for it instead of coding the appointment as a prophylaxis and doing that treatment clinically?

Is this a good thing or a bad thing? If an AI-based computer program “treatment plans” an MOD restoration but the clinician believes that an MODB is the more appropriate treatment, will the clinician be forced to accept a lower reimbursement from the third party payer who relies on the computer’s algorithm or will the clinician consider leaving the buccal pathology alone until it gets worse since the computer said it was not “bad enough” to treat yet? The potential for changes in clinical outcomes and changes in the cost of care exist once AI-based solutions cross this threshold. It is hoped the entities involved will recognize the spectrum of clinical judgment across all of health care and allow for AI-based solutions to augment care instead of restricting clinicians’ ability to think independently and have meaningful discussions with their patients about the best course of treatment.

As AI-based technology evolves, how will regulatory authorities such as the FDA approve a device that becomes increasingly complex and alters its performance over time as it “learns” more information? Are current regulatory processes set up to evolve with the changes in technology or will they hinder growth and restrict

Perhaps digital monitoring of actual improvements in the function in a patient's mouth will become the new standard for value-based oral health.

the ability to get products to market that will provide benefits to patients? How substantive will hardware or software changes have to be in order to necessitate new regulatory approval? How do we ensure patient safety and promote improved outcomes simultaneously?

Who is liable in a malpractice lawsuit if the AI algorithm reaches an incorrect conclusion? For example, what happens if a particular software program with AI failed to identify pathology such as breakdown of a cortical plate consistent with squamous cell carcinoma on a radiograph and one year later the patient's cancer has metastasized?

As with any type of technology, there is a learning curve on how best to interact with the new system and make the most of its capabilities. This was the case in the industry's shift from reversible hydrocolloid to irreversible hydrocolloid. It was and continues to be the case in the migration of data from paper charts to electronic charts. In many cases, adopting new technology will initially decrease efficiency and possibly even decrease performance. This adoption learning curve will also be variable between providers. Are we okay knowing that the quality of care could potentially decrease in earlier generations of new hardware and software? Are we okay knowing that all providers will not be comfortable interacting with the technology to the same extent and quality of care could be affected as a result?

How will dental education be affected by the presence of solutions that can ease the burden of diagnosis or treatment planning but may not give new graduates as much

experience with the fundamentals that the technology relies on? Might new graduates be better trained to interact within the software and thus be on a shorter learning curve once they are no longer under faculty supervision?

It is not just the equipment that will change in coming years. Dentistry will change too.

Conclusion

We are likely to enter a paradigm shift in the traditional dentist-patient relationship over the next 20 years, one that will fundamentally change health care forever. The interaction between the patient, the clinician, the computer, and industry will change as a result of new technology availability. This has the potential for a positive impact on patient outcomes if used with the right data at the right time by the right people in the right circumstances. There are also many potential unforeseen and deleterious consequences as we insert additional variables into the dentist-patient relationship. Navigating those interactions and integrations will be critical to the future of AI in dentistry and the successful improvement in quality care delivery. ■

Dentistry in the ACD's Second Century

Erik G. Klintmalm, DMD, MPH,
MA, FACD

Abstract

The profession underwent dramatic changes in the past 100 years. Anyone who dwelled too long on perfecting the moment of balance between advances in dentistry and the demands of the public and the opportunities of new developments was apt to be left behind. The American College of Dentists has a century-old tradition of anticipating these trends and helping the profession position itself for continued growth. The challenges today are primarily interorganizational, as commercialism, student debt, and a splintering of groups each clamoring for attention challenge traditional professional values and finding the right response to rapidly changing technology and demographics of patient needs. All of these changes will demand leadership to get the response right. The American College of Dentists has traditionally functioned in this role and is expected to continue to do so.

Dr. Klintmalm practices in Austin, Texas. He has served as executive director of the Student Professionalism and Ethics Association; erik.klintmalm@gmail.com. He was the Regent Intern of the college from 2019 to 2020.



The past century has demonstrated the protean and protracted nature of the organizational fabric that is the American College of Dentists. Throughout its history, the college has assumed various forms to engage the inevitable changes that occurred within the profession. Each era brought new challenges and new opportunities and new leadership to champion the myriad causes the college undertook. This raises a logical question: does that organizational agility and adaptability remain? Acknowledging that in the context of a centennial celebration, the shift of attention to ceremony and celebration is important as we seek to honor those individuals who have contributed greatly to the profession. This is the very essence of fellowship “to elevate the standards and to recognize those who have done meritorious work.” But fellowship is not a destination; fellowship is an invitation for collective engagement and commitment. Our second century provides the college the unique opportunity to open the aperture and shift focus to the iterative development of the future leaders of the profession. This begins with an environmental scan of the profession and those who elect to enter the profession.

What Kind of Business Will Dentistry Become?

A darkness is, and has been, stealthily moving over dentistry. The commoditization of oral health care has been snowballing over the past few

decades as people are bombarded with chain dental offices and competitive price cutting, where whitening is valued over prevention of disease. The modality of care has changed slightly to fit more closely society's increasingly social media-centric view. The draw for dentists can be identified rather easily: money. The driving force behind many intraprofessional decisions has become financially based for a multitude of reasons, including steadily rising dental school debt and stagnant dentist income with which to pay it back. The financial strength of solo practice dentists peaked in the 1990s and the first part of this century, and now practitioners find themselves in a quickly changing landscape that does not line up with the patient loyalty model that undergirded previous success. Meanwhile, newly graduated dentists are finding themselves in circumstances that are not even reminiscent of the patient loyalty model of their family, friends, and mentors. This model, which dominated the practice philosophy even a short time ago, had also been the impetus for the newly graduated dentists to enter the practice world. The college has the opportunity to help guide these new young professionals through this changing landscape by shining a light on areas where the profession could use progressive leadership.

The commoditization of dentistry has had the fortuitous benefit of bringing to light the importance of oral health. Most literature is reliably revealing the connection between oral health and overall health and blurring the lines separating dentistry and medicine. Interprofessional education will be a strong focus of the college's second century. A future where patient care is coordinated by multiple professionals, providing input from their respective specialty areas. A future where a cardiologist consults with a comprehensive dentist prior to treatment and where a dental clearance is more than a check of a box. Primary care physicians will become acutely aware of the effects of poor oral health and become proactive in connecting patients with their oral healthcare provider. Dentists will understand that patients more regularly see them than their primary care physician—if they have one at all. Dentists will be making referrals to physical therapists to aid with conservative and reversible TMD therapies. The health care of the patient is a holistic one requiring an approach that is different from a delegated and categorical approach that prohibits the consideration of the entirety of the patient's health. Dental education, through the direction of many forward-thinking academic deans, has begun the push for improved interprofessional education, but only through advocacy and organized effort can that education perspective advance to other health care professions. Improving the

collaboration among all healthcare professionals is an area of action for the college.

It will be increasingly improbable for dentists to practice on their own in the future. There are too many hurdles from insurance negotiation to dental material fees that plague the solo practitioner. Now this is not necessarily a bad thing, but is inconsistent with the natural progression of the model that the profession created for itself. But once larger corporate groups engage, there is the invisible hand of the outsider that will affect the path of the profession. Dentists will fall in line with the physician where insurance companies and attorneys dictate treatment decisions. This will be a time when those in organized dentistry will have to stand firm and raise their fists. The college will be at the forefront of this fight. The ethics of care will be debated and scrutinized. And in a fight where ethics and the profession are on trial, it will be up to the American College of Dentists to be a booming voice representing the profession.

Eventually, in this second century, dentistry will find itself housed firmly in the medical sphere and the communication among the professions will no longer be viewed as interprofessional, but rather as clinicians working together to care for the patient. There will be battles over insurance and cost of care, but dentists will champion a more holistic approach to health care: providing vaccinations and screening for non-odontogenic illnesses like the flu or HPV. Dentistry will demand and guide the development of the oral health physician and as this happens, the college will continue to be a docking for the driven, the wise, and those who stand when others sit. The honor of being a fellow is held by a small, select group of deserving individuals. This will be an honor that more dentists

More leadership from dentists within their first couple of decades of practice is needed to guide the profession out of the darkness and into the light.

will want to be associated with because fellowship is leadership and leadership is demanded.

Additionally organized dentistry has become saturated with a plethora of "groups," all vying to be the leading voice of a particular niche. As more groups with narrow focus pop into existence on digital platforms this dilutes dentistry's unified professional voice. Now would be a good time for the college to speak more loudly about ethics. This will be accomplished by the actions of a dialectic leadership within the college. It is foreseen that the college will take more deliberate stances on issues within the profession such as live patient licensure, licensure portability, integrated care delivery, standard of care, and commercialization of delivery. Leadership by the college will take the form of white papers, feet on the ground engagement, and through facilitated networking in partnership with other organizations within dentistry. The unique diversity of college fellows will be its greatest strength in its second century. The constituents of the college have different backgrounds and different

areas in which they operate; but what ties all fellows together is their pedigree, their accomplishments—or potential for accomplishment. And this is not found in just any organization. There is no other group that acknowledges leaders like the college does. The college has a deep history of inviting, cultivating, and producing ethical leaders. This potential must be tapped for the college to rise above the rest and lift the torch for all to see and follow.

What Will We Be Doing?

An increase of oral health knowledge will lead to advancements in improved preventive and restorative options. Current therapies such as silver diamine fluoride and various glass ionomer products will see advancements and increased use to address the growing aging population, as well as to address the access to care issue that the profession faces. Tooth replacement, be it by implant prosthesis or lab grown teeth, will become the future of replacing dentition. Dentistry over the next 100 years will see a great shift in the delivery of oral health care and the technology informing that care.

There will also be changes as to who will provide that care. Expanded function dental assistants and therapists will see an increased use, analogous to that of physician assistants and nurse practitioners characteristic of medicine. Furthermore, in the latter half of the century, robotic advances will appear to move the dentist into more of a supervisory role. Technology advancements like this will allow teledentistry to become more widespread and, most importantly,

more commonplace and accepted.

In the initial decades of this century, dentistry will see a large shift to addressing the needs of older individuals. The population is aging and the Baby Boomer generation is becoming one of the largest cohorts of the population. The treatment of an aging population will require a fundamental shift from focusing not only on the tooth but also on preserving bone. The functions of speech, mastication, and facial expression rely on both teeth and bone. Prosthetic function will be important for a greater period of time as the life expectancy will outpace tooth expectancy. This could lead to a broader frontier of implant dentistry or an improved focus on the preservation of teeth. Improving preservation will require a dual-headed approach of community education on the need for good oral health practices and better preventive care from the clinical side.

The connection between systemic health and oral health has become more visible in recent decades and this connection will become clearer in the second century. As the healthcare arena begins to solidify around this connection there will be a new emphasis on oral health as a gateway to overall health. The recognition of the role the mouth plays in the body will have significant consequences on the dental profession. First, there will be “waves” of interest throughout the insurance industry as companies begin to view dentistry as medicine and not just as a cottage industry. The downstream effect of this will be one where the profession will be pulled to various sides by different stakeholders. The old school dentist cohort will try to keep dentistry small enough so that an individual can control it. Insurance companies will pull to bring as much profit to their sides as they can. If that

means bundling medical and dental, they will do it. New age dentists will see the inherent good, both socially and economically, of value-based dental care. This approach to measuring the good of oral health treatment will become the future model as more stakeholders see the connection between the mouth and the body. There will also be community stakeholders that will pull for dentistry to become more accessible. The battle with insurance will come to dentistry’s door as it did for the medical profession, and that battle will be necessary, albeit unenjoyable.

Second, the public opinion of dentistry will shift in line with the recognized connection between oral health and systemic health. This trend has also begun with the younger populations, but will steadily increase with each subsequent generation. The trend upward will not be exponential, but linear, and this will be acceptable. The use of dentistry in the adult population has been steadily declining, with the most common reason being cost. Meanwhile more dentists are being graduated each year. A saturation of larger markets will inevitably lead to a better distribution of dentists into areas that have been previously neglected. This will help alleviate some of the access to care issues that dentistry faces, but it will not solve it. The cost of attending dental school is simply too much for the return. There is a tangible return of income, which has remained steady the last few decades and is becoming

less appealing for students pursuing a career in health care. And there is the intangible aspect of autonomy and working for oneself. This intangible aspect is still present but becoming less so as insurance is beginning to dictate care like it does in medicine. There will be a tipping point in this century where the financial investment to become a dentist will not be worth the outcome, and this tipping point will come within the first quarter of this second century. Once that threshold has been crossed the profession will see a saturated market of dentists who are unable to be what the dental generations before them could be, and a larger group or corporate model within dentistry will prevail.

Who Will Show the Way?

The focus of the college on young professionals during the previous midcentury helped cultivate a cross section of the profession where individuals could more effectively impact their profession. The *Journal of the American College of Dentists* illuminates where the emphasis within the profession was shifting. From the 1950s to the late 1960s there was activity around dental recruitment, engagement within dental ethics education, the dentists' responsibilities in a changing world, and group dental care. There were ACD leadership programs for young professionals. The role of the dentist as a professional during this time was blossoming, and

Dentistry over the next 100 years will see a great shift in the delivery of oral health care and the technology informing that care. There will also be changes as to who will provide that care.

the college was helping define that role. The time to renew that focus has come once again. Too many in recent years shifted their focus from investing in the profession to harvesting its rewards. Technology and globalization have altered how dentistry is practiced and it is practiced at a pace faster than ever witnessed before. The current model will not sustain itself moving forward, as the changes are occurring too rapidly and require considerably more concerted effort to digest and respond to. The college must rediscover and align with the young professional in this second century. The challenges within dentistry and with dentistry's relationship with the public have become more complicated and are piling up faster than traditional organized dentistry approaches can manage. The profession will call more on a new kind of leadership.

Dentistry needs leaders and leaders need ethics. The college has been blessed with an incredible number of talented leaders from all facets of the profession and has done much to teach and promote ethical leadership within the profession. But leadership cannot solely come from above and

from individuals with enviable, achievement-filled careers. More leadership from dentists within their first couple of decades of practice is needed to guide the profession out of the darkness and into the light. The development of these leaders may come in many forms, such as mentorship, development courses, apprenticeships, internships, and direct involvement within organized dentistry. But regardless of how the development happens, this will be a crucial contribution that the college will bring to its second century.

In closing, I would like to acknowledge that most of the information contained in this paper reflects, to the extent possible, the views of a cohort of young practitioners from across the United States who are in their first decade of practice. In addition to the usual challenges of clinical practice, we are experiencing all of the requisite challenges of ambulatory outpatient practice in the midst of a global pandemic wrought by Covid-19. The enormity of the human tragedy of this twenty-first century pandemic reveals the healthcare disparities and inequities that are inherent in our current healthcare system. The disruptive nature of the pandemic affords the healthcare community a rare opportunity to reinvent itself as society needs it to be. The post-Covid world is likely to be remembered as the time when patient intake interactions and the management of noncommunicable diseases shifted to digital modalities as the default rather than the exception. We are entering a brave new world, and adroit and agile leadership is our mandate. ■

Journal of the American College of Dentists, Volume 87

2020 Article Index

Editorials

- A Dead Letter?**.....Number 1, page 2
David W. Chambers
- Ethical Tough Love**.....Number 4, page 2
David W. Chambers
- Ethics Should Fit the Scope of Practice**.....Number 2, page 2
David W. Chambers
- It Is the Relationships**.....Number 3, page 2
David W. Chambers

College Matters

- Code of Conduct of the American College of Dentists**Number 1, page 66
- Duty [President-elect's address]**.....Number 4, page 5
Leo Rouse
- That's What Leaders Do [Convocation address]**Number 4, page 7
Richard Thomas
- 2020 ACD Awards**Number 4, page 11
- 2020 Fellowship Class**Number 4, page 16

Theme Papers

- A Betrayal of Trust**Number 3, page 8
Neil Fulton
- The Changing Role of Dental School Deans**.....Number 2, page 29
Denise K. Kassebaum & Lily T. Garcia

- The Changing (Expanding) Roles of Dental Deans**Number 2, page 11
Henry Gremillion
- The Dental Ethics Teaching Case**.....Number 1, page 18
David W. Chambers
- Dentistry 2040: Rise of the Algorithm**Number 4, page 33
Ken Randall
- Dentistry in the ACD's Second Century**Number 4, page 37
Erik G. Klintmalm
- Dentists' Knowledge of the ADA Code**Number 1, page 26
David W. Chambers
- Ethical Attribution Effect Hypothesis**.....Number 1, page 59
David W. Chambers
- Ethical Touchstones**Number 1, page 35
David W. Chambers
- Fighting for Quality, Affordable Health Care for Older Adults: AARP Still Going Strong after Six Decades**.....Number 3, page 10
Lina Walker & Andrew Scholnick
- Focus Group Results**Number 1, page 4
David W. Chambers
- Forecasting the Future**.....Number 4, page 27
Brooke Elmore
- The Fundamentals of the Dean's Job**.....Number 2, page 20
David C. Johnsen
- The Future of Dental Insurance**Number 3, page 18
Terry Norris

Lifting Up the Voices of the Unheard Patient.....Number 3, page 14

*Lantz Rubin & Margaret Brooks,
with Pamela Arbuckle Alston*

Practice Goals: Opportunities and Obligations.....Number 1, page 41

David W. Chambers

Regulation and Lobbying for Dentistry.....Number 3, page 23

An Anonymous Professional Lobbyist

Sea Changes for Dental Deans.....Number 2, page 16

Ronnie Myers

The Secret to Our Future: LeadershipNumber 4, page 30

Daniel A. Hammer

The Sky Is Not Falling.....Number 4, page 21

Christian Piers

Survey of Dental Ethics Educators: 2018.....Number 1, page 48

David W. Chambers

Technology Is Not Stuff: It Is New Experiences.....Number 3, page 4

Todd Blankenbecler

Through the Years: A Reflection on the Roles and Responsibilities of Dental DeansNumber 2, page 5

Patricia L. Blanton

What Is the Role of a Dental School Dean?Number 2, page 22

Charles F. Shuler

Who Has the Influence?.....Number 3, page 29

Sreenivas Koka

Forums

Ethics of Dental Care for Medically Complex Patients During the COVID-19 Pandemic.....Number 3, page 33

Tatyana Alimova Straus

Redemption.....Number 2, page 32

Sharhram Skekib

Journal *of the*
American College
of Dentists

**2020 Statement
of Ownership
and Circulation**

The *Journal of the American College of Dentists* is published quarterly by the American College of Dentists, 839J Quince Orchard Boulevard, Gaithersburg, Maryland 20878-1614. Editor: David W. Chambers, EdM, MBA, PhD.

The American College of Dentists is a nonprofit organization with no capital stock and no known bondholders, mortgages, or other security holders. The average number of readers of each issue produced during the past twelve months was 5926, none sold through dealers or carriers, street vendors, or counter sales; 5894 copies distributed through mail subscriptions; 5719 total paid circulation; 175 distributed as complimentary copies. Statement filed with the U.S. Postal Service, September 30, 2020.



