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EDITORIAL

The aftermath of the COVID-19 pandemic on oral medicine practice



We have entered our third year of global experience with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and are hopefully approaching a COVID-19 equilibrium, characterized by the virus being still around but disrupting our lives less frequently. It is time for reflection and consideration of what COVID-19 will leave with us after it becomes endemic and part of the background risk of everyday life. It is inevitable that we will not go back to the way we have always done things and will have learned from victories and mistakes. That is the nature of progress and growth. With hope, we will be more prepared to face novel viral pandemics in the future.

In the 21st century, our world is more technologically advanced, knowledgeable about germ theory, and supported by a health care system generating more preventive (vaccine) and treatment options than at any time in history experiencing global pandemics. Nonetheless, in an article drawing comparisons with the 3 other major global pandemics, Patterson et al.¹ share the consequential population effects and long-term economic impacts of the Black Death or the bubonic plague (*Yersinia pestis*; 1347-1351), smallpox (*Variola major*; New World; 1520-1527), and Spanish Flu (H1N1 influenza; 1918-1920). Studying historical pandemic outcomes, the further back in time they occurred, the more lasting the negative sequelae the pandemic has had on global population growth, with COVID-19 anticipated to have minimal impact other than reducing life expectancies of individuals living through this outbreak period. For economic sequelae, the Spanish flu resulted in sharp short-term declines in industrial productivity that were limited and obscured by World War I and entry of women into the workforce. Currently, the Black Death's economic impact seems to ring truer to our modern times, where labor shortages led to higher wages, peasant revolts, shifts in sociodemographic power dynamics, mobility of laborers, and increased innovation.¹

This brings us to reflect on the challenges presented by the COVID-19 pandemic and innovations in oral medicine practice that were deployed in response to these challenges, innovations that are most likely to enhance clinical care beyond the pandemic, and the influence on both patients and practitioners of lingering challenges creating growth opportunities in clinical practice. How have we been indelibly changed, and where do we as oral medicine providers, educators, and

researchers go from here? What positive transformational changes can we endorse and build upon for a brighter future? I could not have anticipated in early 2017 that the Zoom (Zoom Video Communications, Inc., San Jose, CA, USA) meetings we were using at the University of North Carolina at Chapel Hill for international small group collaboration for the World Workshop on Oral Medicine VII Goteborg, Sweden 2018 projects would become a ubiquitous video or audio communication software platform across the United States by 2020, serving as a backbone to continue core educational activities in most public schools and universities.

PRACTICE MODALITY CHANGES: TELEMEDICINE AND ENHANCED MEDICAL-DENTAL INTEGRATION

With the rise in the use of Zoom and other platforms, COVID-19 created a rapid expansion of telehealth practices, including tele(oral)medicine.² Adaptability of providers and patients facing health facility closures limiting patient access to care rapidly moved videoconferencing platforms to support virtual patient visits, first to assure continuity of care. Increased involvement and capacities for telemedicine resulted from changed or modified state laws to allow this form of consultation. During the pandemic emergency period, payment and insurance coverage and reimbursement issues were addressed. Although telemedicine visits lack tactile examination information, there are significant benefits for patients in rural areas with limited specialty provider access and who have challenges accessing reliable transportation to attend in-person medical appointments. A multicenter US academic oral medicine provider study with 108 patient virtual visits conducted from April through July 2020 showed that tele(oral)medicine was a well-received and convenient option for patients with certain oral mucosal or pain disorders and was considered effective by providers in most cases, with 30% of the patients returning for a biopsy.³

Critical to efficiency of telemedicine use in oral medicine practices are awareness, education, and training in use of telemedicine technologies.⁴ In studying the utility of remote oral medicine provider evaluation of oral mucosal lesions for 100 patients through the EstomatoNet or TelessaúdeRS platform in the southernmost Brazilian state in 2019,⁵ sensitivity was 100%

and specificity was 96% for telediagnosis compared with the face-to-face examination approach. Almost 95% of examiners supported the use of this promising tele(oral)medicine alternative for oral lesion diagnosis to assist primary care providers in remote locations where case management is relatively simple. More work in this area of tele(oral) medicine needs to be done as we transition beyond the pandemic. Our move to use of internet-based and high-tech digital health assessment and communication technologies raises additional ethical issues and challenges for management of data privacy, acquisition, security and manipulation, accountability, online professionalism, and commercial interests.⁶

The COVID-19 pandemic brought us increased medical-dental integration to expand surge capacity in health care to manage increased patient demands on our health systems in many nations. In the height of the pandemic, oral medicine and other dental health care providers were busy taking medical histories, triaging medical patients, and supporting hospital systems and communities by delivering COVID-19 vaccinations, with some regulations implemented to support these integrated practices. In the United States, oral health was deemed essential health, and oral health care workers were prioritized for early receipt of preventive COVID-19 vaccines; yet, lack of full integration of treatment sites, finances, and health informatics systems hampers further expansion of this trend beyond the COVID-19 pandemic emergency period.⁷

Many health care practices are currently experiencing shortages of medical support staff as a result of pandemic work and home-life challenges. For practices with integrated medical-dental electronic health records containing patient-provider communication portals, such as “MyChart” HIPAA (Health Insurance Portability and Accountability Act of 1996) secure messaging, patients can bypass the need for the staff interface in communication with their doctor. Clerical staff time is saved by not having to answer phone messages and transfer patient calls to providers. Technologic advances also support providers’ ability to easily message each other directly about patient care coordination or concerns, within the health record. Health record smartphone apps (for example, at University of North Carolina at Chapel Hill, the EPIC Haiku app; Epic Systems Corp., Verona, WI, USA) can take over the user’s smartphone camera and directly load clinical images of the face, mouth, or other body part taken by health team members to the chart for all providers with access to the health record to view. Many health records support direct online scheduling by patients of their own appointments and facilitate record-embedded telemedicine visits. On the horizon are accurate and reliable wearable biosensor technologies that can

provide physiologic information via dynamic, noninvasive measurements of biochemical markers in biofluids, such as sweat, tears, and saliva, that can be uploaded to the health record for medical provider assessment.⁸

PATIENT DISEASE PATTERN CHANGES DUE TO SARS-COV-2 INFECTION

How have our patients changed? Along with the gustatory changes seen in acute COVID-19 illness, systematic assessment of patients hospitalized for COVID-19 are now demonstrating xerostomia in nearly one-third, and 15% present with oral findings of erythema, ulcers, and tongue depapillation, significantly correlated with disease severity.⁹ Salivary gland ectasia from hyperinflammatory response to SARS-CoV-2, white tongue, dry mouth, oral ulcers, and masticatory muscle weakness and temporomandibular joint abnormalities may present and linger beyond the acute infection phase.¹⁰ Hospitalized COVID-19 survivors are significantly more likely to experience new-onset chronic pain in the head and neck regions than are patients not having become infected with COVID-19.¹¹ Providers in the future also may need to evaluate and treat increased numbers of patients with new-onset or worsening orofacial pain due to COVID-19 pandemic—related stress, regardless of infection history.¹²

We are adding to our practices the need to care for a growing cohort of “long-COVID” patients who may require treatment modifications to support safe care associated with 14 symptoms.¹³ These vary for the most common symptoms, from working on appropriate appointment timing and length for those with fatigue; to pulse oximetry and supplemental oxygen for those with lingering shortness of breath; to monitoring for infections, chest pain, hemostasis, seizures, cognitive changes, and liver and kidney function. Oral medicine providers may see a growth in demand for dysgeusia management with long-COVID cases increasing.¹⁴ With more patients receiving COVID-19 vaccines, case reports of inflammatory and autoimmune oral mucosal reactions, such as lichen planus, to the vaccinations are appearing in the literature, suggesting that oral medicine practitioners add vaccination to their list of possible triggering events.¹⁵

ORAL MEDICINE PROCEDURE EXPANSION

Oral medicine practices, like all health care practices, have been impacted by the need to enhance infection control; add personal protective equipment based on procedure type, including N95 masks and face shields or eye goggles; reengineer the practice environment to allow compliance with local, regional, and national health and safety policies in the workplace; and provide adequate social distancing for patients. Studies

have investigated effectiveness of preprocedural mouth rinses with commercial products such as chlorhexidine, cetylpyridinium chloride, povidone iodine, and hydrogen peroxide on reducing the potential oral burden of SARS-CoV-2; yet, viral loads remain high, and viral infectivity studies are still required to determine utility in reducing salivary viral load in vivo.¹⁶

Our role in developing, promoting, and administering saliva-based diagnostic tests and vaccinations was accelerated as a result of the pandemic. Oral medicine and other researchers have demonstrated the utility of saliva as a source for detection of COVID-19 in asymptomatic patients as an alternative to nasopharyngeal testing.¹⁷ This has led to emergence of rapid salivary point-of-care tests for the diagnosis of SARS-CoV-2 infection that have potential for application in the dental office.¹⁸ Although before the pandemic, dentists in the state of Oregon were administering the human papillomavirus vaccine to help in the oropharyngeal cancer prevention efforts, COVID-19 opened the door more widely to vaccination practices across the United States. On March 16, 2021, the federal public readiness and emergency preparedness law was expanded to include dentists and dental students in groups authorized to administer COVID-19 vaccines.¹⁹ Although many challenges remain for dentists in administering vaccines in their practices,²⁰ the American Dental Association in Current Dental Terminology 2022 created dental billing codes for COVID-19 vaccine administration (D1701-D1707) to facilitate reporting for insurance reimbursement.²¹ American Dental Association Current Dental Terminology 2022 codes for human papillomavirus vaccination were approved in March 2022 for expedited implementation. Dentist engagement in counseling the vaccine-hesitant and administering vaccines in the community²² will also serve to expand our practice as we move toward a possible new normal of annual vaccines for COVID-19 and other coronavirus infections and prepare for periodic surges with defensive activities.

PREPARING FOR AND SUSTAINING PRACTICE READINESS (EDUCATION PROGRAM AND STAFFING CHANGES)

Part of practice readiness is our professional educational preparation from dental student education through residency programs to continuing education. Our US oral medicine residency programs used innovative hybrid models for didactic and clinical training to successfully graduate new providers in the midst of the pandemic.²³ We have seen a burgeoning growth of online educational offerings, such as the University of Pennsylvania's massive open online oral medicine course, "The Oral Cavity: Portal to Health and

Disease," allowing more learner engagement and exposure to our specialties' educational content.^{24,25}

As did many academies, the American Academy of Oral Medicine, facing the initial COVID-19 pandemic conference facility closures, pivoted and held a July 2020 virtual scientific session for the first time ever, engaged in a series of open access educational webinars throughout 2020-2021, and conducted a full virtual annual meeting in April 2021, all attended by many international colleagues because travel was not required. The Brazilian Society of Stomatology and Oral Pathology also held its first virtual congress in 2021, attended by more than 1000 registrants.²⁶ Virtual meetings have the advantage of the ability to connect the global oral medicine community, but they lack the in-person setting for general fellowship and impromptu collegial connections that stimulate professional collaborations and mentorship.

Uncertainties remain as we enter an era of workers pressing for a hybrid work environment. The workplace now may be a balance between office, road, and home. More critical is a need to endorse virtual work with shared interests, uniting, coaching or mentoring, and sponsoring of younger oral medicine professionals. Who would have thought we could hire team members, such as residents and staff, we had never met in person? Although necessary at times, is video conferencing adequate for communication when most communication is nonverbal body language (55%) and intonation (38%) rather than words (7%)?²⁷ A greater concern for practice leaders and managers is the trend of professional and administrative staff departing from burnout, disengagement from the mission, or feeling unappreciated. How can this talent be replaced? Loss of support staff, many to early retirement, seems to cascade to limit productivity and progress in clinical operations.

The COVID-19 pandemic will have lasting impacts on our practice. We have much to be thankful for in the lessons we have learned over the past 2 years and for the accelerated growth in technology, policy changes and knowledge that the COVID-19 pandemic has brought and will leave with us as an aftermath.

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