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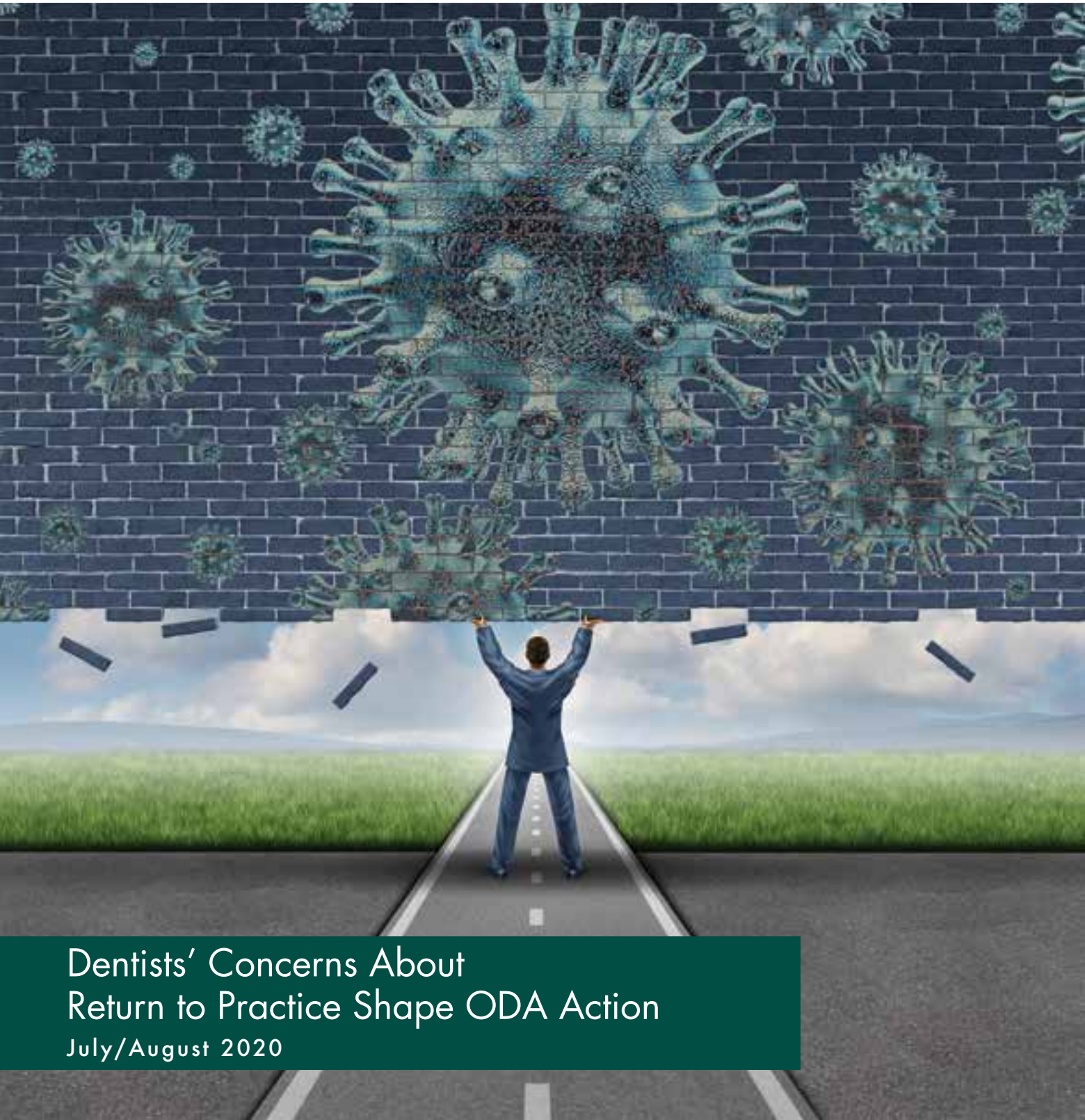

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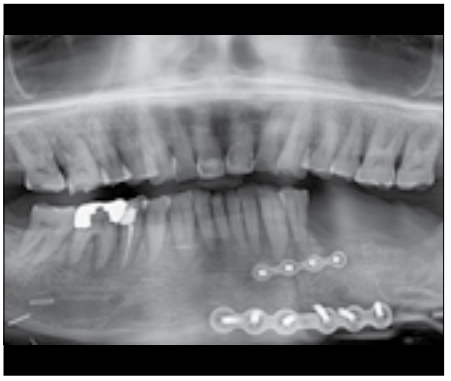

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Proven Record

Thank you for welcoming me to the 2020-21 ODA membership year. Now that I am a 50-year member of the ODA, the complimentary status is particularly appreciated. I joined the ODA the year the Student Membership category was initiated in 1968. When I arrived in Toronto in July 1970 for graduate studies, I became a full member and served on the Dental Student Membership Committee. I was part of the evolution of the ODA as it organized, reorganized, and diversified; it has always been welcoming to its members and in touch with the local dental societies. With its network of volunteer dentists across the province, the ODA is still the very best protection individual dentists have against commercial and political organizations. It has a proven record of rapid evolution and measured response. I look forward to reading each copy of *Ontario Dentist* to track current trends, and the Association's responses.

Dr. David Kenny
Past Editor,* Ontario Dentist *(1982–1987)
Toronto, ON

A Message From the Editor, Dr. Carlos Quiñonez

At *Ontario Dentist*, we check once, check twice, and check thrice in everything we publish, but mistakes can be made. In the June issue of *Ontario Dentist*, an image was published that showed the incorrect wearing of a mask by both the dentist and assistant. This was a clear miss on our part, and we apologize. We have spoken to the author of the article, and they are well aware of the error. As dentists, we maintain the highest standards of infection prevention and control, and this image does not reflect such standards. Once again, our apologies.

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Lesli Hapak
BSc DDS Dip.Perio

Responsible Decision-Making

As I bring pen to paper, I find I'm a little perplexed at the direction I should take for my first President's Page. At the time of writing, we are just shy of three months into the SARS-CoV-2 (COVID-19) pandemic, and I have been at the helm for less than a full week. This pandemic has created a global upheaval and has had a profound effect on our professional and personal lives. And due to editorial requirements and press deadlines, the reality is that anything I write now will likely be somewhat stale, not applicable or maybe even wrong at the time of reading.

To provide a time perspective, the Chief Medical Officer of Health recently revised Directive #2; our regulator released its second version of COVID-19 guidelines (*Managing Infection Risks During In-Person Dental Care*); the ODA released an updated *Return-to-Practice Toolkit*; practices have started providing non-essential and elective care; the ODA had a one-on-one conversation with the U.S. Centers for Disease Control and Prevention; and increased media coverage and member frustration are apparent given discrepancies between dental and dental hygiene regulatory guidelines relating to infection-prevention-and-control protocols.

In the past, the ODA has at times been faulted for not being sufficiently proactive. The reality is that this world crisis shut down most industries, and dentistry was no exception. The world's pandemic planning scenarios have been of limited use, too, as there really was no playbook for such a situation.

So, while forced to react, we have made the most of the situation. With three months of active data collection and research, we have gained a base of information with which we can help shape our profession's future. Although the pandemic is likely far from over, we can now take a temperature check and look over the last 12 weeks to determine what we did right, where we fell short, and where we need to improve. Our data collection efforts will help guide our responses to ongoing and new issues as they arise. Data leads to the development of evidence, and evidence can help us be proactive.

Evidence, as it applies to COVID-19, is a controversial issue amongst colleagues, academia and government. Since this is a novel virus, oftentimes, evidence to support a particular recommendation does not yet exist. Decision-making becomes challenging when evidence is unavailable, but decisions must still be made.

As leaders at the ODA, we continually strive to make knowledge-based decisions. When a decision cannot be "evidence-based," we turn to the "evidence-informed" method. In this scenario, we look to evidence presented from similar research or contexts and anticipate whether a similar or related outcome applies. However, it is almost impossible to make apples-to-apples comparisons and, in the case of SARS-CoV-2, we don't really know if the virus will behave like other, similar viruses. Therefore, the groups that protect the public interest have told us they will err on the side of caution until more is known. Indeed, decisions become difficult when we don't know what we don't know.

Given the above, it's imperative to keep in mind that *absence of evidence is not evidence of absence*. What does that mean? Simply stated, if you don't really know if something exists, that doesn't mean that it doesn't. You just don't know one way or another. For example, just because there is no concrete evidence that COVID-19 can be transmitted by dental aerosols does not mean that one can definitively say there is no risk.

The interpretation of some of the research papers and educational webinars over the past three months has also influenced decision-making. Given the diversity of our membership, we receive passionate comments from one group stating an opinion with supporting research and passionate comments from another group with an opposite opinion supported by the same research. Weekly literature review was an integral part of my periodontics program; I know that even "experts" can interpret and critique the same paper with differing viewpoints.

This reminds me of a family situation I experienced many years ago when my now adult children were much younger. The debate was whether we would purchase

a Wii or an Xbox gaming system. Two of my children wanted a Wii and passionately presented their rationale, including a cost-benefit analysis, and my other two children did the same with respect to the Xbox. Both groups had equally compelling and credible information. So, the question becomes, which do you choose? Arguably, in a small family unit, the parental opinion will have influence in the ultimate decision. With respect to the leadership of a large association, we are not parents, and it is not our duty to have our opinion drive the decision. It is our duty to collect the information, analyze it, come to the best possible way forward for our profession and pass it on to the appropriate parties who may use that information to make a recommendation or decision. And when we are to make decisions, such information is used to collectively balance the needs of members, after extensive consideration with content experts (again, some who disagree with each other), and after engaging our membership in discussion.

This virus to date has been unpredictable, which makes decision-making a tenuous, albeit unavoidable activity. Recommendations and decisions are based on the information of the day, and that can change based on information received week to week. Never forget that any perceived "flip flop" may be based on new information.

Knowing that *absence of evidence* is not *evidence of absence*, our profession needs to seek the evidence we require to guide our path, but also to understand that such evidence may not be available. Over the next months, we will partner with our dental schools, industry and national and international dental associations to support and conduct research that will help us obtain the evidence we need. The caveat is that, as evidence develops and matures, we must be prepared for what used to be two opposing opinions may now be one party proven right and the other wrong. Leadership is about understanding that imperfect decisions are often made in the absence of evidence, but that responsible decision-making must still occur.

Dr. Lesli Hapak is the ODA's President for 2020-2021. Dr. Hapak maintains a private practice in Windsor, specializing in periodontics. She may be contacted at lhapak@oda.ca.

Carlos Quiñonez
DMD MSc PhD FRCD(C)

Now Is Not the Time to Weaken Dental Associations

I recently co-authored an article with a close colleague, dentist and ethicist, Dr. Alexander Holden. The article is entitled, "The role of the dental professional association in the 21st Century" (1). In it, Dr. Holden and I argue that the formation of a professional association was an essential step in the development of dentistry as a profession, and the acquisition of dentistry's professional status. An association was strategic in this regard, as it aligned professional, state and public interests in assuring safe and ethical practice by setting technical standards that members were morally bound to meet.

We further argued that dental professional associations have lost some of this original focus, and that they run the risk of being out of step with pressing public-interest issues, such as the social determinants of health, the commercial determinants of health, and social justice-related issues (e.g. access to care). It's how associations have evolved due to the sharp focus they have placed (naturally and logically) on meeting member dentists' individual needs, and the fact that associations themselves have also had to place a stronger focus on maintaining their voluntary membership numbers.

Nevertheless, Dr. Holden and I argue that promoting the profession of dentistry is likely best done through the lens of the social contract, which means privileging the needs of patients and the public above our own, which again, was one of the central reasons for why professional associations were formed in the first place, and truly the *raison d'être* of a regulated and caring health profession. We advised that:

> "[D]entists and their associations worldwide should reflect upon their priorities and activities in relation to the social contract and related issues such as social justice and altruism. Dentistry should place the management of these issues at the highest priority within [their] strategic plans, replacing strategies of protectionism and self-interest, which only serve to alienate the public" (1, p. 5).

In other words, for an association, leadership means moral leadership, which equates to courageous leadership.

Why does this matter now? Over the past few months, we have seen active attempts to undermine dental professional associations across Canada, and I argue that we do this at our communal peril. At a time of great uncertainty, it is not strategic, dare I say it is foolish, to undermine our associations, as they represent, in part, the solidity that governments and the public depend on as a sign of safe and ethical practice. Debate among members and the accompanying criticism is expected, and it is healthy, but publicly and actively undermining the professional good is not good for anyone.

In the coming days and months, dental professional associations will have to make hard decisions about how to realign themselves to meet the demands of future practice, whether clinical or regulatory. And its leaders should be supported in their efforts to try to make our future bright. There will be hiccups, but it is in sticking together that we make the most progress.

And a heavy focus on finding "efficiencies," while perhaps understandable given economic pressures, is, in my view, not strategic in terms of benefiting the profession. Now is the time to bolster needs where they are apparent, such as in public health practice; policy development; coalition building; public and professional communications; research and data collection; member education and advice; and supply-chain management. I really do believe that all of this can be achieved, while making sure strong supports are in place to meet member needs at the highest level.

But again, we must all remember that the world looks different, and it will need leadership attuned to new realities. Maybe, it will need the moral and courageous leadership that was the genesis of our professional associations. And maybe, what we need is more of the moral and courageous leadership that positions the needs of the public above our own, and that understands that altruism is how dentistry remains vibrant, healthy and relevant. And finally, all of us must remember that, when we proudly pay our membership dues, it is not simply to meet our needs, but to meet the needs of the public and our professional role in protecting their interests. OD

REFERENCE

1. Holden AC, Quiñonez C. The role of the dental professional association in the 21st Century. *International Dental Journal*. 2020 Mar 4. https://doi.org/10.1111/idj.12563.

Dr. Carlos Quiñonez is the Editor of Ontario Dentist. *He may be reached at 416-864-8239, or at cquinonez@oda.ca.*

Lionel Lenkinski
DDS Cert. Endo

Flipping the Switch (or The Light That Guides Us)

The COVID-19 pandemic has been a disruptive influence on everyone's lives. It is aptly described as "the great revealer," and thus presents an opportunity to evaluate fundaments; from global and societal threats to our collective well-being, to dentistry-specific vulnerabilities related to the provision of care.

In the two years before the pandemic, we collectively implemented new infection prevention and control (IPAC) standards. In one sense, this has been a saving grace, since it was a preparatory move forward, establishing the strategic mindset now required for the increased demands to control aerosols and disease transmission. In speaking to colleagues, a great deal of the tension with IPAC was the fear of repercussion if one was found to not be in compliance during an inspection. That is one motivation to change, but there should be another.

Let's flip the switch on this. In light of the status of COVID-19 as the great revealer of vulnerabilities, I am suggesting we look at things differently. It is much like the analogy of a depressurized cabin in an airplane, whereby you're instructed to put the oxygen mask on yourself first. When we view compliance through the lens of keeping ourselves, staff, and patients safe and healthy, and not bringing disease home to our families or the community at large, compliance is an easier emotional exercise. We can start accepting the "how" and not worry about "why," because we place ourselves and community at the centre of risk mitigation.

This attitudinal change should be the new normal, and is reflected in the idea and truth that we are health-care professionals first and everything else second. If it means more PPE, time between patients, and building a safer environment, so be it. It is well worth it, because staying healthy has no price, but getting sick has great costs.

I am often accused of being an optimist, and I admit that I am. My personal rear-view mirror contains images of the atrocities of the Second World War. I find that these images give me purpose, strength, and the committed belief that walking through a dark tunnel and seeing a guiding light means survival. It is dark at first, but one comes out the other side, with a different perspective and a specific type of strength. In dentistry, we are lucky; we have come back to practices that may be different, but they remain operational. This is unlike other small business owners, who again, operate businesses. We do more, we are health-care professionals. That is the light that guides us. OD

Dr. Lionel Lenkinski was on the ODA Board from 1986-1992. He is currently the Executive Director/CEO of the Canadian Dental Protective Association, a mutual defence organization representing Canadian dentists in regulatory matters. He also maintains a private practice in Toronto, specializing in endodontics. Dr. Lenkinski may be contacted at llenkenski@cdpa.com.

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Ontario Dental Association

Joel Rosenbloom
BSc DDS

Shining a Light on Noma: A Cruel and Disfiguring Disease of Poverty

In 1986, shortly after I graduated as a dentist, I left Canada to embark on an adventure that I had been planning since childhood — to work as a dentist in Africa. I had previously worked in Africa, but my stay was cut short for political reasons, and now I was determined to return for a lengthier time.

The country that I went to live in was Mozambique, in the southeast part of the continent, where a civil war was being fought. As a dentist, I encountered many situations that I would never see in Canada. The entire experience shaped me as a person and as a dentist for the remainder of my career.

It was during my time working there that I came across my first patient with noma. This is a particularly horrible affliction, also known as cancrum oris, or gangrenous stomatitis. It is often fatal; if the patients, usually young children aged one to four, survive, they are left in such a disfiguring and debilitating state that pain, stigma, and difficulty eating and speaking will forever mark their lives.

I remember vividly when the Mozambican nurse in the Hospital Central de Maputo presented this young child, approximately three years old, to me. He had an enormous bandage around his face, akin to wrapping a towel around it. The nurse slowly unwound the bandage to expose and irrigate the wound. The child's eyes could not hide the terror that he was experiencing. He did not cry. At that moment, I learned the definition of stoicism.

When the bandage was fully removed, I saw a wound similar to ones that I had previously seen in other patients, but the difference was that a bullet did not cause this, poverty did. Mozambique was in the midst of a war and, in war, anything goes. As a health-care worker, you see the worst of what humans are capable of doing to each other.

The wound caused by noma essentially amounted to the mid third of the child's face being eaten away to expose a window into his oral cavity; displaced teeth, severed tongue, and anything else that got in the way of this terrible disease. It was like a bulldozer of germs was

Maryam, 4, plays in the courtyard of the hospital. Over a period of eight months she has undergone four reconstructive operations, including a skin graft taken from her chest to replace tissue destroyed by noma.

Sakina, also 4, has had many visits to the noma hospital since 2013. She has already been through two stages of surgery.

Sufyanu, 2, is fed at the hospital 10 days after he was admitted. Malnutrition is an important risk factor that leads to noma; the disease then worsens the situation by making it hard to eat.

intent on plowing its way from the inside of the mouth through the cheek to reach its goal, the outside world.

The child started to cry only when his wound was fully exposed, perhaps because my eyes gave me away as I examined the horrific condition, even though I harnessed all of my professional composure not to flinch, difficult as it was. I don't know if the child survived, but it's more than likely he did not, given the circumstances.

Noma is a severe oral infection caused by a mixture of bacteria that leads to necrosis of tissue. The term noma originates from the Greek work "nomein," which means to devour. A triad of conditions contributes to noma: poor oral hygiene, malnourishment and an immunocompromised state, usually a result of malaria, measles and/or HIV. All come together like a perfect storm, followed by quick and rapid destruction of tissues. Many young children die, with mortality rates of approximately 90 per cent. The WHO estimates that 500,000 people are affected, and there are 140,000 new cases each year.

If we look at the causes of noma, poverty underlies each of the risk factors: lack of food, inadequate protection from malaria, measles, dysentery etc. due to lack of bed nets, vaccinations and clean water, and poor oral hygiene and access to dental care.

Noma is one of the most destructive and disfiguring diseases of poverty that I have ever come across. The look in the child's eyes, said it all: "Why me, what did I do to deserve this?" I remember leaving this clinical interaction feeling angry, and ever more determined to use my dental degree to address poverty in any manner possible. During my three-year stay in Mozambique, I unfortunately saw other cases of noma, each time inciting a deep feeling of injustice and anger inside me.

Fast forward 30 years. One would think that development and advancement in Africa and many other countries steeped in poverty would eradicate this condition,

When Sufyanu, arrived at the hospital, he was acutely sick and the disfigurement process had started. He was given antibiotics, his wounds were cleaned and dressed and when he regained strength, he was discharged. He has to wait until he is older before he can have reconstructive surgery because the facial wounds caused by noma are complex and continue to change during a child's growth.

Adamu, 14, during a screening session at the hospital. Adamu and his two brothers got measles. His brothers recovered, but Adamu developed noma. His father has made it a personal battle to get surgery for him. Six months after this photo was taken, Adamu's nose was reconstructed from a piece of his rib and a skin graft from his scalp (see following photo.)

Umar, 8, and Adamu, now 15, stand at the entrance of the post-operative ward. The two boys are looking forward to going outside. They recently underwent surgery and are confined to that ward for four to six weeks to avoid infections.

but no. While working in Ethiopia a few years ago, I saw another case of noma; same scenario, different patient. This child survived after many surgeries, but was grossly disfigured. Once again, the same question arose in my mind; how could we stand by and allow this condition to continue?

I have no answer. My anger has abated somewhat, possibly filtered through a more mature and less impulsive mind, but more likely it's because I have seen much more to be upset and shocked by at this point in my career. My determination to work towards social justice in dentistry, however, has not changed; only my approaches have.

As I reach the twilight of my dental career, I reflect on the path I have taken and find that I have channelled my anger into productive approaches to address poverty. These include working on anti-poverty initiatives at a dental school, where I teach, and dedicating myself to providing dental care for some of the highest-need individuals in the city where I live; people who suffer from addictions, mental illness, poverty and homelessness.

What pearls of wisdom can I pass on to the next generation of dentists? I am unsure what to say; perhaps to remember that we have a social obligation to use our highly trained skills to reach those who, often times, do not show up at our offices. od

Dr. Joel Rosenbloom is a staff dentist at the Centre for Addiction and Mental Health (CAMH), Lecturer at the Faculty of Dentistry, University of Toronto, and Adjunct Assistant Professor at Addis Ababa University, Ethiopia.

All photos on these pages are of patients at Sokoto Noma Hospital, Nigeria, taken throughout 2016 and 2017. Founded in 1999, it is one of the few hospitals in the world that is dedicated to treating children and adults who have noma, including reconstructive surgery.

Alida Andersen
BScH DDS

Practice Versus Planet

While this may be a difficult time to think about our carbon footprint, it actually also might be the best time

There has likely never been a more difficult time to run a dental practice. We recently figured out how to be current with new infection prevention and control (IPAC) guidelines, while fearing the risk of having our doors closed by a public-health inspection. And just as we thought IPAC guidelines could not be any stricter, the COVID-19 pandemic descended upon us. As a result, some might think it's irrelevant and inappropriate to ponder sustainable ways to conduct practice operations for the sake of our planet, but I disagree. While this may be a difficult time to think about our carbon footprint and other ecological impacts as dental professionals, it actually also might be the best time, given we are already forced to rethink the way we run our practices.

The pandemic has allowed us to see that we are part of something greater than ourselves, that we are more interconnected than we appreciate from day to day, and that our actions have deep effects. It also has shown us the power of unity. We are doctors and scientists and, more than others, we need to stand for what is best not only for our patients, but our planet and future generations. As we already know, plastic pollution is a huge problem.

The extent of the health implications of plastic pollution on our health, and the health of our planet and most living things, cannot be ignored. The bottom line is that plastic pollution is poisoning the earth and those who live within it. Thus, every single one of us is responsible for our actions as individuals and, in many cases, collectively, such as in our own profession.

As we continue to serve the public, we desperately need to think of long-term solutions that are sustainable and do not increase the waste we produce that is causing harm to our planet. We are accountable.

The questions we must ask ourselves are: What is the environmental impact of the disposable items we throw out each and every day? What are the health implications? What is our responsibility as professionals and as a profession? What is the responsibility of the manufacturers who we support? What image do we want to provide to our patients as the world is moving towards cleaner and greener technologies?

Patients and the public, now more than ever, demand safety and protection, so they may want to see all the barriers. However, there must be a better way to ensure both, protecting our patients and ourselves, and our planet.

We need to work together to demand better options that are reusable, compostable and less harmful to our environment. Change starts with us, and in joining together as a profession to seek change, we can make it happen. If we do that, companies and suppliers and other scientists will deliver. But, if we close our eyes and think of it as not concerning us, or wait for others to fix it, then it might not happen. It may seem like an impossible task at this time, but if we think big, then it may not be as hard as we think.

We are leaders, not followers. We need to show ourselves, our patients and society that we are taking a lead in this area. As one of my professors in dental school always said, the two letters in front of our names stands for "directly responsible." So, let's lead, because it's the right thing to do. OD

Dr. Alida Andersen has been working as a dentist in Toronto for the past 10 years. She received her BScH from University of Toronto in 2005 and her DDS degree from Schulich School of Dentistry at University of Western Ontario in 2009. In the last couple of years she has become an advocate for a greener and cleaner planet by bringing attention to the issues of plastic pollution (including becoming an advocate for greener dentistry). She has taken one day a week off from dentistry in order to work on this project through lectures and her YouTube channel (Alida Eco).

Michael Glogauer
DDS Dip.Perio PhD

Hard Decisions

Ontario dentists have an important decision to make in relation to practising during the COVID-19 pandemic. Which regulatory guidelines should they choose to follow? The guidelines sent out on May 22nd or the guidelines given on May 31st? The initial guidelines centred on the principles of universal precautions, focusing on stringent aerosol management due to the possibility that the SARS-CoV-2 virus could be spread by aerosols. The May 31st guidelines focused on stringent aerosol management only for patients who screen positive for possible COVID-19 infection.

I have observed lively debate among my colleagues on which of the two sets of guidelines to follow. The supporting arguments for the May 22nd guidelines, which allow for less flexibility and outline additional precautions, are as follows:

1. While the role of small droplets is still unclear in the transmission of the SARS-CoV-2 virus, we should invoke the "precautionary principle" as outlined by the SARS Commission to ensure the safety of healthcare workers and the public.
2. Discussions among infection prevention and control (IPAC) medical directors at major academic hospitals suggest there is broad agreement that aerosol-generating procedures are potentially high risk. To this end, at the University Health Network (UHN), our dental clinic is required to follow the May 22nd guidelines.
3. Since there is clear evidence for asymptomatic and pre-symptomatic transmission of SARS-CoV-2, universal precautions are essential in the dental environment.

The general arguments for the May 31st guidelines, which arguably provide flexibility to consider community-based transmission in particular regions, as opposed to the one-size-fits-all approach, are as follows:

1. It is now clear that the primary mechanism of transmission is through droplet and environmental contamination; however, there has been no documented evidence that aerosol-generating procedures in dental offices have infected staff and patients anywhere in the world. Therefore, there is no justification for stringent aerosol-management guidelines in the dental office.
2. The time costs, financial costs, and productivity losses of reengineering clinical spaces are significant and are not justified by current science.
3. Unfounded emphasis on dental-aerosol mitigation has resulted in a false impression that the dental office is a dangerous place, which results in unnecessary challenges in what is already a difficult time.

How are we to make this critical decision? A decision that may have substantial impacts on our profession, the affordability of dental care, the financial well-being of our practices, and the safety of our patients, staff and families.

I tend to use the following two questions to help me make critical decisions regarding how I manage my private practice:

1. Is the decision I take in the best interest of my patients, staff, practice and family?
2. Do I understand and accept the consequences of my choice and accept full responsibility for the outcomes?

Protecting the public is under the purview of the Ministry of Health, Ministry of Labour, local public-health units, and our regulator. Dentists need to comply with guidance from all four of these authorities. As COVID-19 is a community-spread disease, there will inevitably be patients and dental clinic staff who will become infected. Public-health units will likely be inspecting our practices to determine if our clinics were a possible source

for a given patient's or staff member's infection. Having appropriate precautions in place will be critical to ensure that our practices are not a source of infection.

Like other dentists I have spoken with, I have personally decided to follow the May 22nd guidelines, especially given that my practice is, at the time of writing, in a region with high community transmission. I will use universal precautions and the recommended personal protective equipment (PPE), apply air changes to fallow times, and will make sure that my treatment rooms are closed off. I think the risks of not doing so are much too high.

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Rose Abate

ODA Members' Input Driving Return-to-Practice Knowledge Base

At the early stages of the COVID-19 pandemic, the ODA focused on getting information *out* to members to help them navigate the new environment, such as clarification on regulatory requirements, information about employment law changes or government relief programs. As Ontario settled into the new reality and as our Return-to-Practice Working Group was formed, the need for information *from* ODA members became paramount.

On May 4th, the first in a series of surveys was distributed to ODA members, with a second following on May 19th. Findings of those surveys immediately equipped the Return-to-Practice Working Group with a knowledge base for decision making and advocacy efforts.

For example, the ODA used the results of the first survey in advocacy efforts with the Ministry of Health for access to personal protective equipment (PPE), and discussions with the dental regulator regarding dentists' capacity to return to practice given PPE shortages and physical/environmental limitations. The data on how many members were unable to treat emergencies due to a lack of PPE was also shared with the media in hundreds of local, regional and national interviews. This helped the ODA demonstrate to the public how dentists were donating their PPE to help front-line workers such as those in hospitals; it also helped us talk about dentists' difficulties treating patients without priority access to PPE.

The second survey results were used to understand our members' concerns with COVID-19 transmission when returning to practice (more than 60 per cent were concerned or very concerned), and the resources they felt they most needed to help them return to work. This knowledge emboldened what was already a relentless effort by the ODA to facilitate access to PPE through the ODA Supply Hub, and what would become a partnership with SteriPro. We were able to share with the media that our members are concerned about ensuring patient, staff and dentist safety, and the measures dentists have taken to keep everyone safe. Difficult financial questions were also asked in the second survey, which furthered advocacy efforts with government in terms of extending the existing financial relief programs and developing new ones directed at dentists.

The following charts illustrate some of the key findings from the first two surveys. As the ODA continues to collect relevant and timely information from members, *Ontario Dentist* will report its findings. od

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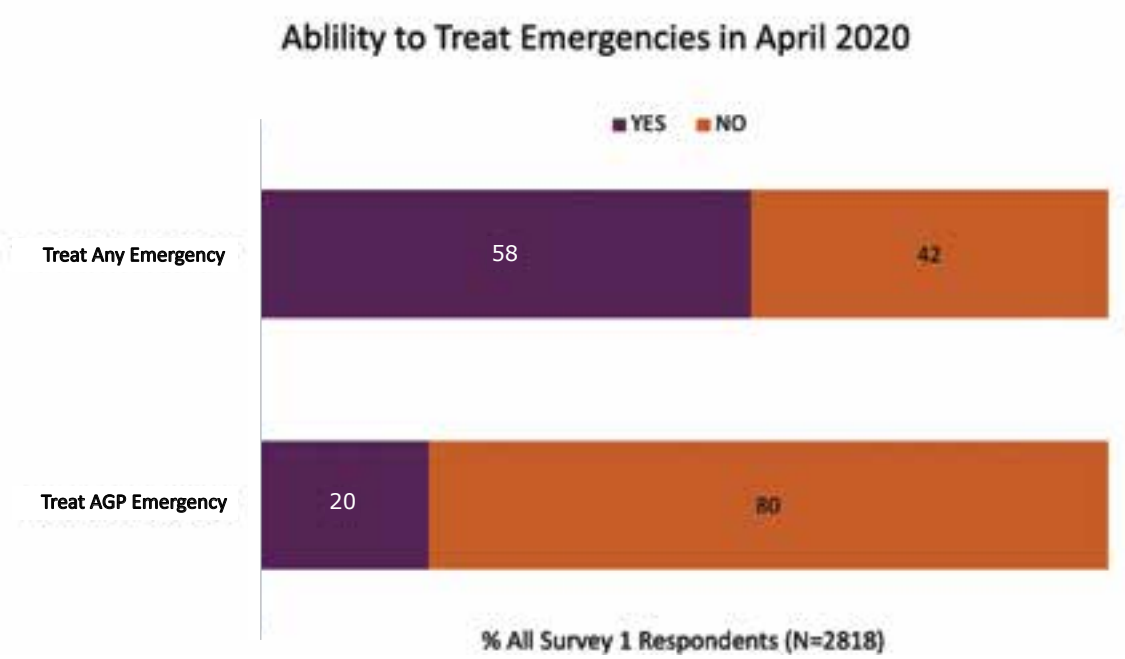
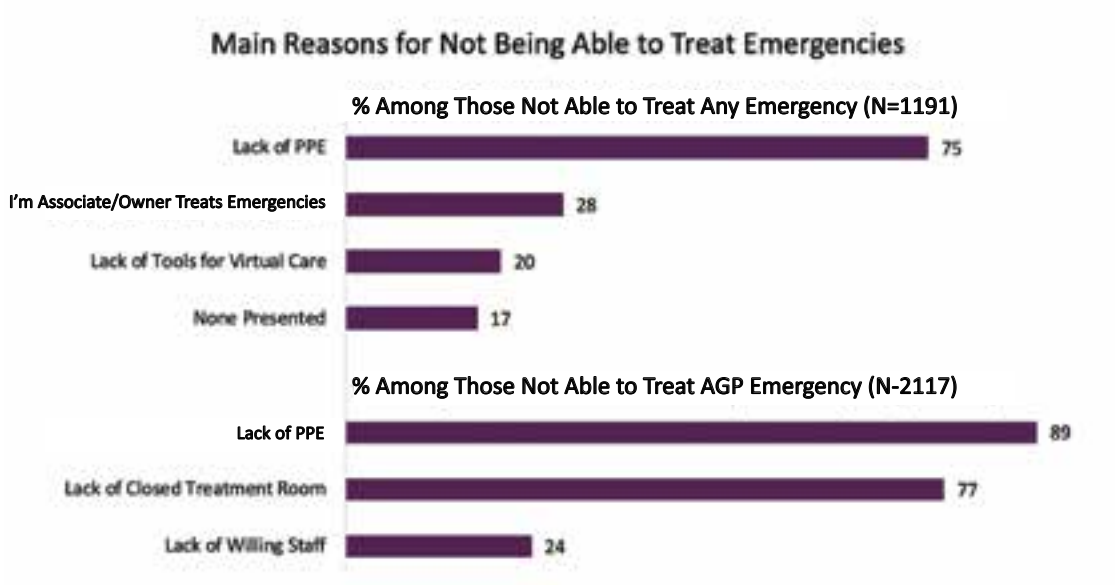
	Survey 1	Survey 2
In Field	May 4 – 11, 2020	May 19 – 25, 2020
Sent to Licensed Members*	8674	8624
Useable Responses	2818	2625
Response Rate	32%	30%

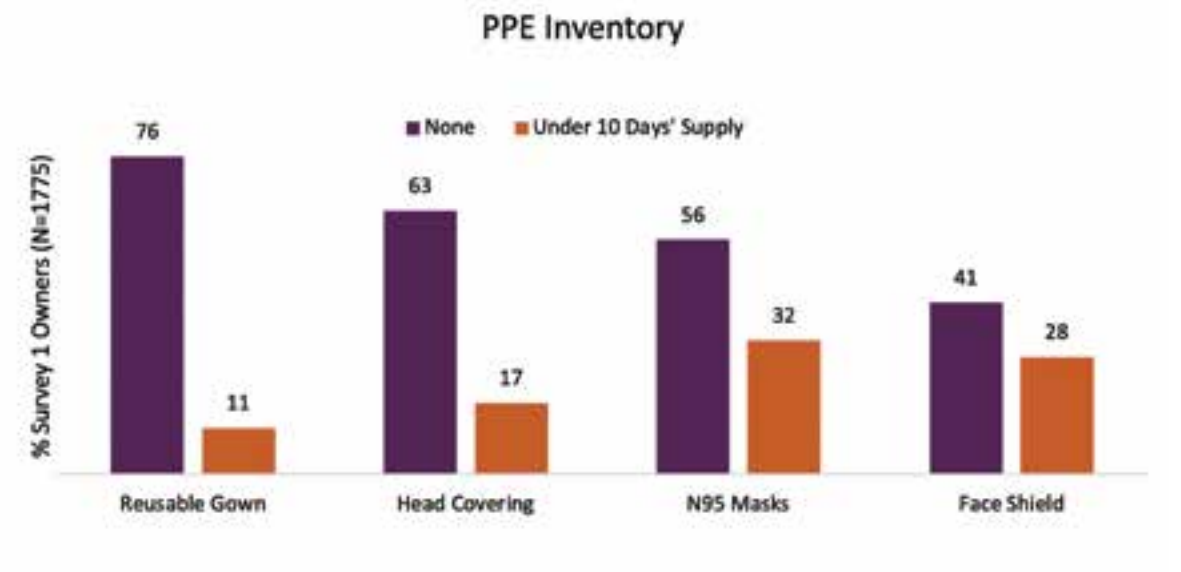
* Some dentists opt out of receiving survey requests



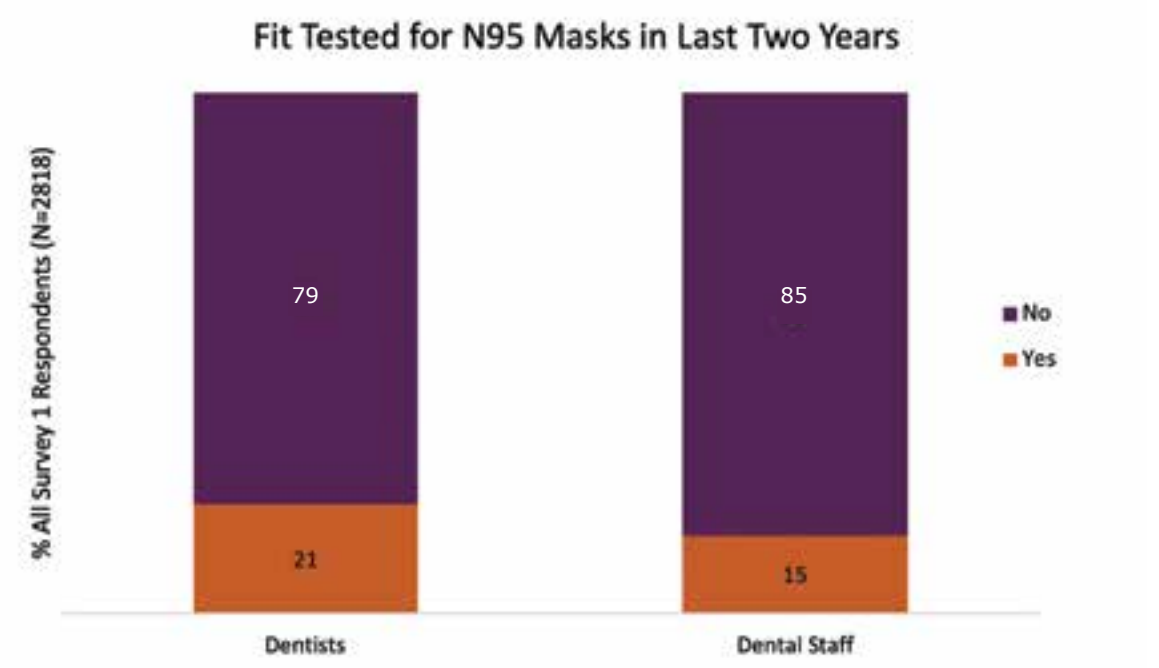
As of March 15th, the dental regulator strongly recommended that only emergency patients be seen. Emergencies that could be managed without producing aerosols required the use of routine infection prevention and control (IPAC) precautions (surgical mask, gloves and eye protection). For emergencies that would require aerosol-generating procedures (AGP), enhanced IPAC precautions (use of N95 masks and face shields) were to be used. About four in 10 dentists reported not being able to see any of their own emergency patients. The vast majority (80 per cent) of dentists were not able to treat emergencies requiring AGP.



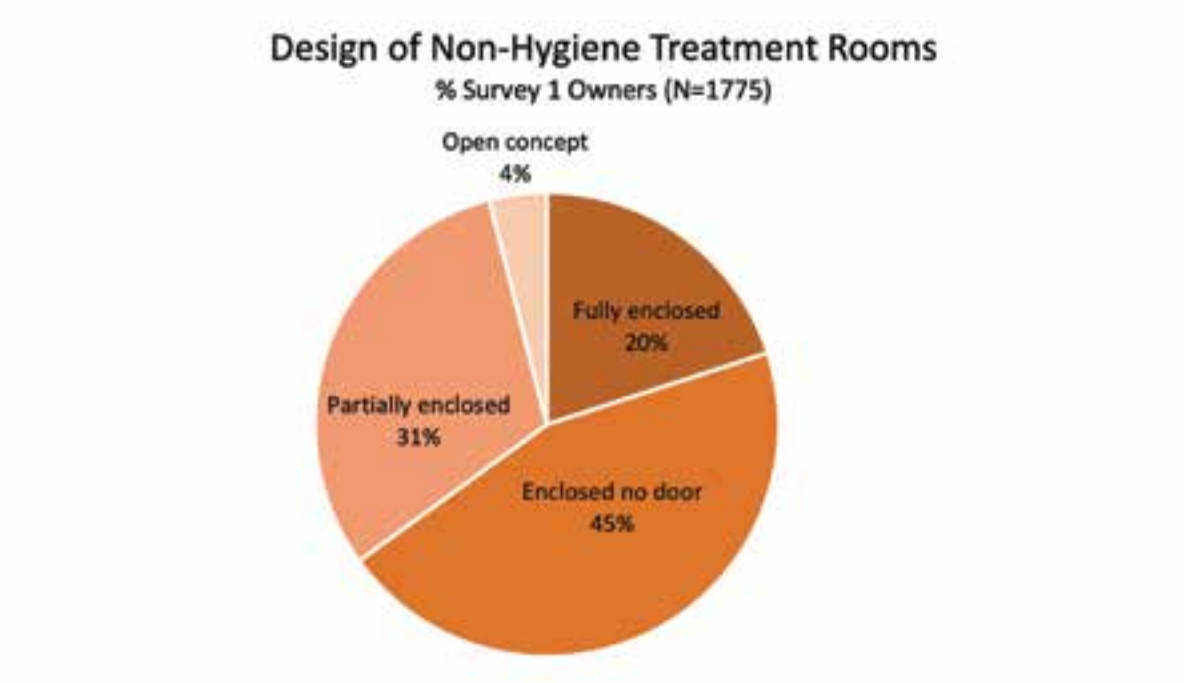
For both those who were not able to treat any emergencies and for those who were not able to treat AGP emergencies, the lack of appropriate PPE was cited by most dentists as the main reason. Guidelines also required that AGP emergencies be treated in fully enclosed treatment rooms, which was also a barrier.



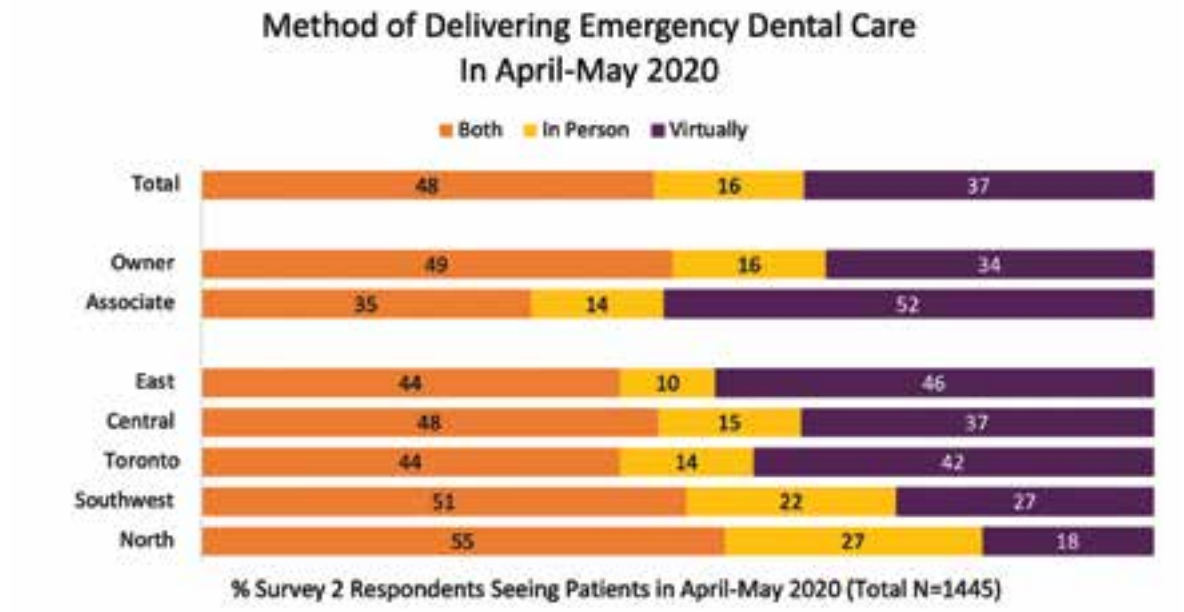
A large proportion of practice owners reported not having any of the key PPE elements required to treat emergencies. Among the very few who did have some, they only had a few days' worth to work with.



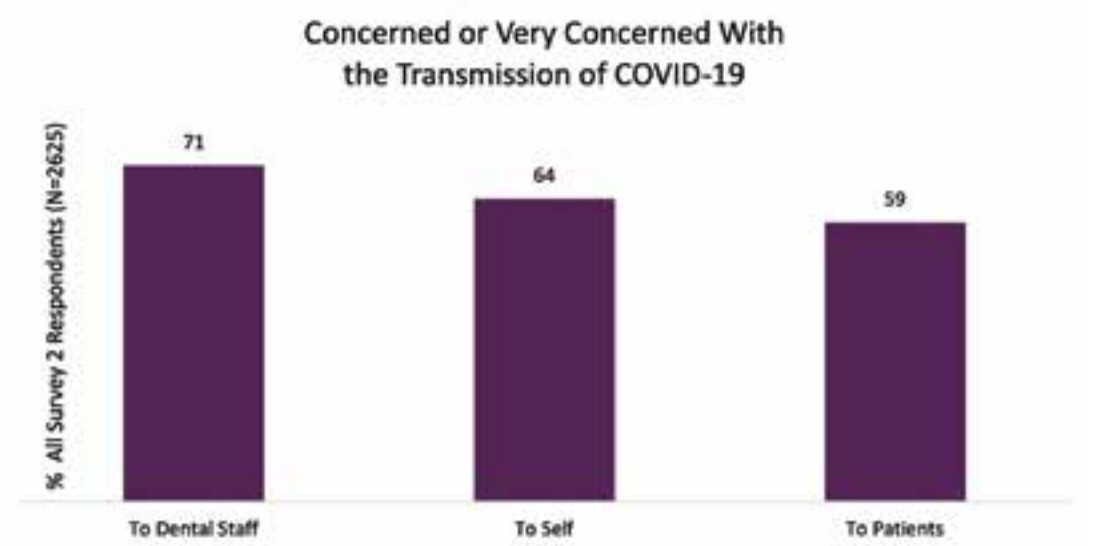
Even if all dental offices in Ontario had access to N-95 masks, the vast majority of dentists and dental staff had not been fit tested for the masks in the last two years.



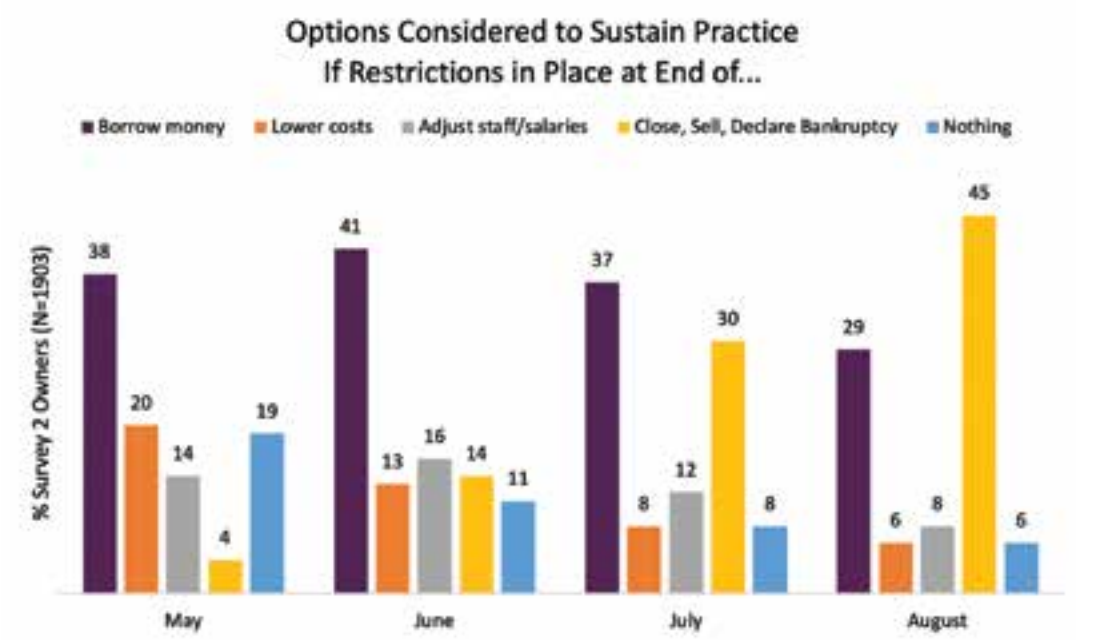
Only two in 10 practices were able to meet the requirement of an enclosed room for the treatment of AGP emergencies. Most non-hygiene treatment rooms are not fully enclosed.



About half of all dentists who delivered emergency care used both a virtual and in-person approach. Associate dentists more frequently reported delivering virtual care than owners; dentists in the North and Southwest regions of the province more frequently reported delivering in-person emergency care than dentists in Toronto, Central and East.



The level of concern of transmission of COVID-19 is high. Seven in 10 dentists are concerned or very concerned with the risk of transmission to their staff, and about six in 10 are concerned with the risk to themselves or patients.



The activities practice owners considered to sustain their practice change the longer the restrictions are in place. In the early era of the restrictions, borrowing money was most often considered. If the restrictions that were in place at the time of the survey (mid-May) are to continue through to July or August, possibly a third to 45 per cent of practice owners would close their doors.

The information collected through these and future surveys is critical as the ODA adapts to the changing environment in a strategic way, with the sole purpose of aiding members in these difficult times. If you receive a survey request, please consider responding. All information is confidential (it will be reported in aggregate), and is key to the Ontario dental profession's successful movement forward.

Junghyun Nam
BSc(Hons) MSc

Socioeconomic Status Impacts on Oral and Oropharyngeal Cancer: Stage at Diagnosis and Prognosis

Socioeconomic status (SES) is a complex phenomenon dependent on factors such as income, housing, education and occupation. An individual's SES illustrates one's social standing and access to resources; it plays a crucial role in physical and mental health, influencing behaviour and lifestyle. For example, low-SES groups are more likely to exhibit unhealthy behaviours such as cigarette smoking, low physical activity and poor diet, all delimited by social and living conditions, leading to more frequent illness and higher death rates than those in high-SES groups (1). Inequities in health behaviours and resource distribution between the high- and low-SES groups are important factors to consider in the context of oral and oropharyngeal cancer, their stage at diagnosis and their prognosis.

Several studies illustrate that lower SES is associated with an increased incidence of cancer and a lower rate of survival (2-4). For cancers in sites such as the lung, breast and uterus, a significant association between SES and survival has been found in the U.S. and Ontario (4). Significant survival advantages were observed for individuals in the middle- and high-income groups in the U.S. for breast and colon cancers (3). In contrast, there was a significant survival advantage for individuals in poorer communities in Ontario for lung, cervix and uterus cancers (3). For certain cancer types, individuals in a low SES demographic may fare better in Canada than individuals in a low SES group in the U.S. due to access to universal health care. A more recent study analyzed the impact of SES on cancer diagnosis and stage in Ontario, finding a significant difference in the overall survival between different SES groups for breast, colon and laryngeal cancers that were diagnosed between 2003 and 2007 (2). Patients with breast cancer who lived in the poorest communities were found to have a 47 per cent increased risk of death than those patients who lived in the highest SES communities (2). Another study illustrated that lower income is significantly associated with increased risk of distant-stage breast cancer for women and distant-stage prostate cancer for men (5). However, no significant association between SES and survival rate was found for cancers of the stomach, colon and pancreas (2). Although the general pattern is that individuals who are in a low-SES group have a worse prognosis than those in a higher SES group, this is not the case for all cancer types, as factors such as geographic location and access to care play a critical role. Currently, there has been extensive research done on the influence of SES on breast, lung, and colon cancers; however, the relationship between SES and oral cavity and oropharyngeal cancer remains unclear.

Cancers of the oral cavity and oropharynx

Oral cancer is a malignant neoplasia of the lip or oral cavity typically defined as a squamous cell carcinoma (SCC), since 90 per cent of oral cancers originate from squamous cells (6). Oral cavity and oropharyngeal cancers most often occur on the tongue, tonsils, oropharynx, gums and floor of the mouth. Despite the advancements made in treatment and diagnosis, it still remains within the top 10 most incident cancers (6). Furthermore, cancers of all regions of the oral cavity and the pharynx together represent the sixth most prevalent cancer in the world (7). In Canada, 4,700 people were diagnosed with oral cancer and 1,250 died from oral cancer in 2017 (8). In 2018 it was estimated by the American Cancer Society

Table 1.
Summary of five-year overall survival for oral cavity cancer categorized by location and stage of the cancer. (9)

Location	Five-year survival rate (%)		
	Local	Regional	Distant
Lip	93	48	52
Tongue	78	63	36
Floor of the mouth	75	38	20

that 51,540 people in the U.S. would get oral cavity or oropharyngeal cancer and 10,030 people would die of these cancers (9).

In most ethnic groups, men are approximately three times more likely to get oral cancer than women (10). There are several risk factors for oral cavity and oropharyngeal cancers, but smoking, alcohol consumption, and human papillomavirus are the three most critical ones to consider (10).

Diagnosis and staging of oral cancer

Currently, there are two main methods of early detection for oral cavity malignancies: oral examination performed by dentists or physicians and use of diagnostic tools to identify lesions and early signs of abnormality (11). Well-established diagnostic tests such as the Pap test for cervical cancer and mammography for breast cancer have effectively decreased mortality via early detection of their respective diseases; however, there is still controversy regarding the efficacy of the diagnostic tools for oral cancer (11). An oral examination may be useful for high-risk patients who are chronic smokers or alcoholics, but most patients are asymptomatic, and it is extremely difficult to discern whether a lesion is pre-cancerous or not with just a visual exam. Many light-based oral examination tools have been developed in order to aid visualization of lesions under the assumption that abnormal tissues reflect and absorb light differently, although their diagnostic performance remains questioned (11). Dentists and physicians may also utilize special dyes such as toluidine blue, which has been illustrated to be sensitive and specific for malignant lesions, but not as effective for pre-malignant lesions (58 per cent false negative reports) (9,11). More specific and sensitive tests consist of taking a biopsy either with a brush or scalpel and then sending the tissue samples to a pathologist for staining using various biomarkers. Although histopathological examination of tissue samples may be the most sensitive and definitive diagnostic tool, it has its own limitations as biopsy can be invasive, and accessing tissue in the oral cavity can be challenging. While there are different diagnostic tools for oral cancer, their effectiveness for detecting lesions, especially pre-malignant tumours, is controversial. As a result, there is an urgent need to develop new ways to diagnose patients, as many are unfortunately diagnosed when cancer has progressed to a malignant stage.

Staging of oral cavity and oropharyngeal cancer is based on a TNM (tumour-lymph node-metastasis) system that is used to analyze the extent of the disease before treatment (7,9). The three critical pieces of information clinicians analyze is the size of the primary tumour (T), spread to lymph node (N), and metastasis to distant organs such as the lung (M) (7). Numbers are added to T, N or M (T1, N2, or M3); the higher the number the more severe the disease. The TNM staging system is then utilized to predict response to post-operative surgery, prognosis, and possible effectiveness of other adjuvant therapies.

Prognosis of oral cancer and oropharyngeal cancer

The prognosis of oral cancer and oropharyngeal cancer differs widely depending on the location (lip, tongue, and floor of the mouth) and its stage (local, regional, distant) (9). The National Cancer Institute's SEER program has accumulated the five-year survival rates of oral cavity and oropharyngeal cancer as summarized in Table 1. The five-year survival rate for cancer of the oropharynx and tonsil was 66 per cent and cancer of the gum was 60 per cent (survival rates based on staging were not available for these cancers) (9).

Given all of the above, there is a need to investigate new ways to predict stage at diagnosis and patient outcome more accurately. The impact of SES on stage at diagnosis and patient prognosis appears to be significant

for cancers of the breast, prostate and larynx (2-5), so its importance to oral cancer and oropharyngeal cancer stage at diagnosis and prognosis should be considered.

SES impact on the stage of oral cancer and oropharynx at diagnosis

A study done by Auluck et al. analyzed the association between SES and stage of oral cancer diagnosis for 6,379 cases from the British Columbia Cancer Registry (12). The TNM staging system was utilized at diagnosis and SES was measured using VANDIX, a metric that accounts for seven different factors including income, education and unemployment (12). The authors observed no significant differences in staging for oropharyngeal cancer between those in deprived or affluent neighbourhoods for either men or women (12). In contrast, for oral cavity cancer, a significantly greater number of men and women in deprived communities were found diagnosed at a later stage than those in affluent areas (12).

The link between advanced stage at diagnosis and SES for head and neck squamous cell carcinoma (HNSCC), including oropharynx and oral cancer was investigated for Danish patients by Olsen et al. (13). This group utilized a Danish head and neck cancer databank containing 9,683 cases, and the SES of individuals was obtained from Statistics Denmark. These authors estimated the odds for a diagnosis of advanced-stage HNSCC utilizing a multivariable logistic regression model controlling for factors such as education, income, sex and degree of urbanization, and found that patients with low income tend to have higher odds for advanced stage diagnosis for oropharynx and oral cancer (13).

Lee et al. studied the association between individual and neighbourhood SES and survival rates of oral cancer, but within this study, the authors also compared individual SES and tumour stage (14). SES was defined by factors such as income, occupation and number of doctors in a neighbourhood (14). These authors illustrated that, for oral cancer patients under 65, those patients with a local (low grade) tumour were more likely to be individuals with a high SES (14). Furthermore, there was a greater prevalence of low-SES individuals within the distant metastatic tumour group of patients (14).

Another study in France observed 698 patients with HNSCC and how SES influenced their stage at diagnosis (15). The patient's SES was determined with an EPICES score that groups individuals into a deprived or non-deprived group based on occupational class, type of work (part time or full) and education level. In contrast to the other studies discussed above, no significant association between SES and cancer stage at diagnosis was found (15).

SES impact on the prognosis of oral cancer and oropharyngeal cancer

Lee et al. analyzed the survival rates of 3,607 oral cancer patients that were stratified into groups based on either individual or neighbourhood SES (14). Overall, findings illustrated that low-income patients under 65 living in deprived neighbourhoods had a 1.46 to 1.64-fold higher risk of death from oral cancer than those with a higher SES (14). The number of neighbourhood physicians had one of the most significant impacts on the two-year survival rate of oral cancer patients (14).

Auluck et al. also studied the influence of SES on the survival rate of patients with oral cancer and oropharyngeal cancer and found that men with higher SES had a significantly higher survival rate than men in lower SES groups for oropharyngeal cancer (12). For women with oropharyngeal cancer, those residing in more affluent neighbourhoods also had higher survival rates than women who lived in poorer areas, but the results were non-significant. In contrast to oropharyngeal cancer, there was no significant difference in survival rates for oral cavity cancer between men residing in affluent and poor neighbourhoods (12).

Most of the findings above focuses on measuring SES at an individual or neighborhood level; however, Megwalu recently performed a large study that investigated the association between oropharyngeal cancer survival rates and SES at a county level (16). This study cohort consisted of 18,791 patients diagnosed with oropharyngeal squamous cell carcinoma between 2004 to 2012 (16). Megwalu found that patients in counties with low-SES had a significantly worse overall survival than patients living in high-SES counties (16).

Conclusion

Overall, SES plays a role in both the stage at diagnosis and prognosis of oral cancer and oropharyngeal cancer. This review helps emphasize the importance of SES as a critical risk factor for these and other cancers. Future research might explore utilizing SES as an adjuvant method for predicting patient's stage at diagnosis and prognosis along with the current methods. Either way, it is imperative that action be taken to reduce the poverty gap in order to help alleviate the severity of oral and oropharyngeal cancer for afflicted individuals. OD

REFERENCES

1. Smith JP. Socioeconomic Status and Health. *The American Economic Review.* 1998;88(2):192-6.

2. Booth CM, Li G, Zhang-Salomons J, Mackillop WJ. The impact of socioeconomic status on stage of cancer at diagnosis and survival: a population-based study in Ontario, Canada. *Cancer*. 2010;116(17):4160-7.
3. Boyd C, Zhang-Salomons JY, Groome PA, Mackillop WJ. Associations between community income and cancer survival in Ontario, Canada, and the United States. *Journal of Clinical Oncology*. 1999;17(7):2244-55.
4. Mackillop WJ, Zhang-Salomons J, Groome PA, Paszat L, Holowaty E. Socioeconomic status and cancer survival in Ontario. *Journal of Clinical Oncology*. 1997;15(4):1680-9.
5. Clegg LX, Reichman ME, Miller BA, Hankey BF, Singh GK, Lin YD, et al. Impact of socioeconomic status on cancer incidence and stage at diagnosis: selected findings from the surveillance, epidemiology, and end results: National Longitudinal Mortality Study. *Cancer Causes & Control*. 2009;20(4):10.1007/s10552-008-9256-0.
6. Lingen MW, Kalmar JR, Karrison T, Speight PM. Critical evaluation of diagnostic aids for the detection of oral cancer. *Oral Oncology*. 2008;44(1):10-22.
7. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncology*. 2009;45(4-5):309-16.
8. Oral cavity cancer statistics: Canadian Cancer Society; 2017. Available from: http://www.cancer.ca/en/cancer-information/cancer-type/oral/statistics/?region=on.
9. Oral Cavity and Oropharyngeal Cancer: American Cancer Society; 2018. Available from: http://www.cancer.ca/en/cancer-information/cancer-type/oral/statistics/?region=on.
10. Rivera C. Essentials of oral cancer. International *Journal of Clinical and Experimental Pathology*. 2015;8(9):11884-94.
11. Mehrotra R, Gupta DK. Exciting new advances in oral cancer diagnosis: avenues to early detection. *Head & Neck Oncology*. 2011;3:33.
12. Auluck A, Walker BB, Hislop G, Lear SA, Schuurman N, Rosin M. Socio-economic deprivation: a significant determinant affecting stage of oral cancer diagnosis and survival. *BMC Cancer*. 2016;16:569.
13. Olsen MH, Boje CR, Kjaer TK, Steding-Jessen M, Johansen C, Overgaard J, et al. Socioeconomic position and stage at diagnosis of head and neck cancer — a nationwide study from DAHANCA. *Acta Oncoligica*. 2015;54(5):759-66.
14. Lee CC, Chien SH, Hung SK, Yang WZ, Su YC. Effect of individual and neighborhood socioeconomic status on oral cancer survival. *Oral Oncology*. 2012;48(3):253-61.
15. Adrien J, Bertolus C, Gambotti L, Mallet A, Baujat B. Why are head and neck squamous cell carcinoma diagnosed so late? Influence of health care disparities and socio-economic factors. *Oral Oncology*. 2014;50(2):90-7.
16. Megwalu UC. Impact of county-level socioeconomic status on oropharyngeal cancer survival in the United States. *Otolaryngology–Head and Neck Surgery*. 2017;156(4):665-70.

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Improving Dental Practices for Incarcerated Populations

Access-to-care initiatives remain a primary focus for public policy in dentistry in many nations. In most cases, this attention is primarily focused on marginalized populations such as children, the elderly, low-income groups, individuals with developmental disabilities and communities. However, one socially and economically marginalized population tends to remain missing: incarcerated individuals. Despite constituting more than 2.2 million individuals in the U.S. alone (1), this population has a marked lack of consideration in terms of care and treatment outcomes (2). This article reviews literature as it pertains to the dental care of incarcerated individuals, assessing the status of care within correctional facilities.

The current status of dental care within correctional facilities

Salive and colleagues assessed the prevalence of decayed, missing and filled teeth to determine the basic oral-health measures of male inmates within a state prison system in the U.S. (3). In a sample of 1,800 male prisoners ranging in racial composition and age, they identified a mean DMFT of 10.5 for inmates aged 18 to 29, with increasing DMFT scores corresponding with age: DMFT scores of 17.1 and 22.4 for age groups 30 to 44, and 44 and over, respectively (3). Mixson and colleagues reported similar findings in an American federal prison with DMFT scores of 12.9 for ages 20 to 34, 16.4 for ages 35 to 44, and 22.1 for ages 45 and over (4). In addition, there was a clear racial distribution with regards to decayed teeth, with male black inmates having a greater number than male whites (4). White inmates also had a greater number of filled teeth, despite similar dental-care utilization rates among both black and white inmates (3,4). These differences are potentially due to dental-care utilization rates prior to incarceration. Regarding female prisoners in the U.S., similar findings were identified, with mean DMFT scores of 16.8 and DMFS scores of 57 for those aged 20 to 65 (5). There was a persistent racial disparity among Hispanics, non-Hispanic whites, and non-Hispanic blacks, with the former having the highest number of filled teeth and the latter having the lowest number, whereas there were no significant differences in number of missing teeth (5). Within Canada, there are similar poor oral-health outcomes such as high caries prevalence due to a range of risk factors, including poor oral-hygiene habits, adverse attitudes towards dental services, and restriction of oral hygiene implements such as floss and interdental aids (6).

While the health status of inmates varies upon admission, a notable finding by Mixson and colleagues was that the number of missing teeth increased significantly with inmate age: the proportion edentulous rose dramatically from 5.2 to 17.3 per cent to 45.5 per cent for ages 35 to 44, 45 to 54, and 55 to 75, respectively (4). This finding corresponds with the study of female inmates reporting a 280 per cent increase in the mean number of missing teeth between age groups 18 to 29 and 40 to 65, indicating that a large number of teeth are eventually extracted within correctional facilities (5). Another study of adult prisoners found similar high measures of mean number of decayed surfaces and a higher percentage of unmet dental needs compared to reference groups (7). Periodontal pocket depths were also reported to be higher, with at least a quarter of the sample population having one or more urgent treatment needs (7).

A macro-level study investigated whether state markers such as state wealth, social-spending patterns, annual

medical expenditure, and size of inmate populations relate to dental-health standards, as indicated by number and type of services provided as well as inmate-to-dentist ratios (8). Findings indicate that quality-of-care measures did not vary significantly by correctional institution size. Most institutions provide dental hygiene services, oral-health education, prosthetics and endodontics, with less access to implant therapy and orthodontics. In addition, inmate-to-dentist ratios did not show significant differences between regional groupings of states (southern, eastern, western and midwestern states), with most states having between 1397:1 to 1036:1 dentist-to-inmate ratios. State per capita income, size of inmate populations, annual medical expenditure per inmate, and the social spending patterns of state legislatures were not associated with staffing patterns of dentists per inmate. This is posited to be due to internal influences in budgeting established as a result of negotiation between individual state correctional institutions and state governors. Thus, based on the findings of this study, there appears to be variation in the manner in which dental care is provided among the different state institutions, as their practices do not appear to reflect the varying demands of their respective inmate population characteristics, state spending patterns nor availability of state of resources. Instead, there appears to be a baseline level of dental care that is provided for each state institution that is routinely affected by policies and relationships to neighbouring state institutions, creating "clumpings" of similarly run correctional facilities (8).

Looking outside Canada and the U.S., similar oral-health outcomes are reported in Australia, Sweden, Scotland, England and India. Australia reports a low standard of oral health care for inmates, with dental service utilization rates of 50 per cent and mean DMFT scores of 20.4 and 3.4 for decayed teeth (9). Sweden reports no significant difference in caries prevalence between institutionalized and non-institutionalized populations but rather differences in how the DMFT scores are distributed, with a large proportion of decayed and missing teeth in the institutionalized population compared to more filled teeth in the non-institutionalized population (10). This illustrates a pattern of leaving decayed teeth untreated within the prison population until they are eventually extracted, corroborating similar findings from studies by Mixson (5) and Clare (7). It is important to note that this pattern is arguably related to the irregularity of seeking dental care within correctional institutions, rather than the prevalence of caries related to health behaviours, given daily brushing appears to keep oral-health measures similar to the general public (10). Scotland, England and India demonstrate similar poor oral-health outcomes in incarcerated individuals compared to non-incarcerated individuals, with high caries prevalence, poor periodontal health measures, and increasing unmet demands for prosthetics (11-14). Of note, these studies also indicate a higher rate of oral-trauma needs, providing insight into additional factors beyond high DMFT scores among existing studies.

Evident in this review is a visible deficit in the oral-health measures of incarcerated populations across different geographies and cultures. To put measures in perspective, the mean decayed teeth scores of the public are approximately 2.7 in the U.K. and 3.2 in the U.S. compared to 3.5 to 4.2 in incarcerated individuals (15,16), arguably demonstrating a lack of access to care. However, most of the measures indicated above only provide superficial measures of oral health without addressing the personal and societal aspects of dental care within correctional institutions. A study by Douds and colleagues aimed to address some of these more qualitative aspects of prison dental care and the effect that such care has on incarcerated individuals (17). Their findings indicate that inmates regularly report negative perceptions of dental care in correctional facilities due to a jarring shift from an extensive initial screening to neglectful long-term management of dental issues (17). Further, inmates report a preference to extract teeth rather than treat them with more costly procedures, especially in instances of oral pain. Of note, this preference is reported as commonplace in U.S. correctional institutions due to co-pays that require inmates to contribute payment for all procedures undertaken at the institution, arguably coercing inmates to opt for "cheaper" care (e.g. extraction) rather than other, restorative treatments (17). During their stay within such institutions, inmates also perceived inadequate dental care as a means of shaming them or as punishment, directly affecting their self-perceptions that persist post-incarceration and affecting their ability for reintegration (17). Inmates also reported a severe deficit in employment opportunities upon release due to the number of missing teeth, as well as damaged maxillofacial appearances (17). And in the case that ex-inmates had adequate oral health to gain employment, they often reported that dental care became an afterthought to more immediate needs such as saving money, keeping jobs, and dealing with additional responsibilities (17). Interestingly, an obligation towards their employer and guilt in taking time away from employment (partly due to perceived instability of employment for ex-inmates) were also major driving forces in post-release dental care neglect (17).

The case for improving the status of dental care within correctional facilities

Considering the evidence presented here, there are potential challenges in correctional facilities when it comes to providing dental care for incarcerated individuals, which not only affect experiences while in correctional institutions but have implications to successful reintegration in society. Yet, correctional facilities are built upon the mandate of rehabilitation and safety (18). Additionally, associated legislation is intrinsically tied to the sanctity of human life, valuing equal rights and opportunities for all humans. Thus, it becomes our social responsibility to care for those in need: individuals subject to significant and sometimes extreme systemic and structural pressures that limit opportunity, including incarcerated individuals and especially subpopulations therein, such as the elderly and Indigenous populations (19). As such, more must be done to improve the dental-health outcomes of inmates to fulfill our social obligations toward supporting and rehabilitating those who require it.

For those who may perceive this as simply social-justice rhetoric, there are numerous alternative cases for the improvement of dental care status within correctional facilities. First, improving the quality of care for prisoners has been associated with lower recidivism (re-incarceration due to subsequent felony) and better post-release life outcomes (20,21). Encouraging and facilitating improved health among the incarcerated population may reduce the number that ultimately return to prison as a result of inadequate health care post release. Factors such as unemployability (due to poor oral appearance), access-to-care barriers such as affordability, and malnutrition due to inadequate oral-health status are only some of the challenges that ex-offenders experience and that facilitate recidivism (22,24,26). As a result, the burden on correctional institutions can be lessened and indiscriminate felony (due to recidivism) can be mitigated. Financially, this could prove a great benefit, too. In most countries, there is a high expenditure on correctional services. For example, Canada spends roughly $5 billion every year on prisons and jails, averaging $115,000 per prisoner per year (23). A simple reduction of 100 offenders from recidivism could thus lessen annual expenditures by $11.5 million, representing a financial incentive to improve dental-care practices within correctional facilities. Second, oral-health measures are inextricably linked to overall health, with many systemic conditions being associated with the condition of the mouth (25). The argument then becomes that by reducing inequity within oral disease, there is opportunity in lessening the burden of associated chronic systemic diseases. Multiple studies show that changes in oral-health conditions may be associated with improved health outcomes in diabetes mellitus, aspiration pneumonia and cardiovascular disease, warranting oral-care regiments to be incorporated in health-management protocols for individuals with these diseases (27). This also offers a financial benefit as the concurrent improvement in oral and systemic disease reduces demand on health services within correctional services, freeing up budgets to be spent on improving other living and social conditions for these inmates.

Recommendations

There is arguably a need for improvements in dental care within correctional facilities. However, to improve the status of dental care for incarcerated individuals, there are a number of prior steps that require attention. First, there is a marked deficit in literature aimed at dental-care outcomes within the incarcerated population (28). Most of the literature (as indicated here) is dated and many of the studies do not provide alternative measures of oral health beyond caries and periodontal indices to establish a broader understanding of the dental needs and associated impacts for incarcerated populations. However, it is suggested that this is not due to disinterest in the topic but rather a lack of data at the national level (2). As such, the primary recommendation is to include prisoners in nationally collected data and to improve the information technology infrastructure in correctional facilities to include electronic health records that incorporate dental care. By facilitating better data collection, incarcerated populations can be analyzed at a deeper level, and additional dental concerns can be brought to light. Second, recognizing that increasing dental expenditure is often simply a practice of idealism, other practical means of promoting access to dental care should be implemented. For example, dental professionals should be incentivized to practise within correctional facilities to ensure that there is adequate access to care by reducing dentist-to-inmate ratios. Incentives such as loan forgiveness programs and tax credits may entice a new generation of practising dentists to offer additional consideration to incarcerated individuals. Alternatively, dental students can be included in servicing correctional facilities to ensure availability of services (often at a reduced cost to the correctional facility) while offering a valuable clinical and societal experience for the student (29). Finally, a nationwide network of "correctional health executives" should be created to discuss policy changes regarding incarceration practices, as there appears to be few concerted efforts at improving health services within correctional institutions. With oversight through such a committee, there can be external pressure on government to better acknowledge the status of incarcerated individuals, and these populations can be advocated for more effectively.

Conclusion

There is a deficit in adequate dental care within incarcerated populations across varied geographies and judicial systems. Incarcerated individuals routinely demonstrate poor oral-health outcomes, a lack of access to dental care, and poor oral-health literacy. The lack of dental care also contributes to shortcomings in rehabilitation and prospects upon release, as reflected in impacts to the quality of life and higher rates of recidivism. As such, there is a need for intervention with respect to improved data collection, research, advocacy and service.

REFERENCES

1. Gramlich J. U.S. incarceration rate is at a two-decade low. Washington DC: Pew Research Center; 2018. Available at: https://www.pewresearch.org/fact-tank/2018/05/02/americas-incarceration-rate-is-at-a-two-decade-low/ [Accessed June 03, 2020].
2. Makrides NS, Shulman JD. The oral health needs of the incarcerated population: steps toward equal access. *American Journal of Public Health*. 2017;107;S46.
3. Salive ME, Carolla JM, Brewer TF. Dental health of male inmates in a state prison system. *Journal of Public Health Dentistry*. 1989 Mar;49(2):83-6.
4. Mixson JM, Eplee HC, Fell PH, Jones JJ, Rico M. Oral health status of a federal prison population. *Journal of Public Health Dentistry*. 1990 Jun;50(4):257-61.
5. Heng CK, Morse DE. Dental caries experience of female inmates. *Journal of Public Health Dentistry*. 2002 Mar;62(1):57-61.
6. Laltoo ABE, Pitcher LM. Oral health needs of Canadian prisoners as described by formerly incarcerated New Brunswickers. *Canadian Journal of Dental Hygiene*. 2012 Aug;15-17.
7. Clare JH. Survey, comparison, and analysis of caries, periodontal pocket depth, and urgent treatment needs in a sample of adult felon admissions, 1996. *Journal of Correctional Health Care*. 1998 Apr;5(1):89-102.
8. Makrides NS, Shulman JD. Dental health care of prison populations. *Journal of Correctional Health Care*. 2002 Oct;9(3):291-306.
9. Osborn M, Butler T, Barnard PD. Oral health status of prison inmates — New South Wales, Australia. *Australian Dental Journal*. 2003 Mar;48(1):34-8.
10. Priwe C, Carlsson P. Oral health status of male Swedish citizens at admission to prison. *Journal of Correctional Health Care*. 2018 Oct;24(4):382-94.
11. Jones C, McCann M, Nugent Z. *Scottish Prisons Dental Health Survey 2002*. Edinburgh: Scottish Executive; 2004. Available at: http://www.scotland.gov.uk/Resource/Doc/47210/0013527.pdf [Accessed June 03, 2020].
12. Heidari E, Dickinson C, Wilson R, Fiske J. Oral health of remand prisoners in HMP Brixton, London. *British Dental Journal*. 2007 Jan;202(2):E5.
13. George B, John J, Saravanan S, Arumugham IM, Johny MK. Dental caries status of inmates in central prison, Chennai, Tamil Nadu, India. *Journal of Natural Science, Biology, and Medicine*. 2015 Aug; 6(Suppl 1):S110.
14. Anup N, Biswas G, Vishnani P, Tambi S, Acharaya S, Kumawat H. Oral health status and treatment needs of inmates in district Jail of Jaipur City-A cross sectional study. *Journal of Nursing and Health Sciences*. 2014;3:22-31.
15. Heidari E, Dickinson C, Newton T. Oral health of adult prisoners and factors that impact on oral health. *British Dental Journal*. 2014 Jul;217(2):69.
16. National Institute of Dental and Craniofacial Research. Dental caries (tooth decay) in adults (age 20 to 64). Washington DC: National Institute of Dental and Craniofacial Research, U.S. Department of Health and Human Services. Available at: https://www.nidcr.nih.gov/research/data-statistics/dental-caries/adults [Accessed June 03, 2020].
17. Douds AS, Ahlin EM, Kavanaugh PR, Olaghere A. Decayed prospects: A qualitative study of prison dental care and its impact on former prisoners. *Criminal Justice Review*. 2016 Mar;41(1):21-40.
18. Canadian Human Rights Commission. Our correctional system: CHRC states that we must do better. Ottawa: Canadian Human Rights Commission. Available at: https://www.chrc-ccdp.gc.ca/eng/content/our-correctional-system-chrc-states-we-must-do-better [Accessed June 03, 2020].
19. Morenoff JD, Harding DJ. Incarceration, prisoner reentry, and communities. *Annual Review of Sociology*. 2014 Jul 30;40:411-29.
20. Janssen PA, Korchinski M, Desmarais SL, Albert AY, Condello LL, Buchanan M, Granger-Brown A, Ramsden VR, Fels L, Buxton JA, Leggo C. Factors that support successful transition to the community among women leaving prison in British Columbia: a prospective cohort study using participatory action research. *CMAJ Open*. 2017 Jul;5(3):E717.
21. Bonta J, Pang B, Wallace-Capretta S. Predictors of recidivism among incarcerated female offenders. *The Prison Journal*. 1995 Sep;75(3):277-94.
22. Salem BE, Nyamathi A, Idemundia F, Slaughter R, Ames M. At a crossroads: Reentry challenges and healthcare needs among homeless female ex-offenders. *Journal of Forensic Nursing*. 2013 Mar;9(1):14.

The John Howard Society of Canada. Financial facts
23. on Canadian prisons. Kingston: The John Howard Society of Canada; 2018. Available at: http://johnhoward.ca/blog/financial-facts-canadian-prisons/ [Accessed June 03, 2020].
Jansen P. Women need health and dental care to stay
24. out of prison. Macleans; 2018. Available at: https://www.macleans.ca/society/women-need-health-and-dental-care-to-stay-out-of-prison/ [Accessed June 03, 2020].
Treadwell HM, Formicola AJ. Improving the oral
25. health of prisoners to improve overall health and well-being. *American Journal of Public Health*. 2005 Oct; 95(10):1677-78.
Eldridge TE. Another hurdle for former inmates:
26. their teeth. New York City: The Marshall Project; 2018. Available at: https://www.themarshallproject.org/2018/06/28/another-hurdle-for-former-inmates-their-teeth [Accessed June 03, 2020].
Taylor GW, Loesche WJ, Terpenning MS. Impact
27. of oral diseases on systemic health in the elderly: diabetes mellitus and aspiration pneumonia. *Journal of Public Health Dentistry*. 2000 Dec;60(4):313-20.
Walsh T, Tickle M, Milsom K, Buchanan K, Zoitopou-
28. los L. An investigation of the nature of research into dental health in prisons: a systematic review. *British Dental Journal*. 2008 Jun;204(12):683.
Simon L, Sue K, Williams R, Beckmann D, Tobey M,
29. Cohen M. Dental student–delivered care at a student–faculty collaborative clinic in a correctional facility. *American Journal of Public Health*. 2017 Jun;107(S1):S85-S87.

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Chronic Osteomyelitis: An Often Misdiagnosed Condition

Introduction

Chronic recurrent multifocal osteomyelitis (CRMO), more recently characterized as chronic non-bacterial osteomyelitis (CNO), or primary chronic osteomyelitis (PCO), is an uncommon and frequently misdiagnosed autoinflammatory bone disorder. It most often occurs in children and adolescent females between the ages of seven to 12 years, with the average age of diagnosis being 10 years old (1). The reported prevalence ranges between 1:160,000 and 1:200,000 (1). However, it has been suggested that the prevalence is underestimated and is thought to be similar to that of infectious bone osteomyelitis (2).

Clinical features of CNO are often diffuse and nonspecific. These include pain with an insidious onset, local bone enlargement with or without soft-tissue swelling, and potential for involvement of more than one bone. Low-grade fever and malaise may accompany the pain. The bones most commonly affected include the metaphyses of long bones such as the tibia, humerus and femur (1,3). However, this disease may also involve the clavicles, the vertebrae and the mandible, along with their associated joints. In fact, 30 per cent of diagnosed patients present with joint involvement including articular effusions, synovial hypertrophy and cartilaginous damage (2). Those cases with multiple bones affected are more commonly described as CRMO. Approximately 20 per cent of patients diagnosed with CNO also present with inflammatory diseases of the skin or intestines, such as psoriasis, pustulosis of palm and soles, acne and Crohn's disease (2).

The pathophysiology of this disease process is akin to other inflammatory conditions. Increased inflammatory markers such as TNF-α, IL-6, ESR and CRP are noted in the absence of T-cells, pathogens or autoantibodies. These findings point to an autoinflammatory rather than an autoimmune nature to the disease process. Nonspecific clinical symptoms make a diagnosis challenging. Symptoms are often misinterpreted as being a result of an infectious process, a metabolic disorder, a benign bone dysplasia or a malignancy. Inappropriate therapy, such as long-term antibiotic therapy, is often administered, which has repeatedly demonstrated little utility in the treatment of these patients. As well, it leads to a delay in treatment; complications such as pathological fractures, growth anomalies and neurological symptoms may result. Appropriate diagnosis and management with nonsteroidal anti-inflammatory drugs (NSAIDs) and/or surgical interventions are crucial for ideal outcomes and to minimize complications.

The following case demonstrates a multidisciplinary treatment approach for an individual that presented with mandibular asymmetry, recognized in an orthodontic setting, interpreted radiologically, and referred for appropriate treatment.

Case report

A 12-year-old female initiated orthodontic treatment at a private practice. Six months into treatment, the orthodontist recognized an increasing right facial asymmetry with mandibular enlargement. The patient was subsequently referred to an oral and maxillofacial surgeon and then to the Special Procedures Clinic in the Faculty of Dentistry, University of Toronto.

On examination, the patient reported sporadic, spontaneous, pulsating and throbbing pain, first noted in 2016. The pain worsened when eating, sleeping on her right side, or when pressure was applied to the right mandible, and occasionally localized to the right mandibular premolar area. The pain was intermittent, spanning a few hours, with episodes lasting between two to

Figure 1.
Images acquired on date of examination.

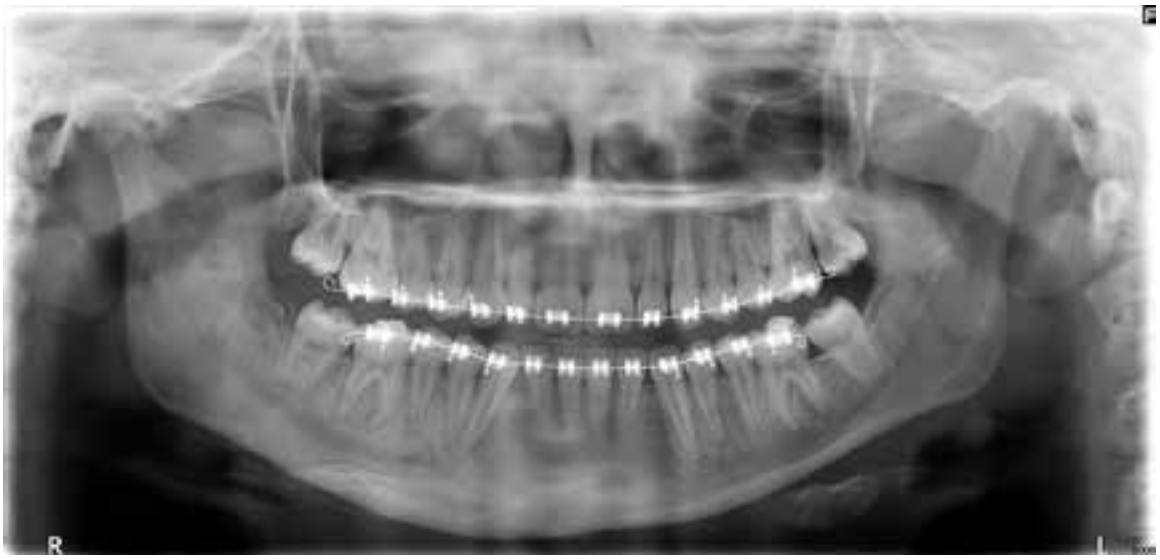

Figure 2.
Panoramic image. Note the ill-defined area of altered bone pattern from the right condyle to the midline.

five minutes. Occasionally, the pain was relieved with Ibuprofen. Episodes of pain occurred most often when eating and around bedtime. Occasionally, hot food elicited a burning sensation within the right mandibular ramus. This pattern of pain continued throughout the second half of 2016. Since 2017, the patient reports no symptoms.

Clinical examination revealed a right mandibular enlargement and marked facial asymmetry. There was deviation of the mandible to the right on opening. There was medio-lateral and bucco-lingual expansion of the mandibular right ramus and premolar area with no intraoral signs of infection. The teeth were all vital with a normal pulpal, periapical and periodontal status.

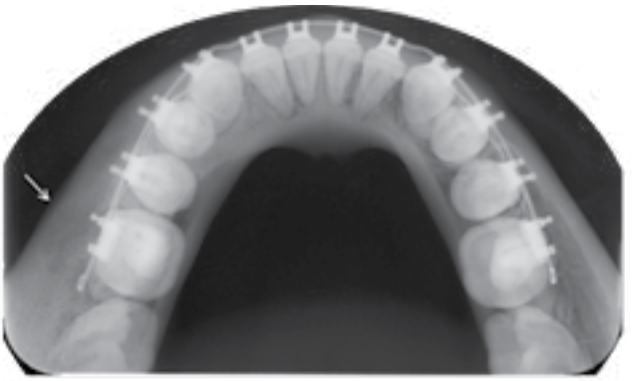

Figure 3.
Standard mandibular occlusal image. Arrow indicates the area of enlargement and loss of cortico-cancellous boundary of the bone.

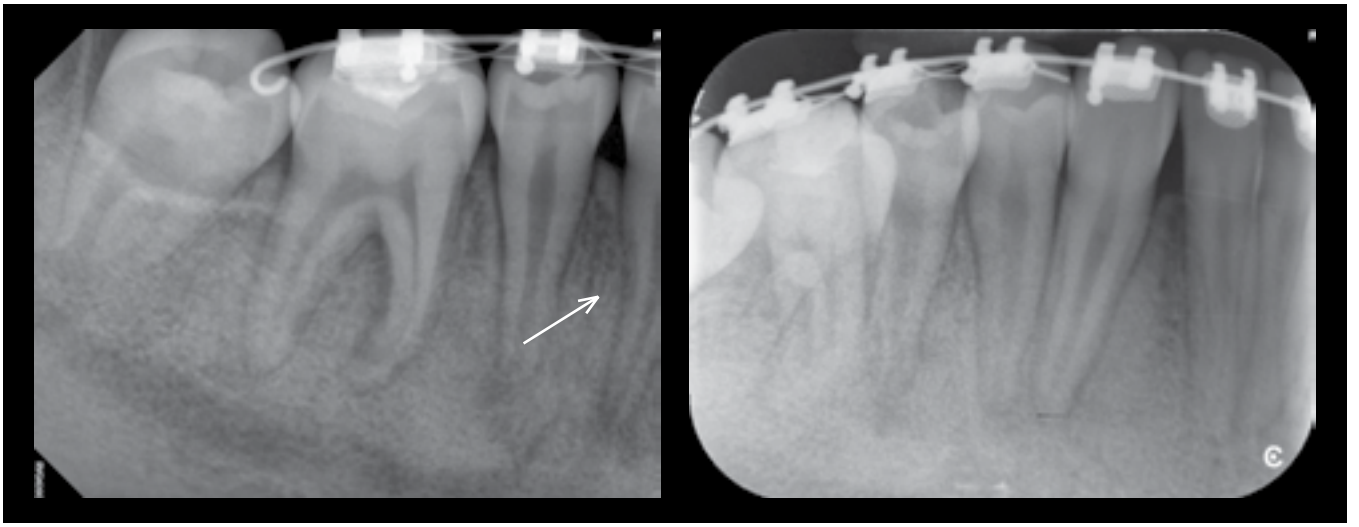

Figure 4.
Periapical images of the mandibular right dentition illustrating the widespread sclerosing osteitis and loss of the lamina dura around the dentition.

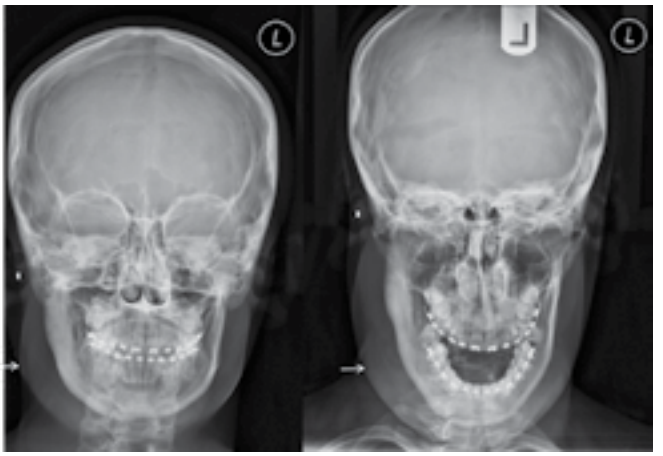

Figure 4a (left). Posterior-Anterior cephalometric skull image.

4b (right) Posterior-Anterior open-mouth Townes skull image.

Arrows indicate the enlarged right masseter.

Table 1.
Diagnostic criteria of CRMO.

Major Criteria	Minor Criteria
At least two bone lesions	Normal blood count
Psoriasis	Good general state of health
Palmoplantar pustulosis	Mild-to-moderate elevation of CRP and ESR
Radiological presence of osteolytic or sclerotic bone lesions	Observation time of 6 months
	Hyperostosis
Sterile bone biopsy with signs of inflammation, fibrosis, and/or sclerosis	Association with other autoimmune diseases (apart from palmoplantar pustulosis or psoriasis)
	Grade I or II relatives with autoimmune or autoinflammatory disease with CRMO

Jansson A, Renner ED, Ramser J, Mayer A, Haban M, Meindl A, Grote V, Diebold J, Jansson V, Schneider K, Belohradsky BH. Classification of non-bacterial osteitis: retrospective study of clinical, immunological and genetic aspects in 89 patients. *Rheumatology*. 2007 Jan 1;46(1):154-60.

The soft tissue in the floor of the mouth appeared to be within the range of normal. The patient's medical history is non-contributory.

The radiologic evaluation included a panoramic image, a posterior-anterior cephalometric skull image, a posterior-anterior open-mouth Townes image, three mandibular occlusal images, and two periapical images (Figures 2-4). A multi-detector CT study (MDCT) with contrast was subsequently requested and reviewed.

The panoramic image (Figure 2) demonstrates an ill-defined, abnormal bone pattern in the mandible extending from the right mandibular condyle to the mandibular midline, involving the right mandibular condylar neck, coronoid process, ramus, and body of the mandible. The articulating surface of the right mandibular condylar head appears unaffected. The pattern of altered bone is predominantly sclerotic. A series of alternating radiopaque and radiolucent lines parallel to the surfaces of cortical bone of the right mandibular ramus represents a prominent periosteal reaction. There are multiple, scattered, round, low-attenuation/radiolucent components to the abnormal bone pattern in the right ramus and coronoid process. Within these radiolucent areas, there are small, punctate islands of radiopaque bone that likely represent sequestrae. There is loss of the normal cortices of the right inferior alveolar canal.

The mandibular occlusal image (Figure 3) demonstrates the loss of the cortico-cancellous boundary and bucco-lingual enlargement within the right body of the mandible. The posterior-anterior cephalometric skull image (Figure 4a) and the open-mouth Townes image (Figure 4b) demonstrate the increased medio-lateral width of the ramus as well as the enlargement of the right masseter muscle. On advanced imaging (MDCT) a cloaca was noted along the medial ramus, superior to the lingula extending into the right pterygomandibular space. This imaging modality also demonstrated periosteal new bone formation and sequestrae.

The patient was referred for appropriate medical consultation and treatment. Blood work was also completed. The tests along with the lack of local source of infection and the clinical presentation allowed for a diagnosis of CNO as a diagnosis of exclusion.

Discussion

Chronic non-bacterial osteomyelitis is a rare and poorly understood autoinflammatory bone pathology with chronic periods of relapse and long periods of remission. This case report is meant to provide awareness of the variable clinical presentations of this process and to highlight the importance of early diagnosis.

Chronic sclerosing forms of osteomyelitis are often overshadowed by the more well-known, infectious forms of osteomyelitis. This is further complicated due to the similar clinical presentation of these two processes. The presence of odontogenic structures in the jaws can often act as a red herring, misleading practitioners in their diagnosis of an infectious process being present. As a result, these patients are often treated with antibiotics, in the hopes that their symptoms are a result of a bacterial insult and will be alleviated.

When a patient is identified, they require a comprehensive workup for appropriate diagnosis through a multidisciplinary approach. This involves referral to

appropriate surgical and medical colleagues. Medical screening involved for these patients is comprehensive and is typically performed by a rheumatologist. A workup will typically include a comprehensive medical, surgical, social and family history. From this, a comprehensive rheumatologic examination is completed, including record of tender points, leg length discrepancy and the presence of a gait. From this, other high-risk bones, such as the long bones, pelvis, clavicle and spine, may be identified as potential remote primary sites (3). Beyond being useful in determining if this patient is at risk of non-bacterial osteomyelitis, it will also be a useful guide in determining if the patient is at risk of a multifocal form of the disease (Table 1). Although patient symptoms are often useful as a guide, imaging is required to identify the presence of additional primary sites. As in this case, radiologic signs play an important role in differentiating this process from other causes of jaw asymmetry and bone pattern change, including fibrous dysplasia or hemifacial hyperplasia. Computed tomography (CT) is the most important imaging modality used in the evaluation of osteomyelitis for its ability to clearly demonstrate diagnostic signs, including the presence of periosteal new bone formation, sequestrae and sclerosis. Additional imaging will typically aid in the diagnosis of osteomyelitis, as well as identify additional sites. Medical workup includes blood work CBC with differential, serum creatinine and liver function tests.

If any suspicion of other osseous pathology exists, a bone biopsy may be completed as part of the comprehensive workup for these patients. Bone cultures are used to determine if the osteomyelitis may be of infectious origin. Management of patients diagnosed with non-bacterial forms of osteomyelitis involves NSAID therapy as a mainstay. The long-term success rate of NSAID therapy is variable, ranging anywhere from 27 to 80 per cent (3-5). Before adjuncts are added, NSAID therapy requires a minimum of four weeks at therapeutic levels (6). Naproxen is the only NSAID with prospective studies validating its use, and is recommended at a dose of 5.0-7.5 mg/kg/day (7).

For refractory cases, corticosteroids may be considered. A study by Ishikawa-Nakayma et al. in 2000 demonstrated the use of Prednisone at a dose of 1.0-2.0 mg/kg/day (8). Additional medical therapies, such as Sulfasalazine (9) and Methotrexate (10), have also been proposed, with mixed results. Bisphosphonates such as pamidronate (11) and Neridronate (12) have been used in special cases, such as those with spinal involvement (13,14).

Finally, surgical corticotomy (15,16) or resection with free flap reconstruction (17) would be considered for end-stage refractory cases.

Conclusion

This case outlines the progression from clinical presentation to diagnosis and treatment of a rare case of CNO affecting the mandible. Cases of CNO must be recognized and treated by a multidisciplinary team to allow for proper outcomes and minimal complications associated with misdiagnosis and delayed treatment. It is critical that dentists be aware of this disease process and recognize the radiologic hallmarks of osteomyelitis. Early identification and appropriate referral will allow for timely management of patient symptoms and decrease the probability of chronic deformities.

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REFERENCES

1. Taddio A, Zennaro F, Pastore S, Cimaz R. An update on the pathogenesis and treatment of chronic recurrent multifocal osteomyelitis in children. *Pediatric Drugs*. 2017 Jun 1;19(3):165-72.
2. Schnabel A, Range U, Hahn G, Siepmann T, Berner R, Hedrich CM. Unexpectedly high incidences of chronic non-bacterial as compared to bacterial osteomyelitis in children. *Rheumatology international*. 2016 Dec 1;36(12):1737-45.
3. Wipff J, Costantino F, Lemelle I, Pajot C, Duquesne A, Lorrot M, Faye A, Bader-Meunier B, Brochard K, Despert V, Jean S. A large national cohort of French patients with chronic recurrent multifocal osteitis. *Arthritis & Rheumatology*. 2015 Apr;67(4):1128-37.
4. Catalano-Pons C, Comte A, Wipff J, Quartier P, Faye A, Gendrel D, Duquesne A, Cimaz R, Job-Deslandre C. Clinical outcome in children with chronic recurrent multifocal osteomyelitis. *Rheumatology*. 2008 Sep 1;47(9):1397-9.
5. Pastore S, Ferrara G, Monasta L, Meini A, Cattalini M, Martino S, Alessio M, Torre FL, Teruzzi B, Gerloni V, Breda L. Chronic nonbacterial osteomyelitis may be associated with renal disease and bisphosphonates are a good option for the majority of patients. *Acta Paediatrica*. 2016 Jul;105(7):e328-33.
6. Job-Deslandre C, Krebs S, Kahan A. Chronic recurrent multifocal osteomyelitis: five-year outcomes in 14 pediatric cases. *Joint Bone Spine*. 2001 May 1;68(3):245-51.
7. Beck C, Morbach H, Beer M, Stenzel M, Tappe D, Gattenlöhner S, Hofmann U, Raab P, Girschick HJ. Chronic nonbacterial osteomyelitis in childhood:

prospective follow-up during the first year of anti-inflammatory treatment. *Arthritis Research & Therapy.* 2010 Apr;12(2):R74.
8. Ishikawa-Nakayama K, Sugiyama E, Sawazaki S, Taki H, Kobayashi M, Koizumi F, Furuta I. Chronic recurrent multifocal osteomyelitis showing marked improvement with corticosteroid treatment. *The Journal of Rheumatology*. 2000 May;27(5):1318-9.
9. Girschick HJ, Zimmer C, Klaus G, Darge K, Dick A, Morbach H. Chronic recurrent multifocal osteomyelitis: what is it and how should it be treated? *Nature Clinical Practice Rheumatology*. 2007 Dec;3(12):733-8.
10. Borzutzky A, Stern S, Reiff A, Zurakowski D, Steinberg EA, Dedeoglu F, Sundel RP. Pediatric chronic nonbacterial osteomyelitis. *Pediatrics*. 2012 Nov 1;130(5):e1190-7.
11. Compeyrot-Lacassagne S, Rosenberg AM, Babyn P, Laxer RM. Pamidronate treatment of chronic non-infectious inflammatory lesions of the mandible in children. *The Journal of Rheumatology*. 2007 Jul 1;34(7):1585-9.
12. De Cunto A, Maschio M, Lepore L, Zennaro F. A case of chronic recurrent multifocal osteomyelitis successfully treated with neridronate. *The Journal of Pediatrics*. 2009 Jan 1;154(1):154-5.
13. Hofmann SR, Schnabel A, Rösen-Wolff A, Morbach H, Girschick HJ, Hedrich CM. Chronic nonbacterial osteomyelitis: pathophysiological concepts and current treatment strategies. *The Journal of Rheumatology*. 2016 Nov 1;43(11):1956-64.
14. Hospach T, Langendoerfer M, von Kalle T, Maier J, Dannecker GE. Spinal involvement in chronic recurrent multifocal osteomyelitis (CRMO) in childhood and effect of pamidronate. *European Journal of Pediatrics*. 2010 Sep 1;169(9):1105-11.
15. Theologie-Lygidaki Schoinohoriti O, Iatrou I. Surgical management of primary chronic osteomyelitis of the jaws in children: a prospective analysis of five cases and review of the literature. *Oral and Maxillofacial Surgery* 2011;15(1):41-50.
16. Montonen M, Iizuka T, Hallikainen D, Lindqvist C. Decortication in the treatment of diffuse sclerosing osteomyelitis of the mandible: Retrospective analysis of 41 cases between 1969 and 1990. *Oral Surgery, Oral Medicine, Oral Pathology*. 1993 Jan 1;75(1):5-11.
17. Singh S, Graham ME, Bullock M, Rigby MH, Taylor SM, Trites JR, Hart RD. Chronic sclerosing osteomyelitis of the mandible treated with hemimandibulectomy and fibular free flap reconstruction. *Plastic and Reconstructive Surgery Global Open*. 2015 Dec;3(12).

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Is Periodontal Disease a Risk Factor for the Development of Osteoradionecrosis?

Introduction

The majority of head and neck cancers (HNC) are treated with radiation therapy (RT), which involves the use of ionizing radiation to kill tumour cells. However, RT also damages healthy tissues causing significant early and late complications involving the salivary glands, soft tissues, teeth and jaw bones (1). Osteoradionecrosis (ORN) is a severe complication that develops in irradiated jaw bones and is resistant to most treatment modalities. Clinically, it manifests as pain, draining fistulae and exposed bone in the irradiated area. The mechanism of action is believed to result from a combination of bone hypocellularity, hypoxia and hypovascularity (2). Local factors affecting the progression of ORN include tumour characteristics, radiation dosage, tooth extractions and local trauma, immune deficiency, nutritional status and periodontal diseases (3).

Periodontal disease is an inflammatory disease of the tooth-supporting structures, which includes the gingiva, periodontal ligament and the alveolar bone. Radiation-induced inflammation, hypovascularity and fibrosis reduces remodelling and healing of periodontal tissue, thus increasing the risk of periodontal disease among HNC survivors (4). Gingival recession, clinical attachment loss (CAL), plaque index and tooth loss have been reported to increase in jaws that receive high radiation doses (5,6). Periodontal therapy can improve periodontal status; thus, it is recommended that HNC patients receive periodontal care before, during and after RT (4,7). The treatment of periodontal diseases before RT may prevent future tooth extraction and consequently reduce the development of ORN (8). Periodontal health has a demonstrated role in the development of osteoradionecrosis. Periodontal pocketing greater than 5.0 mm, plaque scores greater than 40 per cent, and radiographic alveolar bone loss are risk factors for ORN (9). Schuurhuis et al. demonstrated that the risk of developing ORN was considerably higher in patients with periodontal disease and that more severe periodontal disease predicted an increased risk of ORN (10). Accordingly, teeth with clinically significant periodontal disease (probing depths greater than 5.0 mm, furcation involvement, grade I mobility or greater, and 6.0 mm gingival recession or greater) within high dose radiation volumes are recommended to be prophylactically removed prior to RT with the mindset of ORN (10). Despite this, the exact relationship between periodontal health status and development of ORN is still unclear and further investigation is needed.

Treatment of ORN has been attempted using a number of modalities. Systematic reviews and randomized control trials comparing radiation dose, type, number and location of extractions, hyperbaric oxygen (HBO) staging, and adjunctive therapy have found insufficient evidence to prove HBO reduces the incidence of ORN in patients undergoing post-radiation extractions (11,12). More recently, treatment of ORN with PENTOCLO, a combination of pentoxifylline-tocopherol and clodronate, has gained popularity. While this protocol has achieved both radiographic and clinical regression of ORN in some cases, with healing time shorter in patients who receive radiation alone in comparison to those who receive both chemotherapy and radiation, its efficacy has not been proven in randomized trials (13). Advanced ORN and associated bone fractures typically require microvascular reconstruction and radical resections of the mandible (14). Accordingly, prevention of ORN is critical to the aesthetic, function, and health of patients undergoing radiation therapy.

The following cases raise the question as to whether the significant morbidity experienced by these patients could have been minimized with aggressive management (including prophylactic extractions) of periodontal issues pre- and post-radiation. In all three cases, recurrent malignancy was ruled out as part of the work-up for ORN.

Case 1

A 64-year-old male presented in 2015 with a chief complaint of slow onset of paresthesia of the left lower lip. His dental examination was significant for an intra-oral fistula along the height of the alveolar ridge distal to tooth 35, which probed to bone with suppuration on probing. His past medical history is significant for a diagnosis of T3N2bM0 p16+ squamous cell carcinoma of the left tonsil treated with concurrent chemotherapy (cisplatin) and radiation (70Gy in 35 fractions) completed in 2005. He has also been diagnosed with COPD secondary to alpha-1 antitrypsin deficiency, hypertension and a gastrointestinal stromal tumour of the stomach resected in 2016. His current medications include Prolastin-C, Ramipril and the PENTOCLO regimen. He has an allergy to Penicillin and a 20 pack-year history of smoking, quit in 1998.

His past dental history is significant for a history of periodontal disease. His sequence of panoramic radiographs from 2010 to 2015 demonstrate progressive periodontal disease and loss of teeth 18, 16, 48, 46, 47 and 36. On several occasions, the patient was referred to a periodontist but was not compliant with the suggested recall schedule and failed to present for regular appointments.

In 2015, the patient was diagnosed with osteoradionecrosis of the left mandible following the extraction of tooth 36 in 2014. The patient was referred to the Adult Radiation Late Effects Clinic and started on the PENTOCLO regimen. He was not a candidate for HBO as a result of his COPD. He developed recurrent infections and underwent sequestrectomies with an oral surgeon in 2015 and 2017. Unfortunately, his ORN progressed and he developed a draining extra-oral fistula in 2018, as well as a need for monthly antibiotics due to recurrent infections. He is now planned for a resection of his left mandible.

Case 2

A 55-year-old male presented in 2018 with a chief complaint of "I had a tooth fall out and now another is ready to go." His clinical examination revealed a soft tissue defect in the site previously occupied by tooth 34. Tooth 37 had a grade III mobility and suppuration from the associated gingiva. The tooth was removed with gauze and granulation tissue was noted underneath. He was offered a follow-up appointment two weeks later but failed to present for follow up.

His past medical history is significant for a T3N2bM0 squamous cell carcinoma of the left lateral tongue treated with surgery, chemotherapy and radiation (66Gy in 33F) completed 2012. He is also diagnosed with gastroesophageal reflux disease, hypercholesterolemia

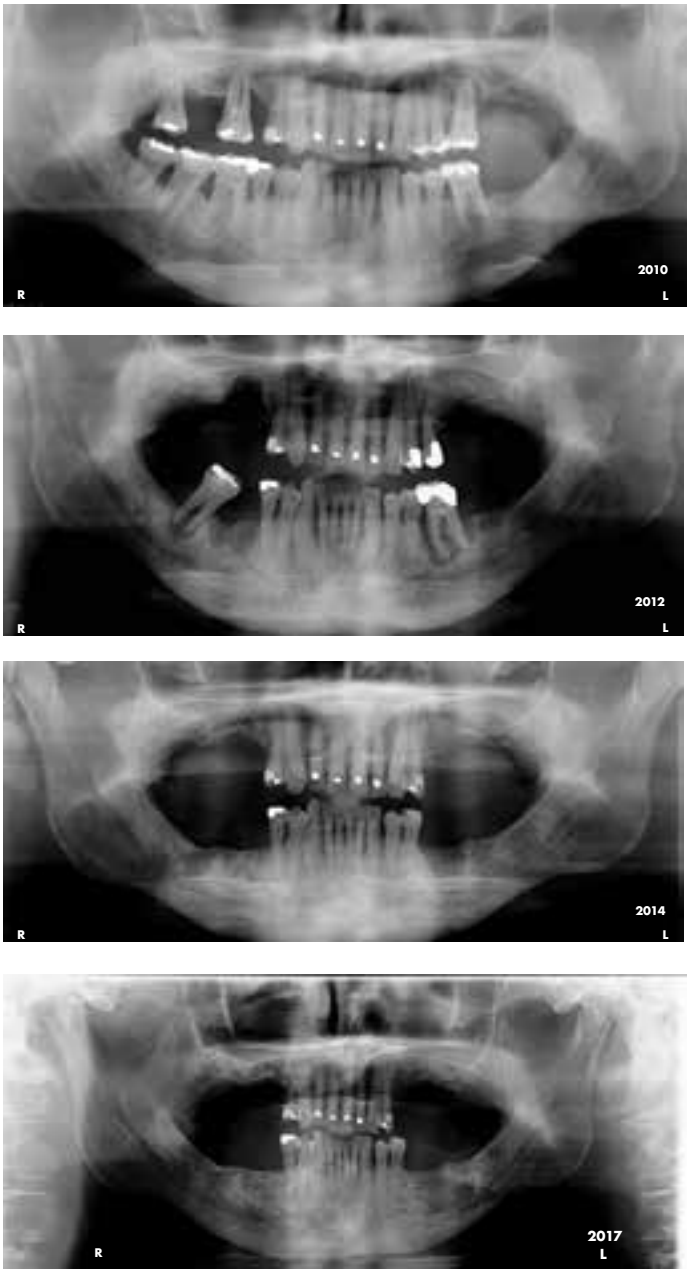

Figure 1.
Osseous structures associated with Case 1: There is an osseous defect associated with the left mandibular alveolus within the edentulous 36 region, which is irregular in contour and circumscribed by sclerotic bone. This defect extends from the height of the alveolus to the superior cortex of the inferior alveolar canal, which has been lost in this region. There is no discernible evidence of sequestra and, compared to the panoramic image dated 2017, these findings are largely unchanged. The appearance is suggestive of osteoradionecrosis and advanced imaging of this region (cbCT) is warranted. More generally, there is an abnormal bone pattern involving the left and right mandibular bodies consisting of irregular regions of bone sclerosis with a few areas of bone resorption. This likely is the result of previous therapeutic radiation exposure.

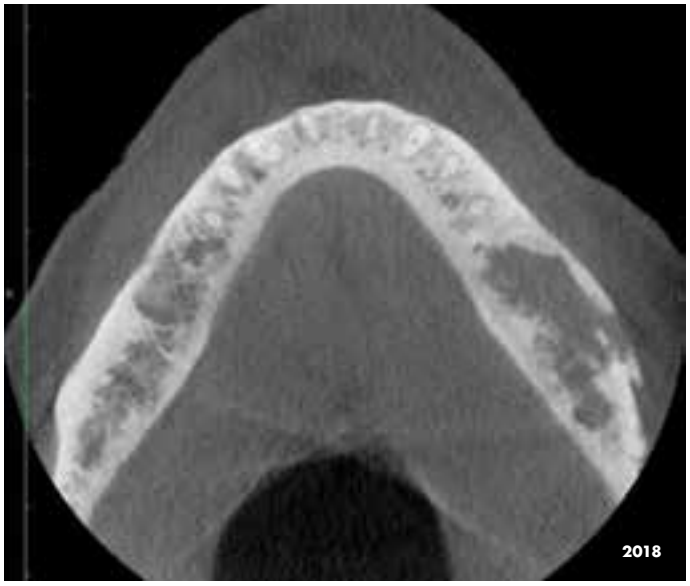

Figure 2.
Osseous structures associated with Case 1: There is an abnormal bone pattern involving the left mandibular body between the region of tooth 34 and the angle of the left mandible extending from the height of the mandibular body to the inferior cortex of the mandible and between the buccal and lingual cortical plates. This pattern is characterized by irregularly-shaped and ill-defined regions of bone resorption, especially in the edentulous 36 region, which is circumscribed by a diffuse periphery of sclerotic bone. There are several sequestra located within the edentulous 36 to 38 region, especially involving the buccal cortex of the mandible, which, along with the inferior cortex of the mandible, also demonstrate endosteal thinning. There has also been a loss of the circumferential periphery of the left inferior alveolar canal in this region. There is also a suggestion of a lamellar periosteal reaction in this region. There is no discernible evidence of a fracture in this region. These features are suggestive of osteoradionecrosis of the left mandibular body for which clinical correlation is required. Compared to the previous panoramic image in 2017, there have been interval changes in the extent and appearance of the involvement of the mandible in this region suggesting a worsening of this process.

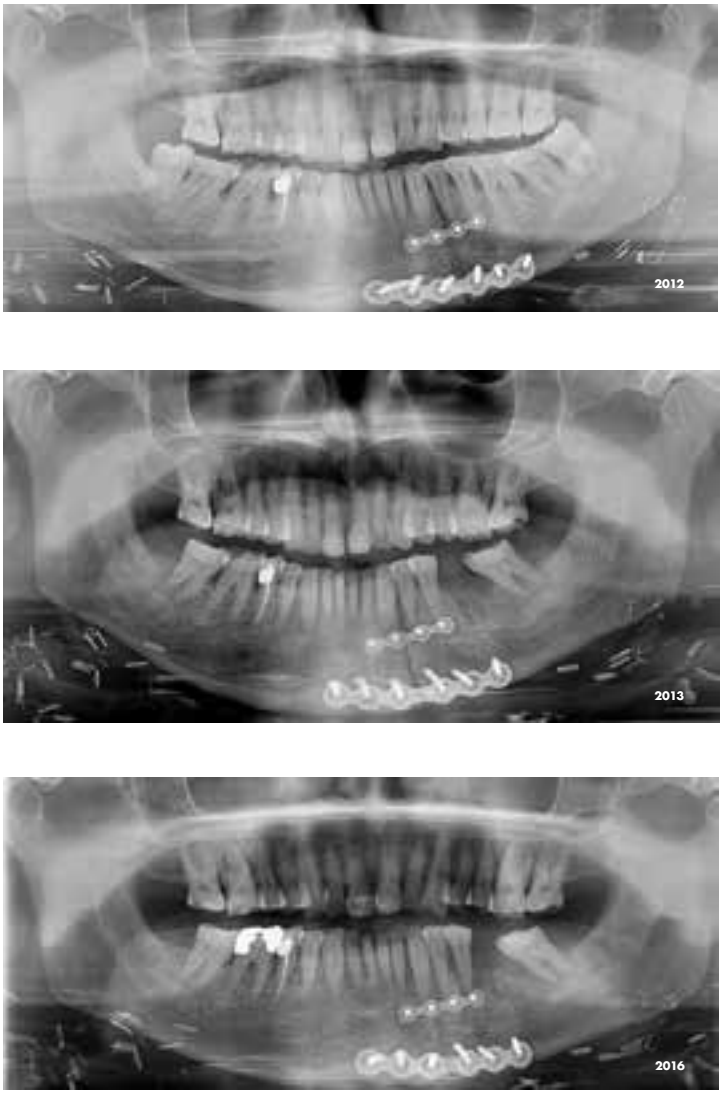

Figure 3.
Sequential panoramic radiographs of Case 2 noting pathological changes.

and hypertension, as well as active tuberculosis at the time of cancer diagnosis. His medications include Venlafaxine, Prevacid and Lipitor. Prior to his radiation, teeth 38, 36 and 48 were removed with the mindset of preventing osteoradionecrosis in the future. Following radiation, he was discharged back to his family dentist and on numerous occasions noted to have radiographic bone changes consistent with a history of exposure to therapeutic radiation, as well as progressive periodontal disease.

In 2018 he returned with a chief complaint of "I have bad pain and some swelling on the lower left side." He had a recent CT to rule out recurrent cancer. His clinical exam at that time revealed trismus with a maximal intra-incisal opening of 18.0 mm. Tooth 46 was noted to be non-vital and diagnosed with a perio-endo lesions, the patient was referred for endodontic treatment of tooth 46. An intra-oral fistula was present in the region previously occupied by 37, that probed to bone with suppuration. The patient was started on Moxifloxacin 400 mg qd and referred to the Adult Radiation Late Effects Clinic for initiation of PENTOCLO. When he was seen for his post-endodontic restoration, a draining extra-oral fistula was noted in the left submandibular region, and exposed bone was present in the 37 site. His head and neck surgical oncologist elected to treat the condition medically with PENTOCLO (minus bisphosphonate as patient was

unable to tolerate the tablets) in 2019. Following initiation of PENTOCLO, the extra-oral fistula closed and the extraction site 37 was fully mucosalized as of most recent follow-up exam in August of this year. The patient continues to do well on medical management.

Case 3

A 57-year-old male presented for emergency dental examination in 2018 with a chief complaint of "I cannot open my mouth and I lost feeling on the left side." Clinical examination revealed trismus with maximum intra-incisal opening of 15.0 mm. On intra-oral examination, a soft tissue defect was present in the region previously occupied by tooth 38, which probed to bone. Panoramic imaging revealed a pathologic fracture of the left mandible.

His past medical history was significant for a diagnosis of a T3N2aM0 squamous cell carcinoma of the left tonsil p16+, treated with chemotherapy and radiation, 70Gy in 35F. He has also been diagnosed with HIV, depression and gastroesophageal reflux disease. His medications include Atripla, Percocet, Lorazepam and Pantoprazole.

His past dental history is significant for periodontal disease. Prior to radiation, he did not have any teeth removed prophylactically. Following radiation he suffered from progressive bone loss, gingival recession and caries on the buccal and lingual of tooth 38. The tooth was restored and the patient was advised to undergo regular cleanings to attempt to avoid any further recession and progression of his periodontal disease. He was lost to follow up from the clinic. He started to develop pain in the left jaw, saw his radiation oncologist and had a recurrence ruled out. He then saw his dentist who diagnosed him with an odontogenic issue and had a tooth on the lower left removed in 2017. When the pain did not subside a second tooth was removed, resulting in the sudden onset of trismus and unilateral paresthesia. A progression of panoramic radiographs illustrates progressive bone loss and loss of teeth 35, 38, followed by the onset of ORN, pathologic fracture and progression of ORN. He underwent a partial mandibulectomy in 2018, where it was determined that free flap reconstruction of the mandible was not possible. He has since had tooth 45 removed due to a periodontal abscess with good healing of the extraction site. Despite this, the patient is tolerating his condition well and has had a partial denture fabricated with a maxillofacial prosthodontist to facilitate mastication on the right side.

Figure 4.

Figure 4. Osseous structures associated with Case 2: There is an abnormal bone pattern associated with the left mandibular body in the edentulous premolar and molar region above the inferior alveolar canal characterized by irregularly-shaped and ill-defined regions of bone resorption and bone sclerosis. There is also evidence of several osseous sequestra. There is a similar bone pattern in the region of tooth 45 and the mesial root of tooth 46. These features are suggestive of osteoradionecrosis for which clinical and historical correlation are required.

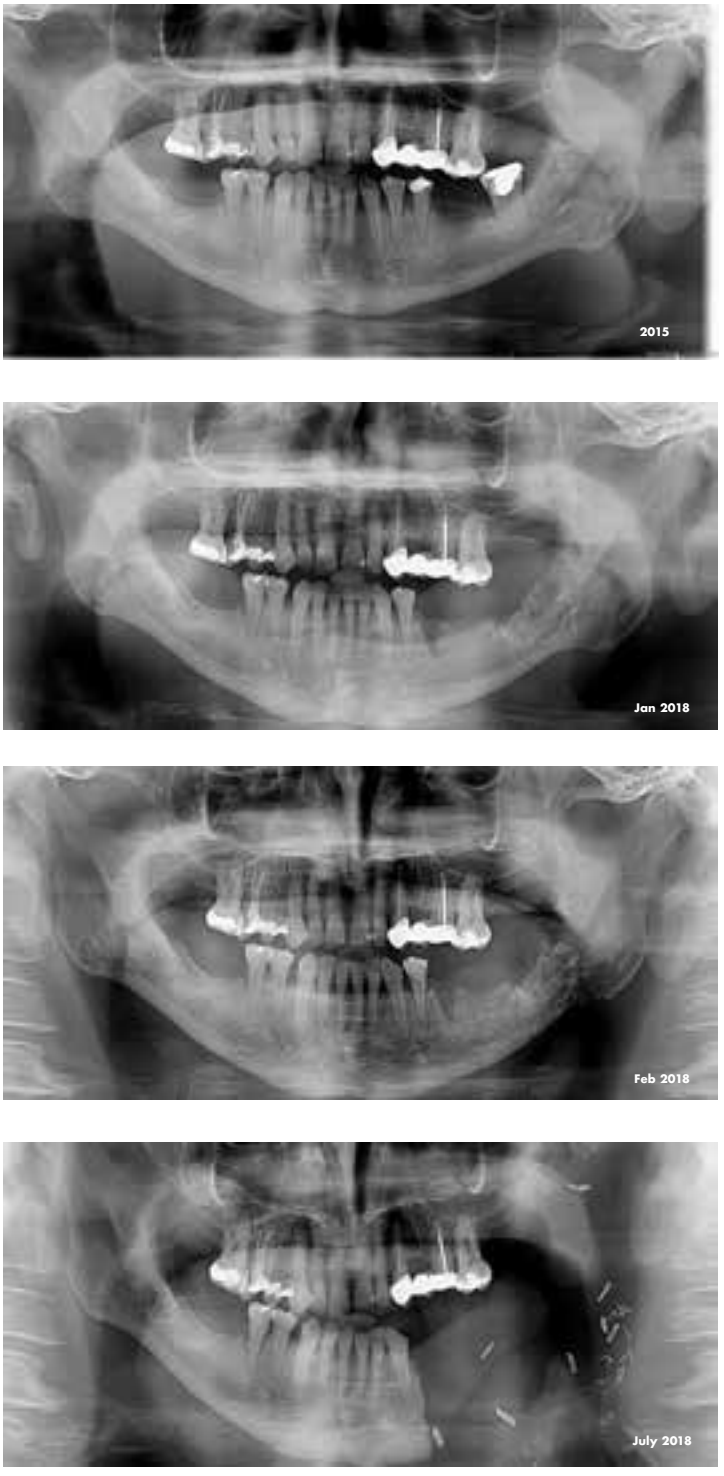

Figure 5.
Sequential panoramic radiographs associated with Case 3 noting pathological changes.

Discussion

Osteoradionecrosis is a late complication of RT in HNC and is very debilitating and difficult to treat. Pre-radiation dental screening aimed at eliminating oral foci of infection in HNC patients has been shown to be effective in reducing the incidence of ORN (15). The management strategies currently adopted differ between centres and are often based on clinician experience rather than evidence-based practice (16). Limited time for decision making and treatment to eliminate oral foci and allow healing prior to RT is one of the main challenges in dental management of HNC patients.

One of the main risk factors for the development of ORN is the radiation dose received. The dose volume positively correlates with the incidence of ORN in patients with oropharyngeal cancer (17). The three patients in this case series received radiation doses between 66-70 Gy, which could have contributed to the development of ORN. A study by Chang et al. demonstrated a radiation dose ≥70Gy has a positive predictive value of ORN (18). Another study also showed that a radiation dose less than 50Gy could reduce the likelihood of developing ORN (19). The location of the tumours in these patients might have predisposed them to receive high radiation to the jaws.

The periodontal status of HNC patients prior to RT could be a predictive factor for ORN (10). The majority of oral foci seen in HNC patients is related to periodontal disease and could be one of the major pre-RT conditions that contributes to development of ORN (20). The relationship between periodontal disease and bone healing problems has been previously reported (10). There is need for a meticulous periodontal examination and treatment before commencement of RT, as patients with severe periodontal disease with periodontal pocket depth (PPD) ≥6.0 mm prior to RT have higher chance of developing ORN (20). As demonstrated in the pre-RT panorexes, all three patients in this case series had at least a moderate degree of periodontal bone loss prior to RT around the sites of their eventual tooth loss and associated ORN. Appropriate periodontal treatment may have prevented ORN in these patients, either in the form of prophylactic extractions pre-RT or periodontal therapy pre- and post-RT. It is difficult to decide upon the appropriate treatment modality in such situations and further studies are needed to elucidate whether to extract or perform periodontal treatment in the pre-RT setting. The available time between dental screening and commencement of RT could be a limiting factor to complete elimination of

these foci and adequate healing. Also, attempting periodontal maintenance of a tooth with high PPD may be difficult and could put the patient at risk of requiring post-RT extraction which could still cause ORN (20).

Periodontal health deteriorates with radiation exposure because of increased inflammation, hyperaemia, hypovascularity and altered collagen synthesis which causes fibrosis (4). In addition, the circulating immunoglobulins could be reduced because of altered gingival crevicular fluid and saliva (8). Studies have confirmed increased gingival recession, CAL, plaque index and tooth loss in jaws that receive high radiation dose (5,6). The study by Katsura et al. showed that post-RT periodontal pocket depth and dental plaque scores were significantly worse in the HNC patients that developed ORN compared with those without ORN (10). This shows the need for meticulous oral hygiene and continuous periodontal monitoring following RT. Our cases were non-compliant with follow-up treatment and this could have contributed significantly to ORN. The patients were not reviewed and treated by periodontists following RT. Bueno et al. showed that periodontal therapy following RT was effective in reducing plaque index and improving periodontal status, as evidenced by the decreases in PPD and the maintenance of attachment level (7).

The case series presented above further shows the need to investigate the plausible relationship between periodontal disease and osteoradionecrosis and how aggressive periodontal therapy and continuous monitoring could prevent the development of ORN. OD

REFERENCES

1. Sroussi HY, Epstein JB, Bensadoun RJ, Saunders DP, Lalla RV, Migliorati CA, Heaivilin N, Zumsteg ZS. Common oral complications of head and neck cancer radiation therapy: mucositis, infections, saliva change, fibrosis, sensory dysfunctions, dental caries, periodontal disease, and osteoradionecrosis. *Cancer Medicine*. 2017 Dec;6(12):2918-31.
2. Marx RE. A new concept in the treatment of osteoradionecrosis. *Journal of Oral and Maxillofacial Surgery*. 1983 Jun 1;41(6):351-7.
3. Chrcanovic BR, Reher P, Sousa AA, Harris M. Osteoradionecrosis of the jaws — a current overview — part 1. *Oral and Maxillofacial Surgery*. 2010 Mar 1;14(1):3-16.
4. Epstein JB, Stevenson-Moore P. Periodontal disease and periodontal management in patients with cancer. *Oral Oncology*. 2001 Dec;37(8):613–9.
5. Epstein JB, Lunn R, Le N, Stevenson-Moore P. Periodontal attachment loss in patients after head and neck radiation therapy. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 1998 Dec 1;86(6):673-7.
6. Ammajan RR, Joseph R, Rajeev R, Choudhary K, Vidhyadharan K. Assessment of periodontal changes in patients undergoing radiotherapy for head and neck malignancy: a hospital-based study. *Journal of Cancer Research and Therapeutics*. 2013 Oct 1;9(4):630.
7. Bueno AC, Ferreira RC, Barbosa FI, Jham BC, Magalhães CS, Moreira AN. Periodontal care in patients undergoing radiotherapy for head and neck cancer. *Supportive Care in Cancer*. 2013 Apr 1;21(4):969-75.
8. Irie MS, Mendes EM, Borges JS, Osuna LG, Rabelo GD, Soares PB. Periodontal therapy for patients before and after radiotherapy: a review of the literature and topics of interest for clinicians. *Medicina Oral, Patologia Oral y Cirugia Bucal*. 2018 Sep;23(5):e524.
9. Katsura K, Sasai K, Sato K, Saito M, Hoshina H, Hayashi T. Relationship between oral health status and development of osteoradionecrosis of the mandible: A retrospective longitudinal study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 2008 Jun;105(6):731–8.
10. Schuurhuis JM, Stokman MA, Witjes MJ, Reintsema H, Langendijk JA, Vissink A, Spijkervet FK. Patients with advanced periodontal disease before intensity-modulated radiation therapy are prone to develop bone healing problems: a 2-year prospective follow-up study. *Supportive Care in Cancer*. 2018 Apr 1;26(4):1133-42.
11. Fritz GW, Gunsolley JC, Abubaker O, Laskin DM. Efficacy of pre-and postirradiation hyperbaric oxygen therapy in the prevention of postextraction osteoradionecrosis: a systematic review. *Journal of Oral and Maxillofacial Surgery*. 2010 Nov 1;68(11):2653-60.
12. Shaw RJ, Butterworth CJ, Silcocks P, Tesfaye BT, Bickerstaff M, Jackson R, Kanatas A, Nixon P, McCaul J, Praveen P, Lowe T. HOPON (Hyperbaric Oxygen for the Prevention of Osteoradionecrosis): a randomized controlled trial of hyperbaric oxygen to prevent osteoradionecrosis of the irradiated mandible after dentoalveolar surgery. *International Journal of Radiation Oncology* Biology* Physics*. 2019 Jul 1;104(3):530-9.
13. Robard L, Louis MY, Blanchard D, Babin E, Delanian S. Medical treatment of osteoradionecrosis of the mandible by PENTOCLO: preliminary results. *European Annals of Otorhinolaryngology, Head and Neck Diseases*. 2014 Dec 1;131(6):333-8.

14. Shaha AR, Cordeiro PG, Hidalgo DA, Spiro RH, Strong EW, Zlotolow I, Huryn J, Shah JP. Resection and immediate microvascular reconstruction in the management of osteoradionecrosis of the mandible. *Head & Neck: Journal for the Sciences and Specialties of the Head and Neck*. 1997 Aug;19(5):406-11.
15. Schuurhuis JM, Stokman MA, Witjes MJ, Dijkstra PU, Vissink A, Spijkervet FK. Evidence supporting pre-radiation elimination of oral foci of infection in head and neck cancer patients to prevent oral sequelae. A systematic review. *Oral Oncology*. 2015 Mar 1;51(3):212-20.
16. Epstein JB, Parker IR, Epstein MS, Stevenson-Moore P. Cancer-related oral health care services and resources: a survey of oral and dental care in Canadian cancer centres. *Journal of the Canadian Dental Association*. 2004 May;70(5):302-5.
17. Mohamed AS, Hobbs BP, Hutcheson KA, Murri MS, Garg N, Song J, Gunn GB, Sandulache V, Beadle BM, Phan J, Morrison WH. Dose-volume correlates of mandibular osteoradionecrosis in Oropharynx cancer patients receiving intensity-modulated radiotherapy: Results from a case-matched comparison. *Radiotherapy and Oncology*. 2017 Aug 1;124(2):232-9.
18. Chang DT, Sandow PR, Morris CG, Hollander R, Scarborough L, Amdur RJ, Mendenhall WM. Do pre-irradiation dental extractions reduce the risk of osteoradionecrosis of the mandible? *Head & Neck: Journal for the Sciences and Specialties of the Head and Neck*. 2007 Jun;29(6):528-36.
19. Tsai CJ, Hofstede TM, Sturgis EM, Garden AS, Lindberg ME, Wei Q, Tucker SL, Dong L. Osteoradionecrosis and radiation dose to the mandible in patients with oropharyngeal cancer. *International Journal of Radiation Oncology* Biology* Physics*. 2013 Feb 1;85(2):415-20.
20. Schuurhuis JM, Stokman MA, Roodenburg JL, Reintsema H, Langendijk JA, Vissink A, Spijkervet FK. Efficacy of routine pre-radiation dental screening and dental follow-up in head and neck oncology patients on intermediate and late radiation effects. A retrospective evaluation. *Radiotherapy and Oncology*. 2011 Dec 1;101(3):403-9.

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Barbara Morrow

Suggested Fee Guide Coding and Dental Claims/Plans Questions

Q. I have some questions about code use and determining what constitutes a "site" for soft tissue grafts, procedure codes 42511, 42521 and 42531. The *Suggested Fee Guide* indicates that two adjacent teeth in the same sextant are considered one site when using these procedure codes.

1. In cases where there are three adjacent teeth within a sextant, for example 41, 42 and 43, is this coded as one site or two?

   A. Two adjacent teeth are considered to be one surgical site. Therefore, tooth 41 and tooth 42 are one site, and tooth 43 is a second site. Or tooth 41 may be considered to be one site and tooth 42 and 43, the second site.As per the NOTE in the *Suggested Fee Guide*:
   NOTE: INSTRUCTIONS ON USING GRAFTS, FREE SOFT TISSUE CODES
   For free soft tissue grafts involving two adjacent teeth in the same sextant at the same appointment, this is considered to be a single graft, single site.

2. In cases where there are two adjacent teeth but they are in two sextants, for example, tooth 33 and 34, is this coded as two sites or one?

   A. Based on the note above, a surgical site is considered to be two adjacent teeth within a sextant; therefore, when 2 adjacent teeth are not within the same sextant, they are coded as two individual sites.

3. How does coding change when a tooth is missing (e.g. soft tissue grafts are placed adjacent to teeth 41 and 43 but tooth 42 is missing)?

   A. The code to describe this graft is code 42531. The description in the USC&LS description is Grafts, Free Soft Tissue, *Adjacent to teeth or edentulous area*, per site. This oversight in the ODA Fee Guide description will be corrected in the 2021 editions. Again, we look to the Notes to determine which teeth (or edentulous area) are included within the sextant. The appropriate coding in the above situation would be code 42531 to describe the graft about tooth 41 and the missing 42, and tooth 43 is the second site.

Procedure codes must accurately reflect the service performed. The suggested fees in the Guide are not obligatory and each practitioner is expected to determine independently the fees which will be charged for the services performed. This Guide is issued merely for professional information purposes, without any intention or expectation whatsoever that a practitioner will adopt the suggested fees. OD

Barbara Morrow is the Dental Information Officer in the Practice Advisory Services Dept. She provides technical expertise regarding the use of the ODA Suggested Fee Guides *to ODA members and their staff. In addition to matters related to the use of procedure codes, Barbara also provides support to members and their patients.*

In order to provide support to our members regarding the correct use of the *ODA Suggested Fee Guide* and dental benefit plans, Practice Advisory Staff at the ODA publish a regular column in *Ontario Dentist*. My colleagues and I welcome your emails and phone calls, and ask that you continue to contact us with any questions you might have.

Please contact us at:
Tel: 416-922-4162 ext. 3301 Toll-free: 1-866-739-8099 ext. 3301 Email: AdvisoryServices@oda.ca

Jeff Grandfield

Negotiating Your Commercial Lease or Renewal in the COVID-19 Environment

It goes without saying that we are in unprecedented times, with a lot of uncertainty when it comes to your practice, the economy and the pandemic itself. For most practice owners, their commercial lease is typically the largest fixed overhead cost and, as such, deserves significant attention.

Knowledge is only the beginning of power; how you utilize that knowledge will determine your success in the negotiation of a new lease, lease renewal or even a rent abatement during your current lease term as a result of the pandemic. Here are 10 points to consider.

1. New real estate inventory is/will be coming on the market.

During the pandemic and shortly thereafter many businesses will shutter their doors. This means that some prime sites currently occupied, perhaps even by another dentist, may come on the market for lease. Other opportunities may gradually become available as a result of tenants not renewing their leases, so don't overlook great properties that traditionally had no vacancy. The landscape is about to change.

2. Landlords will need your tenancy more than ever.

The pandemic and resulting financial impact will pass over in time, but no one knows how long it will take before we return to a near normal economy. With fewer businesses planning to open, landlords will be more willing to deal if you play your cards right, especially as a dental tenant, which historically landlords have coveted.

3. Maximize lease inducements.

With rental expectations likely to soften in many markets, landlords will still push to keep rent as high as possible in order to meet mortgage requirements and maintain building valuations. In efforts to attract tenants to their buildings, landlords may be offering extended rent-free periods (well beyond your fixturing period when building the new clinic). Furthermore, financially sound landlords may be offering significant tenant improvement allowances as additional incentives and to help offset tighter lending policies from banks.

4. Pace the process.

If you are working with an agent, they will typically want to approach one site at a time and complete a deal as quickly as possible. This is not to the tenant's advantage. Best practice is to select multiple prospective sites and invite letters of intent from all landlords simultaneously. You want the landlords to compete for your tenancy and create a bidding war for you, the landlord's future customer. The other aspect to this point is that you want to ensure you are comfortable with where the economy is, your finances and the state of the pandemic; do not rush the process for fear of missing an opportunity.

5. Start early.

If you are in an existing practice and it continues to be impacted by the pandemic, you may want to negotiate an early extension of your lease — many landlords are prepared to offer free or reduced rent now in exchange for the longer-term commitment.

6. Talk with other tenants in the building.

Before getting into lease renewal negotiations with your landlord talk to your neigbours. You can gather information from other tenants who may tell you whether they plan to stay or move, if their rent just went up or down, or how the landlord handled their renewal. Remember, the landlord knows what every tenant in the building is paying for rent — you need to gather similar intel yourself.

7. Shop around.

Even if you don't plan to move it pays to shop around; make the landlord earn or re-earn your renewal tenancy by getting proposals from other properties. Don't hand your renewal over to your landlord on a silver platter — make them bid to keep you. After all it's expensive for the landlord to replace a tenant and often more cost-effective to keep you, even at a rent reduction.

8. Let the landlord make the first offer.

It's much easier to negotiate when you see the business terms on paper. Let the landlord make the first renewal proposal, so you are in a position to counter-offer. If you make the first proposal it looks like you are pursuing the landlord — we want the landlord to pursue the tenant (after all you are their customer.)

9. Ask for justification.

Question the landlord: why do they need a rent increase or why is the rent not going down in the times we are in? Introduce some of the insights you have gathered. Use relocation opportunities for leverage in your discussion. Rarely are all tenants paying the same rent per square foot. If the landlord says they can't lower your rent, the question then becomes "can't" or "won't?"

10. Don't focus just on the rent.

We recently finished negotiating a lease renewal rent reduction for a tenant, plus we got the tenant four months of free rent (on top of the landlord's participation in the Canada Emergency Commercial Rent Assistance program) to help with renovations to the space and to help offset the reduced production for the last few months and anticipated reduction in the coming months. Frequently we can get a renewal tenant an allowance as well, plus their deposit back and removal of personal guaranties. It's all negotiable.

Jeff Grandfield, a commercial lease consultant, negotiates new leases and renewals for healthcare tenants, working exclusively for tenants. He and Dale Willerton are professional speakers and co-authors of Negotiating Commercial Leases & Renewals for Dummies *(Wiley, 2013). For more information visit www.TheLeaseCoach.com. They can be reached at 1-800-738-9202; JeffGrandfield@TheLeaseCoach.com or DaleWillerton@TheLeaseCoach.com.*

Rita Li
CFA CFP MBA

Retirement and Your Investments: How to Navigate Through Uncertainties

The first half of 2020 has been a turbulent time in the economy and the markets. We have had the biggest single-day drops, and subsequently the biggest market rallies since the Great Depression.

During this time, you may have made adjustments to your portfolio; some have trimmed their investments or got out of the markets all together, while others stayed the course or have made adjustments to their overall asset allocation. With the benefit of hindsight, there should be two key takeaways.

One is timing the market — not something most people should attempt to do, professional or otherwise, given most cannot do so profitability.

Second is the importance of finding the right asset mix. This is not to say you shouldn't make adjustments in response to economic realities, but it is important to not overreact to positive or negative headlines.

Source: https://www.fidelity.com/viewpoints/investing-ideas/six-tips

Making sense of the recent market developments

Markets have dropped 30 per cent but, as of June, have rallied back almost to the previous highs in a span of three months. Does this mean we are out of the woods?

Since the March lows, markets have staged an impressive rally. Many investors are confounded given the real economy has just begun on the path to recovery.

There are three key factors we need to look out for to determine market recovery.

First, it is important to monitor for new cases of Covid-19 as the economy reopens. Governments and businesses need to have confidence that the pandemic will be contained as they resume business operations. The experts leading vaccine research still put the timeline for a vaccine to between 12 and 16 months.

Secondly, it is important to take the temperature of the real economy. As the economy reopens, I expect the pressure of rising unemployment to alleviate and for consumer spending to increase. However, most economists project the earliest timeframe for us to return to the pre-crisis level is at the end of 2022.

Lastly, how much of the recession has been priced-in in the current markets? The recent market rally is based on the expectation of a strong "V" shaped recovery. Therefore, there could be a further downside if the economic damage is more prolonged than currently anticipated.

Unsure about how your portfolio is positioned? Here are a few considerations:

Investors who have invested over the long term through multiple market cycles understand the importance of staying invested and navigating through the challenges. The post Covid-19 world may not be the same as the one we knew, but a new normal will be re-established along with new innovations and opportunities.

As we start to appreciate some of the long-term impacts of the pandemic, white papers such as RBC's *8 Ways COVID Will Transform the Economy and Disrupt Every Business*, by former journalist John Stackhouse, will pave the way for long-term investment by providing insight into which sectors will thrive more than others.

Carefully examine how your investments performed since the beginning of the year, and make sure you are comfortable with the ups and downs you observe in your own portfolio. If you are not certain about how much market exposure you are taking on, be proactive and ask your advisor about your overall asset allocation.

Rita Li works with health-care professionals to provide investment advice, risk management and financial planning. With more than 10 years' experience at top investment firms in Canada and abroad, Rita is a Chartered Financial Analyst (CFA) and Certified Financial Planner (CFP); she has an MBA from Richard Ivey School of Business, Western.

Bernard Dolansky
BA DDS MSc

Bill Henderson

Now Is Not the End

Winston Churchill famously said, "Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

As Ontario's dentists emerge from the virtual lockdown that the COVID-19 pandemic has imposed, these words seem appropriate. They were spoken during an uncertain time. Similarly, we too are entering a period of uncertainty, where many questions are posed about what dentistry's future may look like.

Private practice, fee-for-service dentistry, is the oral health-care delivery system for the great majority of Canadians, so the economic health of dental practitioners is a fundamental requirement for this system to function well. Further, for practice owners, and dentists who wish to become practice owners, a good deal of their retirement planning is dependent on the value of their practice.

As we enter into this interim period of dentists easing back into practise, our broad-based approach to deal with valuation questions is to acknowledge that we will be moving from an "interim period" of uncertainty towards what will become a "new normal" at some point in the future.

We're now at the front end of this interim period, ahead of whatever the new normal is. While our May 31 regulatory guidelines have helped, there are still uncertainties regarding other regulatory authorities, local public-health agencies, the potential for further changes to regulatory guidance, and staff and patient concerns. Purchaser confidence is starting to build, but still has a long way to go. Earnings (net profit or cash flow) are definitely lower, and will take time to recover, both because of limitations on revenue and increases in costs.

In the present dental practice sales market, most buyers and banks measure dental practice values in terms of earnings or net cash flow. A simple formula for earnings is:

> Revenue — Adjusted Costs (including dentist compensation) = Earnings

Before March 16, the great majority of Ontario practices were selling for five to seven times earnings (the multiple), with outliers above and below that amount. At the time of writing this article, regulatory guidance on infection prevention and control was just released, and we can safely assume that there will be real impacts on both revenues and costs.

Figures 1 and 2 divide some of the factors that affect dental practice values into the short-term period and the new normal.

Figure 1.
Factors that will impact revenue during the interim period.

Factors influencing the short-term or interim period

Let's examine the factors that will impact revenue during the short term:

- Required fallow times between patients after aerosol-generating procedures will limit productivity;
- Patient screening and patient management in the office place constraints on patient scheduling;
- Some patients, particularly the elderly, will be concerned about returning for care.

This could well be offset by:

- The thousands of dental appointments that were cancelled, resulting in a backlog of cases, some requiring more complex treatment due to delays;
- Aerosol avoidance may result in more hand-scaling hygiene units being required.

Historically, economic recessions have had little to no effect on dental revenues, so we believe that is a neutral factor.

The interim-period factors that affect costs are:

- In addition to increased needs for PPE, significantly inflated prices for PPE will persist for a while;
- Increased staff costs for patient flow management, fallow times and cleaning.

In a free-market environment, supply and demand are the ultimate determinants of any asset; the supply/demand equation has been a key underpinning of the pre-COVID rise in dental-practice prices. During the interim period, one factor that will affect the supply of practices for sale is:

- Dentists who are fed up and/or concerned about personal health risks and want to get out of ownership, possibly increasing supply.

We believe this will be offset by:

- More sellers sitting on the sidelines until they can once again sell their practices for a strong price;
- Stock market volatility delaying retirement plans, which is what happened after the 2008-09 Great Recession.

On the demand side we can expect:

- Some buyers sitting on the sidelines, taking a wait-and-see stance;
- Banks staying in the game, but being more cautious;
- Although dental practice aggregators seldom paid the highest amount for practices, they did provide a good floor for pricing and they will still be buying; however, their cost of capital is greater than the individual buyer and they too are susceptible to uncertainty, so they will be looking to pay less.

This is offset by:

- Interest rates are at all time lows, driving up demand;
- Associates being negatively affected by closures and slow-downs, so more are seeking ownership as a means for controlling their own destiny;
- The oversupply of dentists, which has been building for several years, will continue to produce more buyers than sellers.

Overall, the interim period is probably going to see lower earnings and lower multiples, and therefore lower prices. As we work our way through this period, advances in science as well as greater clarity from regulators and public-health authorities will lower uncertainty, giving buyers greater confidence. That will have prices trend back up towards pre-COVID levels as time goes by.

What might the new normal look like?

The probable revenue impacts are:

- Examining methods to capture the now higher PPE costs and, possibly, productivity reductions given limitations on operatory scheduling;
- There will continue to be catch up on delayed treatments including a need for more complex treatment due to delays.

These may be moderated by:

- Somewhat reduced productivity, which translates into higher staff costs relative to revenue, for as long as operatory fallow times remain in effect.

Overall the new normal could result in a return back to previous earning levels. There is some risk of lower earnings if IPAC-related cost increases are not fully recovered, but we believe this will not result in significant earnings declines. Consider this: even if earnings returned only to 95 per cent of pre-COVID levels, if a buyer is paying a six-times-earnings multiple for the practice and if an owner holds on to the practice just six extra months before selling, they have earned more than enough to offset the reduction in purchase price.

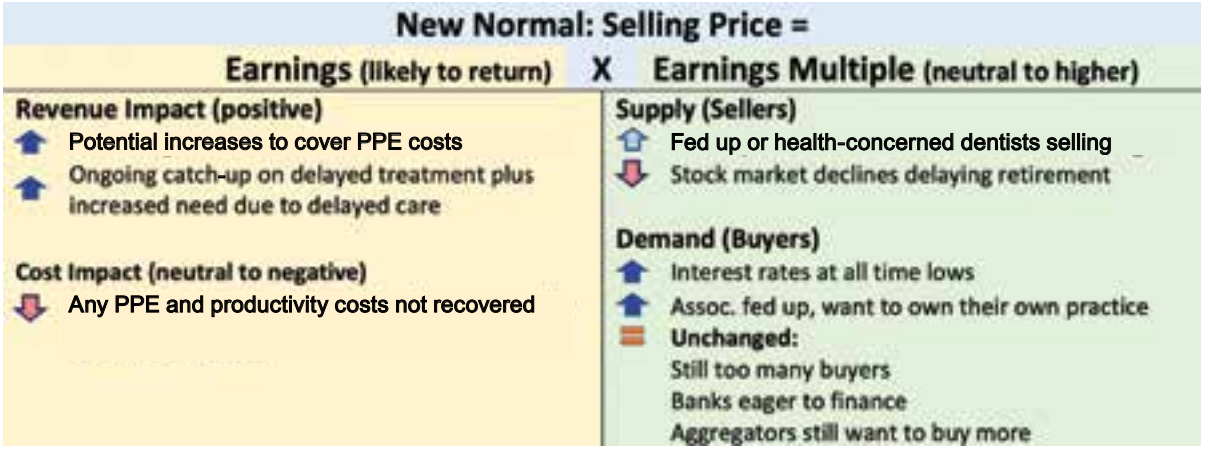

Figure 2.
Factors at play in the new normal.

Possible supply side (seller) impacts are:
- More fed-up dentists wanting to sell.

Balanced by:
- Dentists who have had their retirement plans delayed.

On the demand side (buyers), most of the same factors from the interim period will still be present:
- Interest rates will likely remain near all-time lows with the trend downwards, and low rates drive demand;
- Associates have been negatively affected by closures and slow-downs, so more of them will be seeking ownership as a means for controlling their own destiny;
- The oversupply of dentists, which has been building for many years, will continue to produce more buyers than sellers;
- Banks will continue to see dentists as prime clients for credit;
- Aggregators will still be buying.

While the earnings picture is uncertain for the so-called new normal, there are very strong indicators that multiples will return to pre-COVID levels and may even increase.

Week by week and month by month, the science around COVID-19 will get clearer; the practical in-office experience of a return to treatment here and around the world will grow; and along with that, uncertainty will wane as confidence and earnings start back up. It is therefore reassuring to recognize the known factors indicating that a dentist's most important asset still maintains good value now, and will increase value in the future.

Dr. Bernard Dolansky is Past President of the ODA, the Ottawa Dental Society, the CDA, and the Dentistry Canada Fund. He is currently a partner at Tier Three Brokerage Ltd., and assists dentists with transition planning, practice purchase and sale, evaluations, associateships, retirement planning and partnership arrangements. You may reach him at bernie.dolansky@tierthree.ca or 613-794-1977.

Bill Henderson is the President of Tier Three Brokerage Ltd., one of Ontario's leading dental practice brokerages. A recognised industry expert in dental practice valuations and sales, Bill is a regular presenter for the ODA as well as other industry organisations. He may be contacted at bill.henderson@tierthree.ca, or 416-578-7061.

There is Strength in Numbers — and Advocacy

How your ODA committees are working for you during COVID-19

ODA Members have heard a great deal about the activities of the Return-to-Practice Working Group, chaired by ODA Past President **Dr. David Stevenson** (Rideau) over the past few months. The group has carried out numerous member surveys, regular outreach to regulatory authorities and the media and, perhaps most importantly, delivered the centrepiece of the ODA's member benefits during the pandemic — the Return-to-Practice Toolkit — which is being updated regularly and is available on the ODA member website at oda.ca/member.

Your association has been doing much more as well. Throughout the COVID-19 pandemic, the ODA's network of hundreds of volunteer dentists have been working for you — their colleagues throughout Ontario — to support your needs during practice closures, return to practice, and now into the recovery phase. The ODA has been informing members via regular weekly emails, our member website, and presentations at the virtual ASM20 (see section on Education Advisory Committee) about the issues we are dealing with on your behalf, the important progress that has been made as we navigate the new normal for dental practice, and how the ODA is working to sustain the association to continue to serve you in the future. Here are some highlights about how committees have been working behind the scenes to support you since March.

Audit, Finance and Risk Committee, chaired by **Dr. Maneesh Jain** (Waterloo -Wellington) until May 2020; chaired by **Dr. David Brown** (York) starting June 2020

This Board committee has done a comprehensive assessment of the ODA's financial resources and obligations, forecasting cash flow for the coming year and reviewing financial forecasts on a multi-year basis. AFRC has overseen a process in which the ODA has identified measures to preserve ODA financial resources. It has explored bank financing options and applied for government subsidies that have helped the association continue to serve members during this uncertain financial time. It has worked with the Board of Directors to establish a delayed membership renewal, a nine-month deferred payment plan, to help members who are facing financial challenges while ensuring the ODA can be there for members when they need support the most. The committee is guided by an overriding principle — ODA money is member money.

Governance and Nominating Committee, chaired by **Dr. Lesli Hapak** (Essex) until May 2020; chaired by **Dr. Charles Frank** (Essex) starting June 2020

During the pandemic, this Board committee's focus has been on adjusting the ODA's governance systems to accommodate the emergency orders issued by the province. A virtual meeting of General Council was held on May 1st, where Councillors approved an extension to the terms of the current Board members and the Chair of Council, whose terms would have otherwise expired on May 31st. Councillors also decided to adjourn the Council meeting until it is safe to hold an in-person meeting, or until a technology platform is found and tested to enable an electronic or virtual meeting, at which time the Chair and Board elections can be held in an effective, secure manner. Elections to advisory committees have also been postponed, and current committee members have been asked to extend their service.

Economics Advisory Committee, chaired by **Dr. Larry Watral** (Thunder Bay)

This committee has reviewed the major financial implications of the pandemic to practices and patients. Its most recent work centred on adding new codes to the *ODA Suggested Fee Guide* to help dentists who were performing teledentistry services and who need to capture the costs for additional PPE requirements due to the pandemic. The committee is also adjusting the approach to the annual economic survey to identify the effects on practice costs and patient demand, and how these will inform the *ODA Suggested Fee Guide* for 2021.

Education Advisory Committee, chaired by **Dr. Shawn Steele** (Oxford)

The ODA's vast library of online continuing education (CE) resources, including numerous Category 1 (core) courses, has been made free to all ODA members for a limited time. As well, in less than nine weeks, the committee moved from cancelling the Annual Spring Meeting (ASM), one of North America's largest conferences, to embarking on a virtual conference for the first time in the ODA's history. Visit asm.oda.ca today to register, and you can earn up to 28 Category 2 and 3 CE credits for free, online, at Virtual ASM20. Available to you and your dental team for a limited time, the event includes a mix of pre-recorded clinical, practice management and wellness sessions. Explore a variety of COVID-19 topics, including our panel discussion on returning to practice, new IPAC protocols, and office cybersecurity. More sessions will be added in the coming weeks.

Health Policy and Government Relations Advisory Committee, chaired by **Dr. Janet Leith** (Ottawa)

The committee has been directly supporting the ODA's return-to-practice initiative. It has reviewed clinical standards and regulatory and legislative policy guidance, and noted members' concerns to inform conversations with various government and regulatory bodies, including the Royal College of Dental Surgeons of Ontario (RCDSO) and the Ministry of Health. This committee aids in the development of many ODA practice-management and clinical resources that members can implement in their practices.

Membership Services and Programs Advisory Committee, chaired by **Dr. Jonathan Mahn** (Brant)

In April, the committee introduced a revised Oral Health Month social media campaign to educate the public on accessing emergency dental care, suspension of routine care, home oral hygiene, and how dentists are helping the health-care system respond to COVID-19. For the summer, the committee is rolling out a new public campaign that talks about how dentists are working hard to keep their offices safe for patients and staff, what patients can expect in the dental practice, and what patients can do to be partners in everyone's safety.

The committee has also worked extensively to help make supplies available to dentists, particularly personal protective equipment. The ODA Supply Hub has become an important source for members to access PPE. As well, through the Return-to-Practice Working Group, the ODA has created a new partnership with SteriPro as another channel to help members access urgently needed PPE.

Community Services Committee, chaired by **Dr. Sanjukta Mohanta** (Halton-Peel)

The dental profession remains concerned about the impact of the COVID-19 pandemic on Ontarians who rely on social assistance programs, such as Healthy Smiles Ontario and the Ontario Disability Support Program/Ontario Works. This committee has directly engaged the Chief Medical Officer of Health to outline many challenges that will further limit the capacity of dentists to treat the backlog of patients.

Component Society Committee, chaired by **Dr. Drew Smith** (London)

Component society volunteer leaders have supported our members locally throughout the pandemic. To help the ODA better help our local leaders, the committee has surveyed societies to learn their plans and how we can support them. Component societies are often sustained by their events, which cannot be held at this time, so they are finding other ways, via online platforms, for example, to provide that vital networking and social link that colleagues need. The annual Component Society Leadership Summit (CSLS) will also be moved to a virtual format. The CSLS brings together society volunteers to provide leadership training and allow volunteers to see what their colleagues across the province are doing to engage members locally.

Hospital Services Committee, chaired by **Dr. Joe Armstrong** (London)

This committee is dedicated to dentists who work in hospitals and is attuned to specific member needs in these settings. The committee has achieved important wins with its advocacy to the Ministry of Health. By talking about the importance of hospital-based dentists, the committee has helped ensure the Ministry treats dentists like their medical colleagues in these settings, and

considers all member dentists as essential partners in the response to COVID-19. The committee has achieved income stabilization support, and is working on the acceptance of virtual dental care to prevent unnecessary visits to hospitals, and has asked for better planning for redeployment of dentists during emergency situations.

Indigenous Oral Health Committee, chaired by **Dr. Rick Caldwell** (Temiskaming)

The ODA's endeavour to ensure safe and continued access to care for Indigenous Peoples in the Sioux Lookout Zone and Weeneebayko Area has been led by this relatively new committee. Throughout the pandemic, the association's Remote Areas Program has continued at a reduced level, and through tele-dentistry. The committee is now planning for the gradual resumption of in-person care for individuals who have significant challenges accessing dental care.

Insurance Committee, chaired by **Dr. Dennis Medland** (Halton-Peel)

To assist members who are facing financial challenges, the 2020/21 ODA Extended Health Care Insurance plan premiums have been frozen for members, their families and their staff. The ODA is also providing a one-month premium holiday on the first EHC invoice of the plan year.

Political Action Committee, chaired by **Dr. Don Friedlander** (Ottawa)

During this ever-changing time, this group has led the development of our messages to the government, strategizing about how best to engage government during the recovery phase of the pandemic. The committee oversees our Political Contact Dentist network and is helping lead our local volunteers in their important role in telling government what we need to ensure safe, sustainable access to care.

ODA CE
Continuing Education Program

ODA Continuing Education Calendar 2020

The ODA Continuing Education program provides a variety of resourceful and informative learning opportunities designed to educate dental health professionals about the ever-evolving profession. For more information, or to register for our events, please visit the Continuing Education page on the Member Website.

Questions: Contact Richard Pita, Program Co-ordinator at rpita@oda.ca.

UPCOMING LIVE EVENTS

LIVE SEMINARS

- **Ottawa: The Benefits of Immediate Protocols for the Partially and Completely Edentulous Patients (AM) & Implant Prosthodontic Treatment Solutions for Completely Edentulous Patients and Patients with a Terminal Dentition (PM)**
  Date: Friday November 6, 2020 | 9:00 am – 4:00 pm
  CE Points: 6 Points, Category 2
  Speaker: Dr. John Zarb

- **Windsor: CSI 2 — Office Implementation of Compliance, Safety & Inspections**
  Date: Friday November 13, 2020 | 9:00 am — 4:00 pm
  CE Points: 6 Points, Category 1 (Core)
  Speaker: Dr. Blake Clemes

- **GTA: CSI 1 — Compliance, Safety, Inspections — Can Your Practice Survive?**
  Date: Friday December 4, 2020 | 9:00 am — 4:00 pm
  CE Points: 6 Points, Category 1 (Core)
  Speaker: Dr. Blake Clemes

* Note: The locations for the CSI1 and CSI2 seminars have changed from the locations listed in the previous CE Calendars.

All seminars and in-person event dates are subject to change.

LIVE CONFERENCE

An innovative CE and networking program designed exclusively for dentists in practice for 10 years or less.

- *** Cancelled - Toronto: New Dentist Symposium**
  Date: Saturday, September 26, 2020 | 8:00 am — 7:00 pm
  Sunday, September 27, 2020 | 8:00 am — 2:30 pm

E-LEARNING PROGRAM

E-LEARNING — CATEGORY 1 (CORE)

The following innovative self-paced e-learning programs are available exclusively to ODA Dentists. Experience e-learning at your own pace 24/7 from home, work or while vacationing and earn CE points.

- **Dentistry's Role in Abuse Recognition and Domestic Violence Prevention**
  CE Points: 3 Points, Category 1 (Core)

- **The ODA Suggested Fee Guide and Dental Plans: Best Practices**
  CE Points: 3 Points, Category 1 (Core)

- **Informed Consent: A Guide to Understanding the Consent Process in the Dental Office**
  CE Points: 15 points, Category 1 (Core)

AVAILABLE ON DEMAND

RECORDED WEBINARS

The following webinars have been recorded and archived and are available on-demand exclusively to ODA members. Earn 1 CE point in Category 1 or 2 per webinar from the convenience of your home or office.

CATEGORY 1 (CORE)

- **Oral Manifestations and Management of Patients with Immunosuppression and Autoimmune Diseases**
  Presented by Dr. Allan Hovan

- **Evaluation of a Suspicious Oral Lesion: A Guide to Early Detection of Oral Premalignant and Malignant Disease**
  Presented by Dr. Allan Hovan

- **Dental Management of Patients with Endocrine Disorders**
  Presented by Dr. Aviv Ouanounou

- **Clinical Pharmacology and the Geriatric Dental Patient**
  Presented by Dr. Aviv Ouanounou

- **Peri-Operative Management of the Oral Surgery Patient**
  Presented by Dr. Keyvan Abbaszadeh
- **Sexually Transmitted Disease and Dentistry: HPV and Oropharyngeal Cancers**
  Presented by Dr. Deborah Saunders
- **Oral Care for the Medically Compromised Patient**
  Presented by Dr. Deborah Saunders
- **Anti-Infectives in the Dental Office: What's New?**
  Presented by Dr. Aviv Ouanounou
- **Pharmacology for the Dental Practitioner: An Overview**
  Presented by Dr. Aviv Ouanounou
- **Managing Opioids with Acute Pain Patients**
  Presented by Dr. David Mock
- **Local Anaesthesia Related Emergencies In The Dental Office**
  Presented by Dr. David Isen
- **Cardiac Emergencies In The Dental Office**
  Presented by Dr. David Isen
- **Oral Cancer: Pathways to Diagnosis**
  Presented by Dr. David Clark
- **Oral Cancer: The New Face of HPV and Oropharyngeal Cancer**
  Presented by Dr. David Clark
- **What's in Your Toolbox? Part 1: Making the Most of Your Diagnostic Tools in Oral Radiology, Oral Medicine and Oral Pathology:**
  Presented by Dr. Kristina Perschbacher and Dr. Susanne Perschbacher
- **What's in Your Toolbox? Part 2: Making the Most of Your Diagnostic Tools in Oral Radiology, Oral Medicine and Oral Pathology:**
  Presented by Dr. Kristina Perschbacher and Dr. Susanne Perschbacher
- **Diagnosis and Management of Orofacial Pain**
  Presented by Dr. Howard Tenenbaum
- **Oral Care for the Elderly Patient — A Collaborative Approach**
  Presented by Dr. David Clark
- **Management of Non-Responsive Periodontitis**
  Presented by Dr. Howard Tenenbaum

CATEGORY 2

- **Complications in Implant Surgery**
  Presented by Dr. Keyvan Abbaszadeh
- **Endodontics for General Dentists Part 1: Advanced, Comprehensive and Practical Training**
  Presented by Dr. Manor Haas
- **Endodontics for General Dentists Part 2: Advanced, Comprehensive and Practical Training**
  Presented by Dr. Manor Haas
- **Breakthrough Shaping and Cleaning of the Root Canal System**
  Presented by Dr. Gary Glassman
- **Innovations in Endodontic Obturation and the Restoration of the Endodontically Treated Tooth**
  Presented by Dr. Gary Glassman

VIDEOCASTS AND PODCASTS

VIDEOCASTS

The ODA has teamed up with the Canadian Dental Association (CDA) to offer members new practice management video resources. These short videos consist of conversations with experts on a variety of practice management topics sorted by category:

- **Communication**
- **Ethics and Jurisprudence**
- **Finance**
- **General Practice Management**
- **IT/Security**
- **Work/Life Balance**

PODCASTS

Visit the ODA's podcast page to access a collection of audio recordings covering the categories below:

- **New Dentist Podcast Series**
- **Female Dentist Podcast Series**
- **Transitioning Dentist Podcast Series**

The ODA regrets the passing of:

Dr. David Clay Sugden, on March 26, 2020, at the age of 89. Dr. Sugden began his career as an aeronautical engineer at Avro Canada before deciding to become a dentist. He graduated from the University of Toronto's Faculty of Dentistry in 1963, and practised as a general practitioner in Guelph for more than 40 years. Dr. Sugden belonged to the Durham Ontario Dental Society. He will be remembered for his love of classical music and a lifelong love of model airplanes. Dr. Sugden is survived by his wife, June, children Kevin and Carolyn, and three grandchildren.

Dr. Bruce E. Aris, on April 2, 2020, at the age of 85. Born in Port Arthur (now Thunder Bay), Dr. Aris graduated from the University of Toronto's Faculty of Dentistry in 1959. He practised in Thunder Bay as a general practitioner for more than 50 years and belonged to the Thunder Bay Dental Association. In 2011, he received a Distinguished Service Award from the Thunder Bay Dental Association for outstanding service to the profession and to the community. Dr. Aris is survived by his sister Marilyn, wife Margaret, children Shawn, Douglas and Shelly, and seven grandchildren.

Dr. Jack Walter Halip, on April 7, 2020, at the age of 77. Dr. Halip graduated from the University of Toronto's Faculty of Dentistry in 1965 and practised as an oral and maxillofacial radiologist. He belonged to the London & District Dental Society. Dr. Halip is survived by his wife, Jacqueline.

Dr. Frederick C. Buschlen, on April 13, 2020, at the age of 95. He graduated from McGill University's Faculty of Dentistry in 1957 as a general practitioner and began his dental career with the Canadian Armed Forces Dental Corps peacekeeping operation in the Middle East. Following his tour of duty, he began practising dentistry in Arnprior and later moved to Ottawa, where he practised for more than 30 years. Upon Dr. Fred Buschlen's retirement, his son Dr. Donald Buschlen took over the practice. He belonged to the Ottawa Dental Society. Dr. Buschlen is survived by his wife Anna, children Donald, Eric and Eleanor, and four grandchildren.

Dr. Joseph S. Pritchard, on May 27, 2020. Dr. Pritchard graduated from the University of Toronto's Faculty of Dentistry in 1960 and belonged to the Ottawa Dental Society. He is survived by his wife, Sheena.

Dr. S. William "Mickey" Grossman, on June 12, 2020. Dr. Grossman graduated from the University of Toronto's Faculty of Dentistry in 1958 and practised as a general practitioner. He belonged to the Toronto Central Dental Society. He is survived by his wife, Linda, children Perri-Anne, Michelle and Heather, and three grandchildren.

Tribute

Dr. Donald Beauprie

February 16, 1930 – April 24, 2020

Donald Beauprie was born on February 16, 1930, in Montreal, to Lennox and Ruth (née Howell) Beauprie. A graduate of McGill University (Dentistry '56) he practised preventative dentistry for 39 years. Passionate about photography and the outdoors and endlessly curious about the world around him, Dad surprised us all by writing *Destination Algonquin Park: Tracks to Cache Lake and the Highland Inn*, a book that distilled decades of research into the history of Algonquin Park.

Predeceased by his wife of 56 years, Jean (MacGregor) Beauprie, he is survived by his children Rod (Liz Stanich), Ian (Grainne Neilson) and Laura (Klaus Kollenberg). He will be missed by his grandchildren Alistair, Ross, Colin, Stefan and Anna.

Over the last two years, Dad received compassionate and knowledgeable care from Dr. McVey, Dr. Ong, Dr. Choan, Dr. Saar, Dr. Naik and their teams. Special thanks to Claire Steer whose support allowed him to live in his own home until recently; and Ken and Millie Walters for companionship on many trips to Pembroke and Ottawa for medical appointments. OD

Submitted by Rod Beauprie

Advertiser Index

Classified Ads

General Information:
Ontario Dentist is published 10 times a year and is the best way to directly reach dentists in Ontario.

Ad Rates
All rates are in Canadian dollars. HST is applied to the total cost. Rates are per issue.

CLASSIFIED ADS	ODA Members	Non-Members
Basic line count	10 lines and under = $75	5 lines and under = $100
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For more information or to submit your ad, contact:

Catherine Solmes
Classifieds Co-ordinator
csolmes@oda.ca
Phone: 416-922-3900/
1-800-387-1393, ext. 3305

Classified ad and Marketplace ad deadlines for upcoming issues of *Ontario Dentist*:

ISSUE	DEADLINE
September 2020	CLOSED
October 2020	September 8
November 2020	October 6

Advertising Policy
All classified and Marketplace ads are subject to the approval of *Ontario Dentist's* Classifieds Co-ordinator, Managing Editor, Editor and Publisher. The ODA reserves the right to decline, withdraw or edit ads at its discretion. The publication of an ad should not be construed as an endorsement, nor an approval by, the ODA. *Ontario Dentist* assumes no responsibility or endorses any claims or representation offered or expressed by advertisers. All ads published in *Ontario Dentist* are required to comply with the Ontario Human Rights Code.

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Associate needed 4-5 days/week at three offices located in Chatham. Minimum three years practicing experience preferred. Excellent communication skills and qualification to practice in Ontario required. We offer a competitive compensation ranging from 41% to 45% of collection depending on experience. We have a progressive mindset at our offices, including digital X-rays, digital scanners. Owners open to possible mentorship. Send your résumé to rafaelgarciajr@hotmail.com.

Want to place a Classified Ad? Contact: **Catherine Solmes**
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Ontario Dentist Marketplace

Maternity Leave — Stirling, Ont.
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P/T Associate Wanted in Kingston
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