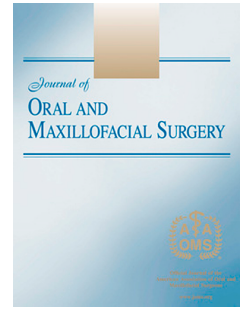




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

# Journal Pre-proof



A Pinch of Prevention is Worth a Pound of Cure: Proactive Dentistry in the Wake of COVID-19.

Steven Halepas, DMD, Elie M. Ferneini, DMD, MD, MHS, MBA, FACS

PII: S0278-2391(20)30332-3

DOI: <https://doi.org/10.1016/j.joms.2020.03.036>

Reference: YJOMS 59147

To appear in: *Journal of Oral and Maxillofacial Surgery*

Received Date: 21 March 2020

Revised Date: 25 March 2020

Accepted Date: 25 March 2020

Please cite this article as: Halepas S, Ferneini EM, A Pinch of Prevention is Worth a Pound of Cure: Proactive Dentistry in the Wake of COVID-19., *Journal of Oral and Maxillofacial Surgery* (2020), doi: <https://doi.org/10.1016/j.joms.2020.03.036>.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2020 Published by Elsevier Inc on behalf of the American Association of Oral and Maxillofacial Surgeons

A Pinch of Prevention is Worth a Pound of Cure: Proactive Dentistry in the Wake of COVID-19.

Steven Halepas, DMD (1)

Elie M. Ferneini, DMD, MD, MHS, MBA, FACS (2)

1: Resident, Department of Oral and Maxillofacial Surgery, New York Presbyterian/Columbia University Medical Center, New York, NY

2: Beau Visage Med Spa/Greater Waterbury OMS/University of Connecticut,/Quinnipiac University Cheshire, CT

\*Corresponding Author:

E. M. Ferneini, DMD, MD, MHS, MBA, FACS  
Private Practice, Greater Waterbury OMS  
Medical Director, Beau Visage Med Spa  
Associate Clinical Professor, Division of Oral and Maxillofacial Surgery  
University of Connecticut School of Dental Medicine  
Associate Clinical Professor, Department of Surgery  
Frank H Netter MD School of Medicine, Quinnipiac University  
435 Highland Avenue, Suite 100  
Cheshire, CT 06410  
Tel: (203) 272-7700  
Fax: (203) 574-2460  
eferneini@yahoo.com

## A Pinch of Prevention is Worth a Pound of Cure: Proactive Dentistry in the Wake of COVID-19.

We live in an increasingly globalized and transnational world. With modern advances in travel, humans move around today more than in any previous generation. While this has tremendous benefits in cultural and societal advancements, it also creates great liability in epidemiology as modern outbreaks have no borders and cross all levels of society, regardless of race, ethnicity or socio-economic status. The Coronavirus pandemic (COVID-19) has ushered in unprecedented times. As the average infected person spreads the disease to two or three others, its spread is exponential. A large number of healthcare workers who died in China in the early days of this disease were ENTs and ophthalmologists. This is possibly due to the high viral shed from the nasal cavity. In Wuhan, 14 people became infected after an endoscopic pituitary surgery on a single COVID-19 patient. SARS-CoV-2 has been demonstrated to remain aerosolized for 3 hours after contamination and on plastics and stainless steel for up to 72 hours. This makes the dental community a relatively high-risk population.

Pandemics inflict devastating consequences on communities and cause long-term rippling effects in the economy and the health care system. AIDS was first described as Gay Related Immunodeficiency Syndrome (GRIDS) in 1981. Young gay men began falling ill and dying of opportunistic infection and fear of the “gay plague” spread rapidly along with the social stigma. Two years later, the CDC documented heterosexual transmission of AIDS<sup>1</sup>. What was originally referred to as a “Gay virus” transformed into one of the greatest ongoing pandemics and scientific challenges of modern medicine. The AIDS pandemic resulted in acceptance of “universal precautions” that revolutionized the standard of care throughout medicine. Prior to HIV/AIDS, dentists did not commonly wear masks or eye protection. In the late 1980s and early 1990s, in an attempt to protect health care workers, OSHA and the CDC proposed guidelines to reduce exposure to bloodborne pathogens such as HIV and hepatitis B. Dentistry resisted this change at every step. Dentists argued that ‘children would be frightened of the masks.’ The ADA led a fight against OSHA’s universal precautions rule, arguing that no dentists had contracted these pathogens. In an op-ed published in the *New York Times* on November 12, 1989, Dr. Avrum Goldstein, a periodontist from New Haven, CT, expressed his opposition this way: “...these regulations will bring about changes in the dentist-patient relationship and make it more difficult to practice dentistry. By its nature, dentistry is an intimate occupation. The dentist works within an inch of a patient’s head, probing sensitive, often tender areas of the patient’s body. The mouth embodies our ability to smile, kiss, talk and eat—all very emotional qualities. Patients’ needs a warm and trusting relationship with their dentist to help overcome fears and make necessary dentistry possible. It will be more difficult to establish this relationship when the dentist is gowned, shielded, and masked. [These barriers] will have a profound effect on the relationship between the dentist and patient.” In 1991, the ADA challenged the rule in the US Court of Appeals for the Seventh Circuit and lost. In 2020, the ADA’s resistance to masks and eye protection seems preposterous, particularly given the information we have about bloodborne pathogens today.

As a species, we are reluctant to change. This is evident not only by dentistry’s resistance to adopt universal precautions, but also throughout history. The technology needed to eradicate smallpox was first described in 1798, but took nearly 180 years to execute. This strand of Coronavirus may be new, but we have seen the same societal reaction to outbreaks countless times. With fear and panic brings blame and bigotry. On March 19, 2020, the President of the United States referred to the Coronavirus as the “Chinese Virus.” Global threats require unified efforts, which is why terms such as the “Chinese Virus” are so detrimental. “Anti-Chinese hostility has been a recurrent problem, whether with plague in San Francisco in 1900, SARS in 2003, or Covid-19 today.”<sup>2</sup> AIDS was not contained in the 1980s because it was considered a gay disease. Syphilis was not eradicated with the invention of penicillin because it

was said to limit promiscuity. If we learn anything from history, it is that we must come together as a species to fight as one, or perish as individuals.

After the SARS outbreak in 2002 and 2003, the United Nations adopted the International Health Regulations in an effort to prevent and contain future outbreaks. Few countries have met their commitments. This is likely due to the cost associated with adopting these advances, as well as society's opposition to change. The cost of an economic bailout will far exceed the cost to prevent a global outbreak. The world needs a coordinated effort by a global institution with enough authority and funding to be efficient<sup>3</sup>. This is of particular interest to doctors as epidemics too often claim the lives of healthcare providers.

On March 16, the ADA said, it "is deeply concerned for the health and well-being of the public and the dental team. In order for dentistry to do its part to mitigate the spread of COVID-19, the ADA recommends dentists nationwide postpone elective procedures for the next three weeks. Concentrating on emergency dental care will allow us to care for our emergency patients and alleviate the burden that dental emergencies would place on hospital emergency departments." Are dental offices prepared to treat these potentially infected patients? If a patient is suspected to have COVID-19 and emergency dental care is indicated, it is recommended to perform the dental treatment in a negative pressure room or airborne infection isolation room.<sup>4</sup>

What will come of this pandemic? The AIDS pandemic resulted in masks, gowns, and eye protection. Samaranayake *et al.* published a retrospective review in 2004 after the peak of the SARS outbreak. It found that the SARS outbreak had a large impact on providers with some countries reporting that 25-33% of those infected were health care workers.<sup>5</sup> The study recommended preprocedural rinsing whenever possible to reduce the number of antimicrobial releases into the environment. The utilization of rubber dams can also reduce microbial aerosolization by up to 70%. Hand hygiene is still the single-most effective method of reducing transmission. Following the SARS outbreak, N95 masks are used throughout Hong Kong for routine dentistry.

Protecting the healthcare workers and patients is of utmost importance and we must focus on preventing future outbreaks. As a profession, we should explore methods of reducing transmission of all infectious agents. External mouth suction, which work like the scavenger systems in our nitrous oxide devices, are being tested for effectiveness in Korea. Commercial air purifiers and air exchange devices are also being explored for the dental setting. Creating negative pressure operatories may seem a drastic and expensive approach now, but in 40 years dentists may think we were ludicrous for working without them, just as we judge those before us who did not use gloves. This pandemic will impact the delivery of care, the question is when and how. Will dentistry accept the advances or continue our history of fighting change?

1. Green W. A History of AIDS: Looking back to see ahead. *Eur J Immunol.* 37:S94-102, 2007.
2. Jones DS. History in a Crisis- Lessons from COVID-19. *The New England Journal of Medicine.* 2020.
3. Gates B. The Next Epidemic - Lessons from Ebola. *The New England Journal of Medicine.* 372(15):1381-1384, 2015.

4. Ather A, Patel B, Ruparel N, Diogenes A, Hargreaves K. Coronavirus Disease 19: Implications for Clinical Dental Care. *Journal of Endodontics*. 46(5), 2020.
5. Samaranayake L, Peiris M. Severe acute respiratory Syndrome and dentistry: A retrospective view. *JADA*. 135, 2004.

Journal Pre-proof