

Providing Oral Health Education during COVID-19: Current Practices and Recommendations

Video Transcript

Welcome to this course, which is designed to provide dental practitioners with strategies to effectively educate patients about oral hygiene during the COVID-19 pandemic, including the use of a demonstration rechargeable electric toothbrush.

Select the forward arrow to begin.

The COVID-19 pandemic has made a profound change to how the dental professional practices. As dental professionals adapt to new infection control guidelines, they are faced with the challenges of how to continue delivering oral hygiene education, both safely and effectively. There has also been a change to how patients seek dental care and how dental professionals are adapting their processes of care.

This course explores international trends and issues on delivering oral hygiene education during the pandemic and discusses the benefits of using a rechargeable electric toothbrush to enable patients in their self-care.

Select the forward arrow to get started.

The beginning of 2020 marked an historic year as the COVID-19 pandemic brought the world to a standstill. Dental practices temporarily closed to stop the transmission of the virus. For the next several months, dental professionals were unsure when their practices would reopen and if patients would return.

This marked a turning point for the profession of dentistry.

According to international researchers, four main concerns were discovered among oral health care workers. How would you classify your concerns as the pandemic hit?

[after viewing each]

Select the other concerns to hear more.

[after viewing all]

Select the forward arrow to move on.

[Economic]

Dental business owners were concerned about financial loss, economic repercussions, economic aid from the government, and the additional costs for infection control. A UK report found that 78% of dental business owners reported a decrease in current income, 80% expected to make changes to their business models to mitigate financial effects of COVID-19, and 63% expected income to decrease over the next 12 months.

According to researchers, almost half of US adults reported delaying dental care due to the COVID-19 pandemic in the early phases and weekly visits to US dental offices declined drastically during this period.

By June 2020, weekly visits rebounded substantially, while office visits remained about 20% lower than the prior year as of August 2020. Due to widespread variation in rates of declining visits during the pandemic, dental practices needed to consider different approaches to reopening and encouraging patients to return. These findings highlight the

economic challenges faced by dental practices as a result of the pandemic.

[Ethical]

Oral healthcare workers reported concerns about patient privacy, technology, providing emergency care, and international regulations.

[Social]

As the pandemic spread, oral healthcare workers owners were concerned about a lack of adequate digital literacy within the population, high perceived distress and the need to be prepared, feelings of anxiety and fear, as well as the general mental wellness of coworkers.

[Professional]

Professional concerns were common, with oral healthcare workers mindful of the pandemic's immediate impact on dental healthcare as well as on dental professionals of the future. There were also concerns about managing patients with special needs, medico-legal issues, hardships in rebuilding practices, and moral vs evidence-based decision making.

As dental practices began to reopen, respective global health agencies released new infection control guidelines indicating how they could safely operate.

The increasing complexity of guidelines and regulations presents significant challenges to ensure clinicians are doing the right thing to protect their patients and teams.

According to the United States' National Institute for Occupational Safety and Health (the NIOSH), the Hierarchy of Controls demonstrates that the prevalent use of lower-level controls in responding to COVID-19, highlights the importance of using this framework for a holistic approach to health and safety in the workplace.

A recent comparative analysis of guidance on COVID-19 management in dentistry issued by different agencies was undertaken by the College of Dentistry at New York University and the Geneva Graduate Institute for Policy Studies in Switzerland, revealing 5 distinct fields of pandemic management.

The study resulted in the development of the "Pandemic-5 Framework for COVID-19 Control in Dentistry," which proposes a flow of comprehensive decision-making aimed at practicing clinicians. The framework supports a systematic approach for dental clinics to design and implement appropriate infection control protocols that respond to the needs of clinical practice during a pandemic.

Although the Hierarchy of Controls indicates that personal protective equipment (or PPE) is the least effective field of pandemic management, it remains one of the most critical safety measures within dentistry.

Consider how the "Pandemic 5 framework" associates with the "hierarchy of controls" and the CDC's precautions. Select each of the 5 controls in blue to see the relationships.

Now consider for a moment the protective measures you have implemented. Which of these did your practice introduce?

[Feedback - any answer] These are just some examples of protective measures that were implemented nationally and internationally.

Researchers recommend that dental professionals check with their national and local health care agencies on best safety practice to reduce the risk of COVID-19 transmission. Since this pandemic is continuously evolving, the dental practice guidelines listed above may change with new variants.

Delayed dental care was a major concern for dental practitioners as practices reopened. Several factors were attributed to this, such as the reluctance to seek care due to the pandemic and the loss of employer-sponsored dental insurance coverage.

What percentage of adults do you think neglected their oral health during lock down?

[Feedback]

A 2020 survey by the Oral Health Foundation in the UK revealed that 55% of British adults feel they have neglected their teeth during lock

down, while 1-in-6 admitted to not brushing their teeth as much as before.

The closure of dental practices has led patients to seek care in emergency rooms or via remote consultations and teledentistry, leading to short-term care until definitive treatment was provided.

This lack of access can lead to untreated tooth decay or infections such as gingivitis and/or periodontitis.

In fact, a recent study shows that a periodontitis-like microbiome dysbiosis can occur as soon as 24 to 72 hours after pausing oral hygiene.

You can learn more about the impacts of the pandemic on dentistry and oral health by selecting the button shown.

[Impacts]

The pandemic led to increased oral health neglect, reduced patient volume, and increased demand for preventive care. Select each to read more.

One survey undertaken in the UK in September 2020, after the first lockdown, indicated that over the next twelve months, a large proportion of oral healthcare workers expected a wide range of adverse effects on the delivery of the services. Now, try to remember what you were expecting for the coming 12 months as you came out of your first lock down. Which of these effects did you expect or observe?

[Feedback - 92% 'increased waiting times']

Like you, most dental professionals were expecting increased waiting lists as well as a likely increase in the provision of emergency care.

[Feedback - 82% 'declines in health', 81% 'reduction in access']

Your concern was frequently seen. Dental professionals expected declines in oral health status and a reduction in access for oral health care. Most commonly, dental professionals just coming out of lock down expected increased waiting lists and emergency care. One survey undertaken in the UK in September 2020,

indicated that over the next twelve months a significant proportion of dental professionals expected a wide range of adverse effects on the delivery of services.

[Feedback - 51 'extremely vulnerable', 48 'unable to afford']

Your concerns were shared by others. Most commonly, dental professionals just coming out of lock down expected increased waiting lists and emergency care. One survey undertaken in the UK in September 2020, indicated that over the next twelve months a significant proportion of dental professionals expected a wide range of adverse effects on the delivery of services.

As oral health professionals began to modify their clinical process of care, they found that they needed more time to clean and disinfect their work areas after patient treatment.

During the start of the pandemic, U.S. clinicians waited fifteen minutes at the conclusion of the dental treatment to allow aerosol particles to settle on the surface in order for the disinfection process to take place.¹¹ As a result of this new infection control protocol, there was less time to provide oral hygiene education during the appointment.

In addition to these time limitations, the clinician was faced with the challenge of talking to the patient with a face mask respirator and a face shield. Vocal transmission was muffled with the additional PPE causing hearing issues between the clinician and the patient. Clinicians have since found unique alternatives to compensate for these challenges to educating patients in oral hygiene education. These include online patient education videos, online written patient education and oral hygiene applications.

We know that masks and visors might make communication with your patients more difficult. Thinking about this, which approaches to providing oral hygiene advice to patients do you feel can be most effective to help overcome this challenge?

[FEEDBACK]

Research indicates that there is insufficient evidence in recommending any specific method of one-to-one oral hygiene education as being

more effective than another in maintaining or improving oral health.

Several different psychological interventions-based on social cognitive theories, behavioral principles and motivational interviewing- have been investigated to improve oral health instruction compliance in patients with periodontal diseases. The available evidence has not demonstrated that these interventions have improved the patient's oral hygiene ability to reduce their plaque and bleeding scores over time. However, the consensus does indicate that clinicians must invest the time to adequately equip their patients with preventive and health promotion strategies to facilitate their compliance and achievement of desired oral health outcomes.

Several articles discuss current best approaches to oral health care that we as dental professionals can reinforce during a patient's dental visit. In what ways do you approach maintaining or improving oral health? Consider this for a moment then select each image to hear about three current practices and recommendations for global oral health.

[Mechanical]

The first is mechanical plaque removal. According to researchers, the physical removal of dental plaque using a toothbrush reduces the inflammatory response of gingivitis.

[OHI]

Second, research indicates that professional oral hygiene instruction should be provided to reduce dental plaque.

According to the Clinical Practice Guideline on "Treatment of stage I-III periodontitis", published in 2020 by the European Federation of Periodontology- oral health education (in addition to professional mechanical removal of supragingival plaque and calculus, as well as elimination of local retentive factors), is a key first step in the patient's treatment.

Oral health education includes addressing the patient's motivation and behavior changes and is ultimately aimed to ensure the patient achieves adequate self-performed oral hygiene practices.

The EFP's guidelines build on the consensus of a working group at the 11th European Workshop in Periodontology in 2014, which undertook a systematic review of the evidence for primary prevention of periodontitis by preventing gingivitis.

Two meta analyses on mechanical plaque removal and two traditional systematic reviews on chemical plaque control and anti-inflammatory agents were included in the assessment, with key findings also showing that regular oral hygiene, reinforced during professionally directed education, can improve periodontal outcomes.

[Self-care]

Third, self-care is the overall goal. The Oral Health Series, published by The Lancet in 2019 describes the extent and consequences of oral diseases, their socioeconomic determinants, and their ongoing neglect in global health policy, with the aim to highlight the urgent need to address oral diseases among other non-contagious diseases as a global health priority.

In the wider context of global oral health the importance of maintaining oral hygiene for self-care and prevention is also paramount for supporting cost effective healthcare provision. It is therefore critical that individuals empower themselves in providing protection from health risks which, in turn would benefit society as a whole.

[All viewed]

Select the forward arrow to move on.

While an individually tailored oral health educational program can more be effective for achieving proper long-term oral hygiene self-care behaviors, clinicians have identified several methods to teach oral hygiene education during the pandemic, such as online patient education videos, online written patient education materials, and oral hygiene apps.

A recent international survey of dental hygienists found that several teaching methods were found to be useful in compensating for having less time to provide oral hygiene education.

As the pandemic continues, oral health professionals agree that patients must continue to receive oral health education to enable effective self-care at home. Based on a 2020 survey for the General Dental Council, dental professionals in the UK expected demand for non-Aerosol Generating Procedures, such as Preventive Care, to increase by 45% in the next 12 months.

Professional preventive dental care is an important component of the maintenance of oral health for many individuals. During preventive visits, patients usually receive guidance on oral hygiene procedures and recommendations for their self-care at home.

So as patients return to dental practices it's worth considering what guidance we provide and how we provide it.

While the manual toothbrush is still the predominant method of teaching biofilm reduction during oral hygiene education, the benefits of using an electric rechargeable toothbrush should be considered as evidence indicates they are an effective component to a patient's oral home care regimen.

A systematic review has shown results in favour of power versus manual toothbrushes:

- There was an 11% greater reduction in plaque at one to three months of use, and
- a 21% greater reduction in plaque when assessed after three months of use.

For gingivitis, there was a 6% greater reduction at one to three months of use and an 11% greater reduction when assessed after three months of use.

Meanwhile, a recent cohort study found that electric toothbrush users presented with superior clinical outcomes versus manual brushers, with 22% lower progression of probing depth, 21% lower progression of clinical attachment loss and 20% less tooth loss over an 11-year period. Notably, these effects were on subjects with no or mild and moderate periodontitis, indicating the preventive benefits of powered toothbrush technology.

This is compelling, as clinicians are beginning to see patients that have not been in the dental practice for over a year due to a reluctance to seek routine dental care during the pandemic and who have already self-reported an increase in oral hygiene neglect.

It is therefore important for oral health professionals to be aware of the evidence that using an electric rechargeable toothbrush is an effective component to a patient's oral home care regimen.

The results of the Preventive Oral Health Covid Survey by the International Federation of Dental Hygienists, shown earlier in this course, found that 27% of 4593 respondents recommended using smart electric rechargeable toothbrushes with an instructional app as part of their oral hygiene education.

As patients return to dental practices, dental professionals can discuss and demonstrate the important oral health benefits of using an electric rechargeable toothbrush with educational tools such as the Oral-B Test Drive, which consists of a rechargeable oscillating rotating toothbrush handle adapted for intra-oral use in the dental setting, along with brush heads for individual patient demonstrations, disposable sheaths and a microbiologically validated cleaning & disinfection protocol.

The practice of dentistry and dental hygiene in the post-Covid era must include key considerations to PPE, Infection Control Regulations, Aerosol Generated Procedures & and Aerosol Generated Exposures. An aerosol-generating procedure (AGP) has been defined as a medical or dental procedure that results in the production of respirable airborne particles. More recently, the term Aerosol-Generating Exposure (AGE) has been introduced to account for the differing COVID-19 transmission risks attributable to factors such as procedure duration and the patient's medical status.

While by no means a new phenomenon in the dental setting, the pandemic has turned the definition of AGPs within the profession into a subject of considerable debate and confusion.

Currently there is no global consensus on a definitive list of AGPs.

Two key articles have looked at AGPs to review what procedures might be included in dentistry and to help the profession better understand the risks.

Select either for details.

There are three key types of transmission: droplet transmission, aerosol transmission, and infected surface transmission. Select each to learn more.

[Droplet]

Droplet transmission occurs by droplets landing in direct contact with the nose, mouth, eyes and via inhalation. The susceptible individual must be in close proximity to the source (or infected) individual for the infected droplets to make contact with the nose, mouth or eyes. For example: during coronal polishing using a slow speed handpiece.

[Aerosol]

With Aerosol transmission particles less than 5 microns in diameter can be suspended in the air for indefinite periods of time and are transported by air currents. This means that distance is not strictly correlated to probability of infection as targets that are far from the source can also be infected. For example: during ultrasonic scaling, air polishing and high speed handpiece use.

[Infected surfaces]

During Infected surface transmission, droplets-including aerosol secretions - can contaminate surfaces. Transmission can occur when coming into contact with the infected surfaces and transferring the infected material into the eyes, nose or mouth.

[Once All Read]

Based on the size and persistence of an aerosol, the World Health Organization uses a cut-off diameter of 5 microns to differentiate between airborne and droplet transmission. Click on each particle size to learn more, then select on the magnifying glass icon to learn more about Key Considerations for Droplet Travel Distance, Size and Contact with Surfaces.

While In dentistry aerosol particles have been defined less than 50 microns in diameter, the use of an electric toothbrush in clinical settings was flagged as a possible risk for aerosol particle generation.

Researchers have recently investigated the droplet sizes produced by demonstration oscillating-rotating electric toothbrushes during simulated use.

To learn more about the study, select the magnifying glass icon.

Both Oral B Genius and Oral B iO Test Drive are approved by the FDA for use in dental settings, and are equipped with microbiologically validated cleaning and disinfection protocols that meet requirements for mid- and high-level disinfection, respectively (or against most resistant Mycobacteria). The protocols are also expected to exceed disinfection requirements against less-resistant lipid or medium-size viruses, such as Coronavirus. The cleaning and disinfection protocols have undergone a process of microbiological validation to confirm their efficacy. Click on the magnifying glass to learn more.

The objective of the study was to measure liquid droplet sizes produced by the moving part of the brush head of two different demonstration oscillating-rotating electric toothbrushes when in operation. Measurement of droplet production and size was recorded in-vitro using three methods, which you can select for more detail.

The key findings of the study showed that droplet sizes for both demonstration electric rechargeable toothbrushes averaged 500 microns, which is considered splatter; no droplets smaller than 200 microns were detected; no aerosol-sized droplets were detected; 99% of the recorded droplets were larger than 0.3millimetres and had a fall time of less than 1.8seconds; and splatter generated by operator brushing was not projected to travel more than 95cm away from the location of the patient.

The study's findings confirm that both Oral B Genius and iO Test Drive electric rechargeable

toothbrushes can be safely used for patient oral health education in the dental office, without risk of aerosolization, and should be viewed as a Non-Aerosol Generating Procedure as defined by emergent particle sizes.

While the analysis was restricted to oscillating-rotating electric rechargeable toothbrushes, at the time of the assessment this was the only available technology of its kind specifically designed for in-clinic intraoral demonstration. Further investigation of alternative electric rechargeable toothbrushes is advised to confirm their safety when the technology is available to do so.

[MALVERN]

The Malvern Spraytec is a calibrated LASER particle size measurement device with the ability to detect particles between 0.1-2500 microns. For this method, the brushes were mounted on a 3D-printed, 2 shell form-fit fixture with supply of tap water.

[DUST TRACK]

The Dust Track DRX is an aerosol measurement device. For this method brushing was simulated in the oral cavity of a phantom head using test liquids including tap water, water with detergent, 70% ethanol, glycerin and toothpaste slurry. High-speed visualization was also performed using a Phantom v 12.1 High Speed Video Camera.

In this example, a clinician is providing oral hygiene education to a patient at The University of Texas Health Science Center at Houston School of Dentistry. As indicated by one international survey the use of a rechargeable electric toothbrush with an app was one method clinicians used to teach oral hygiene education to compensate for less time in the dental setting.

To see how this is incorporated, select an image here.

[1] Following a clinical assessment of the patient's oral hygiene, the clinician discusses the findings with the patient, using a hand mirror to highlight areas of concern or which require special focus during their oral hygiene routine.

[2] The clinician explains the importance of effective plaque control and brushing behaviors in order to prevent oral disease.

[3] This process can be effectively supported with the use of educational videos to bring the science to life in a relevant and relatable way for the patient.

[4] The clinician then uses the demonstration electric rechargeable toothbrush to show the patient the correct brushing technique.

[5] The patient is then asked to demonstrate the technique back to the clinician to ensure they have understood and are able to replicate the correct brushing process on their own. This is also an opportunity for the clinician to observe the patient's brushing behavior and provide guidance that is personalized to the patient's needs.

In conclusion, as the pandemic continues around the world, dental professionals need to be aware of the best approaches to oral health care, which are:

- mechanical plaque removal
- professional oral hygiene instruction
- and self-care.

It is paramount that we as dental professionals continue our efforts in promoting these three best approaches in oral health care during and as the pandemic ends.

You can review any of the topics discussed in this module by selecting one from the menu.