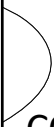


Aerosol Safety in Dentistry

The Continuing Story of
COVID-19 and Beyond

Mary Govoni, MBA, CDA, RDH

1



The Current State of the Global Pandemic

COVID-19 cases

- Surging in the U.S. in areas with low vaccination rates
- Also surging in other countries
- Delta variant is now said to be the dominant strain - 50% of cases in the U.S.

The highly transmissible B.1.617.2 (Delta) variant continues to spread across the United States at a rapid pace. Early data suggest that B.1.617.2 now makes up more than 50% of COVID-19 cases. In some parts of the country, this percentage is even higher, especially in areas with low vaccination rates. This rapid rise is concerning and threatens the progress the United States has made toward ending the pandemic.

<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html>

2

FDA Emergency Use Authorizations

FDA Revokes Emergency Use Authorizations for Non-NIOSH-Approved Disposable Respirators and Decontamination Systems as Access to FDA-authorized and NIOSH-approved N95s Increases Nationwide

On June 30, 2021, the FDA announced the revocation of the following EUAs:

- Imported, Non-NIOSH-Approved Disposable Filtering Facepiece Respirators (effective July 6, 2021)
- Non-NIOSH-Approved Disposable Filtering Facepiece Respirators Manufactured in China (effective July 6, 2021)
- Decontamination and Bioburden Reduction System EUAs for Personal Protective Equipment (effective June 30, 2021)

As of the effective date of the revocations, these devices will no longer be authorized for use by health care personnel in health care settings. For additional information, please see Update: FDA No Longer Authorizes Use of Non-NIOSH-Approved or Decontaminated Disposable Respirators - Letter to Health Care Personnel and Facilities.

Historical information regarding these EUAs can be found on Historical Information about Device Emergency Use Authorizations.

<https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/personal-protective-equipment-euas>

3

Guidance and Regulations for Dentistry

OSHA

– Dentistry largely exempt from Emergency Temporary Standard

EMERGENCY TEMPORARY STANDARD

COVID-19 Healthcare ETS

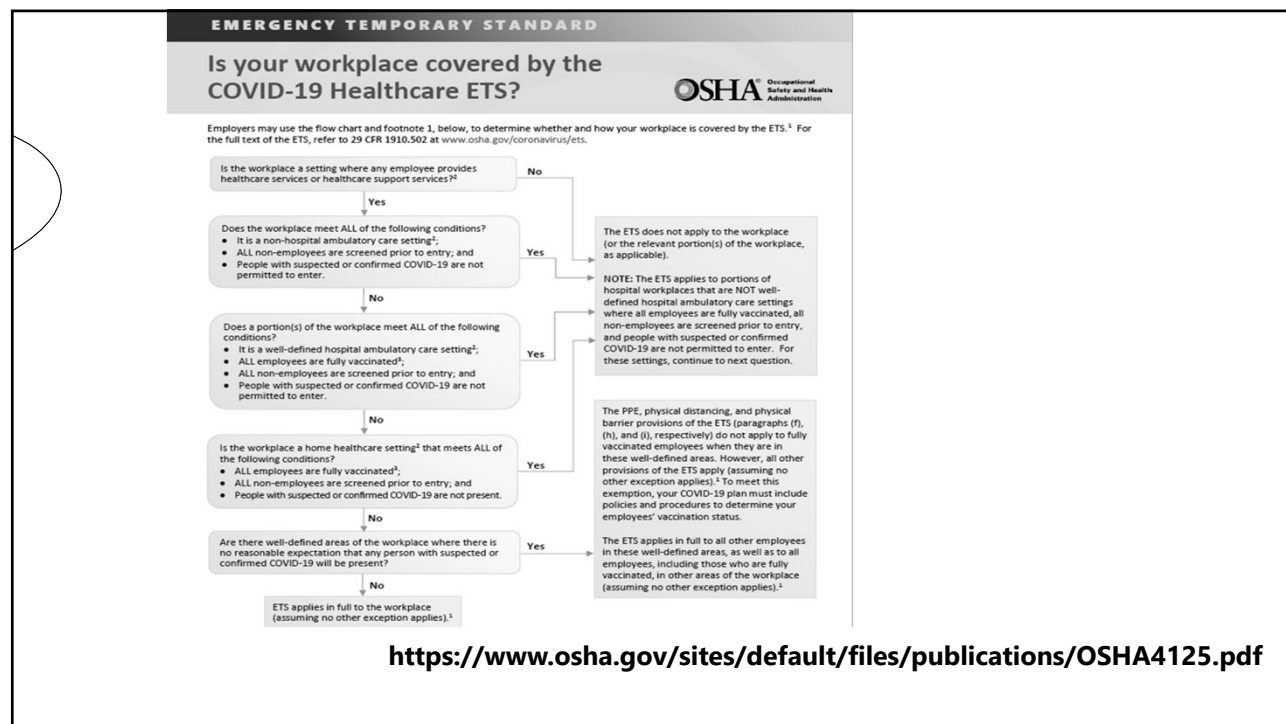


The ETS was officially filed in the Office of the Federal Register on June 17, 2021, and it became effective when it was published on June 21, 2021. Written comments on any aspect of the ETS must be submitted by August 25, 2021 in Docket number OSHA-2020-0004. Written comments on the information collection determination as described in VII.K of the ETS presentation (84 FR 22560) must be submitted by August 25, 2021 in Docket number OSHA-2021-0003.

OSHA has reviewed the latest guidance, science and data on COVID-19 and has consulted with the Centers for Disease Control and Prevention (through the National Institute for Occupational Safety and Health). OSHA has determined that neither CDC's guidance on healthcare settings nor the underlying science and data on COVID-19 in healthcare settings has materially changed in a way to necessitate changes in the health and safety requirements contained in the ETS released on June 19, 2021. OSHA has determined that no changes to the ETS are necessary at this time, but the agency will continue to monitor and assess the need for changes each month.

<https://www.osha.gov/coronavirus/ets>

4



5

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- OSHA Guidance for PPE during COVID-19

Recommended PPE ensembles for dentistry

Care of patients in areas where community transmission of COVID-19 has subsided in the local area		Care of patients in areas where community transmission of COVID-19 continues in the local area		Care of patients with suspected or confirmed COVID-19, regardless of community transmission of COVID-19 in the local area	
Dental procedures not involving aerosol-generating procedures	Dental procedures that may or are known to generate aerosols	Dental procedures not involving aerosol-generating procedures	Dental procedures that may or are known to generate aerosols	Dental procedures not involving aerosol-generating procedures	Dental procedures that may or are known to generate aerosols
<ul style="list-style-type: none"> Work clothing, such as scrubs, lab coat, and/or smock, or a gown Gloves Eye protection (e.g., goggles, face shield) Face mask (e.g., surgical mask) 	<ul style="list-style-type: none"> Gloves Gown Eye protection (e.g., goggles, face shield) At a minimum, face mask (e.g., surgical mask) with face shield NIOSH-certified, disposable N95 filtering facepiece respirator (or better) offers more protection to workers who may encounter asymptomatic or pre-symptomatic patients who can spread COVID-19 or other aerosolizable pathogenst 	<ul style="list-style-type: none"> Work clothing, such as scrubs, lab coat, and/or smock, or a gown Gloves Eye protection (e.g., goggles, face shield) At a minimum, face mask (e.g., surgical mask) with face shield NIOSH-certified, disposable N95 filtering facepiece respirator (or better) offers more protection to workers who may encounter asymptomatic or pre-symptomatic patients who can spread COVID-19 or other aerosolizable pathogenst 	<ul style="list-style-type: none"> Gloves Gown Eye protection (e.g., goggles, face shield) NIOSH-certified, disposable N95 filtering facepiece respirator or better† 	<ul style="list-style-type: none"> Gloves Gown Eye protection (e.g., goggles, face shield) NIOSH-certified, disposable N95 filtering facepiece respirator or better† 	<ul style="list-style-type: none"> Gloves Gown Eye protection (e.g., goggles, face shield) NIOSH-certified, disposable N95 filtering facepiece respirator or better†

<https://www.osha.gov/coronavirus/control-prevention/dentistry>

6

Guidance and Regulations for Dentistry

- CDC:

Guidance for Dental Settings

Interim Infection Prevention and Control Guidance for Dental Settings During the Coronavirus Disease 2019 (COVID-19) Pandemic

Updated Dec. 4, 2020 Print

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>

For DHCP working in facilities located in areas with moderate to substantial community transmission

- DHCP working in facilities located in areas with moderate to substantial community transmission are more likely to encounter asymptomatic or pre-symptomatic patients with SARS-CoV-2 infection. If SARS-CoV-2 infection is not suspected in a patient presenting for care (based on symptom and exposure history), DHCP should follow Standard Precautions (and Transmission-Based Precautions, if required based on the suspected diagnosis).
- DHCP should implement the **use of universal eye protection** and wear eye protection in addition to their surgical mask to ensure the eyes, nose, and mouth are all protected from exposure to respiratory secretions during patient care encounters, including those where splashes and sprays are not anticipated.
- During aerosol generating procedures DHCP should use an N95 respirator or a respirator that offers an equivalent or higher level of protection such as other disposable filtering facepiece respirators, powered air-purifying respirators (PAPRs), or elastomeric respirators.

7

Guidance and Regulations for Dentistry

Updated Healthcare Infection Prevention and Control Recommendations in Response to COVID-19 Vaccination

Updated Apr. 27, 2021 Print

CDC guidance for SARS-CoV-2 infection may be adapted by state and local health departments to respond to rapidly changing local circumstances.

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-after-vaccination.html>

8

Guidance and Regulations for Dentistry

Interim Public Health Recommendations for Fully Vaccinated People

Updated May 28, 2021 Languages ▼ Print

Key Points

The following recommendations apply to non-healthcare settings. For related information for healthcare settings, visit [Updated Healthcare Infection Prevention and Control Recommendations in Response to COVID-19 Vaccination](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html).

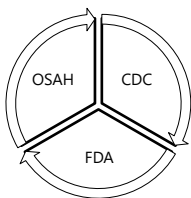


<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html>


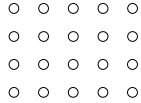
9

What does all this mean???


- It's not back to the "old normal" – pre-pandemic
 - OSHA and CDC state that N95 respirators should be worn for AGP's
 - OSHA states that health care settings must follow CDC guidance
 - OSHA and CDC also state that respirators and face masks must be NIOSH-certified, and FDA cleared as medical/surgical masks and respirators



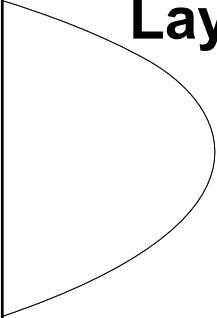
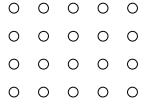
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It's all about aerosols and Aerosol-Generating Procedures (AGPs)

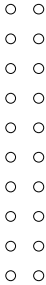


11



Layering of Containment Strategies

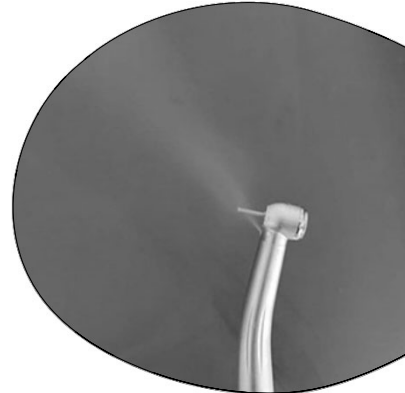
- HVE
- Ventilation
- Air purification



12

Aerosol Production

- Aerosol-generating procedures (AGPs) = use of:
 - High speed handpieces
 - Air/water syringe
 - Ultrasonic scalers
 - Air abrasion
 - Air polishing



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13

Aerosol Containment

- **Protection from aerosols:**
 - Wearing a higher level of respiratory protection
 - Respirator that seals
 - Wearing face shields or goggles (no gaps)
 - Increasing air exchanges in ventilation system
 - Removal of dispersed aerosols
 - Using air purification units in treatment rooms
 - Removal of dispersed aerosols

14

Aerosol Production in Dental Procedures

- Reduce the aerosol produced by:
 - Avoidance of AGPs – *not realistic*
 - Selectively using ultrasonic scalers and air polishing/air abrasion
 - Using dental dams where possible
 - **Using high volume evacuation (HVE) for all AGPs**

15

HVE is a Key Component of Layering Strategy

- Use of HVE – can reduce aerosol by up to 90%
 - [https://jada.ada.org/article/S0002-8177\(14\)61227-7/fulltext](https://jada.ada.org/article/S0002-8177(14)61227-7/fulltext)
- Many intraoral and extraoral devices available
- Intraoral devices can be challenging for hygienists
 - Typically, no assistant available to manage

16

Extraoral HVE Devices

- Self-contained systems
 - Efficient removal of aerosol
 - Portable units or “Plumbed” units
 - Noise
 - Size
 - potential visual obstruction
 - Filters
 - Cost



17

Extraoral HVE Devices

- Attachments to HVE lines in treatment room
 - Better positioning of device – smaller
 - Can be positioned adjacent to the site
 - Most treatment rooms already have available
 - Less noise
 - Less cost



18

Increased Use of HVE in a Dental Facility

- Adding more users to the system
 - Diffusing the power of the system
 - Saliva ejector uses 1/5 of capacity of an HVE
- Single or dual pump
- Wet or dry
- Ventilation in utility room



19

Is Your Evacuation System Up to the Task?

- Is the pump undersized for the facility?
 - Based on the number of high and low speed lines in each operatory
 - How many are used at one time?
- How old is the evacuation system pump?
- Is the system maintained regularly?

20

Maintenance of the Evacuation System

- Daily
 - Run an evacuation system cleaner through the lines
- Weekly
 - Check the solids collectors (traps) and replace if necessary
 - Check the intake filter on wet vacs
- Monthly – wet vacs
 - Change the main intake filter (follow MIFU)
- Quarterly – dry vacs
 - Check vacuum relief valve
 - Check oil levels if dry vac uses oil as lubricant – not needed on newer systems
- Annually
 - Have service tech perform needed maintenance

21

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22



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