Respiratory Protection Update for the Continuing COVID-19 Pandemic

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Course Objectives

- Discuss why the COVID-19 pandemic and wearing of respirators is still a concern for dentistry
- Compare surgical masks and N95 respirators
- Review of the regulatory requirements surrounding respiratory protection in dentistry – including documentation
- Explain how to make fit-testing of respirators convenient and cost-effective

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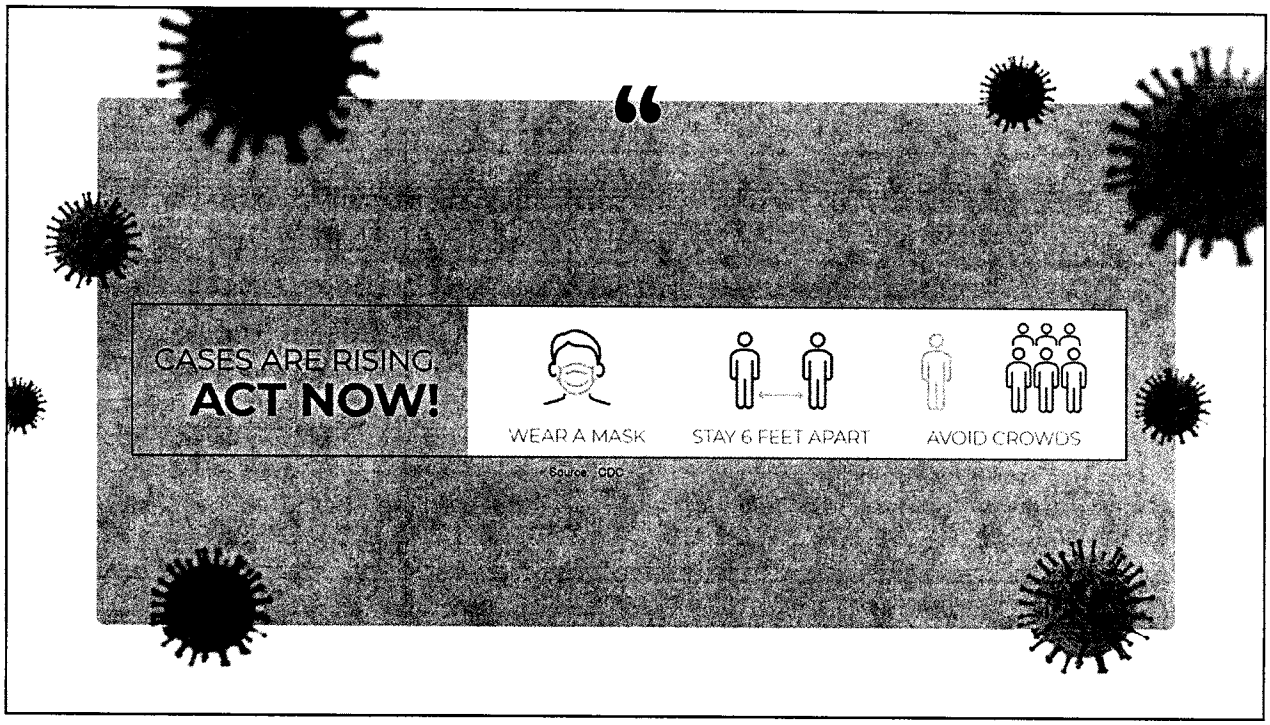

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Why are we still talking about respiratory protection???

- Pandemic is not over – cases still surging
  - In most states
- New strains/variants
  - Super strains - >50% more contagious
  - 4 strains identified as of 1-20-21

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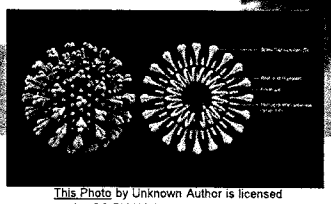
Variants of COVID-19



https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant.html

https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/scientific-brief-emerging-variants.html

https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html

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Why are we still talking about respiratory protection???

Interim: Implications of the Emerging SARS-CoV-2 Variant VOC 202012/01 | CDC

What implications could the emergence of new variants have?

Among the potential consequences of these mutations are the following:

- *Ability to spread more quickly in humans.* There is already evidence that one mutation, D614G, has this property to spread more quickly. In the lab, G614 variants propagate more quickly in human respiratory epithelial cells, out-competing D614 viruses. There also is evidence that the G614 variant spreads more quickly than viruses without the mutation.
- *Ability to cause either milder or more severe disease in humans.* There is no evidence that VOC 202012/01 produces more severe illness than other SARS-CoV-2 variants.
- *Ability to evade detection by specific diagnostic tests.* Most commercial polymerase chain reaction (PCR) tests have multiple targets to detect the virus, such that even if a mutation impacts one of the targets, the other PCR targets will still work.
- *Decreased susceptibility to therapeutic agents such as monoclonal antibodies.*
- *Ability to evade vaccine-induced immunity.* FDA-authorized vaccines are "polyclonal," producing antibodies that target several parts of the spike protein. The virus would likely need to accumulate multiple mutations in the spike protein to evade immunity induced by vaccines or by natural infection.

Among these possibilities, the last—the ability to evade vaccine-induced immunity—would likely be the most concerning because once a large proportion of the population is vaccinated, there will be immune pressure that could favor and accelerate emergence of such variants by selecting for "escape mutants." There is no evidence that this is occurring, and most experts believe escape mutants are unlikely to emerge because of the nature of the virus.

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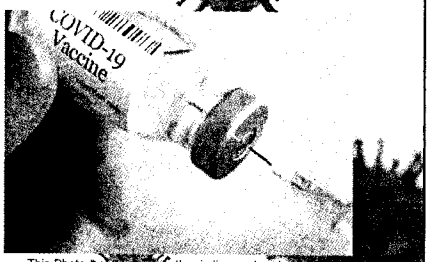
Why are we still talking about respiratory protection???

- Getting people vaccinated takes time
  - DHCP given priority
  - General public may take > a year
- Vaccine does not guarantee immunity
  - If COVID-19 contracted most likely less serious
  - How long immunity lasts is still unknown
  - Vaccine acceptance is not universal



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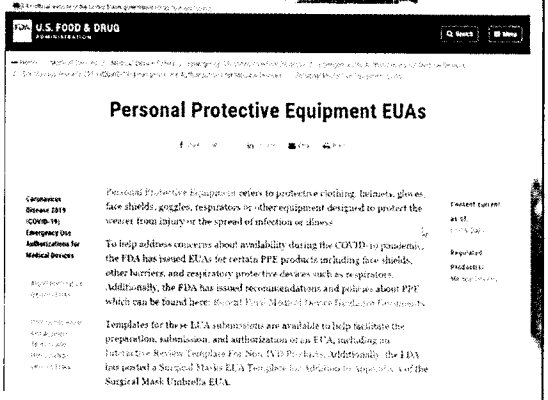
Why are we still talking about respiratory protection???

- Issues with supplies early in the pandemic has caused confusion
  - FDA Emergency Use Authorization (EUA)
    - Allowed for use of KN95 respirators – not NIOSH certified
    - Also allows for use of non-FDA cleared N95's
  - CDC guidance allowed for the use of ASTM Level 3 masks with full face shield
- Personal Protective Equipment EUAs | FDA



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Why are we still talking about respiratory protection???

- These only apply when FDA-cleared N95's not available
  - *If N95's not available, no emergency tx for patients with symptoms or who have COVID-19*
- Infection Control: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) | CDC
- *Must document attempts to procure N95's*

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Attempts to Order/Purchase Respirators

Respirator Type	Distributor/Supplier Contacted	Date Contacted	Result (available or not available)

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Why are we still talking about respiratory protection???

- Conflicting information from dental organizations vs. regulatory authorities
  - N95 respirators ***are required*** by OSHA for AGP's
  - Fit testing for respirators ***is required*** by OSHA
  - OSHA citations from inspections in dental practices
    - Establishment Search Results Page | Occupational Safety and Health Administration (osha.gov)

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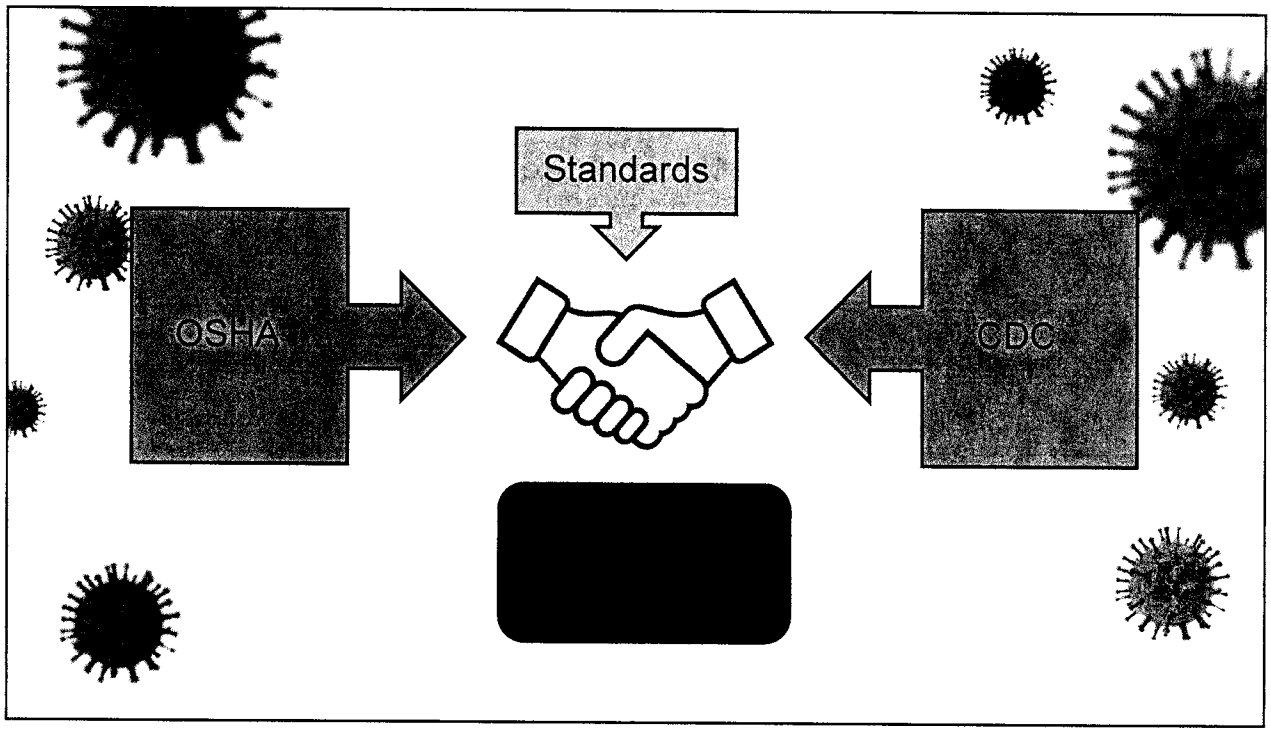

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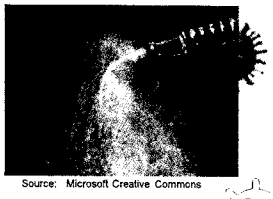
Aerosol Generating Procedures AGP's



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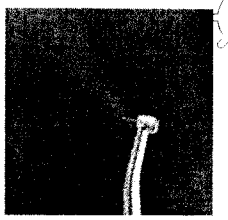

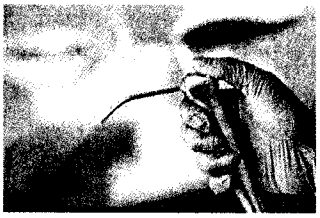

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AGP's Require Respirators

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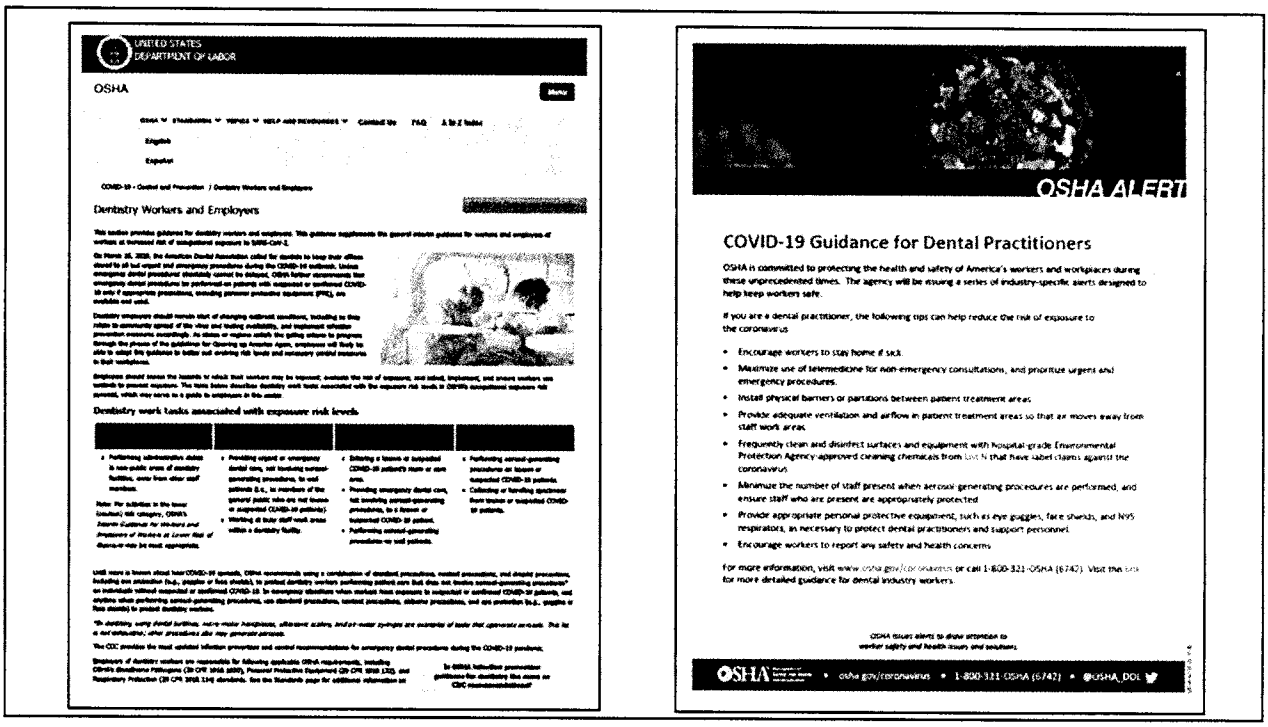

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OSHA Regulations – Interim Guidance

Dentistry work tasks associated with exposure risk levels

Lower (caution)	Medium	High	Very High
• Performing administrative duties in non-public areas of dentistry facilities, away from other staff members. Note: For activities in the lower (caution) risk category, OSHA's *Interim Guidance for Workers and Employers of Workers at Lower Risk of Exposure* may be most appropriate.	• Providing urgent or emergency dental care, not involving aerosol-generating procedures, to well patients (i.e., to members of the general public who are not known or suspected COVID-19 patients). • Working at busy staff work areas within a dentistry facility.	• Entering a known or suspected COVID-19 patient's room or care area. • Providing emergency dental care, not involving aerosol-generating procedures, to a known or suspected COVID-19 patient • Performing aerosol-generating procedures on well patients.	• Performing aerosol-generating procedures on known or suspected COVID-19 patients. • Collecting or handling specimens from known or suspected COVID-19 patients

COVID-19 - Control and Prevention | Denstistry Workers and Employers | Occupational Safety and Health Administration (osha.gov)

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OSHA Regulations – Interim Guidance

Personal Protective Equipment

Dentistry workers must use proper PPE when exposed to patients. PPE differs for the care of well patient care during the COVID-19 pandemic versus PPE needed when providing emergency care to a patient with suspected or confirmed COVID-19 (See OSHA's PPE standards at 29 CFR 1910 Subpart I).

OSHA recommends the following PPE for dentistry during the COVID-19 pandemic:

Well patients		**Patients with suspected or confirmed COVID-19**	
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*
• 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)	• Gloves • Gown • Eye protection (e.g., goggles, face shield) • NIOSH-certified, disposable N95 filtering facepiece respirator or better*	• Gloves • Gown • Eye protection (e.g., goggles, face shield) • NIOSH-certified, disposable N95 filtering facepiece respirator or better*	• Gloves • Gown • Eye protection (e.g., goggles, face shield) • NIOSH-certified, disposable N95 filtering facepiece respirator or better*

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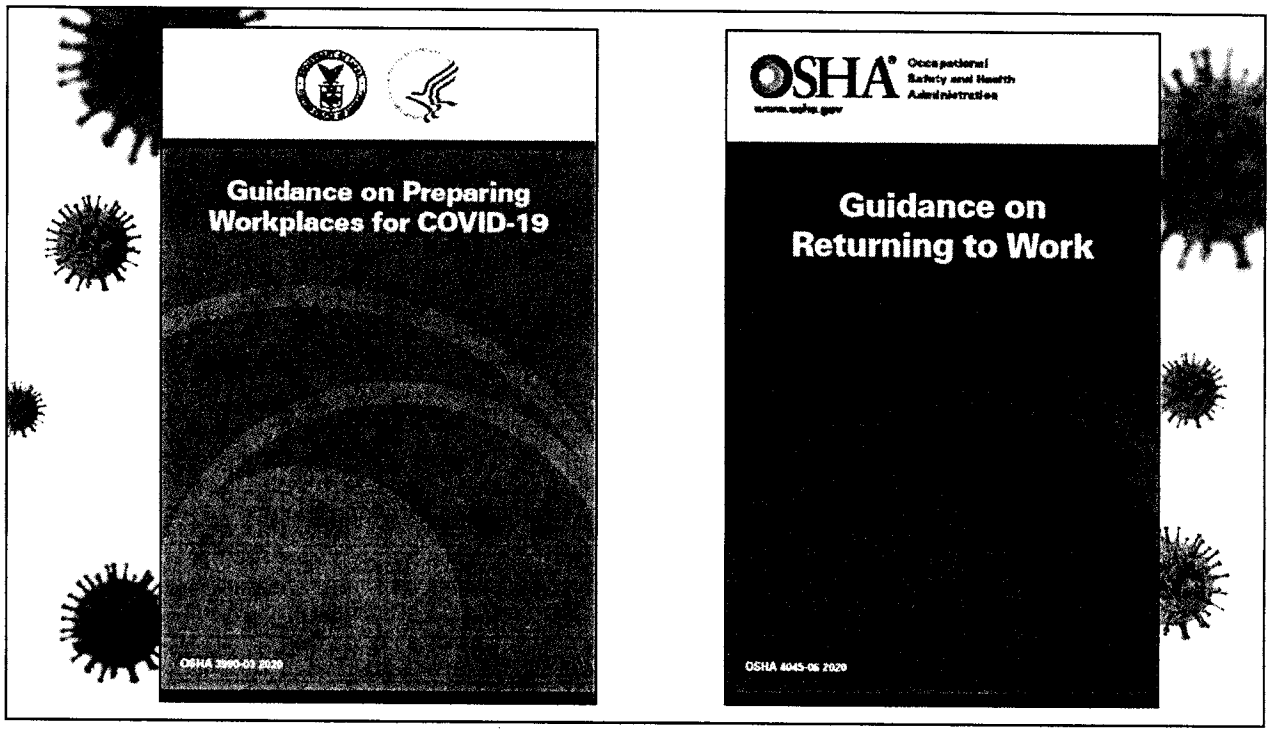

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OSHA Resource Links

COVID-19 - Control and Prevention - Dentistry Workers and Employers | Occupational Safety and Health Administration (osha.gov)

COVID-19 Guidance for Dental Practitioners (osha.gov)

Guidance on Preparing Workplaces for COVID-19 (osha.gov)

Guidance on Returning to Work (osha.gov)

Bloodborne Pathogens - Standards | Occupational Safety and Health Administration (osha.gov)

Source: Microsoft Creative Commons

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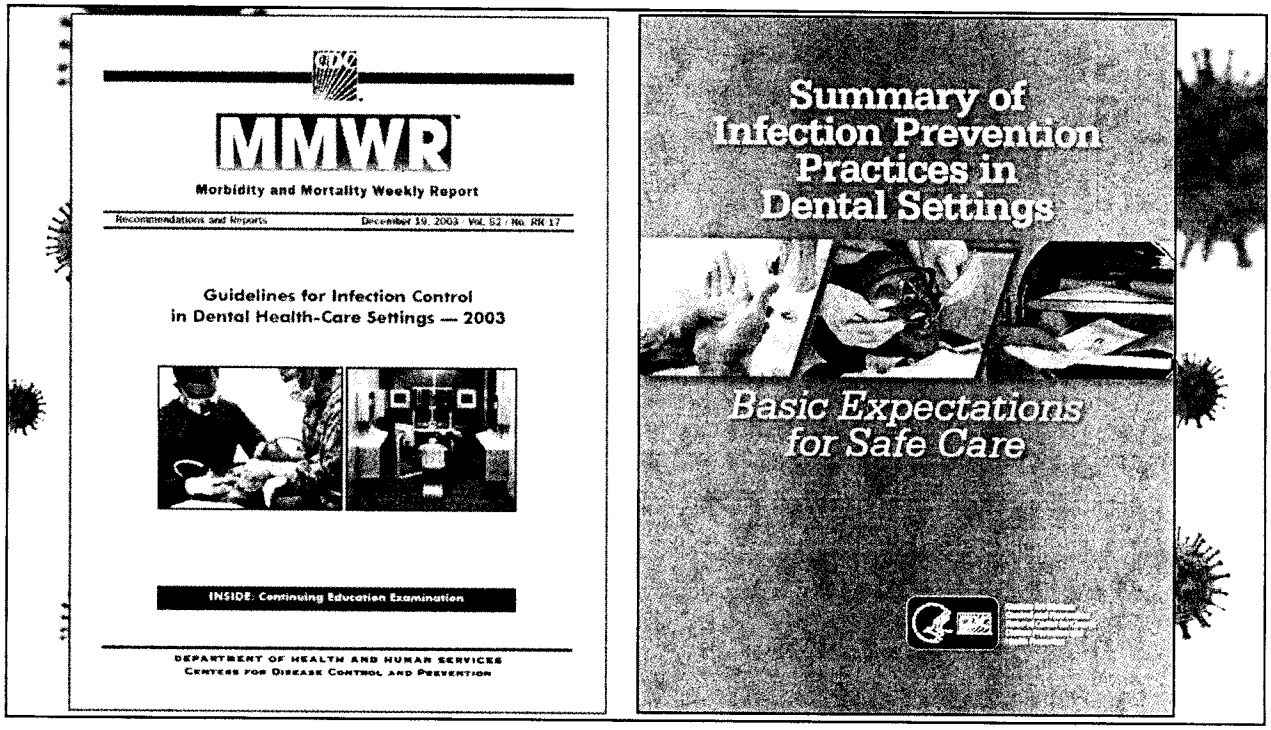
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports
December 19, 2003 / Vol. 52 / No. RR-17
Guidelines for Infection Control in Dental Health-Care Settings — 2003
INSIDE: Continuing Education Examination
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
Summary of Infection Prevention Practices in Dental Settings
Basic Expectations for Safe Care

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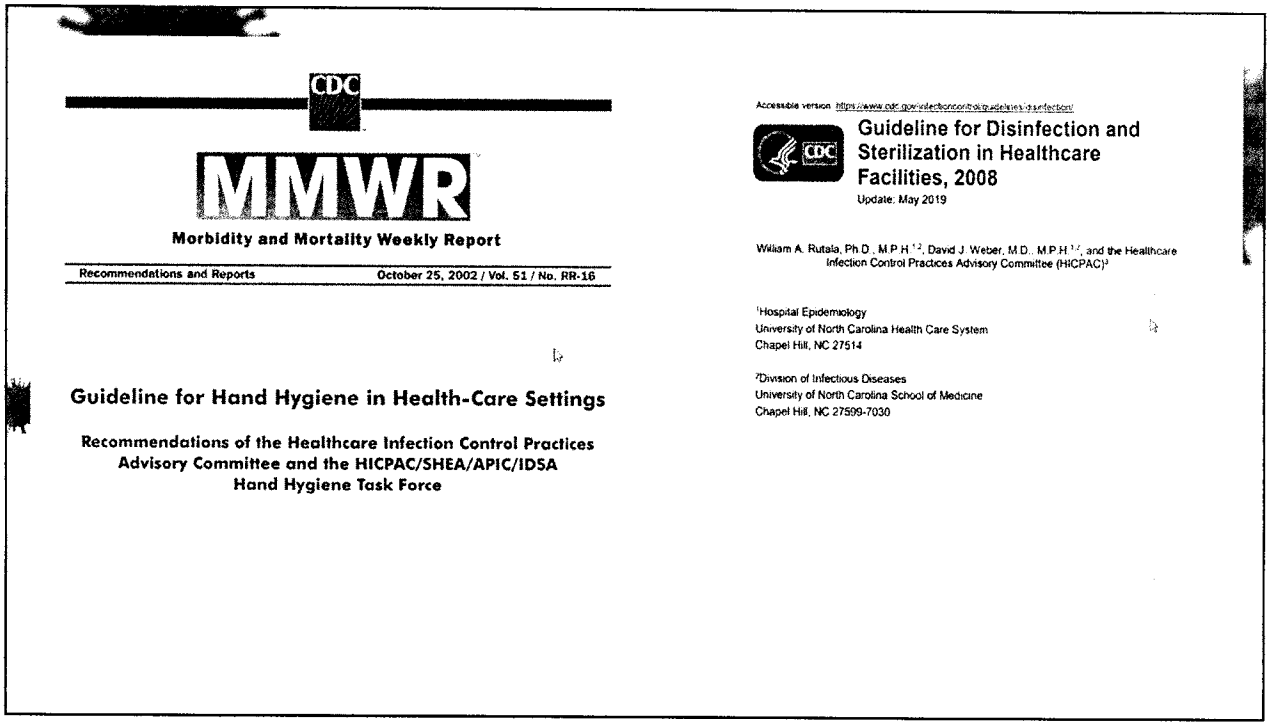
CDC
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports
October 25, 2002 / Vol. 51 / No. RR-16
Guideline for Hand Hygiene in Health-Care Settings
Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force
Accessible version: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/
Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008
Update: May 2019
William A. Rutala, Ph.D., M.P.H.[1,2], David J. Weber, M.D., M.P.H.[1,2], and the Healthcare Infection Control Practices Advisory Committee (HICPAC)[3]
[1]Hospital Epidemiology
University of North Carolina Health Care System
Chapel Hill, NC 27514
[2]Division of Infectious Diseases
University of North Carolina School of Medicine
Chapel Hill, NC 27599-7030

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CDC Resource Links

RR5217 Dental Front.pmd (cdc.gov)

Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care (cdc.gov)

Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 (cdc.gov)

RR5116-Front Cover.p65 (cdc.gov)

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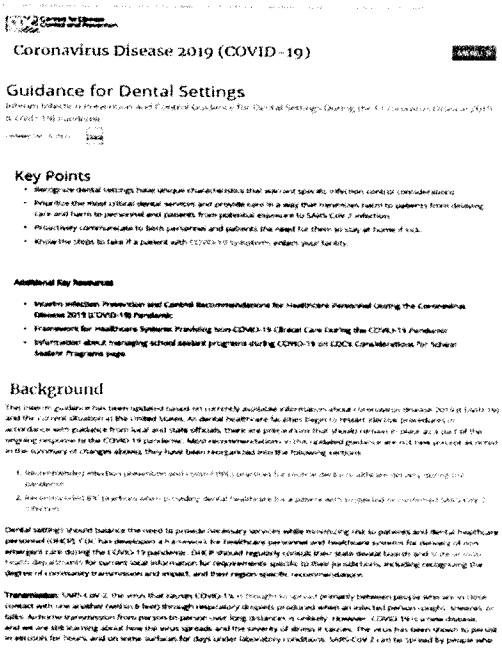
Guidance for Dental Settings | CDC



Coronavirus Disease 2019 (COVID-19)

Guidance for Dental Settings

Key Points

Background

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Universal Source Control

Source: Microsoft Creative Commons

Source: Microsoft Creative Commons

- DHCP should wear face mask ***at all times*** while they are in a dental setting.
  - Meetings/training
  - Break room – when not eating
- When doctors, hygienists, dental assistants are not engaged in direct patient care activities, they can take off their respirator and switch to a surgical mask or cloth face mask

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PPE for Non-AGP's

- During procedures likely to generate splashing or spattering of blood or other body fluids - non-aerosol generating:
  - no handpiece, air/water syringe or ultrasonic scaler

- Surgical mask – ASTM Level 3
- Eye protection
  - Goggles, protective eyewear with solid side shields or a full-face shield
- Gown or protective clothing
- Gloves

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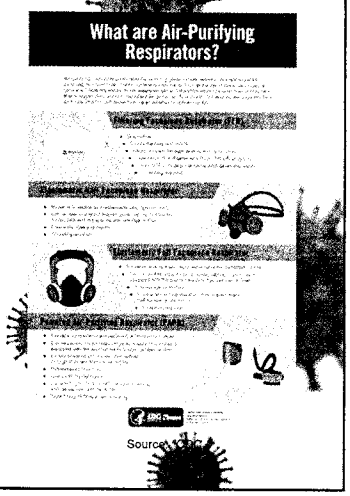
PPE for AGP's

- During AGP's conducted on patients assumed to be non-contagious, consider the use of an N95 respirator or a respirator that offers a higher level of protection, such as:
  - Disposable filtering facepiece respirators
  - Elastomeric respirators
    - Half facepiece
    - Full facepiece
  - PAPR
  - Gowns, gloves, goggles/face shields



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Masks vs. Respirators

- Varying levels of particle filtration and fluid resistance
- Not size specific
- No seal
  - Allows inhalation & exhalation through gaps

- Standardized particle filtration and fluid resistance
- Size specific
- Seal on the face
  - Allows inhalation & exhalation only through the respirator

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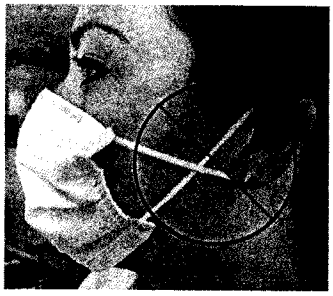
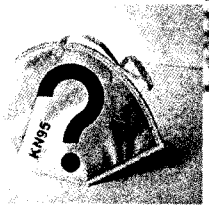
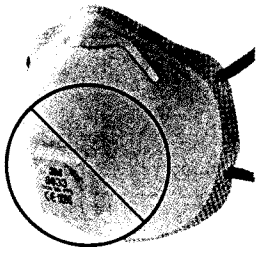
Respiratory Protection

Source: Crosstex





Source: Wikipedia



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Respiratory Protection

Source: 3M

Source: Crosstex

Source: 3M

Source: Halyard Health

Source: Honeywell

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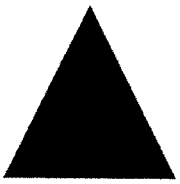
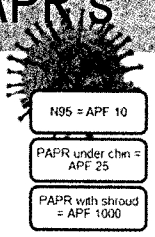
Powered Air-Purifying Respirators – PAPR's

- Alternative to N95 respirator – higher level of protection
  - Higher air purifying factor (APF)
- Fit testing not required (by most manufacturers) – but wearers must be trained on use
- May be less taxing from a physiological/breathing resistance





- https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/powered-air-purifying-respirators-strategy.html

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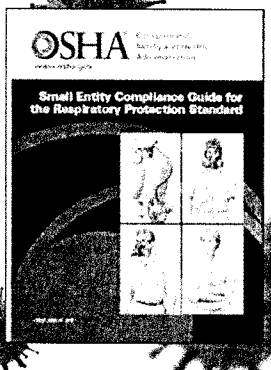
Wearing Respirators

- Not the same as just donning a mask...
  - Respiratory protection plan – OSHA-required
    Respiratory Protection - Standards | Occupational Safety and Health Administration (osha.gov)
  - Medical evaluations
    - Occupational medical facility
    - Online evaluations
  - Training
  - Fit testing
  - Seal checks each time worn



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Respiratory Protection Training and Documentation

- OSHA Respiratory Protection Standard
  - https://www.osha.gov/SLTC/respiratoryprotection/index.html
- Respirator training
  - https://www.osha.gov/video/respiratory_protection/fittesting.html

Source: Microsoft Creative Commons

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Training Resources for Respirators

Respiratory Protection - Training Videos | Occupational Safety and Health Administration (osha.gov)

Source: OSHA

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Thank you!

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