

1 **INFECTION CONTROL & OSHA UPDATE
IT'S A NEW ERA**

2 **WHAT WE WILL COVER**

- Today's safety standards in perspective
- Basic tenants of infection control & prevention
- Rules, guidelines & best resources
- What works best? Hierarchy of safety protocol
- Respiratory protection update
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3 **SAFETY IN PERSPECTIVE**

4 **SARS-COV-2 HAS CHANGED DENTAL SAFETY STANDARDS**

- Consider everyone infectious for ALL types of diseases, including aerosol-transmitted diseases
 - Cannot rely on screening
- Plan for safer buildings, more air management
- Upgrade traditional PPE
- Exposure response
- Apply today's lessons to your healthy future!

5 **CHAIN
OF
INFECTION**

6

7 **STANDARD PRECAUTIONS
MINIMUM STANDARDS FOR ALL PATIENTS**

Review & optimize:

- Hand hygiene
- PPE
- Respiratory hygiene / cough etiquette
- Sharps safety
- Safe injections
- Instrument, device sterilization
- Environmental asepsis cleaning, disinfection, barriers

8 **STANDARD PRECAUTIONS**

- Proven effective for controlling
 - Bloodborne diseases
 - Contact diseases
 - Droplet diseases
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- Not effective for airborne diseases

9 **INFECTIOUS DISEASES**

- Bloodborne diseases are critical, but....
- 80% of common infections (colds, flu, diarrhea) – spread by contact, air, water, food, fomites
- Now: COVID-19, respiratory syncytial virus (RSV), flu
- Stay informed: CDC.gov, OSHA.gov, OSAP.org, CDA.org

10 **IC 101**

- Treat everyone as if infectious: (bloodborne, droplet, contact & airborne diseases)
- Isolate & separate
- Clean before disinfect / sterilize
- How do microbes die?
 - Heat (how hot?)
 - Chemicals (Which ones? What concentrations? What contact time? How toxic?)
 - Is resistance likely?
- Are your systems working?
 - How do you know?
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11 **EVOLVING RULES, RECOMMENDATIONS:**

- Continue to follow CDC's updated Interim Recommendations – Increase safety precautions over Standard Precautions
 - Crisis compromises to preserve PPE, use alternative PPE, supplies & practices = NO LONGER IN EFFECT!
- Recommendations change & evolve
- Laws take time Follow CDC
- Healthcare is excluded from CDC rec's for fully vaccinated public
- Health Care Worker Vaccine Requirement (9/30/21) applies to hospitals, medical.

12 **HIERARCHY OF RULES**

- OSHA: Occupational Safety & Health Administration laws
 - Based on CDC, NIOSH, ANSI recs
- State Board laws
 - Include CDC & OSHA & ADA standards
- Civil & Health Dept... laws
- FDA, EPA laws
- Instructions for use
- CDC Recommendations
 - Based on research
 - Set standards, not "laws" unless by reference
- Consensus standards
 - NIOSH, ANSI used to determine "appropriate" to meet OSHA general industry safety standards
 - Expert statements, CDA, ADA, OSAP (compliance = common, voluntary)
- Competition, marketing, reputation

13 **MUST POST IN OFFICE:**

Appendix 3

*Dental Board of California
Infection Control Regulations*

California Code of Regulations Title 16 Section §1005
Minimum Standards for Infection Control

*All DHCP must comply with & follow OSHA laws
(b) (1-3)*

14 **OSHA REG'S**

Bloodborne Pathogen standard

[\(29 CFR 1910.1030\)](#)

(BBP does not address respiratory secretions)

Personal Protective Equipment

[\(29 CFR 1910.132 & 133\)](#)

Respiratory Protection standards

[\(29 CFR 1910.134\)](#)

the Aerosol Transmissible Diseases (ATD) standard

(CCR Title 8, Section 5199)

OSHA incorporates CDC, ANSI, NIOSH rules by reference

15 **UPDATE & EDIT YOUR IC PLAN**

- Add addendum to Injury & Illness Prevention Program
 - Written COVID-19 prevention & resp. Protection plans
 - Employee risk categories include ATD exposure
- ATD screening & plan (Aerosol Transmitted Diseases)
- CDC updates & IC recommendations

16 **OSHA GENERAL SAFETY / PREPAREDNESS**

17 **ELECTRICAL SAFETY**

18 **CLEAR EXITS**

19 **EMERGENCY EQUIPMENT**

20 **HAZARD COMMUNICATION**

21 **OUR IMMEDIATE SAFETY CONCERN: COVID-19**

22 **COVID-19 CHANGED STANDARDS BECAUSE...**

- Absorbed through conjunctivae, mucosal tissue of nose, respiratory tract
- Spread by pre-symptomatic or asymptomatic carriers (~55%)
- Can not rely on symptom screening
- Dose impacts infection & severity
- Omicron = lowest dose

23 **COVID – LATEST NEWS**

- SARS-CoV-2 linked to newly diagnosed diabetes > 30 days after infection & heart damage

- Omicron – “milder”?
 - Upper respiratory (Delta – prefers lungs)
 - Evades antibodies (still get infected) but T cells reduce severity
 - Long COVID????
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24 **SARS-COV-2 / COVID-19 IN PERSPECTIVE**

- Alpha – Delta <1% case fatality ratio (Omicron = less)
- 2 new flu varieties in China –
 - H7N9 (avian) 30% case fatality ratio
 - G4 (swine) ?%
 - Human-to-human transmission not known
- Next pandemics?
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25 **A LITTLE PARTICLE PHYSICS**

- Coughing, sneezing, laughing project droplets – 3-6+’
- Dentistry creates droplets & aerosols
- Small fluid droplets dry in nano-seconds, float
- Particles < 5 μ remain indefinitely
- Aerosol diseases are also droplet diseases, may be contact-transmitted
- Requires special building design & PPE for safety

26 **DROPLETS FALL AEROSOLS FLOAT: LINGER LIKE SMOKE**

- Evidence of COVID-19 infection after source person left the room

27 **AIRBORNE TRANSMISSION OF SARS-COV-2**

28 **COVID-19 AEROSOL RISK**

- Aerosols are primary mode of transmission
- Infective dose = unknown
 - Much less for Omicron
- Rules vary for “aerosolizing procedures”
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29 **AGP: AEROSOL GENERATING PROCEDURE OR PEOPLE!**

30 **CRITERIA FOR DETERMINING RISK IS IT SAFE????**

- Disease activity locally
 - Specific pathogen features (mode of transmission, transmissibility, severity)
- Mitigation strategies in place
 - Eliminate/reduce contact & exposure
 - Tele-dentistry, distancing, barriers
 - Engineered safety devices / technology
 - Suction, HVAC, Air filtration & changes

- Rules, protocol, management (screening, source control...)
- PPE
- Vaccination status + immune profile
- Aerosol generating procedures

31 **COVID-19 RISK: EVERYONE KNOWS**

- Super-spreader events: inside, talking, singing, shouting.
- Talking, singing: aerosols dominate, NOT droplets
- Talking: exhale aerosols 10X more than breathing
- Shouting, singing: expel > particles than coughing
- Being outdoors is 20X safer than indoors (shown by contact tracing)
- AVOID: prolonged proximity, indoors minus PPE, poor ventilation, talking & shouting, exercising
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32 **LEVELS OF VARIANT RISK**

- Variant of Interest:
 - Specific genetic markers – resist vaccine & convalescent antibody neutralization
 - Lower treatment effectiveness
 - Potential diagnostic impact
 - Predicted > transmissibility or disease severity
- Variant of Concern:
 - Evidence of ≥ 1 of: > transmissibility, > severity, altered symptoms, immune & treatment escape, diagnostic failures

33 **LEVELS OF VARIANT RISK**

- Variant of High Consequence
 - Clear evidence: prevention or tx. are significantly less effective
 - Failure of diagnostics
 - Significantly less vaccine effectiveness (High number of breakthrough cases with severe disease)
 - > severe cases, deaths
 - Currently no SARS-CoV-2 variants of high consequence
 - Small minority of cases are sequenced. Data = limited
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34 **COVID TREATMENT**

- Monoclonal antibodies (use early)
 - Only 1 (sotrovimab) = effective for Omicron
- Pfizer's Paxlovid antiviral pill: effective, short supply
 - Drug interactions with statins, anticoagulants, antidepressants. Risky with severe kidney / liver disease
- Evusheld (antibodies) = preventative med for immunocompromised
- New, better treatments in future (hold on 'til then)

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36 **ELIMINATION & SUBSTITUTION**

- Tele-dentistry (inform, assess, pre-screen, treat pts – phone) prior to appt & on arrival
 - Isolate, discharge, refer all symptomatic pts & HCWs
- Discontinue close gathering in reception area
 - Remove fomites: magazines, TV remote, pens....
- Reduce aerosolization
 - Hand instrumentation, low spray, high suction

37 **SCREEN PATIENTS**

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- Do NOT treat actively infectious patients
- Cal. OSHA Title 8 Ch. 4, Section 5199. Aerosol Transmitted Diseases
- <http://www.dir.ca.gov/oshsb/atdapprvdtxt.pdf>

38 **COVID-19 “SILENT SPREADERS”**

- 20 – 30% never develop symptoms
- Significance:
- Reduces benefits of symptom screening – BUT screening is vital
 - Do NOT treat active COVID patients
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39 **COVID-19 SCREENING**

- Fever, chills, shaking (88%)
- Cough, sore throat: cold-like symptoms
- GI distress, nausea, diarrhea
- Muscle pain, headache
- Loss of smell “anosmia” – strong single diagnostic
- Fatigue
- Respiratory distress: lungs fill up
- Cardiac symptoms, blood clots
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40 **DENTAL WORKER COVID-19 SCREENING**

- HCW's self-assess temp. daily even if asymptomatic (100.0°F!) Symptomatic workers must be evaluated promptly
- If ill, mask & dismiss
- No work until MD clears or 2 (-) COVID tests 24 hrs apart, symptoms improve

41 **IN-OFFICE SCREENING TESTING**

- Molecular (PCR) tests detect viral genetic material
 - Most sensitive, best diagnostic tool, delayed results
- Antigen tests detect viral proteins
 - Specific to virus, less sensitive: may get false (-)

- Repeat & increase frequency
- Antibody (serological) lab tests detect immune response, NOT for active infection diagnosis

42 **IMPORTANT TEST VARIABLES**

- Viral load present at testing site (nose...)
- Sensitivity: ability of test to reveal virus
 - Depends on stage of infection
- Specificity: ability of test to show negative result correctly, avoiding false (-)
- Immune response
- Different labs
- Different tests
- Collection & sample handling technique

43 **POST-EXPOSURE TESTING**

After exposure to someone who tested (+)

- If symptomatic, test ASAP (regardless of vaccine status)
- PCR & Antigen tests OK
- If asymptomatic, not fully vaccinated:
 - Test ASAP & retest 5 days
- If asymptomatic, vaccinated:
 - Test 5 days
- Always isolate after (+) test, even if asymptomatic

44 **OTHER AIRBORNE DISEASES**

Primarily aerosol – transmitted:

- Measles
- Varicella (including disseminated zoster)
- Tuberculosis

Aerosol & droplet transmitted:

- Flu, SARS, Pertussis, mumps, meningitis
- Do NOT treat without special precautions
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45 **TUBERCULOSIS POLICY**

- MDR TB = worldwide risk
- Develop TB program appropriate to risk
- Screen patients:
 - History of TB?
 - Look for active cases of TB
- Dental workers: Tuberculin skin (TST) or blood (IGRA) test when hired & per risk

46 **SCREEN FOR ACTIVE TB:**

- Productive cough (> 3 weeks)

- Bloody sputum
- Night sweats
- Fatigue
- Malaise
- Fever
- Unexplained weight loss
- If yes: medical referral, (reportable)
- Look for symptomatic patients

47 **ROUTINE TB TESTING?**

Only if:

- High risk of exposure (live/stay in country with high TB rate)
- Immunosuppressed, HIV (+), taking immunosuppressive meds
- Close contact with infectious TB

48 **PERSISTENT DISEASE THREATS**

- Vaccine "Controlled, or eradicated" diseases:
 - Measles: (droplet, air) endemic most countries
 - Polio: Africa, Middle East, Indonesia
 - Pertussis: vaccines may not last 10 years
 - Influenza, meningitis, HPV, HBV, pneumonia....

49 **RESPIRATORY SYNCYTIAL VIRUS (RSV)**

- Incubation: 4-6 days
- Symptoms:
 - Runny nose
 - Cough, sneezing, wheezing
 - Fever
 - Low appetite
- Common under 1 yr of age
- Recently in all ages, may be more serious
- No treatment (relieve symptoms)

50 **INFLUENZA SIGNS & SYMPTOMS**

- Fever & chills – sudden onset (102 – 106 degrees)
- Cough (loose, then dry)
- Breathing difficulty
- Sore throat
- Intense body aches, skin sensitivity
- Headache, sinus / nasal pain
- Diarrhea, vomiting

51

52 **SCREEN FOR ALL ATD'S TB, FLU & OTHER ATD'S**

- 1 • TB
 - Fever, cough....

- Flu
 - Fever?
 - Body aches?
 - Runny nose?
 - Sore throat?
 - Headache?
 - Nausea?
 - Vomiting or diarrhea?

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Fever = 100.0°F

If yes, re-appoint, refer

- 2 • Pertussis, measles, mumps, rubella, chicken pox, meningitis
- Fever, respiratory symptoms +
 - Severe coughing spasms
 - Painful, swollen glands
 - Skin rash, blisters
 - Stiff neck, mental changes

53 **CHRONIC RESPIRATORY DISEASES
(NOT ATD'S, NO FEVER)**

- Asthma
- Allergies
- Chronic upper airway cough syndrome "postnasal drip"
- Gastroesophageal reflux disease (GERD)
- Chronic obstructive pulmonary disease (COPD)
- Emphysema
- Bronchitis
- Dry cough from ACE inhibitors

54 **HOW DO WE COMBAT
FEAR & DIS-INFORMATION?**

55 **WITH SCIENCE & LOGIC
VACCINE BASICS:**

- ~5-10% of vaccinated may not respond (or weakly)
- Vaccine less effective against infection
- Breakthrough cases happen but severe cases & death = low % (but high real #s in surge)
- Vaccines assist immunity,
 - Build antibodies ~ 2 weeks,
 - Antibodies target spike proteins (rapidly mutate)
 - T & C cell immunity – delayed, longer lasting, also targets inner proteins in virus that mutate less

56 **WITH SCIENCE & LOGIC
VACCINE BASICS:**

- Host's immune system determines the strength of both recovered (convalescent) &

vaccine immunity

- Immunocompromised likely to have less & shorter immunity
- COVID boosters are not “extra”
- Vaccines do not make PPE unnecessary
 - Vaccines are specific to one pathogen
 - What about the others?

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57 **“NEW” TYPE OF VACCINES RESEARCHED FOR DECADES, “NEW” TO US**

- mRNA vaccines teach body to make proteins or partial proteins that trigger immune response to SARS-CoV-2 spike protein
 - No live virus
 - mRNA does NOT enter our cell nucleus
 - Can be made quickly, standardized, scaled up, modified for variants, combined
 - Other mRNA vaccines studied: flu, Zika, cytomegalovirus, rabies & cancer

58 **MAKE SURE YOU ARE PROTECTED!**

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- HBV
- HAV
- Influenza
- Measles
- Mumps
- Rubella
- Varicella-Zoster
- Polio
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- www.CDC.gov: new adult vaccine recs
- OSHA policies:
 - New hires & employees
-

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- Tetanus, diphtheria
- Pertussis
- Pneumonia
- Meningitis
- HPV

59 **BUILDING SAFETY STANDARDS**

- U.S. medical settings must meet healthcare building codes
 - (-) pressure, filtered air for sterilization, storage & changing PPE
 - Air changes / hour (ACH) – set for medical hospitals
 - Gen med (no procedures) requires 12 ACH (dental???)
- Dental is under business codes currently. Will change.
- Schools – separate building codes
- IAQ matters (healthy vs. Sick buildings)
 - Airborne diseases

- Legionella, viruses
- Indoor chemical pollutants – high during operating hours
 - VOCs, CO₂, particulates
- Odors affect experience
- Allergies, illness

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60 **ENGINEERING CONTROLS**

Room air management

- Optimize building HVAC fresh air changes, cycles, filtration
 - MERV 13
 - Install HEPA filters only if HVAC = designed for HEPA filtration (HEPA = MERV 17)
- Building maintenance (ducts, filters)
- Filters may impede airflow
- Fit matters! Bypass airflow is not filtered

61 **WHAT ACH RATE IS RECOMMENDED FOR DENTAL OFFICES?**

62 **ENGINEERING CONTROLS**

- Separate HEPA air cleaners
- Goals:
 - > circulation, air movement
 - Controlling airflow direction
 - Filtration
 - Source capture (external suction)
- Consider moist aerosols
- HEPA filtration units can recycle or exhaust air (creating (-) pressure)
- Validate equipment claims

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63 **SOURCE CAPTURE EQUIPMENT**

GOAL: Contain aerosols as much as possible, as close to the source as possible

- Saliva ejectors remove fluids, not aerosols
- High Volume Evacuation (HVE)
 - More effective on larger droplets than aerosols – but remove some air
 - Rebalance system: hygiene HVE = operative HVE power
- Extraoral suction
 - More effective on aerosols

64 **ROOM AIR CONTROL: PHYSICAL MODIFICATIONS?**

- Space dividers, walls, screens, windows, curtains (must tolerate disinfection & NOT stagnate air flow)

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65 **ULTRAVIOLET GERMICIDAL IRRADIATION (UVGI)**

- Targets air & surfaces
- Directional (shadows)
- Must vacate room at higher doses
- Efficacy requires specific dosage, airflow, time
- Lights degrade over time

66 67 **INTERIM COVID-19 DENTAL RECOMMENDATIONS ROOM AIR CONTROL**

- Optimize direct suction, evacuation protocol
- Single operatories, spaced apart
- Vacate room after procedure – air exchange
 - 15 min. (CDC)??
 - Droplets settle
 - Ventilation of aerosols – site-specific
- Open windows?

68 **FANS & AIR MOVEMENT**

- Place in windows, doors on exhaust mode
- Roof fans: exhaust to outside
- Defeat auto efficiency settings: run fans 24/7
- Open windows (even slightly)
- New HEPA filters can minimize air resistance
- Air direction: dirty-to-clean, away from operator
- Consult industrial hygienist, HVAC or structural engineer
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69 **AIR FOGGING?**

- EPA cleared disinfectant
- Used on airplanes since COVID-19
- Electrostatic particles improve penetration & surface binding
- Oxidizers, hydrogen peroxide, hypochlorous acid
- Caution: corrosion & damage to eyes, lungs
- Dangerous to add chemicals to remove particles

70 **AVOID / MANAGE AEROSOLS**71 **HVE REQUIRED!
SALIVA EJECTORS = INADEQUATE**72 73 **HIGH VOLUME SUCTION**

- Control at the source
- Draws air into mouth
- Depends on power of suction
 - 7-10 cubic ft/min

- Maximize suction: balance fluid & air
- Factors:
 - Size of vacuum, # of users
 - Piping configuration: bends, curves, distance
 - HVE tubing size
 - Location near source

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74 **DENTAL STUDY: VIRAL REDUCTION**

- IADR study: sampled droplets & suspended virus
- Electric handpieces – significantly reduced aerosols
 - No DUWL
- Rubber dams, HVE, HVAC also provided significant reduction
- External suction less important than electric handpieces

75 **SOURCE CONTROL & PROTECTION**

76 **PRE-PROCEDURAL RINSES – LIMITED, TRANSITORY:**

- Repeat rinses
 - 1-1.5% hydrogen peroxide
 - 0.2% povidone
 - Dilute bleach (corrosive)
- SARS CoV-2 = sensitive to oxidizing products
- Chlorhexidine (CHX)?

77 **ADMINISTRATIVE CONTROLS**

- Rules to maintain elimination & substitution strategies
- Respiratory hygiene / cough etiquette, hand hygiene
- Manage visitors, limit points of entry
- Scheduling: isolate & separate patients in time & space
- Universal source control – face coverings for all
- New employee roles: Infection control coordinator, “floater”, screeners, escorts
- Add respiratory protection program
 - ADA, OSHA

78 **CDC HEALTHCARE COVID RECS**

- Continue 2020-2021 transmission-based precautions
- Follow most stringent guidance (CDC, Cal/OSHA, CDPH)
- HCWs should show proof of vaccination & booster
- All HCWs wear mask in office. NO break-room exceptions
- Unvaccinated workers required to be:
 - Isolated physically (6') & PPE at all times for their protection and others'
 - Screened daily, tested frequently
 - Quarantined & tested after exposures

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79 **1-14-2022 FED/OSHA EMERGENCY TEMPORARY STANDARDS (ETS)**

- "We urge all employers to require workers to get vaccinated or tested weekly to most effectively fight this deadly virus in the workplace. Employers are responsible for the safety of their workers on the job, and OSHA has comprehensive [COVID-19 guidance](#) to help them uphold their obligation.
- "Regardless of the ultimate outcome of these proceedings, OSHA will do everything in its existing authority to hold businesses accountable for protecting workers, including under the [Covid-19 National Emphasis Program](#) and [General Duty Clause.](#)"
- U.S. Secretary of Labor Marty Walsh (Jan 13, 2022)

80 **1-14-2022 CAL/OSHA EMERGENCY TEMPORARY STANDARDS (ETS)**

- Mandate applies to ALL un- or incompletely- vaccinated workers (even nonclinical & owner dentist):
- "Worker" refers to all paid and unpaid persons serving in health care, other health care and congregate settings who have the potential for direct or indirect exposure to patients/clients/residents or SARS-CoV-2 airborne aerosols."
- Protect employee privacy re: vaccination status

81 **CAL/OSHA ETS: EMERGENCY TEMPORARY STANDARDS
JAN 14,2022**

- Employers must make COVID-19 testing available – no cost) during paid time, to exposed workers
 - Regardless of vaccine status or if asymptomatic
- Employer must observe self-tests & results
- "Face covering" must be solid (no light through material)
 - Cloth masks are NOT PPE
- Employees exempt from wearing masks must distance (6') & be fully vaccinated or test weekly
- Must update addendum to IIP to above & specific return-to-work criteria when available

82 **CALIFORNIA HEALTHCARE COVID-19 MANDATE**

- HCW show proof of vaccination OR be tested weekly
- Employer may require vaccination (w/ reasonable accommodation, following Fair Employment & Housing Act & Equal Employment Opportunity Commission (EEOC) Conform to all confidentiality laws for staff & patients
 - "Office is adhering to all state & Fed. Rules to insure patient & worker safety and confidentiality"
- Store confidential worker medical records (test results) separate from general employee file, keep 5 years after termination

83 **ETS RETURN-TO-WORK RULES**

- All COVID (+) employees (regardless of vaccination status or symptoms) may end isolation:
- After fever resolved without meds AND
 - Symptoms improved
 - Either 10 days after 1st symptoms or (+) test OR 5 days & (-) test. Antigen test preferred.
 - Face coverings required 10 days after 1st symptoms or (+) test

84 **RISK ASSESSMENT:****EVALUATING POSSIBLE EXPOSURES**

- "Infectious period" starts 2 days prior to symptoms
- "Exposure" = 15 min cumulative exposure within 6' over 24 hours, EXCEPT if wearing well-fitted N95
- End is determined by testing or time
 - At least 5 days, may be 10
 - Most reliable: 2 (-) tests, 24 hours apart
- Workers must report exposure to employer
- Patients should be alerted if possible exposure occurred
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85 **QUARANTINE AFTER COVID-19 EXPOSURE**

- Unvaccinated and/or not boosted must quarantine until:
- No symptoms AND:
- Either 10 days past time of exposure OR
- 5 days & (-) test on or after day 5
- All must wear face coverings with others & indoors
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- NO quarantine if fully vaccinated & boosted but must test (-) or wear mask & 6' distance
 - 14 days
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86 **INFECTION CONTROL COORDINATOR**

- Assign a person
 - Safety Manager
 - Must be a leader
 - Qualified, trained, empowered
 - Any of us might qualify!
- Get certified
 - DANB.org, osap.org
 - <https://www.osap.org/page/RoleofICPC?> – OSAP initiative
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87 **ORGANIZATION FOR SAFETY, ASEPSIS, AND PREVENTION**

Why join?

- "Go to" source for all infection prevention and patient safety questions.
- New, robust website includes best practices, tool kits, and member forums allowing you to network with global infection prevention leaders.

Code for 25% discount: Nancy25

join today!

88 **OPERATORY ASEPSIS**

2 CHOICES:

COVER IT OR DISINFECT IT

89 **USE FDA CLEARED MEDICAL GRADE BARRIERS**

(TESTED FOR VIRAL & BACTERIAL PENETRATION)

90 **ENVIRONMENTAL ASEPSIS
(UNSEEN DROPLETS)**

- EPA intermediate level disinfectant - operatories
- Extend frequent disinfection protocol - all touch / transfer surfaces
- EPA list of SARS CoV-2 disinfectants
- Weekly deep cleaning – remove chemicals, dry biofilms
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91 **CHEMICAL CLEANING & DISINFECTION
FOLLOW LABEL DIRECTIONS**

- Clean (surfactant) before disinfecting
 - High alcohol fixes proteins to surfaces
- Proteins neutralize disinfectants
- Wear Utility gloves

92 **MICROBIAL RESISTANCE TO KILLING**

- Prions
- Bacterial endospores
- Fungal spores
- Mycobacteria - *Mycobacterium tuberculosis*
- Nonlipid or small viruses (Non enveloped) - *Polio virus, enteroviruses*
- Fungi - *Trichophyton spp.*
- Vegetative bacteria - *Pseudomonas aeruginosa, Staphylococcus aureus*
- Lipid (enveloped) or medium-sized viruses - *Herpes simplex virus, hepatitis A, B & C virus, HIV, Ebola, SARS CoV-2* (CDC), §1005 (b) (14)

93 **CLEAN & DISINFECT – 2 STEPS!****CLEANING**

Spray

DISINFECTION

Wipe

Spray

94 **CLEAN BEFORE DISINFECTING**95 **“SINGLE-STEP CLEANER-DISINFECTANT”**96 **LEAVE FOR STATED TIME**97 *** WHAT IS THE ACTIVE INGREDIENT?**

- * TB KILL TIME?
- * WHICH PRODUCTS CLEAN?

98 **CAVIWIPES 2.0 OPTIMIZATIONS**

99 **BLOODBORNE DISEASES
(BLOOD & FLUIDS = INFECTIOUS)**

EXAMPLES: HIV, HEPATITIS

100

MOST LIKELY DENTAL EXPOSURES

- Percutaneous
 - Needles
 - Burs
 - Instruments, files
- Compromised skin
- Mucosal exposure
- HBV = efficiently transmitted directly & indirectly (survives on surfaces – 7 days)
- Other pathogens (ex: HCV) can remain infectious on surfaces – 1 month

101 **SAFE INJECTION PRACTICES**

102 **SAFE RE-CAPPING**

- Only recap needles using:
 - Scoop technique
 - Mechanical devices designed to hold needle sheath
 - eliminate need for 2 handed capping

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§1005 (b) (9)

103 **SAFETY NEEDLE**

104 **SHARPS & WASTE**

- Follow OSHA rules
- Dispose of all sharp items in puncture resistant containers
- Dispose of pharmaceutical waste as per EPA
- Dispose of contaminated solid waste as per EPA

105 **POST EXPOSURE PROPHYLAXIS**

- Know your immune status: HBV booster needed???
- Exposure packet

- Phone numbers, forms, driving directions, payment arrangements
- Direct MD re: testing, disclosure, include HCV!
- Rapid HIV, HCV testing
- Response windows for maximum effect:
 - HIV - ART – 2 hours
 - HBV – 24 hours
 - HCV – 24 hours
- PEP follow-up: after exposure test 3-6 weeks, 3-6 months, 9 months
- Counseling
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106 DENTAL WATER QUALITY

107 2 STANDARDS FOR WATER SAFETY

- Sterile - for surgery, (cutting bone, normally sterile tissue)
 - 0 CFU/mL of heterotrophic water bacteria
- Potable - for non- surgical procedures -
 - 500 CFU/mL of heterotrophic water bacteria (meets EPA safe drinking water standards)
 - CDC, OSAP, EPA, Dental Board

108 FOR POTABLE WATER

YOUR OFFICE SHOULD:

- Flush lines in AM for 2 min./line (handpieces off)
- Flush lines between patients for 20 sec.
 - (Flushing does not remove attached biofilm)
- Add antimicrobial product to patient treatment water
- Shock periodically – remove attached biofilm
- Follow Manufacturer’s directions for use (dental unit & DUW product)
- Monitor water (test)

109 WATERLINE TREATMENT OPTIONS

- Chemical “Shock” - removes biofilm
 - Sterilex, (bleach not approved)
 - Caustic, may injure tissue. Rinse !
- Continuous chemical “maintenance” - prevents biofilm, keeps CFU’s low.
 - DentaPure 1 /year (dry bottle at night)
 - BluTube 2/year
 - BluTab (Silver ions) – ProEdge (keep bottle on)
 - Team Vista - HuFriedy

110 DETACHABLE EQUIPMENT ASEPSIS

111 HOW DO YOU KNOW YOUR WATERLINES ARE SAFE?

- Loma Linda University Waterline Testing
- ProEdge Waterline Testing
 - 1-day results
- Test quarterly, rotating lines (empiric evidence, not regulated)

- 112 **QUICKPASS™ IN-OFFICE WATER TEST**
- Specific to DENTAL water
 - 48-72 Hour Incubation
 - Neutralization formula within the paddle
 - Colonies easier to see & count
 - Go To: ProEdgeDental.com/FreeQP
 -
- 113 **COVID-19 NOTICE:
DURING CLOSURES**
- Empty waterlines & bottles
 - Re-attach bottles
 - Shock & rinse when re-open office
 - "straw" users: remove "straw", use "dummy" straw to shock, replace "straw"
- 114 **TREAT, SHOCK, AND TEST ALL WATERLINES**
- 115 **INSTRUMENT PROCESSING:
HIGHEST LEVEL OF ASEPSIS**
- 116 **INSTRUMENT PROCESSING
"TRAFFIC FLOW"**
- 117 **PRE-CLEANING & HOLDING/SOAKING:
AVOID SCRUBBING LATER**
- 118 **ENZYME PREVENTS DEBRIS ADHERENCE**
- 119 **ONLY SCRUB IF DEBRIS REMAINS AFTER CLEANING....**
- 120 **ULTRASONIC CLEANING:
ALLOW BUBBLES TO WORK**
- 121 **INSTRUMENT WASHERS & CASSETTES**
- Safer – less handling of sharps
 - More efficient:
 - Saves ~ 1 hour / 9 pt. Set-ups
 - Space management:
 - Less space needed for instrument cleaning, sorting, ultrasonic, drying
 - Software sends error messages to dealer & office
 - 40 min. Cycle (dry)
 - Waste water safely disposed; reduces aerosols
 -
- 122 **CHECK ULTRASONICS OR WASHERS WITH WASH-CHECKS**
- 123 **MEASURING RISK: DOSIMETERS**
- 124 **WEAK LINKS**
- 125 **HANDPIECE STERILIZATION**
- ALL handpieces must be sterilized between each use

- Must have FDA clearance & validated instruction for re-use
- “Sterile” is absolute: either it is or is not!
- Steam sterilization requires
 - Saturated steam
 - Required temp
 - Direct contact with all load surfaces
 - Required time
-

126 **STEAM MUST REPLACE AIR & WATER**

127 **CLASS B PRE- AND POST-VACUUM STERILIZER**

128 **DIAMOND COATED DEVICES = SINGLE-USE**

- FDA: There are NO FDA-Cleared diamond coated burs or devices with approval for re-use
- Diamond surface cannot be cleaned
- Sterilization instructions are for first-time use

129 **STERILIZER MONITORING**

- Indicators: per package
 - Heat
 - Type 5 indicators: per load or pack
 - Time, temperature, pressure
 - Biological Monitors: weekly
 - Non - pathogenic spores
 - Keep written reports
- §1005 (b) (17)

130 **ARE THESE STILL STERILE???**

- Event related storage: “sterile” until an event:
 - Water, oil, tear / puncture
 - Packaged opened
- Time related storage
 - Facility protocol
 - Product instructions
 - Most wraps = 6 months

131 **2 STERILIZATION LOGS**

- 1: Log of each cycle for each sterilizer
 - Class 5 Indicator strip results
 - Sterilizer
 - Date
 - Indicator pass/fail
 - Initial
 - Machine print-out

- - 2: Biological test results
- 132 **PPE:**
TRANSMISSION-BASED PRECAUTIONS FOR DROPLET, CONTACT & AEROSOL TRANSMITTED DISEASES (ATD'S)
- 133 **ALTERING SEQUENCES**
 DROPLET, CONTACT & AIRBORNE PRECAUTIONS
- Glove when entering room
 - Remove gloves when leaving room
 - Immediate hand hyg.
 - Antimicrobial or alcohol agent
 - No bare-handed contact w/ pt., items
- 134 **ALTERING SEQUENCES**
 DROPLET, CONTACT & AIRBORNE PRECAUTIONS
- Gown before entering room, remove immediately when leaving room
 - Disinfect &/or barrier re-used non-critical re-usable equip.
 - BP cuff
 - X-Ray shields
 - Thermometers
 - Disposables
- 135 **ALTERING SEQUENCES**
 DROPLET, CONTACT & AIRBORNE PRECAUTIONS
- Private room, close door for airborne pathogens
 - Maintain \geq 6 ft. Between pts.
 - Optimize air handling
 - Mask to enter room, & \leq 6 ft. of pt.
 - Move pt out of room only if essential, mask on pt.
- 136 **MUST WEAR MASKS AT WORK**
- Masks while in office appropriate to exposure
 - Cloth is not PPE
 - Patients
 - Respirators for aerosols
 - Respirators (or masks & face shield ?) for non-aerosol pt. Care
- 137 **MASKS WORK**
- 138 **IF YOU WEAR THEM CORRECTLY**
- 139 **PPE: SURGICAL MASKS**
- Masks are bi-directional physical barriers

- Mostly keep germs in – protect others!
- Limited protection for user
- Single-use
-

140 **NEVER RE-USE SURGICAL MASKS!**

141 **KNOW MASK LIMITS**

- Level 3 filters most bacteria - No viral claims
- Mask degrades from;
 - Perspiration
 - Talking
 - Sneezing
 - Length of time mask is worn
 - Dust, spray
- Shield may lengthen use-life
- 20 min - 1 hour! (normal conditions)
-

142 **RESPIRATORS (VS. MASKS)**

- Only respirators protect against airborne chemicals, fumes, vapors, infectious pathogens
- N-95 masks filter $\geq 95\%$ particles
- Look for label on outside
- Effectiveness = highly dependent on fit & use

143 **N95 MASKS CAPTURE PARTICLES WITH ELECTRICAL CHARGE**

144 **WET, DAMP MASKS LOSE CHARGE**

145 **HOW MANY TIMES CAN A RESPIRATOR BE USED?**

- Interim extended-use crisis recs = ended
- IFUs for respirators: single patient – single shift, 5 donnings
- Fit may be compromised with repeated donning
-

146 **POOR FIT: WEAKEST LINK**

147 **3D PRINTED FRAMES
IMPROVE FIT OF SURGICAL MASK**

148 **SEALED EDGES
NO FOGGING!**

READIMASK N95

149 **READIMASK
NIOSH N95**

DISCOUNT CODE: NANCY40

150 **N95 WITH FOAM ON NOSE RIDGE**151 152 153 **RESPIRATORY PROTECTION PROGRAM**

- Fit-tested respirators
 - N-95, N-100, elastomeric Half-Mask and Full Facepiece
 - Powered Air-Purifying Respirators (PAPR)
 - R & P-95 to 100 respirators
- Initial fit test required (qualitative)
- Health screening questionnaire (determine safety for user)
- Training

154 **N95 ALTERNATIVES**

- PAPR – re-usable battery-powered blower provides (+) airflow through a filter, cartridge, or canister to a hood or face piece.
- Loose-fitting, avoids fit-testing, OK with facial hair
- NOT source control (exhaled air forced out)
- Elastomeric half-face respirators: re-usable, seal required
- 2 brands have filtered exhalation valves (good source control)
 - Mine Safety Appliance . <https://us.msasafety.com/advantage290>
 - Dentec Safety Specialists https://www.dentecsafety.com/respiratory_protection_page_1.htm

155 **KN95 RESPIRATORS**

- KN95 = Chinese designation of filtration (N95 = U.S.)
- Same filtration
- KN95 – earloops, slightly more seal leakage

156 **RESPIRATORS & MASKS WITH EXHALATION VALVES**

- Do not provide source control
- Breath can contaminate surgical site
- Cover with surgical mask if used

157 **USER SEAL CHECK – EACH TIME**158 **LOOK OUT!
PROTECT YOUR EYES!**159 **2 ISSUES: PARTICULATE INJURY & INFECTIOUS FLUIDS**160 **EYE HAZARDS**

- Dental drilling generates debris @ 50 MPH
 - Blood & oral fluids: pathogens
 - Tooth material
 - Calculus
 - Pumice

- Broken dental burs
- Restorative material pieces
- Aerosols not addressed by previous regs

161 **IS THIS OK?**

162 **BOTTOM GAP**

163 **EYEWEAR**

Eyewear is essential for aerosolizing procedures

Eyewear must have side protection, fit closely

- Remove, reprocess eye/face shields when soiled
- Discard disposable eyewear, face shield after use
- Treat as contaminated (touch precautions)
- Leave pt care area to remove eye/face shields
-

164 **LASER EYE SAFETY**

- Direct & reflected laser energy beams can blind!
 - Beam reflects off mirrors, windows, surfaces, face shields
 - Avoid double-sided mirrors
 - Reduce reflecting surfaces in room
- Near-infrared lasers seek H₂O + cones in eyes
 - (810-1064nm wavelength)
 - Diode & NdYAG
- Mid & far-infrared lasers seek water (Eyes are fluid-filled)
 - Higher wavelengths
 - Erbium & CO₂
- Laser safety glasses – rated for NOHD (Non Ocular Hazardous Distance)
 - Specific to brand & wavelength
- Measure “safe” distance from source

165 **LASER RESPIRATORY PROTECTION**

- Plume extends far beyond “safe” beam distance
- N95 / N100 respirators
- Facial fit = vital
- Fluid resistance
- Wide HVE, $\leq 2''$ from source
- Eye protection – close fitting

166 **LASER WARNINGS**

- Laser fiber: sterilize whole fiber: blood found 4" up channel on fiber
- Post & remove laser use sign so it is noticed

167 **CLINIC ATTIRE**

- Protective attire
- PPE = barrier

- Comply with OSHA regs
- Change / pt.
- SARS viable on uniforms
 - Polyester ~72 hours
 - Cotton/poly ~ 48 hrs
 - Cotton ~ 24 hrs
- Hot water & detergent!
-

168 **PPE TO TREAT NON-COVID-19 PATIENTS**

- Gloves, gown
 - Change gown if soiled. Discard in dedicated container in care area. Launder cloth gowns after each use. Use disposable gowns for only 1 patient.
- N-95 respirator
 - Remove & discard disposable respirator after exiting operatory
-

169

170 **SHOES**

- Shoes shown to carry infective SARS CoV-2 virus
- Isolation / separation & disinfection recommended
- Washing: >140°F, soap, water bleach (UK NHS)
- 70% alcohol & water (CDC)
- Surface disinfectant wipes?
- Do not take work shoes home
- Touch & storage precautions

171 **HAIR COVERING**

Bonnets not required

172 **HAND HYGIENE \geq 20 SECONDS OF LATHERING**

Focus on.....

- Fingernails
- Cuticles
- Webs
- Thickened skin
- Damaged skin
- Thumbs
- Wrists

173 **MOST RECOMMENDED: COMBINED PROTOCOL**

- 1 • Plain soap – routine handwashing
- 2 • Antimicrobial / alcohol hand rub on unsoiled hands
 - No triclosan!

174 **HOW LONG SHOULD THE ALCOHOL SANITIZER STAY WET ON YOUR HANDS?**

- 5 seconds
- 8 seconds
- 15 seconds
- 20 seconds
-

175 **IS WATERLESS HAND-RUB EFFECTIVE?**

- Should have ethanol, not isopropyl alcohol
 - Less drying to skin
 - More effective vs. Viruses
- Must have enough emollients for heavy clinical use
- FDA cleared for medical use
 - "Safe and effective"
 - Must have > 60% ETOH
- Contact time: 15 sec.

176 **COMMON MISTAKES
(THAT HARBOR ORGANISMS &
MAY DAMAGE GLOVES)**

- False nails, Nail polish & applications
- Un-manicured nails
- Jewelry
- Petroleum-based products

177 **HOW LONG ARE GLOVES INTACT DURING USE?**

- 2 • No exact data
- Change per patient & when compromised
- No longer than 1 hour
- Do you trust your gloves?
- 4% may leak
 - Buy quality
- Gloves do not replace hand hygiene
-
- §1005 (b) (8)
-

178 **RESPECT GLOVE LIMITS!
WHAT DESTROYS GLOVES?**

- Soap & water
- Oils – all types
- Petroleum, lanolin, mineral, palm & coconut oils
 - Emollients in products
 - Make-up
- Sweat, dental materials
- Stretching, donning, removing

• Use!!!-

CDC MMWR 2003

179 **CHOICES WITHIN REACH BUT AEROSOL-PROTECTED**

180 **COVID-19: GREATEST IMPACT**

Include respiratory diseases in your safety standard:
"Consider everyone infectious"

No going back

After HBV vaccine: still using gloves!

After COVID: respirators

181 **INFECTION CONTROL & OSHA UPDATE
IN THE SHADOW OF COVID-19**