

1 **CALIFORNIA INFECTION CONTROL
ARE WE SAFE "ENOUGH"?**

2 **WHAT WE WILL COVER**

- CDB 16 CCR, §1005 IC regs
- Today's safety standards in perspective
- Basic tenants of infection control & prevention
- Rules: minimum standards
- Guidelines & best practices
- 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 **DISEASE X
NEXT PROBABLE INFECTIOUS DISASTER**

- 1 Pseudonym - Yet-unknown infectious pathogen capable of human-human transmission (all zoonotic)

WHO project: global health Preparedness for next possible threat

Goal: world cooperation, funding, SCIENCE

- 2 • Crimean-Congo hemorrhagic fever

- Ebola virus disease
- Marburg virus disease
- Lassa fever
- Nipah & henipaviral diseases
- Rift Valley fever

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- 3 • MERS

- SARS
- COVID-19
- Influenza

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- Zika & Dengue
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- PRION diseases

6 **CHAIN OF INFECTION**

7

8 **SURGICAL STERILE STANDARDS VS. NON-SURGICAL DENTAL STANDARDS**

- Surgical standards:
 - Surgical hand preparation
 - Sterile gloves
 - Sterile water
 - Sterile drapes / dressings
- Non-sterile standards – Standard & transmission – based precautions

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

- Hand hygiene
 - PPE
 - Respiratory hygiene / cough etiquette
 - Sharps safety
 - Safe injections
 - Instrument, device sterilization
 - Environmental asepsis cleaning, disinfection, barriers
- 16 CCR, §1005(a)(1), (b)(1)

10 **STANDARD PRECAUTIONS**

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

11 **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, norovirus
- Stay informed: CDC.gov, OSHA.gov, OSAP.org, CDA.org

12 **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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13 **PROBLEM:**14 **ELIMINATION & SUBSTITUTION**

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

15 **SCREEN FOR ALL INFECTIOUS RESPIRATORY CONDITIONS**

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- Do NOT treat patients with Aerosol Transmitted Diseases (ATD)
- Take Temperatures!

16 **AEROSOL TRANSMISSIBLE DISEASES**

- Pathogens capable of surviving air suspension:
 - Desiccation
 - Travel on dust particles, air currents
 - Particles < 5 μ large enough for viral load, small enough to travel > 20'
 - Absorbed through conjunctivae, mucosal tissue of nose, respiratory tract
- 6' distancing is not enough
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17 **COVID CONCERNS**

- SARS-CoV-2 linked to newly diagnosed diabetes & heart damage & attacks, arrhythmias, strokes, clots
 - \geq 30 days after infection
 - All ages! (Not just <18)
- Post-COVID (even mild); screen for:
 - Frequent urination, increased thirst & hunger, weight loss, fatigue, stomach pain, nausea, vomiting
 - Arrhythmias, heart attack & stroke symptoms
 - Ask patients & be self-aware

18 **COVID CONCERNS**

- New variants – evade immunity
- Current surge (detected in wastewater)
- Long COVID???? (1 month after illness) ~10% of U.S. cases
 - Fatigue, respiratory, cardiac, neuropsychiatric and GI dysfunctions...
 - Immunocompromised, diabetes, heart, lung, kidney diseases...
 - Autoantibodies
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19 **AGP: AEROSOL GENERATING PROCEDURE OR PEOPLE!**

20 **AIRBORNE TRANSMISSION**

21 **CRITERIA FOR DETERMINING RISK:
TIGHTEN OR LOOSEN SAFETY CONTROLS?**

- Disease activity locally
 - Specific pathogen features (mode of transmission, transmissibility, severity)
- Mitigation strategies in place
 - Administrative controls
 - Rules, protocol, management (screening, source control...)
 - Eliminate/reduce contact & exposure
 - Tele-dentistry, distancing, barriers
 - Engineered safety devices / technology
 - Suction, HVAC, Air filtration & changes
 - PPE
- Vaccination status + immune profile
- Aerosol generating procedures

22 **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
- Follow return-to-work guidance

23 **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

24 **MEASLES**

- 7-14 day incubation

- High fever, cough, runny nose, conjunctivitis
- @ 2-3 days: Koplik spots
- @ 3-5 days: Rash (from hairline progresses down body)
- Ear infections, diarrhea, pneumonia, encephalitis (brain swelling), deafness, intellectual disability, death
- Vaccine refusal
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25 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
-

26 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

27 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

28 **NOROVIRUS**

- Most common cause - acute gastroenteritis in U.S.
- Symptoms: extreme vomiting & diarrhea
- Infective dose: <100 virions. Ill people shed billions even >2 weeks after symptoms resolve
- Ingestion: food, water, hand-to-mouth (restaurants), recreational & drinking water
- No vaccine, hand sanitizers not effective
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29 **MPX**

30 **MPOX**

INFECTIOUS UNTIL LESIONS TOTALLY RESOLVED – NEW SKIN FORMED

31 **POLIO**

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- 1980's – eradicated in U.S.
 - July/August, 2022: 1 w/ paralysis
 - Tip of the iceberg
 - Don't forget iron lungs
 - Fecal-oral transmission
- Vaccine - preventable
- Unvaccinated children!
- Surface disinfection, x-contamination, PPE

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

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

- All vaccines: ~5-10% of vaccinated may not respond (or weakly)
- Vaccines assist immunity,
 - Build antibodies ~ 2 weeks
- Host's immune system determines the strength of both recovered (convalescent) & vaccine immunity
 - Immunocompromised likely to have less & shorter immunity

34 **MAKE SURE YOU ARE PROTECTED!**

- 1
 - HBV
 - HAV
 - Influenza
 - Measles
 - Mumps
 - Rubella
 - Varicella-Zoster
 - Polio
 - COVID-19
 -
 - www.CDC.gov: new adult vaccine recs
 - OSHA policies:
 - New hires & employees
 -
- 2
 - Tetanus, diphtheria
 - Pertussis
 - Pneumonia
 - Meningitis
 - HPV
 - Smallpox??

35 **ENGINEERING CONTROLS**

Physical protection

36 **BUILDING SAFETY STANDARDS**

- IAQ (healthy vs. Sick buildings)
 - Airborne diseases
 - Legionella, viruses, molds
 - Indoor chemical pollutants – high during operating hours
 - VOCs, CO₂, particulates
 - Allergies, illness
- U.S. medical settings must meet healthcare building codes
 - Air changes / hour (ACH) – set for medical hospitals
 - (Dental???)
- Dental is under business codes currently. Changing....
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37 **NEW ASHRAE STANDARD 241 TO CONTROL INDOOR AIRBORNE PATHOGENS**

- Defines “normal” & “high infection risk” times
- Requires Infection Risk Management Mode (IRMM): ventilation levels - apply during times of higher infection risk
- IRMM for a space – based on # of occupants
- Can be met by outside, filtered recirculated, or disinfected air
- Provides calculation models for IAQ monitoring
- Requires more testing of filters, mechanical systems

American Society of Heating, Refrigerating and Air-Conditioning Engineers, ASHRAE Standard 241-2023, Control of Infectious Aerosols. ISSN 1041-2336B [ashrae.org/241](https://www.ashrae.org/241)

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38 **ENGINEERING CONTROLS**

Built-in solutions for room air management

- Motors, ducts, filters
- 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)
- Change filters - may impede airflow
- Fit matters! Bypass airflow is not filtered

39 **ENGINEERING CONTROLS**

- Separate HEPA air cleaners
- Goals:
 - > circulation, air movement
 - Controlling airflow direction
 - Filtration
 - Source capture (external suction)
- Consider moist aerosols
- Validate equipment claims

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40 **HEPA FILTER UNIT CONSIDERATIONS**

- Air movement capacity: CFM (cubic feet per minute)
- Certified & clinically tested: meet CDC ACH standards
- Noise level
- Replaceable filters
- Location, air-flow direction

41 **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

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

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

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43 **KILLING AIRBORNE GERMS**

44 **ULTRAVIOLET GERMICIDAL IRRADIATION (UVGI)**

- Targets air & surfaces
- Directional (shadows)
- Must vacate room at higher doses
- Efficacy requires specific dosage, airflow, time
- MUST consider ozone emissions

45

46 **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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47 **HVE REQUIRED! – NEED 7-10 CUBIC FT/MIN SALIVA EJECTORS = INADEQUATE**

48 **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)?

49 **RECAP: VENTILATION STRATEGIES**

- Single operatories
- Generate less aerosol
- Optimize HVAC air changes
- Separate HEPA filters
- Optimize direct suction, exhaust equipment
- Between patients:
 - Vacate room after procedure:
 - High speed ventilation
 - UV
- Open windows?

50 **OTHER ENGINEERING CONTROLS**

- Needle caps
- Sharps containers
- Distances and walls: isolation / separation
- Equipment safety features

51 **ADMINISTRATIVE CONTROLS**

- Rules, training, consensus
- Respiratory hygiene / cough etiquette, hand hygiene
- Scheduling: isolate & separate patients in time & space
- Appropriate source control – face coverings
- Infection control coordinator
- Respiratory protection program
 - ADA, OSHA

52 **HIERARCHY OF RULES**

- OSHA: Occupational Safety & Health Administration laws
 - Based on CDC, NIOSH, ANSI recs
- State Board laws
 - Include CDC & OSHA 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, State Associations, ADA, OSAP (compliance = common, voluntary)
- Competition, marketing, reputation

16 CCR, §1005

53 **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

Applies to all – potentially exposed

All DHCP must comply with & follow OSHA laws

16CCR, §1005 (a) (13), (b) (1-3)

[https://govt.westlaw.com/calregs/Document/IDB85BD734C8111EC89E5000D3A7C4BC3?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=\(sc.Search\)&navigationPath=Search%2fv1%2fresults%2fnavigation%2fi0a89994c00000](https://govt.westlaw.com/calregs/Document/IDB85BD734C8111EC89E5000D3A7C4BC3?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2fi0a89994c00000)

191c42fa5d156a35247%3fppcid%3df7e08c2e65b04a35b9a99f40dcd263dc%26Nav%3dREGULATION_PUBLICVIEW%26fragmentIdentifier%3dIDB85BD734C8111EC89E5000D3A7C4BC3%26startIndex%3d1%26transitionType%3dSearchItem%26contextData%3d%2528sc.Default%2529%26originat ionContext%3dSearch%2520Result&list=REGULATION_PUBLICVIEW&rank=1&t_T1=16&t_T2=1005&t_S1=CA+ADC+s

54 **EVOLVING RULES, RECOMMENDATIONS:**

- OSHA just ended COVID-19 Standard
- Now consider COVID-19 among other infectious diseases
- OSHA now working on broader Infectious Disease Standard for healthcare
- Follow existing rules for worker protection based on risk
- Follow CDC [recommendations for healthcare](#)
- Increase precautions when risk is recognized
 - When public health risks announced
 - Based on modes of transmission

55 **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

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

Recordkeeping

(29 CFR 1904)

OSHA incorporates CDC, ANSI, NIOSH rules by reference

56 **CAL/OSHA – CCR TITLE 8 REGULATIONS**

- § 5193. Bloodborne Pathogens.
 - <https://www.dir.ca.gov/title8/5193.html>
- §5144. Respiratory Protection.
 - <https://www.dir.ca.gov/title8/5144.html>
- §5199. Aerosol Transmissible Diseases: "The ATD standard"
 - <https://www.dir.ca.gov/title8/5199.html>
 - Must screen and exclude ATDs to be exempt
- §3205. COVID-19 Prevention. Feb 3, 2023
 - <https://www.dir.ca.gov/title8/3205.html>
 - New IAQ standards, allows choices for PPE & policy based on risk
- CA Dept. of Pub. Health: Guidance for The Use Of Facemasks Apr. 3, 2023
 - <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Guidance-for-Face-Coverings.aspx>
 - Replaces "mandated" masking with "recommended" in healthcare
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57 **OSHA'S GENERAL DUTY CLAUSE**

- All employers will furnish a place free from RECOGNIZED hazards that cause or are likely to cause death or serious physical harm
 - "recognized": by industry, employer, or common sense
 - Ex: encourage employees to be vaccinated, use PPE, safe practices (recognized by OSHA as best precautions)
- MUST comply with all OSHA standards

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- Each employee shall comply with OSHA standards and all rules, regulations related to their own actions

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

58 **UPDATE & EDIT YOUR IC PLAN**

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

59 **MASKS & SANITIZER FOR PATIENTS**60 **INFECTION CONTROL COORDINATOR**

- Assign a person
 - Safety Manager
 - Must be a leader
 - Qualified, trained, empowered
 - Any of us might qualify!
- Get certified: Dental Infection Prevention and Control (CDIPC)

Email: office@MyADS.org

Phone: +1 (410) 571-0003

61 **ADS**

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.

MyADS.org

join today!

62 **ADS NEWSLETTER**

Link policy to practice

Every 2 months

Scenarios

Problem solving
 Checklists, references
 Tools
 Real issues!

63 **CULTURE OF SAFETY**

- Dental safety team
- Shared knowledge
 - Training
 - Meetings, huddles
 - Open communication
- Shared values

64 **DENTAL PATIENT SAFETY FOUNDATION**

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- Report near misses, adverse events anonymously
- Learn from other's experiences & mistakes
- <https://www.dentalpatientsafety.org/>

65 **DENTAL OFFICE
 SURFACE ASEPSIS**

66 **OPERATORY ASEPSIS**

2 CHOICES:

COVER IT OR DISINFECT IT

67 **USE FDA CLEARED MEDICAL GRADE BARRIERS
 (TESTED FOR VIRAL & BACTERIAL PENETRATION)
 IF CLEANING & DISINFECTION WILL HARM SURFACE / DEVICE
 CHANGE: EACH PATIENT, WHEN VISIBLY CONTAMINATED / DAMAGED
 §1005 (B) (19)**

68 **CHEMICAL CLEANING & DISINFECTION
 FOLLOW LABEL DIRECTIONS**

- Clean (surfactant) before disinfecting
 - High alcohol fixes proteins to surfaces
 - Proteins neutralize disinfectants
 - Wear Utility gloves
- (CDC, CCR16, §1005(a)(8,10), (b)(4, 5, 10, 11, 20))

69 **DISINFECT**

- Personal items
- Housekeeping surfaces:
 - Soap & water or EPA low-level
 - With blood, OPIM: intermediate-level
- Critical surfaces: low to intermediate-level

- (CDC), 16 CCR, §1005(b)(11,14,)

70 **STERILIZATION & DISINFECTION**

- Prions
- Bacterial endospores
- Fungal spores
- "Cold sterile" - (some 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, hepatitis A, B & C, HIV, Ebola, SARS CoV-2* (CDC), 16 CCR, §1005(a)(5,6,7,8,9) (b)(20)
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71 **CLEAN & DISINFECT – 2 STEPS!**

CLEANING	DISINFECTION
Spray	Wipe Spray

72 **CLEAN BEFORE DISINFECTING**

73 **"SINGLE-STEP CLEANER-DISINFECTANT"**

74 **LEAVE FOR STATED TIME**

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

EXAMPLES: HIV, HEPATITIS

76 **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

77 **SAFE INJECTION PRACTICES**

78 **SAFE RE-CAPPING**

- Only recap needles using:

- Scoop technique

- Mechanical devices designed to
- hold needle sheath
- eliminate need for 2 handed capping

§1005 (b) (9)

79 **SHARPS & WASTE**

- Follow OSHA rules
- Do not bend/break needles
- Dispose of all sharp items in puncture resistant containers near source
- Dispose of pharmaceutical waste as per EPA
- Dispose of contaminated solid waste as per Fed. & state EPA

OSHA, CDC, CCR16, §1005(b)(9,22)

80 **LAB SAFETY**

- Splash shields, equipment guards
- Fresh pumice
- New / sanitized rag wheels
- Disinfect appliances, impressions
- Store aseptically
- Rinse B4 delivery to patient

16 CCR, §1005(b)(23,24)

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81 **POST EXPOSURE MANAGEMENT**

- Know your immune status: HBV booster needed???
- Exposure packet
 - Phone numbers, forms, driving directions, payment arrangements
- Direct MD re: testing, disclosure
- Rapid HIV, HCV testing – SOURCE PERSON
- Response windows for maximum PEP effect:
 - HIV - ART – 2 hours
 - HBV – 24 hours: HBV vaccine, HBIG
- PEP follow-up: after exposure test 3-6 weeks, 3-6 months, 9 months
- Counseling

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82 **HEPATITIS B CDC 2023 UPDATES**

- Screen all >18 years at least once – triple panel test
 1. HBsAg = chronic or acute infection (or recent vaccine, temporarily)
 2. Antibody to HBsAg (Anti-HBs) – indicates infection recovery, indicates immunity in never infected vaccinated
 3. Total antibody to core antigen (anti-HBc) indicates HBV infection, lasts for life
 - Chronic infection: total anti-HBc & HBsAg (+)
- HBV DNA measures viral load
- HBeAg indicates viral replication, high infectivity

83 **HEPATITIS B CDC 2023 UPDATES**

- Screen all pregnant, each pregnancy for HBsAg
 - Regardless of history of tests or vaccine
- Risk-based testing for:
 - Incarcerated
 - Multiple sex partners
 - HCV (+)
- Test anyone who asks for test

https://www.cdc.gov/mmwr/volumes/72/rr/rr7201a1.htm?s_cid=rr7201a1_w

84 **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 §1005 (b) (18)

85 **FOR POTABLE WATER
YOUR OFFICE SHOULD:**

- Use non-retracting dental units
- Shock dental unit – start with clean system
- Add high quality source water
 - FRESH drinking water
- Flush or purge lines in AM for 2 min./line (handpieces, tips 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 equipment & DUW product)
- Monitor water (test) §1005 (b) (21)

86 **WATERLINE TREATMENT OPTIONS**

- Chemical “Shock” - removes biofilm temporarily

- Liquid Ultra, Sterisil, (bleach not approved)
- Caustic, may injure tissue. Rinse !
- Continuous chemical "maintenance" - lowers biofilm, keeps CFU's low.
 - DentaPure 1 /year (dry bottle at night)
 - BluTube 1/6 months
 - BluTab (Silver ions) – ProEdge (keep bottle on)
 - Sterisil / Citrisil
- Requires access to DUWL

87 **BIOCIDES:**

WHERE DO YOU ACCESS YOUR DUWL?

- Bottles (reservoirs): add biocide to bottle by:
 - Tablet
 - Liquid
 - Cartridge (straw)
- In-line cartridges, not in bottles:
 - In cabinet or junction box of dental unit
- Multi-unit water system:
 - Large cartridges serving multiple rooms/units
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88 **HOW DO YOU KNOW YOUR WATERLINES ARE SAFE?**

- Commercial lab testing
- Test quarterly, rotating lines (empiric evidence, not regulated)

89 **IN-OFFICE WATER TEST**

- Specific to DENTAL water
- 48-72 Hour Incubation
- Neutralization formula within the paddle
- Colonies easy to see & count

90 **EXAMPLE: IN-OFFICE 15 MIN. TEST
PASS / FAIL @ 500 CFU**

91 **WATERLINE TESTING PLAN**

- Assign trained person
- Test monthly in office
 - Fail? Shock, re-test (immediately & 1 week)
 - Fail again? Lab test, consult
- Test quarterly – mail-in lab test
 - Fail? Consult
- Records
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92 **TREAT, SHOCK, AND TEST ALL WATERLINES**

93 **INSTRUMENT PROCESSING:
HIGHEST LEVEL OF ASEPSIS**

- 94 **INSTRUMENT PROCESSING**
"TRAFFIC FLOW"
- 95 **PRE-CLEANING & HOLDING/SOAKING:**
AVOID SCRUBBING LATER
- 96 **ENZYME PREVENTS DEBRIS ADHERENCE**
- 97 **ULTRASONIC CLEANING:**
ALLOW BUBBLES TO WORK
- 98 **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
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- 99 **COMMON CLEANING ERRORS**
- 1 Ultrasonic
 - 2 • Insufficient time
 - Detergent concentration
 - Ineffective cavitation
 - Inappropriate temperature
 - Overloading
 - 3 Washer-Disinfector
 - 4 • Wrong cycle ("rinse-hold")
 - Inadequate water spray: spray impingement
 - Clogged spray arms
 - Pump/line clog or malfunction
 - Overloading
- 100 **CHECK ULTRASONICS OR WASHERS WITH WASH-CHECKS**
- 101 **CDC & CDB PROFESSIONAL STANDARD**
- Treat as semi-critical:
 - Must heat sterilize ALL:
 - Removable handpieces (high & low speed)
 - Rotary components
 - Reusable attachments (AWS tips, ultrasonic scaler tips...)
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- §1005 (b) (15)

102 **WHAT'S WRONG?**103 **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 1 yr
 - §1005 (b) (17)

104 **2 STERILIZATION LOGS**

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

105 **SAFETY: PERCEPTION & REALITY**

- Label instrument packages (date)
 - Expiration of wrap
 - In case of failed spore test
- Keep packaged until used
 - If unwrapped for (flash) sterilization, use immediately
- Store covered, away from "splash zone"
- Prevent cross - contamination
- "Present" sterile packs to patient
-

106 **IF YOU DON'T CLEAN IT**

- You can't disinfect it
- You can't sterilize it

107 **DENTAL ADVISOR STUDY****J. A. MOLINARI, P. NELSON (DENTAL ADVISOR, 2012)**

- ~10% of used & sterilized metal tips showed microbial contamination
- Visual debris was found

108 **SINGLE-USE DISPOSABLES****CCR16, §1005 (B)(14)**

109 **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
-

FDA, OSAP Annual Symposium 2022

110 **PPE: PERSONAL PROTECTIVE EQUIPMENT**

2 Required for spray or spatter of:

- Droplet nuclei
- Blood
- Chemical / germicidal agents
- OPIM
-
- Remove when leaving patient care areas
- Follow OSHA rules

16 CCR, §1005(b) (4, 5)

111 **MASKS REGS & OPTIONS**

- MUST: Masks while in office appropriate to exposure
 - FDA / NIOSH-approved PPE
 - Mask, eyewear/faceshield
 - BEST: based on risk
 - Respirators for aerosols
 - Respirators (or masks & face shield) for non-aerosol pt. Care
- CDC, CCR16, §1005(b) (4)

112 **MASKS ONLY WORK
IF YOU WEAR THEM CORRECTLY**113 **PPE: SURGICAL MASKS**

- Masks are bi-directional physical barriers
- Mostly keep germs in – protect others!
- Limited protection for user
- Single-use

CCR16, §1005(b) (4)

-
-

114 **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
 - Disinfect / dispose between patients
 - 20 min - 1 hour! (normal conditions)
- CCR16, §1005(b) (4)

•

115 **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

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

117 **WET, DAMP MASKS LOSE CHARGE**

118

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

119 **FACIAL HAIR & RESPIRATOR SEAL**

120 **KN95 RESPIRATORS**

- KN95 = Chinese designation of filtration (N95 = U.S.)
- Same filtration
- KN95 – earloops, slightly more (8%) seal leakage
- MUST be NIOSH approved
- NOT acceptable by OSHA if N95 is required

121 **USER SEAL CHECK – EACH TIME**

122

123 **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

124 **LOOK OUT!****PROTECT YOUR EYES!**125 **2 ISSUES: PARTICULATE INJURY & INFECTIOUS FLUIDS**126 **IS THIS OK?**127 **BOTTOM GAP**128 **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
-

129 **FACE SHIELD DESIGN****TOP, FRONT, SIDE AND BOTTOM PROTECTION**130 **LASER EYE SAFETY**

Laser beam:

- Direct & reflected laser energy beams can blind!
 - Beam reflects off mirrors, windows, surfaces, face shields
 - Avoid double-sided mirrors
 - Reduce reflecting surfaces in room
- Lasers penetrate H₂O + dark cones in eyes
- Laser safety glasses – rated for NOHD (Non Ocular Hazardous Distance)
 - Specific to brand & wavelength
 - No scratches!
- Measure “safe” distance from source

Laser plume: can infect eyes!

131 **LASER RESPIRATORY PROTECTION**

- Plume extends far beyond “safe” beam distance
- N95 / N100 respirators
- Facial fit = vital
- Fluid resistance
- Wide HVE, ≤ 2 ” from source
- Extraoral evacuation
- Laser Safety Officer

ANSI Z136_3_2018

132 **CLINIC ATTIRE**

- Protective attire
- PPE = outer barrier
- Comply with OSHA regs
- Change / pt.
- Remove to leave clinic
- Hot water & detergent!
-

CCR16, §1005 (a) (11), (b) (5)

Title 8, CCR §5193

133 **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

134 **HAIR COVERING**

Bonnets protect absorbent hair

135 **CALIFORNIA REQUIRES X-RAY SHIELDS**

[Title 17 of the California Code of Regulations \(CCR\)](#)

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

Focus on.....

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

137 **MOST RECOMMENDED:
COMBINED PROTOCOL**

- 1 • Plain soap – routine handwashing, soiled hands
 - 2 • Antimicrobial / alcohol hand rub on unsoiled hands
- 16 CCR, §1005(b) (6)

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

- 5 seconds
- 8 seconds
- >15 seconds
- 60 seconds
-

139 **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.

140 **COMPROMISED SKIN**

- Non-intact skin may allow pathogens, irritants, allergens to enter
- May NOT treat pts. or handle pt. care items until weeping dermatitis resolves
 - §1005 (b) (6,7)

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

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

142 **PATIENT TREATMENT GLOVES**

Wear to protect from:

- Mucous membranes
- Blood
- OPIM
- Germicidal agents

Pre-clinical, clinical, post-clinical, lab procedures

Hand hygiene & dry B4 & after use

CCR 16 §1005 (b) (6,8)

143 **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!!!-
- 4% have pin-holes

CDC MMWR 2003 16 CCR §1005 (b) (8)

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

145 **CALIFORNIA INFECTION CONTROL
ARE WE SAFE "ENOUGH"?**