

1 **INFECTION CONTROL IN THE SHADOW OF COVID-19**2 3 4 **WE'VE COME A LONG WAY.....**5 **"RECENT" PANDEMICS & EPIDEMICS THAT CHANGED SAFETY STANDARDS**

- 1918-1919 "Spanish flu" A(H1N1)
- 1957-1958 "Asian flu" A(H2N2)
- 1968-69 "Hong Kong flu" A(H3N2)
- 1980's HIV / AIDS
 - OSHA Bloodborne Pathogen Standard
- 2002-4 SARS (coronavirus)
- 2009 "Swine flu" A(H1N1)
- 2013 Avian flu A(H7N9)
- 2019 SARS CoV-2
 - Respiratory protection standards

6 **EVOLVING RULES, RECOMMENDATIONS:
RISK BALANCED WITH URGENCY**

- Interim recommendations – increase safety precautions over Standard Precautions
 - But provide crisis compromises – preserve PPE, alternative PPE, supplies, practices
- Recommendations change & evolve
- Laws take time
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7 **HIERARCHY OF RULES**

- OSHA: Occupational Safety & Health Administration laws
 - Based on CDC 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"
- Consensus standards, Expert statements, ADA, OSAP, NIOSH, CDA
- Competition, marketing, reputation

8 **OSHA, CDC, ADA, CDA, OSAP
COVID-19 RECOMMENDATIONS**

- www.osha.gov/covid-19
- <https://www.osha.gov/SLTC/covid-19/dentistry.html>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>
- <https://pages.ada.org/return-to-work-toolkit-american-dental->

[association?utm_campaign=covid-19-Return-to-Work-Toolkit&utm_source=cpsorg-alert-bar&utm_medium=cpsalertbar-virus&utm_content=covid-19-interim-return-to-work](https://www.cda.org/Home/News-and-Events/COVID-19-coronavirus-Updates)

- <https://www.cda.org/Home/News-and-Events/COVID-19-coronavirus-Updates>
- [https://cdn.ymaws.com/www.osap.org/resource/resmgr/dentaquest/INC-1353 Best Practices for .pdf](https://cdn.ymaws.com/www.osap.org/resource/resmgr/dentaquest/INC-1353_Best_Practices_for_.pdf)

9 **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 & follow OSHA laws
(b) (1-3)*

10 **UPDATE & EDIT YOUR IC PLAN**

- Injury & Illness Prevention Program
 - OSHA manual (CDA)
 - Standard Operating Procedures (SOP's) = written step-by-step plans
- Instructions for Use, SDS & logs
- Calibration & training
- New: Create Respiratory Protection Program!

11 **CDC REC'S & OSHA REG'S**

<http://www.cdc.gov/OralHealth/infectioncontrol/guidelines/index.htm>

2016 CDC Checklists to be used along with 2003 Infection Control Recommendations

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html#section-2>

Aug 4, 2020 CDC COVID update

OSHA's Bloodborne Pathogens ([29 CFR 1910.1030](#))

(BBP does not address respiratory secretions)

Personal Protective Equipment ([29 CFR 1910.132](#))

Respiratory Protection standards ([29 CFR 1910.134](#))

12 **SARS-COV-2 CAUSES COVID-19 ILLNESS**

- Severe Acute Respiratory Syndrome Coronavirus 2
- Respiratory, cardio-vascular, multi-system infection
- <1% case fatality ratio
- 2 new flu varieties in China –
 - H7N9 (avian) 30% case fatality ratio
 - G4 (swine) ?%
 - Human-to-human transmission not known
- Cataclysmic potential
- Pathogens spread at the speed of a jet
-

13 **SARS COV-2 CELL ACCESS**

- Coronaviruses are enveloped positive-sense RNA viruses
- SARS CoV-2 binds to angiotensin-converting enzyme-2 (ACE-2) receptors
- ACE-2 viral receptors - found on endothelial cells in ocular & respiratory mucosa, gastrointestinal tract, blood vessels, heart & kidneys
 - Varied symptoms reported: vascular, cardiac, ocular, respiratory, GI, renal
- Endothelial cells impact vascular integrity, thrombosis, immune response
 - Bradykinin storm
- TX: antivirals, convalescent AB's, monoclonal AB's, Calm immune response, anti-inflm.
-

14 **COVID-19: TRANSMITTED BY DROPLET, CONTACT & AEROSOLS**

- Coughing, sneezing, laughing & dentistry project droplets – 3-6+'
- Small (< 5 μ) fluid droplets & particles dry in seconds, float on air currents, remain indefinitely
- Super-spreader events: inside, talking, singing, shouting, poor ventilation
- Talking: exhale aerosols 10X more than breathing
- Loud talking, singing: high risk
- Being outdoors is 20X safer than indoors (shown by contact tracing)

15 **COVID-19 AEROSOL RISK**

- Absorbed through conjunctivae, mucosal tissue of nose, respiratory tract
- Spread by pre-symptomatic or asymptomatic carriers (50% of infections)
- No longer rely on symptom detection to screen out ill patients
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16 **OSHA: DENTISTRY = "VERY HIGH RISK" CATEGORY**

- Enclosed spaces, >15 min. during and after tx
- Proximity (<6')
- Aerosols & droplets: (handpieces, ultrasonic scalers & air-water syringes)
- Asymptomatic carriers
- Lack of dental indoor air quality management & guidelines
- Unknown ventilation effectiveness

<https://www.osha.gov/SLTC/covid-19/dentistry.html>

<https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-sars-cov-2.html>

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17 **CHAIN
OF
INFECTION**18 19 **STANDARD PRECAUTIONS**

- Proven effective for controlling
 - Bloodborne diseases
 - Contact diseases

- Droplet diseases
-
- Not effective for airborne diseases

20 **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

21 **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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25 **ELIMINATION: BREAK THE CHAIN**

- Avoid exposure when it makes sense

26 **ELIMINATION & SUBSTITUTION**

- Tele-dentistry (inform, assess, pre-screen, treat pts – phone) prior to appt & on arrival
 - Isolate, discharge, refer all symptomatic pts & HCWs
- Discontinue gathering in reception area
 - Wait in cars
 - Chairs 6' apart
 - Remove fomites: magazines, TV remote, pens...
- Avoid aerosolizing procedures
 - Hand instrumentation, low spray, high suction
- Re-assign roles for high risk HCWs to low exposure areas/tasks?

27 **WORKPLACE COVID-19 HAZARD ASSESSMENT**

(ADA CHECKLIST)

- Guide for assessing COVID-19 related risks
- Balance these:
 - Worker risk assessment (CDC recs, co-morbidities)
 - Equal Employment Opportunity Commission (EEOC) & Americans with Disabilities Act <https://www.eeoc.gov/laws/guidance/pandemic-preparedness-workplace-and-americans-disabilities-act>
 - May not discriminate (exclude, limit) workers unless they pose a "direct threat" (to self or others)
 - COVID-19 is a direct threat (OSHA & CDC)

28 29 **COVID-19 TESTING**

- Rapid antigen (swab) test ~50% false (-), few false (+)
- Salivary testing for virus available in other countries (rapid, less reliable)
- Useful for contact tracing and cluster detection
- PCR tests expensive, uncomfortable, require labs & HCWs, delayed results
- Point of care tests not in use YET

30 **ELIMINATION****INTERIM COVID-19 REC'S**

- Prioritize necessary care
- Implement source control:
 - Limit points of entry
 - Limit visitors
 - Separate appts
 - In time & space
 - Physical barriers: screens, windows, curtains

31 **SOURCE CONTROL:
MASKS CONTAIN DROPLETS, PROTECT OTHERS**32 33 **SCREEN PATIENTS**

- Screen for symptoms & fever prior to entry into facility
- Goals = reduce transmission by:
 - Early detection before or @ check-in
 - Prompt isolation
 - Defer elective TX?
 - Refer emergency / acute cases
 - For dental emergencies
 - For medical care
 - Implement appropriate precautions
- Prepare: possible COVID-19 (+) patient

- Follow OSHA policy & training for screening & isolation

34 **COVID-19 SCREENING**

- 1st: Fever, chills, shaking (88%)
- 2nd: Dry cough (68%), productive cough (33%)
- 3rd: GI distress, nausea, diarrhea
- Loss of smell "anosmia" (79%), taste (27%) – strong single diagnostic
- Sore throat, conjunctivitis, tinnitus
- Fatigue (38%)
- Gradual onset (Flu = sudden, cold = gradual)
- Runny nose (like common cold)
- Respiratory distress
- Muscle pain, headache
- Cardiac symptoms, blood clots
- Neurological disorders – may endure
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-
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35 **POST-VIRAL SYNDROME: "LONG HAULERS"**

- "Recovered" COVID-19 patients report ongoing or episodic symptoms
- Exhaustion, chronic fatigue (low blood O₂?)
- Shortness of breath, chest pain, cough
- Brain fog, poor concentration
- Joint pain, body aches, headaches
- Tachycardia
- Chills, sweats, GI distress
- Average: 40 years old, 4X more females than males
- Most were sick but not hospitalized & previously healthy, many not tested or had (-) tests (tested too early, late?)
- Most report diagnosis of "hysteria, female problems, stress"

36 **DENTAL WORKER COVID-19 SCREENING**

- Reduce # of HCW's & exclude/ protect more susceptible workers
- 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 ≥ 24 hours fever-free, improved symptoms

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38 **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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39 **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?
 -

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

40 **MAKE SURE YOU ARE PROTECTED!**

- 1 • 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
 -
 - 2 • Tetanus, diphtheria
 - Pertussis
 - Pneumonia
 - Meningitis
 - HPV
- 41 **ASYMPTOMATIC, AFEBRILE PATIENTS FOLLOWING COVID-19 CRISIS**
- Emergency tx. & elective care
 - Symptom screening
 - Patient temperature < 100.0° F = OK
 - History – travel, exposure / contact with possible COVID-19 (+) people?
 - Patient may be treated following these IC recs:
 - Avoid / reduce handpieces, A/W syringe, ultrasonic scalers
 - Prioritize hand instruments
 - Four-handed dentistry, high evacuation suction, dental dams
 - + N95 & shield for aerosolizing procedures
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- 42 **IF KNOWN / SUSPECTED COVID-19 (+) PT ENTERS OFFICE:**
- Do not treat: refer to location with airborne isolation precautions required for emergency dental care
 - (-) pressure room, 6-12 air exchanges / hour, full respiratory safety program (N-95 masks)
 - Mask patient
 - Release to home if not acutely ill, instruct to contact MD
 - If acutely ill, refer to hospital
 -
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- 43 **DEFINITION OF AN EXPOSURE**
- “Prolonged Exposure” / high risk event = inside building;
 - No mask / respirator
 - No eyewear if pt is not masked
 - Not wearing ALL PPE for aerosol procedures
 - (respirators, eyewear etc)
 - Close contact $\leq 6'$ for 15 min.
 - Direct contact with secretions, excretions of COVID+
 - Highest risk: nose, eyes, mouth
 - Rules = flexible re: community transmission levels
 - Work restrictions (quarantine) – apply until test results known
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- 44 **RISK ASSESSMENT:**

EVALUATING POSSIBLE EXPOSURES

- “Infectious period” = 2 days prior to symptoms – until “termination of Transmission-Based Precautions”:
- Determined by testing or symptoms & risk analysis
 - At least:
 - 10 days since 1st symptoms
 - 3 days since end of symptoms and resolution of fever (no anti-fever meds)
 - 2 (-) tests, 24 hrs apart
- CDA flowchart to handle work exposures
- Workers must report exposure to employer
- Patients should be alerted if possible exposure occurred
-
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45 **STRETCH YOUR NECK: FRONT, BACK, SIDE TO SIDE.**

46

47 **ENGINEERING CONTROLS**

- Devices designed to increase safety
- Organize facility space into infection control zones
 - Keep similar activities together – same PPE
 - Prevent cross-contamination
 - Similar HVAC requirements
- Separate rooms, barriers, training
 - Clinic zone
 - Employee zone
 - Business zone
 - Public zone

48 **ENGINEERING CONTROLS**

Room air management

- Best = Isolation room
- Optimize building HVAC fresh air changes & cycles, filtration & antimicrobial air treatment
- Clean, maintain, manage HVAC systems
- Consider adding HEPA filtration / air cleaner units to HVAC

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

- Consider adding HEPA filtration / air cleaner units to HVAC
- Design modifications, retrofit hoods, suction (professional engineer)
- Space dividers, walls, distancing patients 6'
- Air disinfection technology: ozone, UV
- External evacuation units
-
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- 50 **ROOM AIR CONTROL: PHYSICAL MODIFICATIONS?**
- Design modifications, retrofit hoods, suction (professional engineer)
 - Space dividers, walls, distancing patients 6'
 - Define space then calculate correct air changes needed for space
- -
- 51 **AIR MANAGEMENT**
- 52 **ROOM AIR CONTROL STAND-ALONE UNITS**
- External suction – “local ambient” air capture
 - Must accommodate water
 - Sound: compare to A/W syringe (67dB)
 - HEPA air purifiers
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- 53 **ULTRAVIOLET GERMICIDAL IRRADIATION (UVGI)**
- Upper room UVGI used in medical isolation rooms
 - Insufficient data - dental
 - Must vacate room at higher doses
 - Efficacy requires specific dosage, airflow, time
 - UVGI not recommended inside HEPA filtration units – air flow – too fast
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- 54 **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. (previous CDC)
 - Open windows?
- 55 **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
- 56 **AVOID / MANAGE AEROSOLS**
- 57 **HVE REQUIRED!
SALIVA EJECTORS ARE NOT ADEQUATE**
- 58 **SPRAY – 18”,
SALIVA EJECTOR INADEQUATE**

59 **HVE
SAFETY SUCTION**

60

61 **SOURCE CONTROL & PROTECTION**

62 **INVENTIONS**

63 **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)?

64 **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

65 **RESPIRATORY HYGIENE /
COUGH ETIQUETTE**

66 **MASKS & SANITIZER FOR PATIENTS**

67 **COVER YOUR COUGH SUPPLIES**

68 **RESPIRATORY HYGIENE, COUGH ETIQUETTE
POST SIGNS**

- Cover your cough (lists symptoms patients should report to staff)
- <http://www.cdc.gov/ncidod/dhqp/pdf/Infdis/RespiratoryPoster.pdf>
- Cover your cough instructions and fliers in several languages
- <http://www.cdc.gov/flu/protect/covercough.htm>

69 **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/RoleofCPC?> – OSAP initiative

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70 **“FLOATER” (NEW) ROLE**

71

72 **TELEDENTISTRY: SCREENING, CONSULTATIONS, PRE & POST CARE
(LEGAL LIABILITY, TRAINING)**

73 **DENTAL OFFICE
SURFACE ASEPSIS**

74 **OPERATORY ASEPSIS**

2 CHOICES:

COVER IT OR DISINFECT IT

75 **REMOVE CLUTTER**

76 **SIMPLIFY SURFACES**

Environmental disinfection = cardinal feature in dentistry

Don utility gloves, face protection

77 **USE FDA CLEARED MEDICAL GRADE BARRIERS**

(TESTED FOR VIRAL & BACTERIAL PENETRATION)

78 **ENVIRONMENTAL ASEPSIS
(UNSEEN DROPLETS)**

- EPA intermediate level disinfectant - operatories
- Extend frequent disinfection protocol - all touch / transfer surfaces
- EPA list of SARS CoV-2 disinfectants
- Wait for droplets to settle?
 - (15 min.?)
- Weekly deep cleaning – remove chemicals, dry biofilms

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

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

80 **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)

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

Spray

DISINFECTION

Wipe

Spray

82 **CLEAN BEFORE DISINFECTING**83 **“SINGLE-STEP CLEANER-DISINFECTANT”**84 **LEAVE FOR STATED TIME**85 **BLOODBORNE DISEASES
(BLOOD & FLUIDS = INFECTIOUS)****EXAMPLES: HIV, HEPATITIS**86 **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

87 **THINGS HAPPEN**88 **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)

89 **STRETCH**

90

91 **DENTAL WATER QUALITY**

92 **INTERIM COVID-19 DENTAL RECOMMENDATIONS: DENTAL WATERLINES**

- After non-use:
 - Contact DUWL product &/or dental unit manufacturer
 - Drain waterlines
 - Assemble products & supplies
- Prior to use:
 - Test &/or shock
 - Bypass waterlines for surgery or if lines are not prepared (bulb syringe, etc)

93 **2 STANDARDS FOR WATER SAFETY**

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

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

- A. Flush lines in AM for 2 min./line (handpieces off)
- B. Flush lines between patients for 20 sec.
- C. Add antimicrobial product to patient treatment water
- D. Shock periodically – remove attached biofilm
- E.
- E. Follow Manufacturer’s directions for use (dental unit & DUW product)
- F. Monitor water (test)

95 **SIMPLE FLUSHING OF WATERLINES**

- Flushing is important: flushing removes planktonic contaminants
- BUT: flushing alone is NOT a reliable way to control DUWL biofilms.
-

96 **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)
 - BluTab (Silver ions) – ProEdge (keep bottle on)
 - ICX (Silver ions) – Adec
 - Team Vista - HuFriedy

97 **HOW DO YOU KNOW YOUR WATERLINES ARE SAFE?**

- Loma Linda University Waterline Testing
- ProEdge Waterline Testing
- Test quarterly, rotating lines (empiric evidence, not regulated)
- New test method: flow cytometry; more sensitive than R2A

98 **QUICKPASS™ IN-OFFICE WATER TEST**

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

99 **TREAT, SHOCK, AND TEST ALL WATERLINES**

100

101 **MAKE ITEMS SAFE TO USE..... AND RE-USE**

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

103 **INSTRUMENT PROCESSING
"TRAFFIC FLOW"**

104 **ULTRASONIC CLEANING:
ALLOW BUBBLES TO WORK**

105 **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
 -

106 **WHAT'S WRONG?**

107

108 **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)

109 **CHEMICAL INDICATORS**

TYPE 5

TYPE 4

110 **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

111

112 **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

113 **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

114 **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.

115 **MUST WEAR MASKS AT WORK**

- Masks while in office appropriate to exposure
 - May be cloth.....
 - Patients & receptionists
- Respirators for aerosols
- Respirators or masks & face shield for non-aerosol pt. Care

116 **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

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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 **CONSIDER ALTERNATIVE (EVEN NON-NIOSH) RESPIRATORS**

- Acceptable (OSHA):
 - N/R/P95, N/R/P99, or N/R/P100 filtering facepiece respirator
 - Air-purifying elastomeric (e.g., half-face or full-face) respirator with appropriate filters or cartridges;
 - Powered air purifying respirator (PAPR) with high-efficiency particulate arrestance (HEPA) filter;
 - Supplied air respirator (SAR).
- CDC/ NIOSH guidance for optimizing respirator supplies at: www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy
<https://www.fda.gov/media/136663/download>

120 **KN95 RESPIRATORS**

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

121 **RESPIRATORS & MASKS WITH EXHALATION VALVES**

- Do not provide source control

- Breath can contaminate surgical site
- Cover with surgical mask if used

122 **USER SEAL CHECK – EACH TIME**

123 **PPE TO TREAT ASYMPTOMATIC PATIENTS**

- If respirators are NOT AVAILABLE:
- FDA cleared surgical mask + full-face shield = minimal acceptable PPE
 - Prioritize ASTM level 3 + face shields
 - Remove & discard mask after exiting operatory
 - Change mask sooner if compromised
- If not available DO NOT PERFORM DENTAL CARE
- Refer pt.

124 **BE A SURGICAL MASKS EXPERT**

125 **SURGICAL MASKS: KEY FACTORS**

- Coverage (mouth & nose)
- Filtration (particles, germs)
- Fluid protection
- Fit
- Use-life
- Face shields!
-

126 **MASK FIT**

127 **FRAME IMPROVES FIT OF SURGICAL MASK**

128 **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)
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130 **LASER RESPIRATORY PROTECTION?**

- N95 / N100 respirators
- Or: full face shield & level 3 mask
- Facial fit = vital
- Fluid resistance

- Suction / filtration placed ≤ 1 " from site
- Eye protection – close fitting

131 **NORMALLY: NEVER RE-USE MASKS!**

132 **THESE ARE NOT NORMAL TIMES**

133 **CDC INTERIM COVID-19 RECOMMENDATIONS: POSSIBLE OPTIONS IF NEEDED**

-
- Strategies to Optimize the Supply of PPE
-

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/>

134 **INTERIM COVID-19 RECOMMENDATIONS: POSSIBLE OPTIONS IF NEEDED**

- Possible measures to conserve PPE supplies during COVID-19 surge to provide a continuum of care
- Crisis - alternate strategies that are not commensurate with contemporary U.S. standards of care. Necessity-based strategies when PPE is scarce or not available.
-
-

135 **CDC & OSHA CRISIS OPTIONS: RESPIRATORS**

- If NIOSH approved respirators are not available,
- FDA lists approved products from other countries
 - AVOID counterfeit devices
- In China: 10 counterfeit companies / 1 valid
- Most valid imports go to U.S. Stockpile (Defense Production Act)

136 **RESPIRATOR RE-USE:**

- NIOSH surgical N95 respirators
- OR N95 + face shield
- RE-use interim recs:
- 5 masks per HCW (label)
- 8-12 hour use, limited / no removal
- Store aseptically in breathable bag/box
- Rotate masks, store 5 days
- Written protocol & training

137 **N95 DISINFECTION?**

- UV disinfectors may take 3 days
- NIAID (Natl'l Instit. Allergy & Infect. Dis) stud: 3 methods removed SARS-CoV-2
 - Hydrogen peroxide – 10 min kill
 - Least damage to seal, can re-use 3X

- UV/heat: altered fit & seal. Can re-use 2X
- Alcohol: damaged fit & seal

138 139 **OUTSIDE OF THE OFFICE: DO THESE WORK?**140 **PUBLIC USE OF QUALITY FACEMASKS IF USED CORRECTLY**

- Main benefit – protect others (source control)
 - Reduce dose expelled by 50-70%
- Self-protection value: masks = physical barriers, prevent touch & spray to mouth & nose.....not eyes!
- MAY reduce inhalation of viruses ~50% of sub-micron particles!
-
-

141 **PUBLIC USE OF FACEMASKS TO PREVENT SARS-COV-2 (CDC,WHO)**

- 3- layer, high thread count,
 - 100% cotton
 - Silk: repels fluids, less moisture saturation
 - polypropylene: static electricity, better capture of charged particles
- Nose wire, HEPA filter pocket?
- Tight border fit, clean!
- Avoid bandanas, gaiters
-
-

142 **PUBLIC USE OF FACEMASKS -**

- Most face masks worn incorrectly
 - Poor fit, gaps
 - Auto-inoculate by touching outside of mask when remove mask or displace mask (should only touch ties)
 - Masks worn past use-life (moist)
- Create false sense of security: masks do not replace social distancing!
- Loose masks can push exhaled air behind person. Don't stand there!
- Panic-driven supply loss, affects medical supply
- Source control & personal protection = complimentary & synergistic
-

143 **SCAPULAR RETRACTION**

- Keep both arms at side
- Bend elbows 90°
- Squeeze shoulder blades together, hold 10 sec

144 145 **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
-

146 **WITH LEVEL 3 MASK/RESPIRATOR ADD A FACE SHIELD**

147 **CLINIC ATTIRE**

- Protective attire
- PPE = barrier
- Comply with Cal/OSHA regs
-
- §1005 (b) (5)

148 **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
-

149

150

151 **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

152 **HAIR COVERING**

Bonnets not required

153 **A PLACE TO CHANGE CLOTHES**

154

155 **HAND HYGIENE:
≥ 20 SECONDS OF LATHERING WITH SOAP**

Focus on.....

- Fingernails
- Cuticles
- Webs

- Thickened skin
- Damaged skin
- Thumbs
- Wrists

156 157 **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.

158 **DANGEROUS "ALCOHOL" HAND SANITIZERS**

- Labeled to contain ethanol (ethyl alcohol)
- Contain Methanol (wood alcohol)
- Toxic when absorbed through skin or ingested
- Causes nausea, vomiting, headache, blurred vision, permanent blindness, seizures, coma, permanent damage to the nervous system or death
- Seek reversal treatment for methanol poisoning FAST!
- Fraudulent products:
 - "FDA approved" (none are)
 - Must have \geq 60% alcohol

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

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

160 **COMPROMISED SKIN**

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

161 **HOW LONG ARE GLOVES INTACT DURING USE?**162 **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)
-

163 **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

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

165 **BASIC COVID-19 CONTROL: WHAT IS NEEDED**

- Isolation, separation: masks, social distancing, hand hygiene
- PPE: at least N95 level respirators
- Symptom assessment & isolation
- Widespread testing
- Contact tracing
- Improved early preventive & treatment therapeutics
- Vaccines: Pfizer- 90% effective, ultra low temp, multi-dose, muscle pain, headaches – 1-2 days
-

166 **UNKNOWNNS**

- Efficacy of mitigation efforts (ventilation, masks)
- % of cases contracted through airborne routes
- What conditions facilitate airborne transmission
- Infectious dose of SARS CoV-2 (# of virions)
- Relationship between size & route of inoculation and risk of infection & disease severity

167 **SAFETY CHECKLIST**

1. Written Safety Program
 - OSHA manual – personalize & update it
 - Add respiratory protection program
 - Download CDC, OSHA, State Board recs & rules!
 - Instructions for use, operation manuals, SDS's, SOP's
2. Address all types of risks
3. Avoid aerosols, then phase in aerosolizing procedures
- 4.

168 **SAFETY CHECKLIST**

- New employee roles: Infection control coordinator, "floater", screeners, escorts
- Safety Manager: assign a person
 - Must be a leader
 - Qualified, trained, empowered
- Get certified
 - DANB.org, osap.org
 - <https://www.osap.org/page/RoleofCPC?> – OSAP initiative

169 **CHECKLIST - CLINIC**

- Remove clutter – cleanable surfaces
- Distance seating & traffic
- Limit & direct patient flow (time & space)
- Separate infection control areas
 - Reception, business, public spaces, toilets,
 - Employee spaces (new PPE change areas, storage)
 - Clinical: operatories, sterilization, lab
- Isolation barriers: windows, panels, space separation / distance

170 **CHECKLIST - CLINIC**

- Air circulation, treatment
 - Maximize building air HVAC capacity
 - Add-on focused exhaust, air change, filtration, disinfection
- Equipment
 - Re-activate after shut-down
 - Clean, disinfect & test equipment
 - Waterlines, sterilizers..., allow time
- Surface asepsis
 - Use EPA / FDA approved disinfectants & barriers
 - Follow directions
 - Clean & disinfect

171 **CHECKLIST - CLINIC**

- Dental waterline management (water in)
- Insure sterile water for surgeries
 - Insure potable standard for non-surgeries
 - Control waterline contamination
 - Monitor waterline safety
- Maximize high volume suction (water out)
-

172 **CHECKLIST - CLINIC**

- Instrument sterilization
 - Organize sterilization pathway

- Instrument cassettes
- Instrument washer
- Monitor cleaning
- Use Type 5 indicators
- Keep logs
- Sharps safety
 - Handling & waste
 -
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173 **CHECKLIST - EMPLOYEES**

- Vaccines
 - Educate staff (CDC.gov)
- Consider restricting more susceptible workers
- Train, inform, listen to & calibrate safety team
- Notify patients & staff about ATD policy, respiratory hygiene, cough etiquette
 - Set up stations & enforce policy!

174 **CHECKLIST - EMPLOYEES**

- Screen every patient for active ATD's
 - Take temp. (100.0°F!)
 - Know symptoms
- TB policy: test staff
- Screen staff daily: symptoms & temp. (100.0°F!)
- Isolate, discharge, refer all symptomatic pts & HCWs

175 **CHECKLIST - EMPLOYEES**

- Hand Hygiene
 - Calibrate staff
 - Technique
 - Hand care rules
 - Supplies & set-up
- PPE – Use correctly & respect their limits
- CDC sequence – donning & removing
- Gowns, dressing area?
- Add bonnets, shoe covers?
- Full face protection – shields with all masks
- Use highest level PPE available with aerosols

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176 **CHECKLIST - EMPLOYEES**

- Surgical masks
 - Select appropriate ASTM levels
 - Avoid cross-contamination
 - Change 20 min – 1 hr.
- Respirators

- Medical clearance
- Training & fit testing
- Written program
- Interim guidelines to extend PPE supply
- Gloves
 - Select for fit, reliability
 - Change 20 min – 1 hr.
- Locate PPE in & outside ops
 -
 -
 -

177 **CHECKLIST - PATIENTS**

- Inform, communicate & educate with patients
 - Phone, email, letters, posters at entrance & in office
- Tele-dentistry: pre-screen
- Prioritize highest dental needs
- Require masks (source control)
- Pre-rinse & oral flush - antimicrobial
-

178

179 **TEAMWORK!**

180 **RESOURCES**

- Join osap www.osap.org
 - Organization for Safety, Asepsis and Prevention
- CDA Practice Support
- State Dental Board, ADA,
- OSHA (Cal OSHA Consultants)
- Infection Control Coordinator certification:
 - DANB.org, osap.org
 - <https://www.osap.org/page/RoleofICPC?> – OSAP initiative
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181 **INFECTION CONTROL IN THE SHADOW OF COVID-19**