Safety Town Hall: Introduction to the Clinical Practice Safety Guide (CPSG) and Refresher on Waterline Safety

Dr. Joe Castellano & Amanda Hill

November 11th 2026

AAPD Research & Policy Center

Safety and Quality Improvement Committee (SQIC)







Continuing Education

- **Continuing dental education** is available to those listening in live today who complete the entirety of the CE evaluation.
- Please use the **same email address** on the evaluation as you used to register (necessary for attendance verification purposes).
- The **evaluation link will be posted at the end** of the webinar and provided in a follow-up email to attendees.
- The evaluation must be completed no later than **Friday 11/20**. Certificates will be distributed via email by Monday 11/30.

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Speakers



Dr. Joe Castellano

DDS



Amanda Hill

BSDH, RDH, CDIPC

Agenda

- Overview of a Culture of Safety
- Introduction to the Clinical Practice Safety Guide
- Refresher on Waterline Safety
- Question and Answer Session



Learning Outcomes

1. Describe how the Clinical Practice Safety Guide (CPSG) can be used to identify and apply best safety practices in your clinic.

2. Identify strategies your team can use to maintain waterline safety.

We want to make this webinar as interactive as possible!

Please use the chat throughout the webinar to ask questions, share your thoughts, and engage with our presenters. We also encourage you to have questions ready for the Q&A at the end!

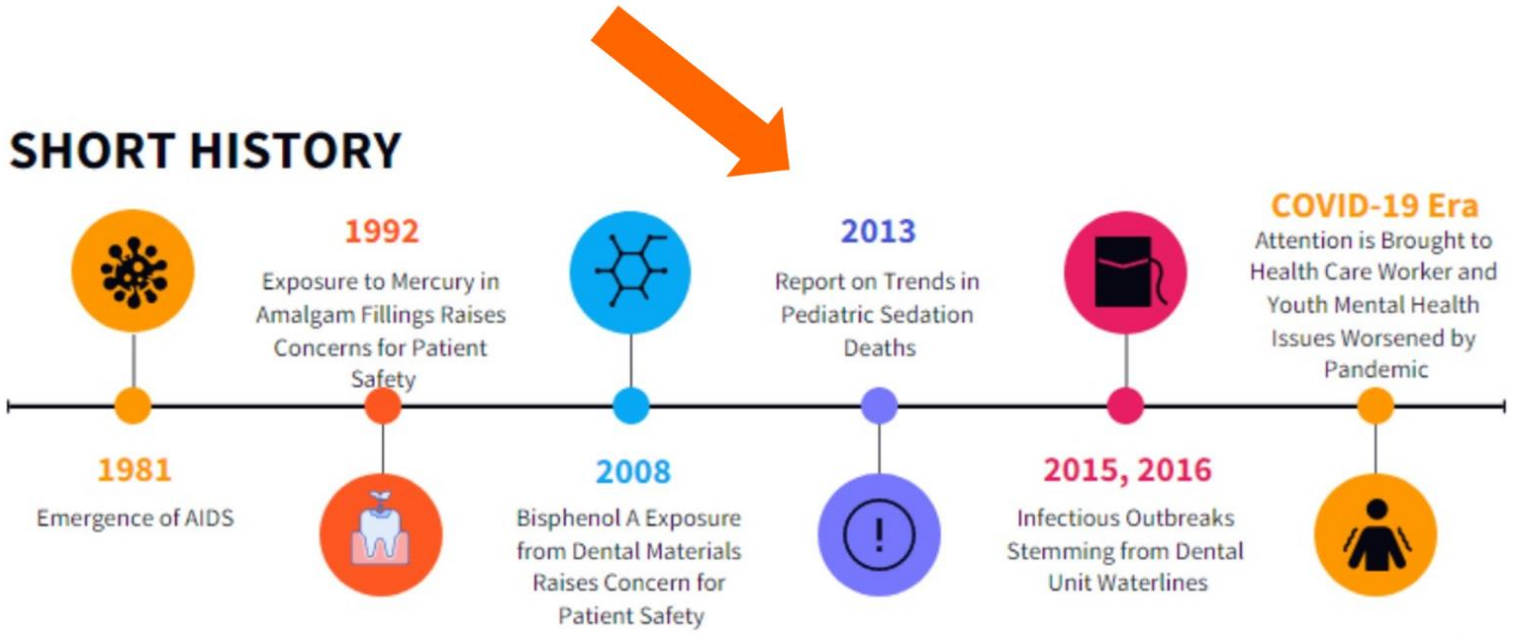


Overview of a Culture of Safety

Dr. Joe Castellano



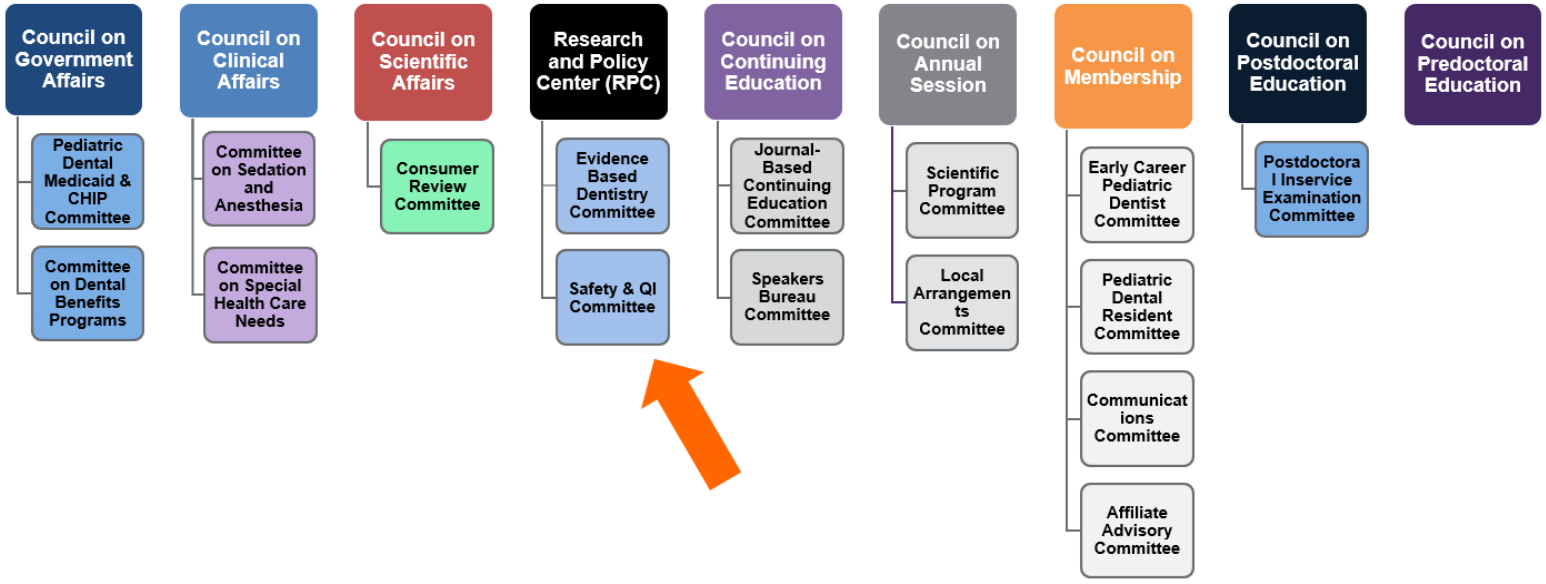
Brief History of Safety & Pediatric Dentistry



AAPD's Safety & Quality Improvement Committee (SQIC)

- To champion the safest possible oral health care delivery system to protect the health and well being of patients and their providers.

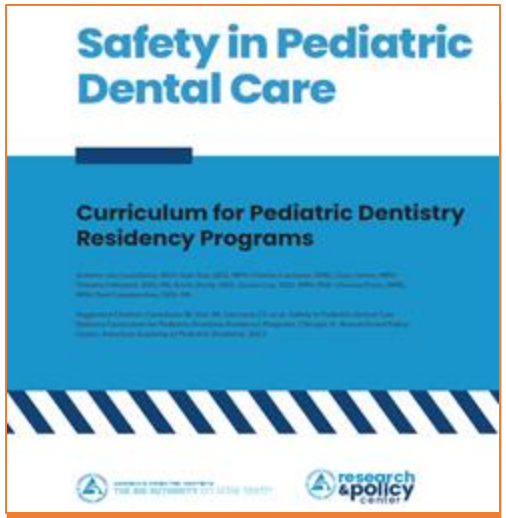
- The mission of the Committee is to apply the diverse resources of the AAPD in aiding dentists to create a culture of safety for both patients and providers in the dental setting. This is done by building and incorporating systems of safety into all aspects of the delivery of oral health.



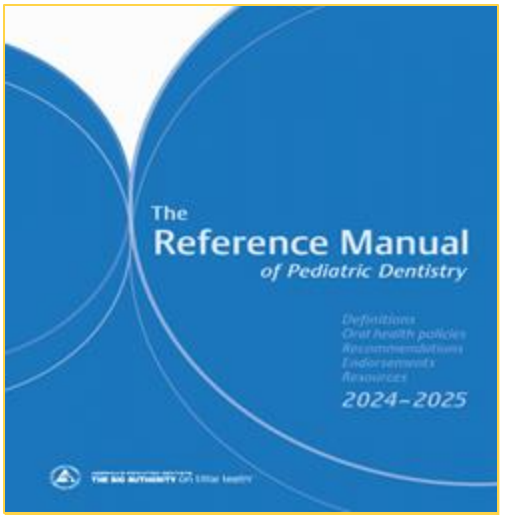
AAPD Safety Resources



Safety Toolkit



Residency Curriculum



The Reference Manual

But what about currently practicing dentists?

We need a new safety resource!

One that:

- Is designed for a busy practice, with **both established and new owners** in mind.
- Is easily **implementable by staff members.**
- Provides templates, checklists, and resources to make it **as simple as possible** to implement.
- Provides guidance in **developing a culture of safety in a private practice**.



Introducing: The Clinical Practice Safety Guide (CPSG)



Goals

- To provide a safety resource aimed at fitting the needs of private practitioners and their teams (*the CPSG can still be applicable to all!)*
- To create a resource that is a "living document" online; and therefore, can always be updated as needed (*no need for printing!)*
- Provide a complementary checklist that practitioners can customize to fit their needs



Priority Areas of Focus

These are the six chapters of the CPSG and their subsections:

1. **Culture of Safety**
   (The "Why")
2. **Safety Basics**
   (Universal Protocol, informed consent, handoffs, emergency response)
3. **Documentation**
   (Mandator reporting, staff vaccinations and training, hazardous materials documentation, reporting errors and adverse events)
4. **Team Safety**
   (Staff well-being, post-adverse event follow-up)
5. **Office Site Safety**
   (radiation, drug diversion, electrical, biohazards, environmental infection, PPE, waterlines, sterilization, needlestick)
6. **Medication Safety**
   (Storage, expiration, anesthesia & sedation, antibiotic stewardship, nitrous oxide scavenging)



Structure of the CPSG Document

- Chapters
  - Each general focus area makes up a chapter
  - There are 6 different chapters
- Sections
  - Number of sections per chapter varies
  - Includes a "Key Points"; "Why It's Important"; and "Good Practices" subsections
- Appendix
  - At the end of each chapter

Chapter A Example

1) Section 1
   - Key Points
   - Why It's Important
   - Good Practices
- Section 2
   - Key Points
   - Why It's Important
   - Good Practices
- Chapter A Appendix



Example of the Document



chapter 5

Office Site Safety

Includes

1. Radiation Safety for Patients
2. Drug Diversion and Intoxication
3. Electrical Safety
4. Environmental Infection Control
5. Personal Protective Equipment
6. Waterline Safety
7. Waterline and Mobile Cart Safety
8. Sterilization
9. Exposure (Needlestick) Plan
10. Biohazards and Biowaste
11. Appendix

Radiation Safety for Patients

KEY POINTS

- In dentistry, children can safely receive radiographs repeatedly through childhood.
- However, because of their size, children receive a higher effective dose of radiation for x-ray procedures.
- There is not a "one size fits all" approach to prescribing radiographs. Each patient's risk profile and individualized needs must be considered before determining which types of images and frequencies are needed.
- Follow the **ALARA (As Low As Reasonably Achievable)** Principle: keep radiation exposure to a minimum, apply quality control measures, and maximize the utility of each image taken.[1]

WHY IT'S IMPORTANT

- Children have a higher prevalence of dental caries, developmental anomalies, orthodontic needs, and dental trauma which can contribute to more frequent radiographic exposure. [2]
- Children's imaging and other radiation exposures will continue over the lifespan.[3] Continued exposure over their lifespan increases the probability of "late manifestation" of cancer from radiation exposure in childhood.[4]
- Because of the proximity to the beam and scatter radiation, the thyroid gland and salivary glands are particularly at risk of the effects of exposure.[5]

GOOD PRACTICES

- Review the latest recommendations from the most reputable sources on prescribing radiographs. (AAPD Reference Manual and ADA Practice Guidelines)
- Train your team on proper x-ray techniques and current recommendations **(See Appendix).**
- Evidence suggests routine patient shielding is no longer necessary. Practitioners should follow local, state, and federal regulations regarding radiation safety.
- Adhere to the ALARA principle for all patients receiving radiographic procedures.[6,7]
- Pledge to *Image Wisely* and *Image Gently.*[8]
- Use child-sized equipment and exposure settings whenever possible.
- Use the fastest image receptor possible: E- or F-speed film or digital sensors. [9]
- Collimate the beam to the area of interest. [10]
- Use cone-beam CT only when necessary. [11]
- Consider the patient's ability to follow instructions and hold still, especially for panoramic and cone beam computed tomography (CBCT) imaging.[12]
- Review OSHA's Ionizing Radiation Standards[13] and EPA's Radiation and Regulations page.[14]
- Have informational materials on hand to discuss the

GOOD PRACTICES

- Implement a comprehensive PPE program that includes guidelines for the selection, use, and disposal of PPE based on the type of exposure risk. **(See Appendix)**
- Provide regular training to healthcare workers on the proper donning and removal of PPE.
- Conduct regular audits to ensure compliance with PPE protocols and address any gaps in practice.

Waterline Testing

KEY POINTS

- Contaminated waterlines can lead to serious infections.
- Biofilm formation in waterlines can harbor harmful microorganisms, making routine testing and maintenance critical.[38]
- Regular testing of dental unit waterlines is essential to ensure the water quality meets safety standards and prevents infections.[39]
- The CDC recommends that water used in non- surgical dental procedures should contain no more than 500 colony-forming units (CFU) of heterotrophic bacteria per milliliter.[40]
- Biofilm formation in waterlines can harbor harmful microorganisms, making routine testing and maintenance critical.[41]

WHY IT'S IMPORTANT

- Immunocompromised patients are at greater risk for developing an infection sourced from a contaminated waterline.
- Routine testing helps identify and address issues before they pose a risk to patient safety.
- Adhering to water quality standards is necessary for compliance with regulatory guidelines and maintaining accreditation.

GOOD PRACTICES

- Implement a regular schedule for testing waterline quality, following the manufacturer's recommendations.
- Use appropriate disinfectants and maintenance protocols to control biofilm formation in waterlines.
- Keep a log to document all testing, dates, and results **(See Appendix).**
- Train staff on the importance of waterline testing and proper maintenance procedures **(See Appendix).**
- Use sterile water through a sterile delivery device for surgical procedures and pulpotomies.

Waterline and Mobile Cart Safety

KEY POINTS

- Dental unit waterlines (DUWLs) are prone to biofilm formation due to narrow tubing and intermittent water flow.[42]
- Water used in non-surgical procedures must meet <500 CFU/mL heterotrophic bacteria (CDC/EPA standard).[43]
- Effective maintenance requires a consistent **shock–treat–test** protocol.
- Sterile water or saline must be used for all surgical dental procedures—never DUWL or mobile cart water.
- Mobile dental carts require special attention due to irregular use and increased risk of stagnation.

WHY IT'S IMPORTANT

- Biofilm in waterlines can harbor bacteria, fungi, and protozoa that may be introduced into the patient's mouth or aerosolized during care.
- Contaminated waterlines increase infection risk for both patients and providers, particularly for immunocompromised individuals.
- Surgical procedures expose sterile tissues, creating a direct pathway for waterborne pathogens if non-sterile water is used.
- Inconsistent maintenance—especially in mobile or infrequently used units—can lead to rapid biofilm proliferation and regulatory noncompliance.

GOOD PRACTICES

- Establish a written waterline maintenance protocol for each dental unit and mobile cart that includes:
  - Source water (distilled, tap, bottled, etc.)
  - Routine or continuous chemical treatment
  - Periodic shock treatment
  - Regular waterline testing

Example of the Appendix Resources

Dental Unit Waterline Maintenance Checklist

Developed from the CDC & ADA Aligned Compliance Document:
https://www.ada.org/resources/ada-library/oral-health-topics/dental-unit-waterlines

Purpose

This checklist translates current CDC and ADA recommendations into actionable steps to help dental practices establish, maintain, and document a compliant dental unit waterline (DUWL) maintenance program. Adherence to these steps supports patient safety, reduces microbial risk, and provides defensible documentation in the event of an audit or inspection.

CDC Guidance: The Centers for Disease Control and Prevention (CDC) recommend that dental unit water used in routine dental treatment meet the EPA standard for drinking water (≤ 500 CFU/mL of heterotrophic bacteria).

ADA Guidance: The American Dental Association (ADA) supports the use of chemical treatment regimens and routine monitoring to control biofilm and maintain water quality within dental unit waterlines.

STEP 1: SHOCK WATERLINES (Biofilm Removal)

- ☐ Perform an initial shock before implementing any waterline treatment protocol
- ☐ Shock waterlines when changing treatment products
- ☐ Shock waterlines at regular intervals - ☐ Begin with every 90 days - ☐ Adjust frequency based on water testing results
- ☐ Shock immediately if water testing shows ≥ 200 CFU/mL
- ☐ Use a manufacturer-approved shock product designed to remove established biofilm
- ☐ Confirm shock treatment is completed prior to initiating or resuming daily/continuous treatment

- **CDC Rationale:** Biofilm can protect microorganisms from low-level antimicrobials. Periodic shock treatment is necessary to disrupt biofilm so maintenance products can be effective.

STEP 2: DAILY OR CONTINUOUS WATERLINE TREATMENT

- ☐ Use a CDC- and ADA-accepted chemical treatment product designed for dental unit waterlines
- ☐ Ensure product is safe for direct patient contact and compatible with equipment
- ☐ Follow manufacturer instructions exactly

Product Application

- Tablet systems
  - ☐ Add one tablet at every water bottle refill
- Cartridge or straw systems
  - ☐ Install correctly
- Replace according to manufacturer schedule

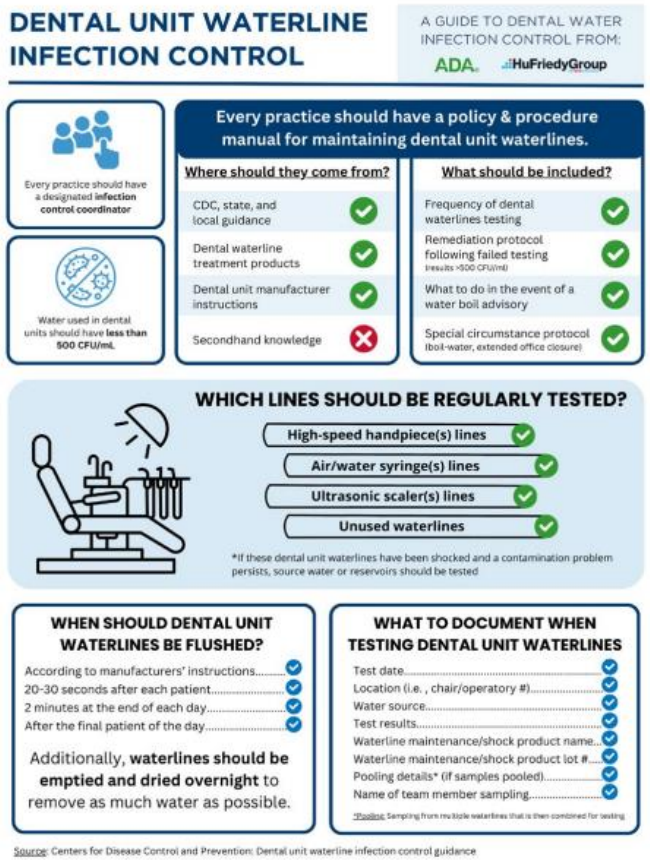
Flushing Protocol (CDC Recommended)

- ☐ Flush water and air lines for at least 1 minute at the start of each clinical day
- ☐ Flush 20–30 seconds between patients
- ☐ Visual & Sensory Monitoring
- ☐ Monitor for indicators of biofilm formation: - Musty or unusual odor - Cloudy water - Visible particulates - Line clogging or reduced flow

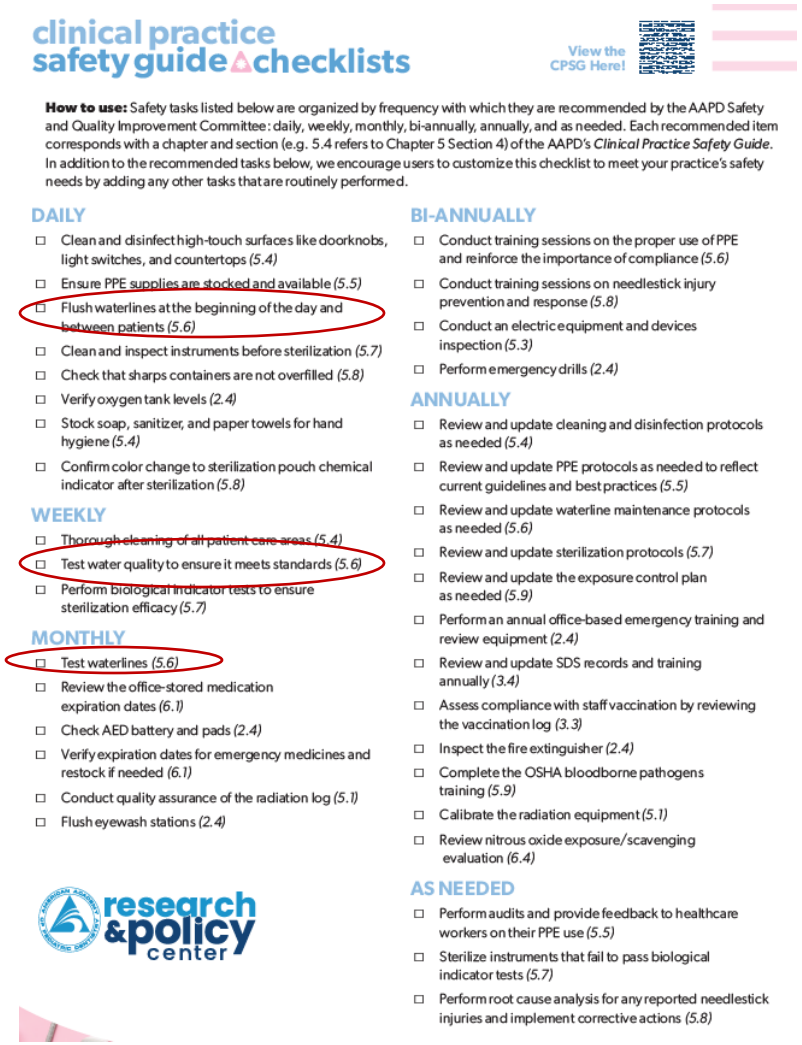
- **ADA Rationale:** Continuous chemical treatment combined with routine flushing helps suppress microbial regrowth and maintain water quality over time.

Dental Unit Waterline Infection Control One-Pager

From the ADA: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/ada-library/duwl_one_page_guide_infection_control.pdf?rev=77be68edefe54e84bc90679ba17e5ce7&hash=592565B557A81086C4E253012D-31EDC7



And… the CPSG Checklist!



clinical practice safety guide checklists

View the CPSG Here!

How to use: Safety tasks listed below are organized by frequency with which they are recommended by the AAPD Safety and Quality Improvement Committee: daily, weekly, monthly, bi-annually, annually, and as needed. Each recommended item corresponds with a chapter and section (e.g. 5.4 refers to Chapter 5 Section 4) of the AAPD's *Clinical Practice Safety Guide*. In addition to the recommended tasks below, we encourage users to customize this checklist to meet your practice's safety needs by adding any other tasks that are routinely performed.

DAILY

- ☐ Clean and disinfect high-touch surfaces like doorknobs, light switches, and countertops *(5.4)*
- ☐ Ensure PPE supplies are stocked and available *(5.5)*
- ☐ Flush waterlines at the beginning of the day and between patients *(5.6)*
- ☐ Clean and inspect instruments before sterilization *(5.7)*
- ☐ Check that sharps containers are not overfilled *(5.8)*
- ☐ Verify oxygen tank levels *(2.4)*
- ☐ Stock soap, sanitizer, and paper towels for hand hygiene *(5.4)*
- ☐ Confirm color change to sterilization pouch chemical indicator after sterilization *(5.8)*

WEEKLY

- ☐ Thorough cleaning of all patient care areas *(5.4)*
- ☐ Test water quality to ensure it meets standards *(5.6)*
- ☐ Perform biological indicator tests to ensure sterilization efficacy *(5.7)*

MONTHLY

- ☐ Test waterlines *(5.6)*
- ☐ Review the office-stored medication expiration dates *(6.1)*
- ☐ Check AED battery and pads *(2.4)*
- ☐ Verify expiration dates for emergency medicines and restock if needed *(6.1)*
- ☐ Conduct quality assurance of the radiation log *(5.1)*
- ☐ Flush eyewash stations *(2.4)*

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BI-ANNUALLY

- ☐ Conduct training sessions on the proper use of PPE and reinforce the importance of compliance *(5.6)*
- ☐ Conduct training sessions on needlestick injury prevention and response *(5.8)*
- ☐ Conduct an electric equipment and devices inspection *(5.3)*
- ☐ Perform emergency drills *(2.4)*

ANNUALLY

- ☐ Review and update cleaning and disinfection protocols as needed *(5.4)*
- ☐ Review and update PPE protocols as needed to reflect current guidelines and best practices *(5.5)*
- ☐ Review and update waterline maintenance protocols as needed *(5.6)*
- ☐ Review and update sterilization protocols *(5.7)*
- ☐ Review and update the exposure control plan as needed *(5.9)*
- ☐ Perform an annual office-based emergency training and review equipment *(2.4)*
- ☐ Review and update SDS records and training annually *(3.4)*
- ☐ Assess compliance with staff vaccination by reviewing the vaccination log *(3.3)*
- ☐ Inspect the fire extinguisher *(2.4)*
- ☐ Complete the OSHA bloodborne pathogens training *(5.9)*
- ☐ Calibrate the radiation equipment *(5.1)*
- ☐ Review nitrous oxide exposure/scavenging evaluation *(6.4)*

AS NEEDED

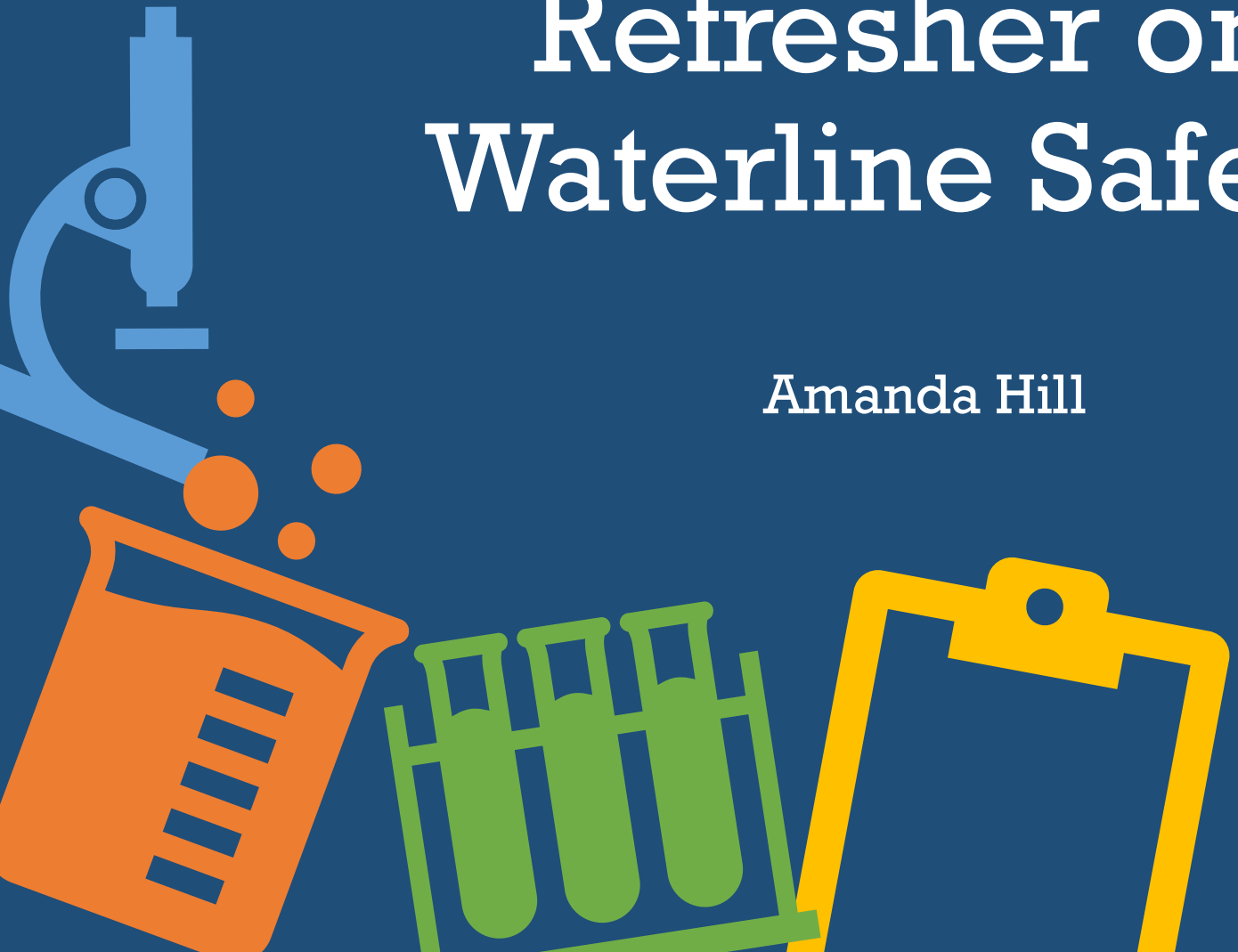
- ☐ Perform audits and provide feedback to healthcare workers on their PPE use *(5.5)*
- ☐ Sterilize instruments that fail to pass biological indicator tests *(5.7)*
- ☐ Perform root cause analysis for any reported needlestick injuries and implement corrective actions *(5.8)*

- Designed to breakdown team tasks into daily, weekly, monthly, etc. tasks
- Each item correlates with a chapter and section in the CPSG
  - Ex. (5.4)→Chapter 5, Section 4



Refresher on Waterline Safety

Amanda Hill



So what now?

- Shock
- Test
- Treat
- Maintain



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Where is your water coming from?



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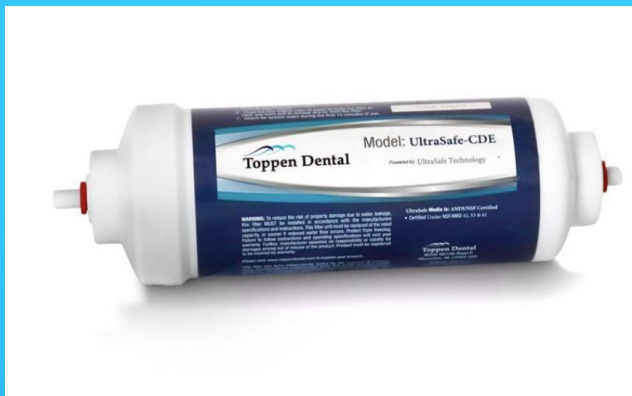
Straight from the city



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Centralized Water Systems









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INDEPENDENT WATER BOTTLE SYSTEMS

Pros

- Low upfront cost
- Provides the ability to fill water bottles with preferred water
- A wide variety of antimicrobial and shock products
- More control over water program
- Makes operating during a boil-water advisory much easier

Cons

- More labor-intensive to fill and clean bottles
- Possibility of running out of water in the middle of patient care
- Chance of recontamination of delivery system during filling

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Traditional Source Water













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Shocking!

- Shock Before Initial Use of a Water Treatment Product
- Shock periodically
- When your waterline test reveals a contamination level of 200 CFU/ml or more



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Don’t wait until you get to 500!



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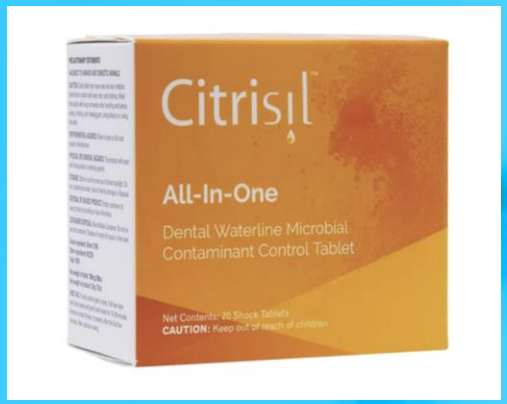
Shock











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Instructions For Use are your Friend!!



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How to shock

- Airflush line
- Choose your solution and READ the instructions
- Mix product and pay attention to use life
- Add recommended amount to your Dental Unit Water bottle (make sure you have a dummy straw in place, if needed)
- Re-Attach the Bottle to the Unit
- Run shock into EACH line-run each line until you see, smell, or feel it (your ultrasonic scaler will take forever)
    - *Disclaimer!-* Always check your manufactures IFUs



Photo courtesy Pixabay

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How to shock continued…..

- Leave it for recommended time. That could at 10 minutes to overnight
- MORE ISN'T BETTER
- Place Shock In Progress sign
- Disconnect the bottle and dump it in the sink (do not use your suction!) or run the rest of the product through.
- Refill Bottles with warm water and FLUSH the lines repeat 2-3 times.



Photo courtesy Pixabay

Disclaimer!- Always check your manufactures IFUs

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No bleach in suction lines



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Dummy Straw



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Testing

It's the only way to know (*and prove*) you're doing it right!!

ADS Recommends you test every 90 days

In Office Testing

Mail in Testing

Remember: You are testing for Colony Forming Units

Per the EPA and CDC safe drinking water is <500 cfu/ml

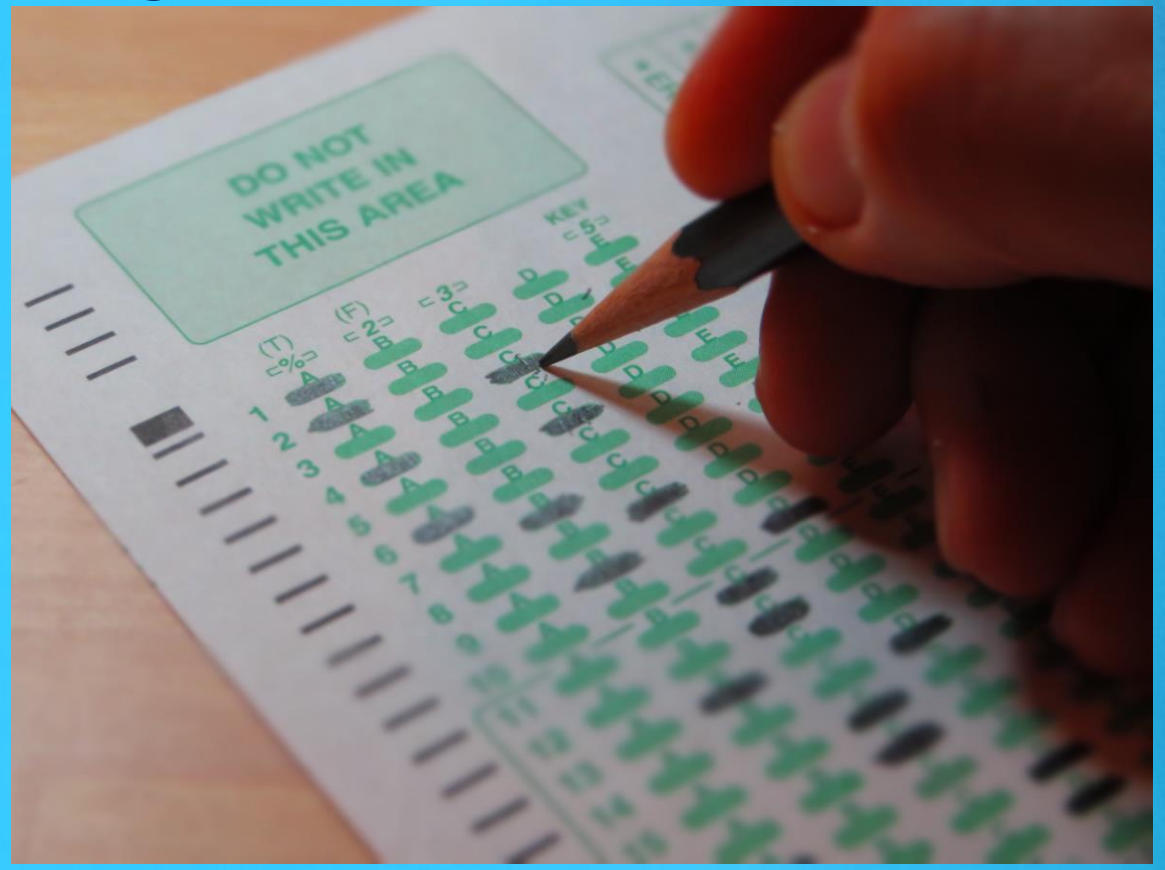


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NOT Total Dissolved Solids (TDS) or Total Coliform Bacteria

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When to test?

- Baseline testing
  - At the beginning of your waterline journey
  - Before making any changes
- Routine Testing
  - Check manufacturers instructions for use

  OR
  - Monthly until 2 consecutive passes
  - Then Quarterly **AT MINIMUM!**

  Test before you shock
    - After a fail
      - But not immediately after



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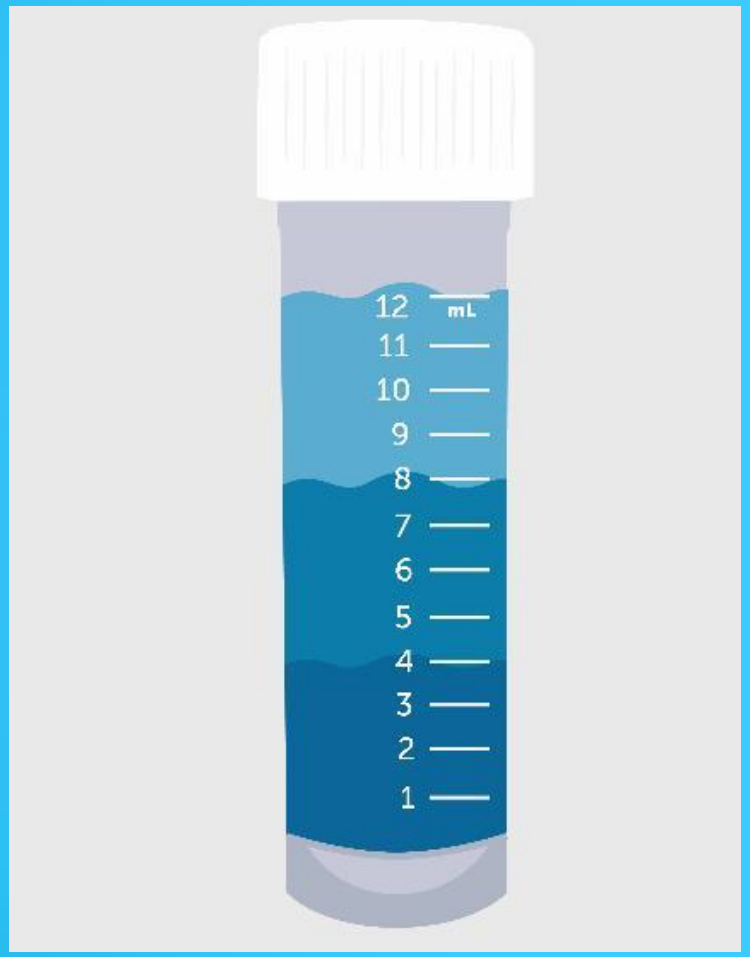
Collecting your sample is easy

Read the instructions for use first!!!



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Pooled or combined samples



3 or 4 samples from the same operatory or bottle can be combined in a single sample

Pass = all lines pass

Fail = shock all lines and retest

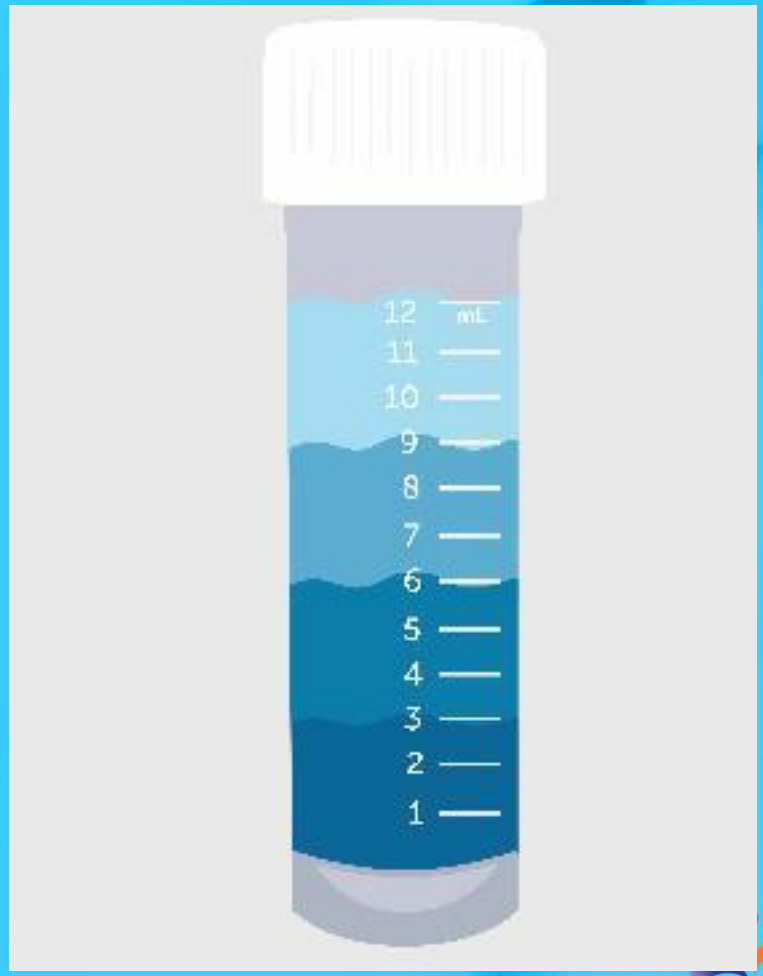


Chart courtesy ProEdge Dental Compliance Labs

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Pro Tips for getting a good sample

- Determine how many lines can receive water
- Decide if you are doing pooled sample or individual lines
- Wash hands and don gloves
- Remove any devices-handpieces, air water syringe tips
- Flush *all* lines for 30 seconds
- Get sample of air driven handpiece first





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In-Office Testing

- 100% Confidential
- Imprecise CFU/mL
- More economical
- Results in 15 minutes -7 Days

READ THE INSTRUCTIONS FOR FREQUENCY



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Mail-In Lab Testing

- 3rd Party Verification
- More precise results
- Overnight Shipping
- Report Emailed
- Results in 1-7 Days



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What if I Fail?

- Shock 3 times
- Try another shock product
- Check for dead legs
- Test your source water
- Check your bottle
- Check your filters



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Treat



Photo courtesy giphy.com

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You Want Both!

Shocking =

Perio Maintenance Visit



Treating=

Daily Homecare



Photo courtesy giphy.com

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Tablets

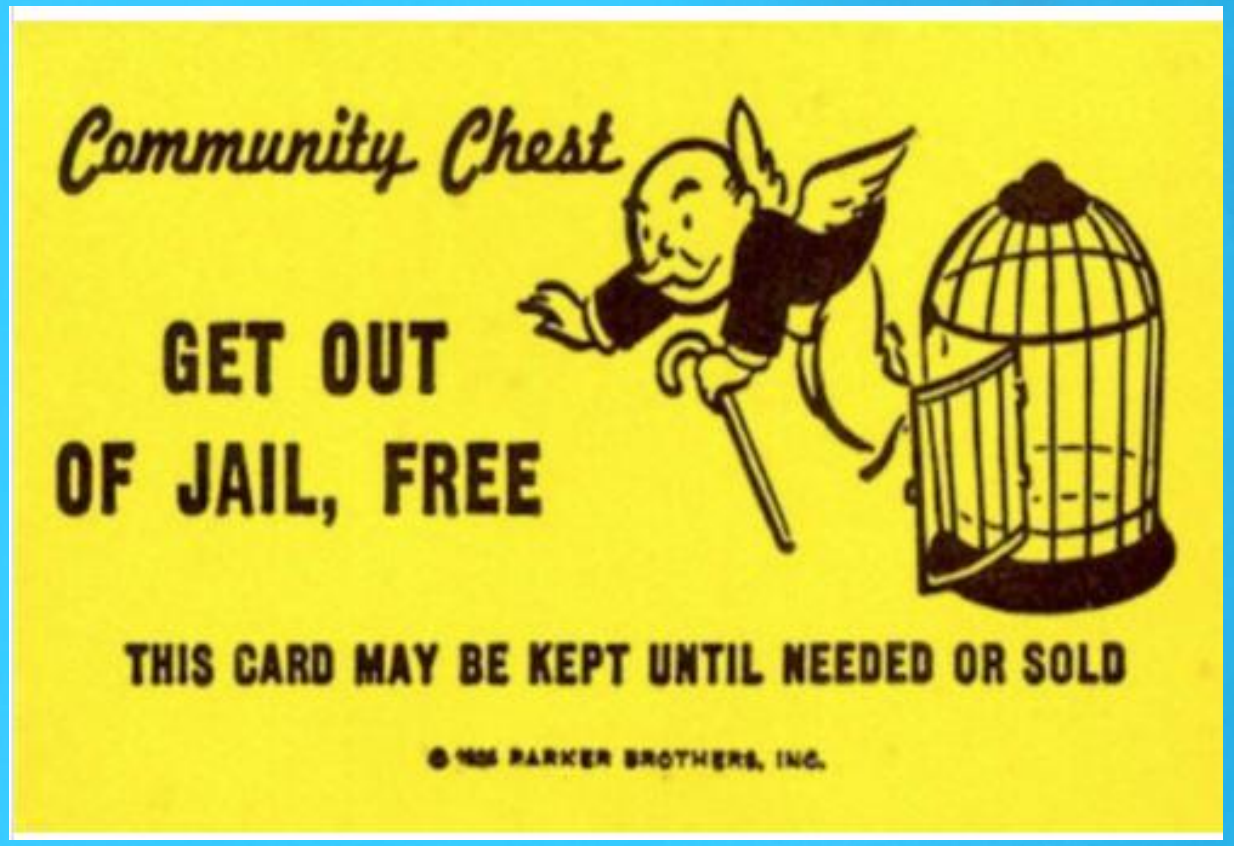
- Determine the size of your bottle and how many tablets you need
- Place tablet(s) in empty dental unit waterline bottle or gallon jug
- Let the tablet effervesce before re-attaching the bottle or closing the lid



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Straws/Cartridges

- Remove bottle and attach straw per the instructions for use
- Set a note in your appointment book for when you are due to replace your straw



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Liquids

- Products vary greatly in instructions for use
- Daily dilutions
- Weekly treatments



Photo courtesy Air Techniques

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Maintain

- Appoint a Waterline Warrior!
- Establish your Standard Operating Procedures (SOPs)
- Keep Records of what you are doing



Photo courtesy HPTC

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Flushing vs Purging

- Flush in the morning and between each patient for 20-30 seconds
- Purging is only recommended for extended absences



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Dental Waterlines and Surgery

- Use sterile saline or sterile water as a coolant/irrigator when performing surgical procedures

- Use devices specifically designed for the delivery of sterile irrigating fluids







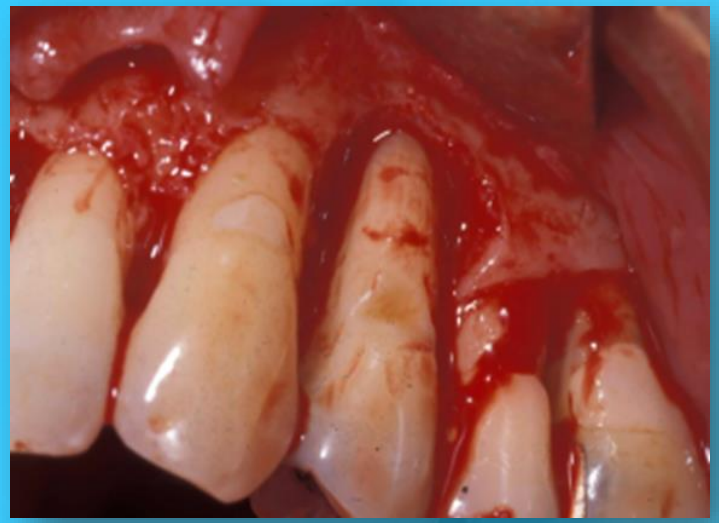
Slide courtesy Shannon Mills

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Surgery Definition – 2003 Guideline

- The incision, excision, or reflection of tissue that exposes the normally sterile areas of the oral cavity”

- Examples:
  - Biopsy
  - Periodontal surgery
  - Apical surgery
  - Implant surgery
  - Surgical extractions requiring flap reflection, manipulation of bone or sectioning
  - Endo and pulpotomies



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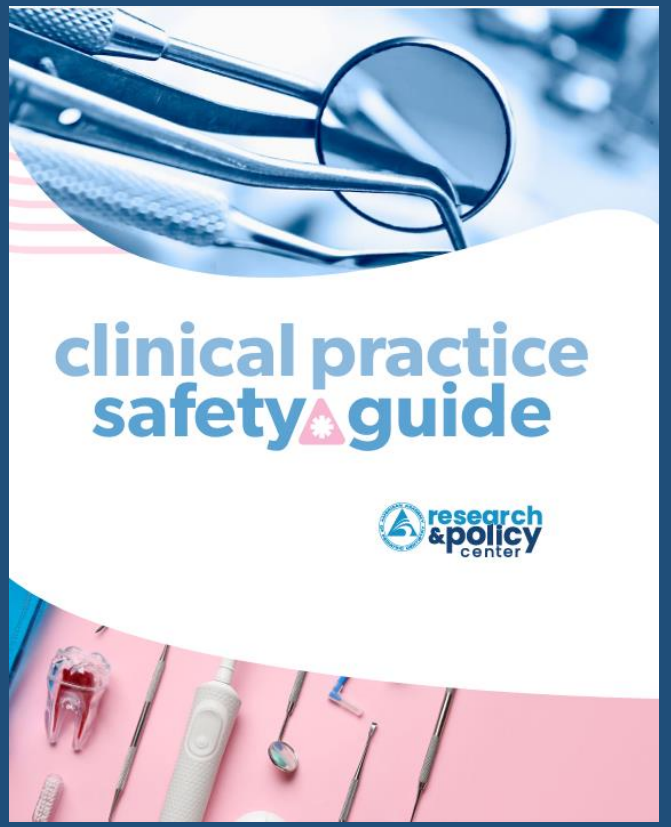
So what do I have to do again?

- Shock
- Test (and document)
- Chose a maintenance product and use it!
- Flush lines at beginning of the day and between patients
- Re-test quarterly (and document)
- Shock as needed

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Check out the Document Here!

https://www.aapd.org/research/clinical-practice-safety-guide



Thank You!

Feel free to contact us for any Safety & QI Questions



Dr. Joe Castellano
jcastellanodds@msn.com



Amanda Hill
amandahillrdh@gmail.com

Research & Policy Center
rpc@aapd.org