

Cleanliness and Hygiene for ECPs

(Cleanliness is Next to Godliness)

(Optical Seminars Course # HS-20)

by

Anthony Record, DO
Optical Seminars, Inc.
PO Box 5445
Spring Hill, FL 34611-5445
homestudy@opticalseminars.com
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Course Objectives

Upon completing this one-hour, home study course, the optician should:

- **Be more aware of the history of germs, hygiene, and cleanliness.**
- **Discover potential problem areas in a typical optical dispensary, including the different organisms that can inhabit work surfaces.**
- **Understand official CDC (Centers for Disease Control) guidelines.**
- **Be more able to implement SBPs (Strategic Best Practices) at work.**
- **More effectively and tactfully change patient and colleague behaviors.**
- **Achieve a minimum score of 70% on the final assessment.**

I Introduction

This CE module was originally written as a response to COVID-19. It has been more than five years since the virus wreaked havoc on the world. Long before “COVID” and “Coronavirus” entered our lexicon, during live CE seminars I would always stress that standard of care in our industry called for opticians to thoroughly wash their hands in between every patient encounter. I would also review suggested routines for sanitizing tools, surfaces, and sample frames. Unscientific polls made it clear to me that most Florida opticians and their unlicensed ECP (eye-care professional) colleagues approached the whole idea with casualness and nonchalance. COVID-19 changed all that. Sadly, although the widespread and serious threats we faced in 2020 have long subsided, I fear most ECPs have returned to a state of complacency when it comes to cleanliness and hygiene. This module hopes to change that, if even just a little bit.

II A Short History of Germs, Hygiene, and Cleanliness

We have all heard the old cliché that “Cleanliness is Next to Godliness.” Don’t believe it! In fact, I just looked up the word “cleanliness” in my edition of *Webster’s New Concise Pocket Dictionary*. “Cleanliness” is in fact, NOT next to “godliness.” In my dictionary, “cleanliness” is next to “click.” So hopefully that will inspire you to click on all the Internet links in this module to further delve into the subject matter of this course.

The word hygiene comes to us from the Greek language. Hygeia was the Greek Goddess of Health. What follows is a brief timeline of the history of germs, hygiene, and cleanliness:

2800 BCE – The earliest known use of soap or a soap-like product. It was found in clay urns during an excavation of ancient Babylon.

1200 BCE – Ancient Israelites take an active interest in hygiene. Moses gave the Israelites detailed laws governing personal cleanliness. In fact, the Bible references a mixture of ashes and oil to be used in hair, which might be considered the first hair gel.

600 BCE – Ancient Greeks are using public baths.

300 BCE – For the first time in recorded history, wealthy ancient Romans begin wiping after defecating. They mostly used wool and rosewater. Sometime later, common Romans began wiping with sponges soaked in salt water.

1346 CE – The Black Death ravages Europe. Between 40-50% of the population dies within four years. It is widely believed the Black Death was of Asian origin and was spread through the trade routes.

1400 CE – The Chinese invent toilet paper.

1770s CE – The American colonists believed that too much handwashing and too much bathing was bad for the body because it stripped essential oils from the skin, thus causing disease. Of course, we now know that the exact opposite is true.

1854 CE – In the middle of the 19th century, England experienced an outbreak of cholera, and it soon grew to an epidemic. Dr. John Snow observed that it was spreading via sewage-contaminated water, mostly around a water pump in Broad Street in London. Dr. Snow simply removed the pump handle and almost immediately the spread was contained.

1890 CE – Toilet paper rolls invented in America.

1918 CE – The Spanish Influenza, an H1N1 virus of avian origin, causes widespread devastation. Eventually it would claim more than 50 million lives worldwide, including 675,000 Americans.

1922-1923 CE – Alexander Fleming discovers the enzyme lysozyme in human tears, saliva, and certain animal fluids, and that it could act as an antibacterial agent. He also discovers penicillin.

1931 CE – Disposable tissues invented.

1954 CE – Jonas Salk creates a vaccine against polio.

1966 CE – The Hong Kong flu infects more than 1 million Americans. More than 100,000 American lives are lost.

1997 CE – The first successful alcohol-based waterless hand sanitizer to be mass-marketed to consumers, Purell, hits the marketplace.

2009 CE – Another H1N1 virus strikes. 500,000 people worldwide, including 12,469 Americans lose their lives.

2019 CE – A new Coronavirus, COVID-19, has affected the entire globe. As of this writing (June 2020) there are 3.5 million cases worldwide and nearly 250,000 dead. In America, there are 1.2 million cases, and nearly 110,000 Americans have died. Unprecedented social changes have taken place including quarantines, sheltering in place, social distancing, masses wearing gloves and masks, shortages of PPE (Personal Protective Equipment) and cleaning supplies, businesses closed, and a negative economic and unemployment impact not seen since the Great Depression. Although deemed “essential,” most optical dispensaries closed (except for emergencies) for more than two months. My retail optical businesses – like most others in our country – experienced a 95% drop in sales over the first two months of the crisis.

2020 CE – On January 20 the first case of COVID-19 is reported in the United States. Unprecedented social changes took place including quarantines, sheltering in place, social distancing, masses wearing gloves and masks, shortages of PPE (Personal Protective Equipment) and cleaning supplies, businesses closed, and a negative economic and unemployment impact not seen since the Great Depression. Although deemed “essential,” most optical dispensaries closed (except for emergencies) for more than two months. My retail optical businesses – like most others in our country – experienced a 95% drop in sales over the first two months of the crisis.

2022 CE – By the end of 2022, the CDC reports that more than 77% of Americans have had

2022 CE – A global outbreak of Mpox (formerly called Monkeypox) begins. Although mostly confined to Africa, it continues through 2024. Of potential concern to optical shop workers,

Mpox raised concern of transmission by coming in to contact with unclean surfaces (e.g. door handles, dispensing desks and counters) and other fomites.

2023 CE – On May 11 the COVID-19 Official Public Health Emergency ends.

2024 CE – Through April 2024 there have been approximately 1.2 million COVID-related deaths in the United States. Additionally, more than 109 million Americans have had COVID-19 and fully recovered. About 82% of Americans have had at least one COVID-19 vaccine.

2025 CE – A southern Africa cholera outbreak emphasizes sanitation, hygiene, public-health infrastructure; alerts to continuing risk of classical bacterial pathogens.

III Assessing Your Organization’s Approach to Hygiene and Cleanliness

Take a few minutes to complete the following 20-statement assessment to see how you, your colleagues, and your organization rate when it comes to hygiene and cleanliness. Simply circle YES or NO for each statement as it generally applies to you and your environment. If you are accessing this course in audio or video form, simply get a piece of paper and write the word YES or NO for each of the 20 statements.

1. YES or NO – The office where I work could accurately be called a Culture of Safety when it comes to handwashing and environmental disinfection. We really take it seriously.
2. YES or NO – Alcohol-based hand sanitizer is available at all dispensing tables, lab areas, exam rooms, and patient waiting areas.
3. YES or NO – A sink with running water is available somewhere in the dispensary.
4. YES or NO – Soap dispensers are available at all sinks and are always kept full.
5. YES or NO – Disposable paper towels are always available at all sinks and kept stocked.
6. YES or NO – There is prominent signage near sinks describing and/or illustrating proper handwashing techniques.
7. YES or NO – Our organization has specific policies describing proper handwashing and sterilization techniques, AND I and my colleagues are fully aware of them. We have also received specific training on these techniques.
8. YES or NO – All staff members were properly screened (screening questions asked, and body temperature monitored) before their shift began during the COVID pandemic.
9. YES or NO – I thoroughly wash my hands with soap and water or an alcohol-based hand sanitizer in between *every* patient encounter.

10. YES or NO – There is a specific schedule for sanitizing the work surfaces in our office including countertops, keyboards, computer mice, phones, etc.
11. YES or NO – There is a specific schedule and protocol for sanitizing the hand tools that are used in the lab and at dispensing tables.
12. YES or NO – Company leadership (owners, doctors, managers, etc.) take the issue of cleanliness seriously.
13. YES or NO – Front-line dispensers and all other employees were actively consulted and engaged in the creation of any official or unofficial policies regarding cleanliness in the office.
14. YES or NO – There is real accountability in our organization when it comes to cleanliness and hygiene – compliance is recognized and occasionally rewarded; likewise, non-compliance is not tolerated.
15. YES or NO – In the time of Coronavirus, disposable gloves and masks were provided to the staff.
16. YES or NO – The staff was adequately trained in the proper wear, use, and disposal of gloves and masks.
17. YES or NO – All instruments and furniture that makes contact with patients (e.g. pupilometers, PD sticks, tonometers, autorefractors, chairs, etc.) are thoroughly disinfected in plain sight of the patient before each use.
18. YES or NO – There is a specific protocol in place to sanitize our sample frames after they are tried on by a patient before they are returned to the frame board.
19. YES or NO – Microfiber and other non-disposable cloths are limited in their use and not used on multiple, different patient's eyeglasses.
20. YES or NO – Being intimately familiar with how our organization handles all the issues surrounding hygiene and cleanliness, I would be comfortable having my family examined here and allowing them to purchase eyeglasses or contact lenses.

Count the number of times you circled YES, and the number of times you circled NO. While there is certainly nothing scientific about this assessment, if most of your responses were YES, I would say you work in an environment that is doing pretty good in the area of hygiene, and by participating in this CE module you will pick up a few tips to make it even better. On the other hand, if most of your responses were NO, consider taking some serious notes and work to make as many improvements as you can.

IV Official CDC (Centers for Disease Control) Guidelines

While we will mostly deal here with handwashing, PPE, and other concerns from the CDC, it is worth noting how long viruses (such as COVID-19) can live on various surfaces in our dispensary.

The Coronavirus can live for hours to days on various surfaces like countertops, file cabinets, mirrors, and doorknobs. How long it survives depends on the material the surface is made from.

There are many sources that promulgate this information, but I have found the most concise information on this topic at WebMD (www.webmd.com). Take a few minutes to access their website. Once there, search for “surface contamination” to get the latest information available. According to their experts, “Just how long coronaviruses - the family of viruses that includes the one that causes COVID-19 - can live on some of the surfaces you probably touch daily.

That said, consider the following information about which organisms (bacteria, viruses, and fungi) can survive, how they are likely to spread in an optical shop, their survival time, risks, and a recommended cleaning regimen:

Bacterial Species	How It Spreads in an Optical Setting	Surface Survival Time	Risks / Relevance to Opticians	Recommended Disinfectants
<i>Staphylococcus aureus</i> (including MRSA)	Skin contact, contaminated hands, shared tools, frame adjustments	Days to weeks	Causes skin infections; MRSA is antibiotic-resistant; easily spreads via frames, tools, PD rulers	EPA-registered quaternary ammonium compounds (“quats”), 70% isopropyl alcohol, hydrogen peroxide wipes
<i>Streptococcus pneumoniae</i>	Respiratory droplets near fitting tables, contaminated tissues and pens	Hours to days	Associated with pneumonia and sinus infections; deposits readily on counters and desks	Quats, alcohol-based sprays/wipes, hydrogen peroxide disinfectants
<i>Escherichia coli</i> (E. coli)	Poor hand hygiene; contaminated money, personal items	Hours to days	Indicator of inadequate sanitation; can transfer to frame fronts and tools	Quats, hydrogen peroxide wipes; bleach for heavy contamination (not for frames)
<i>Pseudomonas aeruginosa</i>	Moist environments (ultrasonic cleaners, cloths, nose pads, sinks)	Hours to days	Causes eye infections; thrives in water and wet fabrics	Hydrogen peroxide disinfectants, quats; routine drying of equipment; avoid bleach on frames

Table 2 — Viruses Relevant to the Optical Dispensary Environment

Virus	How It Spreads in an Optical Setting	Surface Survival Time	Risks / Relevance to Opticians	Recommended Disinfectants
Adenovirus (viral conjunctivitis)	Contaminated frames, PD rulers, demo lenses; hand-to-eye transfer	Up to 30 days	Highly contagious; frequent cause of conjunctivitis outbreaks in optical shops	EPA-registered hospital-grade quats; hydrogen peroxide disinfectants; alcohol is less reliable for adenovirus
Rhinovirus (common cold)	Droplets, contaminated doorknobs, pens, counters	Up to 48 hours	Extremely common; spreads rapidly in patient-facing environments	Alcohol wipes, quats, hydrogen peroxide products
Influenza virus	Respiratory droplets, contaminated fitting stations and tools	24–48 hours	Seasonal risk; attaches strongly to plastics and metals	Alcohol wipes, quats, hydrogen peroxide disinfectants
Coronaviruses (including SARS-CoV-2)	Droplets, aerosols, contaminated surfaces such as tablets	24–72 hours	Elevated awareness since 2020; frequent surface contamination	Alcohol (70%), quats, hydrogen peroxide; all EPA List N disinfectants
Norovirus	Contaminated hands and surfaces; very low infectious dose	Days to weeks	Causes GI outbreaks; survives routine cleaning	Bleach (sodium hypochlorite) is required; hydrogen peroxide can help but bleach is preferred; quats are ineffective

Table 3 — Fungi, Yeasts, and Other Microbial Risks

Organism / Hazard	How It Spreads in an Optical Setting	Surface Survival Time	Risks / Relevance to Opticians	Recommended Disinfectants
Candida species	Contaminated cloths, tools, skin contact; thrives in moist zones	Days	Can colonize silicone nose pads and cloths; implicated in eye and skin irritation	Quats, alcohol wipes, hydrogen peroxide
Dermatophytes (Ringworm fungi)	Shared frames, adjustment tools, display panels; contact with forehead/temples	Weeks	Causes ringworm; survives on dry surfaces for long periods	Quats, alcohol wipes, hydrogen peroxide
Mold spores	Damp storage areas, wet microfiber cloths, humid environments	Weeks to months	Causes allergies and respiratory irritation; contaminates cloths and frame boards	Hydrogen peroxide cleaners, diluted bleach for non-frame surfaces, quats
Biofilm-forming organisms (mixed bacteria/fungi)	Ultrasonic cleaners, water trays, faucet heads	Can persist indefinitely without removal	Biofilms resist disinfectants; require mechanical cleaning + chemical disinfection	Scrubbing + hydrogen peroxide or enzymatic cleaners; quats afterward; avoid bleach in ultrasonic tanks

General Survival Times of Microorganisms on Common Surfaces				
Microorganism Type	Plastic / Metal	Glass	Cloth / Fabric	Notes
Adenovirus	Up to 30 days	Up to 30 days	Several days	Extremely hardy; major cause of viral conjunctivitis outbreaks.
Influenza Virus	24–48 hours	24–48 hours	8–12 hours	Lasts longest on smooth, nonporous surfaces.
Rhinovirus	Up to 48 hours	Up to 48 hours	A few hours	Common cold virus; easily transferred via hands.
Coronaviruses (e.g., SARS-CoV-2)	1–3 days	1–3 days	Hours to 1 day	Longer survival on nonporous materials.
Norovirus	Days to weeks	Days to weeks	Several days	Requires bleach for reliable inactivation.
Staph aureus (including MRSA)	Days to weeks	Days	Days to weeks	Very persistent, especially in dry environments.
E. coli	Hours to days	Hours to days	< 24 hours	Indicates inadequate sanitation if present.
Pseudomonas aeruginosa	Hours to days	Hours to days	Days (if moist)	Thrives in wet cloths and water traps.
Candida (yeast)	Days	Days	Days	Can survive on silicone nose pads and cloths.
Dermatophytes (ringworm fungi)	Weeks	Weeks ↓	Months	Extremely durable on porous surfaces.

What follows now is taken directly from “Hand Hygiene in Healthcare Settings” found in official CDC literature as of November 2025.

The CDC defines Hand Hygiene as “Cleaning your hands by using either handwashing (washing hands with soap and water), antiseptic hand wash, antiseptic hand rub (i.e. alcohol-based hand sanitizer including foam or gel), or surgical hand antisepsis,” and that “cleaning your hands reduces the spread of potentially deadly germs to patients, and the risk of healthcare provider colonization or infection caused by germs acquired from the patient.”

The CDC then comments on the age-old debate: Which is more effective – washing your hands with soap and water, or using an alcohol-based hand sanitizer? The CDC’s response may surprise you. Remember this is not my opinion, this comes from their official information pages:

- “Alcohol-based hand sanitizers are the most effective products for reducing the number of germs on the hands of healthcare providers.
- Alcohol-based hand sanitizers are the preferred method for cleaning your hands in most clinical situations.
- Wash your hands with soap and water whenever they are visibly dirty, before eating, and after using the restroom.”

The CDC then goes on to describe specific times that a healthcare worker should use an alcohol-based sanitizer and when he or she should use soap and water. Since many of the

examples simply do not apply to an ECP (eye-care professional) or an optical dispensary, what follows is a synopsis of the information. It is advisable to use an alcohol-based hand sanitizer immediately before touching a patient, after touching a patient or the patient's immediate environment, after coming in contact with any bodily fluids or potentially contaminated surfaces, and immediately after glove removal. We should use soap and water whenever our hands are visibly dirty.

Techniques for using alcohol-based hand sanitizer:

- Put product on hands and rub hands together.
- Cover all surfaces until hands feel dry.
- This should take around 20 seconds.
- Alcohol-based hand sanitizers should have a minimum of 60% alcohol content.

Techniques for washing hands with soap and water:

- When cleaning your hands with soap and water, wet your hands first with water, apply the amount of product recommended by the manufacturer to your hands, and rub your hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers.
- Rinse your hands with water and use disposable towels to dry. Use a paper towel to turn off the faucet.
- Avoid using hot water to prevent drying of skin.
- Other entities have recommended that cleaning your hands with soap and water should take around 20 seconds.
- Either time is acceptable. The focus should be on cleaning your hands at the right times.

You may access more details regarding hygiene at the following link:

<https://www.cdc.gov/clean-hands/hcp/clinical-safety/index.html>

(Optional Action: While not required, if you have a lot of time on your hands you could access and read the CDC's 54-page complete guide to Hand Hygiene in Healthcare Settings at the following link):

In the time of COVID, many ECPs began to wear gloves. Here are the CDC's guidelines when it comes to proper glove use:

- "Wear gloves, according to Standard Precautions, when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, non-intact skin, potentially contaminated skin or contaminated equipment could occur.
- Gloves are not a substitute for hand hygiene.

- If your task requires gloves, perform hand hygiene prior to donning gloves, before touching the patient or the patient environment.
- Perform hand hygiene immediately after removing gloves.
- Change gloves and perform hand hygiene during patient care, if
 - gloves become damaged,
 - gloves become visibly soiled with blood or body fluids following a task,
 - moving from work on a soiled body site to a clean body site on the same patient or if another clinical indication for hand hygiene occurs.
- Never wear the same pair of gloves in the care of more than one patient.
- Carefully remove gloves to prevent hand contamination.”

One area of hand hygiene that most opticians never think about concerns fingernails and jewelry. Again, this is what the CDC says about it:

- “Germs can live under artificial fingernails both before and after using an alcohol-based hand sanitizer and handwashing.
- It is recommended that healthcare providers do not wear artificial fingernails or extensions when having direct contact with patients at high risk.
- Keep natural nail tips less than ¼ inch long.
- Some studies have shown that the skin underneath rings contains more germs than comparable areas of skin on fingers without rings.
- Further studies are needed to determine if wearing rings results in an increased spread of potentially deadly germs.”

It is worth noting how the FDA (Food and Drug Administration) answers two specific questions about handwashing and the prevention of the spread of viruses. You will notice that some of this information is contradictory to CDC information. This fact illustrates how important it is for ECPs to take in as much information as possible from credible sources, and then make their own professional decisions based on research, personal discernment, and the environments in which they function. Here are the FDA’s official answers to two relevant questions:

Is hand sanitizer effective against viruses?

The best way to prevent the spread of infections and decrease the risk of getting sick is by washing your hands with plain soap and water, advises the CDC. Washing hands often with soap and water for at least 20 seconds is essential, especially after going to the bathroom; before eating; and after coughing, sneezing, or blowing one’s nose. If soap and water are not available, CDC recommends consumers use an alcohol-based hand sanitizer that contains at least 60% alcohol.

Should I be using antibacterial soap to wash my hands?

The best way to prevent the spread of infections and decrease the risk of getting sick is by

washing your hands with plain soap and water, advises the CDC. Washing hands often with soap and water for at least 20 seconds is essential, especially after going to the bathroom; before eating; and after coughing, sneezing, or blowing one's nose. There is currently no evidence that consumer antiseptic wash products (also known as antibacterial soaps) are any more effective at preventing illness than washing with plain soap and water. In fact, some data suggests that antibacterial ingredients could do more harm than good in the long-term and more research is needed.”

Although it should go without saying, dispensing opticians should also wash their hands:

- At the beginning of their shift.
- After adjusting or repairing eyewear.
- Before and after handling contact lenses.
- Before using screening instruments such as autorefractors, non-contact tonometers, keratometers, etc.
- After taking initial measurements while ordering glasses, and after dispensing of eyewear.

Before moving on to Section V, please take a few minutes to view this brief video produced by the World Health Organization. It illustrates proper handwashing using soap and water. Use this hyperlink to access the video on YouTube:

<https://www.youtube.com/watch?v=vYwypSLiaTU&t=2s>

V Implementing Strategic Best Practices in Your Dispensary

Regardless of whether you are in an ownership or management position in your practice, if you are participating in this CE module you are a licensed professional, and as such you are in a de facto leadership position. Additionally, unless there is some dysfunction in your work environment, as a licensed professional you should have significant influence on the behavior of the people around you. Therefore, if you begin to change your habits and behaviors, most of your co-workers will follow your lead. Short of that, here are 17 specific things I like to call SBPs (Strategic Best Practices) that I hope you consider implementing or improving in your practice:

1. Consciously work on creating a Culture of Safety in your dispensary. That means sharing the importance of everything you learn in this module, and more importantly, demonstrating and modeling the habits and techniques outlined here.
2. Make sure that hand sanitizer and alcohol wipes are readily available at all dispensing stations for dispenser and patient use, and for wiping down PD sticks, pupilometers, pens and pencils, etc.
3. Set up a hand sanitizer station specifically for patient use. (See illustration below.)



4. Educate your staff on the importance of handwashing and proper handwashing techniques. Post signs that illustrate proper techniques near sinks. Also, studies show that signage that reminds healthcare workers that hygiene compliance helps to protect the safety and welfare of *patients* is the most effective message in raising compliance.
5. Create a sign instructing patients who are trying on frames to NOT return them to the frame board after they try them on, rather to deposit them on a specific table or in a basket, so they may be sanitized before they are returned to the display boards. (See illustration below.)



6. Whenever possible, wash your hands and disinfect the equipment you are about to use (e.g. a pupilometer) in plain sight of your patients. This will help instill a sense of confidence and seriousness of purpose.
7. Consider having opticians wear a button that reads “Ask me if I washed my hands,” on their lapel or lab coat.

8. In times of pandemic: Set up a mandatory screening process for staff members before they begin their shift. Screen by taking body temperatures and asking questions to see if the team member has been experiencing symptoms that may be indicative of an infection. (Remember that while the average human body temperature is 98.6°F, some studies indicate that a person's "normal" temperature can have a wide range – from just over 97°F to 99°F. A temperature of over 100.4°F usually indicates a fever caused by some illness or infection, and that staff member should be excused from work. Screening questions should look for things like fever, chills, dry cough, difficulty breathing, stomach pain, diarrhea, nausea, muscle pain, headache, sore throat, and loss of taste or smell. If the staff member is experiencing any of these symptoms that cannot be explained by other causes, they may be infected and again, should probably be excused from work.)

9. Use an alcohol-based or hydrogen-peroxide based solution to disinfect frames before returning them to the frame boards. (Note: When it comes to killing germs on surfaces, 70% isopropyl alcohol is better than 90%. Why? Lower percentages contain more water – which is a good thing. Basically, 90% alcohol is *too* powerful in most cases. According to Dr. Elizabeth Scott, professor of microbiology at Simmons Center for Hygiene and Health at Simmons University in Boston, "It [90% alcohol] fries the outside of the cell before it can get into the inside and kill the actual germ. Turns out that 70% alcohol is just the right proportion of alcohol to water to zap the entire [virus] cell."

Seventy-percent isopropyl alcohol is widely recognized as more effective for disinfecting countertops, tools, and equipment than 91% alcohol because of the way alcohol interacts with microbial cells. Although it may seem counterintuitive, higher concentration does not equal greater disinfecting power. Microorganisms—especially bacteria—are protected by a cell wall and outer membrane. Pure or near-pure alcohol (such as 91%) evaporates extremely quickly and coagulates the outer proteins of the cell on contact. This rapid coagulation forms a hardened shell that protects the organism’s internal structures, preventing the alcohol from penetrating deeply enough to destroy the cell completely. In contrast, 70% alcohol contains about 30% purified water, and this added water dramatically slows evaporation. The water allows the alcohol to remain on the surface longer, increases its ability to penetrate the cell, and facilitates more thorough denaturation of internal proteins and enzymes. Water also helps alcohol dissolve lipids in viral envelopes, making 70% solutions more effective against many viruses commonly found on high-touch surfaces. Because of these factors—slower evaporation, better penetration, fuller protein denaturation, and improved lipid dissolution—70% is considered the optimal concentration for routine disinfection of surfaces and tools in healthcare and optical settings, providing a more reliable kill rate than 91% alcohol.



10. Install a home-made sneeze-guard barrier on your pupilometer. All you need is a little ingenuity, a couple strips of Velcro, and an 8x10 acrylic picture frame (the Velcro and frame should cost less than \$5 total). Attach the Velcro to the pupilometer and to the frame and position as shown in the photo below. A little added protection that can be created with \$5 and 5 minutes of your time. Note: Some pupilometer models are now available with a built-in, plastic shield. (See illustration below.)



11. If your office currently does not have specific *policies* regarding hygiene and cleanliness, now is the time to create them, based on some of the techniques revealed in this module. But remember, in creating and implementing policies (including accountability), one of the most important things to remember is ownership. Your staff will “own” and comply with the created policies the more they are actively involved with their creation. Always remember: More involvement, more commitment. No involvement, no commitment.
12. If your dispensary is a free-standing office (as opposed to a department within a larger store), be sure to thoroughly wipe the push bar on the inside of your door, and the handle on the outside of your door with disinfectant wipes or alcohol after each use.
13. In the time of a pandemic, wear masks and consider requiring your patients to do so too.
14. In the time of a pandemic, consider limiting the number of people in your store or dispensary at any one time.
15. Rearrange the chairs in your waiting room and dispensary so that they maintain a minimum of six feet of social distancing.

16. If you use lab trays in your dispensary, make sure they are cleaned on a regular basis. Consider using a disposable paper towel as a lab “lining.” Make sure they are changed in between each job.
17. Create a specific schedule for how and when things in your office are sanitized. This might include work surfaces, furniture, tools, mirrors, and more.

VI Effectively and Tactfully Changing Employee and Patient Behavior

I once heard the word tact defined as the ability to tell someone to go to hell in such a way that that they look forward to the trip! While that might have brought a smile to your face, there is much wisdom there too. While we need to change some behaviors in our patients and staff, we should strive to do so with patience and respect, so that no one feels insulted or alienated in the process.

Once team members have been properly trained on the practice’s new cleanliness and hygiene policies (and hopefully they were involved in the process of creating those policies) it will probably take them some time to come into complete compliance – even if they have a sincere desire to comply. Why? Although many studies exist with varying statistics, I have found that even willing adults sometimes need to be reminded six or seven times when it comes to changing a work habit. This could be a period of 90 days or more before the habit becomes “automatic.” Be patient. Recognize when steps are made toward compliance with some kind of positive reinforcement. Even a simple thing like, “Hey...I’ve noticed you washed your hands between every single patient this morning and I just wanted to say thank you. It’s so important.”

Of course, if those six or seven “friendly reminders” don’t do the trick, simply inform the “forgetful” employee of the number of times you have reminded them of the policy, and what specific consequence will occur the next time the policy is not followed. Be polite, but firm. You have to show a seriousness of purpose with these types of offenders. Be ready to follow through if necessary.

When it comes to patients, apply the same general approach – friendly, patient, but firm. Be sure to explain that the new policies that may irritate or inconvenience them were implemented for their safety and the safety of all your patients and their family members. Although I doubt it would ever come to it, be ready to “fire” a non-compliant patient, just as you would an employee who simply refused to comply to policies.

Mahatma Gandhi was famous for saying, “Be the change that you wish to see in the world.” On a less grand scale, the same could be true where you work. Start to model the change you wish to see in your patients and colleagues, and little by little you will begin to see the change in them. Good luck on the journey.

VI 20-Question Final Assessment

1. The average, normal human body temperature is generally accepted to be:
 - a. 97.6° F
 - b. 98.6° F
 - c. 99.6° F
 - d. 100.4° F

2. According to DR. Elizabeth Scott, the most effective percentage isopropyl alcohol to disinfect work surfaces is:
 - a. 50 %
 - b. 60 %
 - c. 70 %
 - d. 90 %

3. Including as many staff members as possible when creating new hygiene standards for your practice will help instill in them a sense of:
 - a. Professionalism
 - b. Ownership
 - c. Unity
 - d. Resentment

4. To increase handwashing compliance, probably the most effective message on signage would be:
 - a. "Remember: Handwashing is the right thing to do!"
 - b. "Remember: You are being monitored on closed-circuit TV"
 - c. "Remember: Keep yourself safe and clean: Wash Your Hands!"
 - d. "Remember: Wash your hands to help keep you patients safe!"

5. This module suggested 17 different SBPs to implement. SBP stands for:
 - a. Significant Bathroom Policy
 - b. Strategic Best Practices
 - c. Serious Business Policies
 - d. Stand-By Patients

6. When it comes to effective handwashing using soap and water, the process should take at least:

- a. 5-10 seconds
- b. 10-20 seconds
- c. 15-20 seconds
- d. 30-45 seconds

7. If you are wearing protective gloves and they become visibly soiled or have come into contact with bodily fluids you should:

- a. Remove them and perform hand hygiene before donning new ones
- b. Thoroughly wash them with soap and hot water
- c. Thoroughly wash them using an alcohol-based hand sanitizer
- d. All three choices (a, b, or c) are acceptable

8. The CDC recommends that you do NOT use hot water when washing your hands throughout the day. Why?

- a. Cold water is a more effective disinfectant
- b. Warm water is a more effective disinfectant
- c. To save energy costs
- d. Because it tends to dry out the skin

9. CDC guidelines recommend keeping natural fingernail tips less than:

- a. $\frac{1}{4}$ -inch long
- b. $\frac{1}{2}$ -inch long
- c. $\frac{3}{4}$ -inch long
- d. 1-inch long

10. The CDC's definition of hand hygiene includes:

- a. Cleaning your hands by using handwashing, or an alcohol-based hand gel
- b. Using hot water
- c. A minimum rub time of 45 seconds
- d. Some sort of hydrogen-peroxide based regimen

11. Whenever possible, handwashing and instrument disinfection should be done in plain view of your patients. This is to:

- a. Save time by not walking back to the lab to do it
- b. Instill a sense of confidence and seriousness of purpose
- c. Save the patient the trouble of asking if you did it
- d. Help remind you to follow policy

12. Some studies have shown that skin underneath your wedding ring:

- a. Is generally naturally cleaner because it is less exposed
- b. Contains just as many germs as other areas of your hand
- c. Contains a dangerously high level of bacteria
- d. Contains more germs than comparable areas of uncovered skin on fingers

13. If using an alcohol-based hand sanitizer it should contain at least what percent alcohol?

- a. 40 %
- b. 50 %
- c. 60 %
- d. 70 %

14. All things being equal, on which surface would a Coronavirus last the longest?

- a. Fabric
- b. Carboard
- c. Cloth
- d. Metal

15. What does the CDC say about wearing rings on your fingers in terms of spreading potentially deadly germs?

- a. It does
- b. It doesn't
- c. It significantly does
- d. Further studies are needed

16. In the early 20th century, Spanish Influenza claimed how many lives worldwide?
About:

- a. 30 million
- b. 50 million
- c. 70 million
- d. 90 million

17. What modern “convenience” was invented in America in 1890:

- a. Latex gloves
- b. Toilet paper rolls
- c. Surgical masks
- d. Kleenex

18. To contain cholera during an outbreak in the mid-19th century, what action did Dr. John Snow take?

- a. He quarantined a significant portion of the population
- b. He removed a handle from a public water pump
- c. He led a vigorous education project all over London
- d. He began to wash his hands in between each and every patient

19. Which of the following statements is FALSE?

- a. Gloves are an adequate substitute for vigorous handwashing
- b. Gloves that are physically damaged should be replaced
- c. Germs can live under artificial fingernails even after using hand sanitizer
- d. Hands should be washed after coughing, sneezing, or blowing one’s nose

20. The author suggested sanitizing frames before they are returned to the frame board, with a solution that is:

- a. Alcohol-based or hydrogen peroxide-based
- b. A diluted chlorine bleach solution
- c. Lysol
- d. Hot water mixed with hydrogen peroxide