Sanitation, Sterilization and Infection Control

3 CE Hours

By: JoAnn Stills

Learning objectives

- Describe recent events that require your knowledge of sanitation techniques.
- Explain the difference between pathogenic and nonpathogenic bacteria.
- Contrast disinfectants and antiseptics and explain the significance of those differences.
- List the steps necessary to properly sanitize your hands and to disinfect, handle and store tools appropriately.
- List infection-control responsibilities in the practice of cosmetology in North Carolina.
- List infection-control responsibilities according to universal sanitation precautions.
- Contrast sanitation and sterilization and explain the significance of those differences.

Introduction

Why do I have to complete sanitation continuing education?
Salon professionals need to be aware that we have reached a time where, quite simply, antibiotic-resistant organisms can kill, and the frequency of infections from them is increasing. Due to the sheer nature of people touching people in a salon atmosphere, the killer organisms can occur in your facility if you aren’t informed and following the proper procedures. The following information emphasizes how important sanitation is in your salon.

Your responsibilities

As a salon professional, you have responsibilities to the state and your profession to learn and use appropriate precautionary measures and cleaning procedures, to protect both yourself and your clients; reduce the incidence of bacterial, viral, and fungal infections; and prevent the spread of disease. You, your instruments and workstation must be kept as clean as possible, meaning no shortcuts or omissions of any precautionary measures discussed in this chapter. Violations can result in penalization by the state of North Carolina as well as infection.

The remainder of this chapter will review these subjects:
- The biology of pathogens, how they function, reproduce and infect.
- Universal sanitation and sterilization precautions.
- State of North Carolina regulations that apply to cosmetology.
- The difference between decontamination, sanitation, sterilization and disinfection.
- How to effectively disinfect tools and surfaces in your environment, and to sanitize hands.

Microorganisms and infectious agents

Microorganisms are tiny living particles (organisms) with many different characteristics. They live in our air, water and earth, and are found everywhere on the planet. Some microorganisms are associated with infection or disease; others are harmless or even helpful. Bacteria, viruses and parasites are three major categories of microorganisms that you encounter every day.

Bacteria

Bacteria are tiny, one-celled vegetable microorganisms (plants) that can be seen only with a microscope. The most plentiful organisms on the earth, bacteria are found virtually everywhere around us, existing in dust, dirt and decay; our skin and body tissues; and the air we breathe and the water we drink. Bacteria produce slimy fluids or waxy coatings that moisten them and help them survive in inhospitable environments. Fimbri, hairlike tendrils that anchor the bacteria to an object, make bacteria sticky, requiring one to use some degree of pressure when scrubbing to break the hold of these tenacious fibers. Bacteria exist in one of two modes: an active, vegetative mode, and an inactive, spore-forming mode. In the active stage, bacteria grow and multiply at an astonishing speed.

Reproducing through binary fission (a process in which one bacteria splits into two), bacteria produce millions of copies within hours. Bacteria are only able to reproduce when the environment meets their specific needs in temperature and degree of moisture. They require a warm, damp, usually dark and often dirty environment that provides a supply of food adequate to sustain the bacteria and provide fuel for reproduction. If conditions are not favorable for reproduction, the bacteria will move into a spore-forming stage, producing spores with tough outer surfaces that are almost impervious to wind, heat, cold, harsh cleaners or disinfectants. These characteristics help spores survive for long periods between reproductive phases.

While there are hundreds of different kinds of bacteria, they are primarily sorted into one of two types, according to the danger they pose to us. Potentially harmful bacteria are called pathogenic; harmless or beneficial bacteria are called nonpathogenic. The great majority (about 70 percent) of bacteria are nonpathogenic. Called saprophytes, these organisms do not produce disease and carry out necessary functions, such as decomposing dead matter, for example. Nonpathogenic bacteria also exist in the human digestive tract and in the mouth and intestines, where they facilitate digestion by breaking down food.
Viruses that leave to infect other cells. Viruses cause diseases like hundreds, thousands and even millions of new mature infectious and destroying the cell in the process. The cell is then used to breed the death of that cell. They are parasites, taking the cell’s nutrients dangerous because their replication inside the cell eventually causes any length of time without the protection of a living cell. Viruses are infectious biological entities that are very small – much smaller than bacteria – and cause disease by entering a healthy cell, with signs of infection. With infection, the bacteria have entered the body and have begun to multiply and cause damage to the organ or body tissue involved. Signs of infection include fever, warmth, redness of the area, pain and an elevated white blood cell count. MRSA is spread by direct contact with affected areas and is normally not spread by casual contact. Good hand washing and the use of gloves for contact with mucous membranes will avoid transferring the bacteria from one person to another.

**Methicillin-resistant Staph aureas (MRSA)**

Methicillin-resistant Staphylococcus aureus (MRSA) is caused by bacteria known as staphylococcal aureus. Staph aureus is a common bacteria found on skin and mucous membranes. In MRSA, a type or strain of Staph aureus has become resistant to antibiotics in the penicillin family, which includes methicillin.

People can become either colonized or infected with MRSA. In colonization, people have MRSA on their skin or mucous membranes without signs of infection. With infection, the bacteria have entered the body and have begun to multiply and cause damage to the organ or body tissue involved. Signs of infection include fever, warmth, redness of the area, pain and an elevated white blood cell count. MRSA is spread by direct contact with affected areas and is normally not spread by casual contact. Good hand washing and the use of gloves for contact with mucous membranes will avoid transferring the bacteria from one person to another.

**How common are Staph and MRSA infections?**

Staph bacteria are one of the most common causes of skin infection in the United States and are a common cause of pneumonia, surgical wound infections and bloodstream infections. The majority of MRSA infections occur among patients in hospitals or other health care settings. But they are becoming more common in the community setting.

**What does a staph or MRSA infection look like?**

Staph bacteria, including MRSA, can cause skin infections that may look like a pimple or boil and can be red, swollen, painful or have pus or other drainage. Infections that are more serious may cause pneumonia, bloodstream infections or surgical wound infections.

**Are certain people at increased risk for community-associated staph or MRSA infections?**

Factors that have been associated with the spread of MRSA skin infections include close skin-to-skin contact, openings in the skin such as cuts or abrasions, contaminated items and surfaces, crowded living conditions and poor hygiene.

**How can I prevent staph or MRSA skin infections?**

Practice good hygiene:
- Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
- Avoid contact with other people’s wounds or bandages.
- Avoid sharing personal items such as towels or razors.
- Practice good disinfection techniques.
- Keep cuts and scrapes clean and covered with a bandage until healed.
- Clean your hands. You, your family and others in close contact should wash their hands frequently with soap and warm water or use an alcohol-based hand sanitizer, especially after changing the bandage or touching the infected wound.
- Do not share personal items. Avoid sharing personal items such as towels, washcloths, razors, clothing or uniforms that may have had contact with the infected wound or bandage. Wash sheets, towels and clothes that become soaked with water and laundry detergent. Drying clothes in a hot dryer instead of air-drying also helps kill bacteria in clothes.
- Talk to your doctor. Tell any health care providers who treat you that you have or had a staph or MRSA skin infection.

**If I have a staph or MRSA skin infection, what can I do to prevent others from being infected?**

You can prevent spreading staph or MRSA skin infections to others by following these steps:
- **Cover your wound.** Keep wounds that are draining or have pus covered with clean, dry bandages. Follow your health care provider’s instructions on proper care of the wound. Pus from infected wounds can contain staph and MRSA, so keeping the infection covered will help prevent the spread to others. Bandages or tape can be discarded with the regular trash.
- **Clean your hands.** You, your family and others in close contact should wash their hands frequently with soap and warm water or use an alcohol-based hand sanitizer, especially after changing the bandage or touching the infected wound.
- **Do not share personal items.** Avoid sharing personal items such as towels, washcloths, razors, clothing or uniforms that may have had contact with the infected wound or bandage. Wash sheets, towels and clothes that become soaked with water and laundry detergent. Drying clothes in a hot dryer instead of air-drying also helps kill bacteria in clothes.
- **Talk to your doctor.** Tell any health care providers who treat you that you have or had a staph or MRSA skin infection.

**Viruses**

Viruses are infectious biological entities that are very small – much smaller than bacteria – and cause disease by entering a healthy cell, maturing and reproducing. Unlike bacteria, viruses do not survive for any length of time without the protection of a living cell. Viruses are dangerous because their replication inside the cell eventually causes the death of that cell. They are parasites, taking the cell’s nutrients and destroying the cell in the process. The cell is then used to breed hundreds, thousands and even millions of new mature infectious viruses that leave to infect other cells. Viruses cause diseases like hepatitis, influenza and measles, and are the source of colds, chicken pox, cold sores and genital herpes, mononucleosis, hepatitis and HIV/AIDS.

Viruses are a particular concern in salons because of their potential severity and the way they spread. Viruses occupy the surfaces of objects you touch, including door handles, coffee mugs and scissors; they can be inhaled on tiny dust particles or travel on the minute amount of saliva expelled in a cough. Viral infections can be prevented by:
- **Clean your hands.**
- **Cover your wound.**
- **Avoid sharing personal items.**
- **Practice good disinfection techniques.**

You should wash your hands frequently with soap and warm water or using an alcohol-based hand sanitizer. You can prevent spreading staph or MRSA skin infections to others by following these steps:
transmitted from one person to another through casual contact with an infected individual or contact with what he or she touched. Both hand-to-surface and hand-to-hand contacts are highly effective methods for transferring virus particles from one individual to another.

### Plant parasites

**Plant parasites** such as **fungus** or **mold**, **mildew** and **yeasts** are multicellular organisms that are as prevalent as bacteria and consume both live and dead tissue to survive. Fungi usually prefer a damp environment, but can also survive in a warm, dry climate. They reproduce and spread a number of different ways, and can invade the human body easily, requiring no break in the skin.

<table>
<thead>
<tr>
<th>Transmission types</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Direct</td>
<td>Athlete’s foot, ringworm of the nails</td>
</tr>
<tr>
<td>Indirect</td>
<td>Athlete’s foot, ringworm of the skin</td>
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### Precautions with plant parasites

Fungal infections can be stubborn. Many affect the skin, but fungal infections can also cause severe respiratory infections. More common versions of fungal infections are those caused by yeast, including nail fungus, athletes’ foot, jock itch and ringworm. Both over-the-counter and prescription treatments are available for relief from the unpleasant, itchy symptoms of many yeast infections.

Plant parasites, like fungus and mold, are contagious, with nail fungus a significant risk to clients receiving nail services because fungi can spread, not only from one nail to another but also from a client to a technician or the reverse, given improper sanitation techniques at a salon. Nail fungus appears as discoloration of the nail plate (on either the fingernails or toenails), initially appearing white, but growing darker over time. Clients with nail fungus should be referred to a physician for treatment.

Molds and mildews do not infect fingernails, and rarely, if ever, appear under the nail.

### Animal parasites

Animal parasites may be single-cell ([protozoans](https://www.cdc.gov/parasites/protozoas/index.html)) like amoebas or malaria, or multicell, like mites or lice. Protozoans consume both plant and animal tissue and are found in blood and body fluids, water and food. Multicell animals such as lice and mites can hide in the hair and burrow under the skin. Be aware of the signs of scabies, identified by bite marks on a client; Rocky Mountain spotted fever, or typhus, caused by rickettsia; and animal parasites carried by fleas, lice and ticks that are even smaller than bacteria.

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<th>Transmission types</th>
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<tbody>
<tr>
<td>Direct</td>
<td>Dog or cat fleas</td>
</tr>
<tr>
<td>Indirect</td>
<td>Dog or cat mites</td>
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### Modes of contamination

Diseases are communicable or contagious when they move from one individual to another. Working with the public means encountering potentially dangerous pathogens and opportunistic organisms every day. Always assume your clients, co-workers and environment could be carrying illness, and use proper infection control procedures every day.

Humans have some level of immunity against infection, but our level of protection varies with age, health and a range of other factors. Skin is our first line of defense. When there are no cuts or scrapes, skin is excellent protection against pathogens.

In the vast majority of cases, bacteria, fungi and viruses enter the body through the portals of the nose and mouth, small tears or openings in the skin, and to a lesser extent, the eyes and ears. Once inside the body, the pathogen reproduces rapidly at a rate that can overwhelm the immune system, resulting in disease.

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<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Coughing, sneezing</td>
</tr>
<tr>
<td>Indirect</td>
<td>Airborne droplets</td>
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</table>

### Plant parasites

**Ringworm** and **athlete’s foot** are two common contagious diseases that are spread by fungi. Another is **favus**, which affects the scalp. **Cosmetologists** should not serve any individual with signs of any fungal infection. If you have a fungal infection, do not work and seek treatment immediately. If you think a client has ringworm, identified by a ring-shaped, circular pattern on the skin, or athlete’s foot, do not provide service to the individual, because they are highly contagious. Tell the individual to consult a physician for treatment.

For any individual with a visible communicable disease, like **pediculosis** (head lice), open sores or marks suggesting scabies, it is recommended that the person furnish a statement signed by a physician that the disease or condition is not in an infectious, contagious or communicable stage. The same is true if the cosmetologist has symptoms or indications of a visible disease, lice or open sores; he or she should not practice cosmetology until obtaining a statement signed by a physician stating that the disease or condition is not in an infectious, contagious or communicable stage.

Transmission may occur through direct or indirect contact. For example, indirectly inhaling contaminated droplets in the air (airborne transmission), or touching a contaminated surface and then touching one’s nose, eyes or a mucous membrane is an easy way to transmit germs. Try to avoid touching your face during the day, and always wash your hands between clients.

Yeast, scabies, lice and many other skin infections do not require an open sore or mucosal surface to infect. Athlete’s foot contaminates through indirect transmission. When someone with athlete’s foot walks barefoot on a wet bathroom floor, for example, the person leaves behind spores that will stick to the foot of anyone else walking barefoot on that floor, infecting the individual even if he or she has no cuts or openings on the feet.

Fungi, like athlete’s foot, will survive for some time on a damp or wet floor. Spa shower stalls and soaking baths that retain small amounts of
water must be thoroughly cleaned and disinfected with the appropriate disinfectant.

The primary modes of travel for common contagions are:

- Unclean hands.
- Unclean implements.
- Open sores.
- Pus.
- Mouth and nose discharge.
- Shared cups or towels.
- Coughing or sneezing.
- Spitting.

Pathogenic bacteria can also enter the body through:

- A break in the skin, including pimples, scratches or cuts.
- The nose and the mouth during breathing.
- The mouth during eating and drinking.

Humans are excellent sources of contamination because we are constantly leaving organic particles behind wherever we go, a mixture of dead skin cells with viral, bacterial and fungal particles and other microorganisms that consume skin cells or use us to travel to an appropriate host. Every time you touch something, you deposit some of this organic matter on another surface. Simple actions, such as touching a client’s hair, brushing some of your hair out of your eyes with your hand or touching a spray bottle can move microorganisms from one item to another, from you to your client or your client to you.

Individuals who are susceptible to infection because of a compromised protection system or some failure in their ability to resist invasion are also the targets of opportunistic microorganisms. In contrast to pathogens, opportunistic organisms do not cause initial illness but will infect an individual once pathogenic organisms have already weakened its immune system. Opportunistic organisms cling to the skin and the hair and exist in the bodies of healthy people.

Microbes also contaminate ventilation systems; to discourage their growth, vents, filters, humidifiers and dehumidifiers should be cleaned and maintained regularly. Investigate any mildew or musty odors, which are a good indication of microbe growth. Germs in a ventilation system easily spread throughout a salon, landing on people, surfaces and implements, whenever the blower or fan turns on.

Germs not only float through the air, settling constantly on salon surfaces such as sinks and countertops, and they can also “hitchhike” on human skin, hair and clothing, contaminating anything with which they come into contact.

Pathogenic and opportunistic microorganisms are able to thrive in a salon’s warm, moist places, like the drain of the shampoo sink, the footbaths, hot- and cold-water handles and taps. Implements such as scissors, files, brushes or nippers can be major sources of contamination because they often contain organic matter, an optimum growth environment for pathogenic and opportunistic microorganisms.

Some of the most dangerous areas in your salon are the places you keep contaminated manicuring tools or equipment, including the manicure table and the trash cans in which you deposit dirty implements. Microbes can also exist on seemingly unlikely products, like bars of soap, for example. Because germs and other microorganisms have been shown to thrive on bar soap, many salons prefer to use liquid soap that can be dispensed from a container for each customer. In addition, soaking solutions, lotions and creams that initially are uncontaminated may lose preservatives that keep them safe from pathogenic or opportunistic microbes from growing in them. Changes in color, texture, appearance or odor can be signs of contamination.

Fighting infection may be a matter of staying home when you are sick. Just as you should avoid working with contagious clients, you should not go to work if you have an infection, such as a bad cold or flu. Cover your mouth and nose to control pathogens escaping through sneezes and coughs. Avoid causing wounds if your client’s skin is dry or fragile; tears and breaks can occur easily, even when filing nails. Use abrasive instruments with care and a gentle touch, especially around the nail bed.

The problem of antibiotic resistance

Viruses cause:

- All colds and flu.
- Most coughs.
- Most sore throats.

Antibiotics cannot kill viruses. This is a common misconception. Many of us demand antibiotics from our doctor when we have a severe cold, but antibiotics in that situation can actually do you more harm than good.

Bacteria cause:

- Most ear infections.
- Some sinus infections.
- Urinary tract infections.
- Antibiotics do kill specific bacteria.

Drug-resistant bacteria

Each time you take an antibiotic, bacteria are killed. Sometimes bacteria may be resistant or become resistant. Drug-resistant bacteria do not respond to the antibiotics and continue to cause infection.

Each time you take an antibiotic unnecessarily or improperly, you increase your chance of developing drug-resistant bacteria. So it is really important to take antibiotics only when necessary. Because of these resistant bacteria, some diseases that used to be easy to treat are now becoming nearly impossible to treat.

What do you need to know about antibiotics?

- Remember that antibiotics don’t work against colds and flu, and that unnecessary antibiotics can be harmful.
- Talk to your health care provider about antibiotics and find out about the differences between viruses and bacteria – and when antibiotics should and shouldn’t be used.
- If you do get an antibiotic, be sure to take it exactly as prescribed; that may help decrease the development of resistant bacteria.
- Antibiotic resistance is particularly dangerous for children, but it can occur in adults as well.

Taking antibiotics appropriately and getting immunized will help prevent having to take more dangerous and more costly medications. If we use antibiotics appropriately, we can avoid developing drug resistance. We just need to take our medicine exactly as it is prescribed and not expect to take antibiotics every time we’re sick.
The troubling result

The triumph of antibiotics over disease-causing bacteria is one of modern medicine’s greatest success stories. Since these drugs first became widely used in the World War II era, they have saved countless lives and blunted serious complications of many feared diseases and infections. After more than 50 years of widespread use, however, many antibiotics don’t pack the same punch they once did.

Over time, some bacteria have developed ways to outwit the effects of antibiotics. Widespread use of antibiotics is thought to have spurred evolutionary changes in bacteria that allow them to survive these powerful drugs. While antibiotic resistance benefits the microbes, it presents humans with two big problems: It makes it more difficult to purge infections from the body, and it heightens the risk of acquiring infections in a hospital.

Diseases such as tuberculosis, gonorrhea, malaria and childhood ear infections are now more difficult to treat than they were decades ago. Drug resistance is an especially difficult problem for hospitals because they harbor critically ill patients who are more vulnerable to infections than the general population and therefore require more antibiotics. Heavy use of antibiotics in these patients hastens the mutations in bacteria that bring about drug resistance. Unfortunately, this worsens the problem by producing bacteria with greater ability to survive even our strongest antibiotics. These even stronger drug-resistant bacteria continue to prey on vulnerable hospital patients.

To help curb this problem, the Centers for Disease Control and Prevention (CDC) provides hospitals with prevention strategies and educational materials to reduce antimicrobial resistance in health care settings.

According to CDC statistics:

- Nearly 2 million patients in the United States get an infection in the hospital each year. Of those patients, about 90,000 die each year as a result of their infection – up from 13,300 patient deaths in 1992.
- More than 70 percent of the bacteria that cause hospital-acquired infections are resistant to at least one of the drugs most commonly used to treat them.
- Persons infected with drug-resistant organisms are more likely to have longer hospital stays and require treatment with second- or third-choice drugs that may be less effective, more toxic and more expensive.
- In short, antimicrobial resistance is driving up health care costs, increasing the severity of disease and increasing the death rates from certain infections.

Environment forces evolutionary change

A key factor in the development of antibiotic resistance is the ability of infectious organisms to adapt quickly to new environmental conditions. Bacteria are single-celled creatures that, compared with higher life forms, have small numbers of genes. Therefore, even a single random gene mutation can greatly affect their ability to cause disease. And because most microbes reproduce by dividing every few hours, bacteria can evolve rapidly.

A mutation that helps a microbe survive exposure to an antibiotic drug will quickly become dominant throughout the microbial population. Microbes also often acquire genes, including those that code for resistance, from each other.

A growing problem

For all these reasons, antibiotic resistance has been a problem for nearly as long as we’ve been using antibiotics. Not long after the introduction of penicillin, a bacterium known as Staphylococcus aureus began developing penicillin-resistant strains.

Today, antibiotic-resistant strains of Staphylococcus aureus bacteria as well as various enterococci – bacteria that colonize the intestines – are common and pose a global health problem in hospitals. More and more hospital-acquired infections are resistant to the most powerful antibiotics available, methicillin and vancomycin. These drugs are reserved to treat only the most intractable infections in order to slow development of resistance to them.

There are several signs that the problem is increasing:

- In 2003, epidemiologists reported in The New England Journal of Medicine that 5-10 percent of patients admitted to hospitals acquire an infection during their stay, and that the risk for a hospital-acquired infection has risen steadily in recent decades.
- Strains of S. aureus resistant to methicillin are endemic in hospitals and are increasing in non-hospital settings such as locker rooms. Since September 2000, outbreaks of methicillin-resistant S. aureus infections have been reported among high school football players and wrestlers in California, Indiana and Pennsylvania, according to the CDC.
- The first S. aureus infections resistant to vancomycin emerged in the United States in 2002, presenting physicians and patients with a serious problem. In July 2002, the CDC reported that a Michigan patient with diabetes, vascular disease and chronic kidney failure had developed the first S. aureus infection completely resistant to vancomycin. A similar case was reported in Pennsylvania in September 2002.
- Increasing reliance on vancomycin has led to the emergence of vancomycin-resistant enterococci infections. Prior to 1989, no U.S. hospital had reported any vancomycin resistant enterococci, but over the next decade, such microbes have become common in U.S. hospitals, according to CDC.
- A 2003 study in The New England Journal of Medicine found that the incidence of blood and tissue infections known as sepsis almost tripled from 1979 to 2000.

Other federal agencies are involved in combating the problem of drug-resistant microbes. See the links below for more information.

- Centers for Disease Control and Prevention
  http://www.cdc.gov/drugresistance/community/
- Food and Drug Administration
  http://www.fda.gov/opacom/hottopics/antiresist.html
- National Library of Medicine Medline Database
- Public Health Action Plan to Combat Antimicrobial Resistance
  http://www.cdc.gov/drugresistance/actionplan/index.htm
### What is an antibacterial and how are antibacterials classified?

In its broadest definition, an antibacterial is an agent that interferes with the growth and reproduction of bacteria. While antibiotics and antibacterials both attack bacteria, these terms have evolved over the years to mean two different things. Antibacterials are now most commonly described as agents used to disinfect surfaces and eliminate potentially harmful bacteria. Unlike antibiotics, they are not used as medicines for humans or animals, but are found in products such as soaps, detergents, health and skincare products and household cleaners.

### What are some common antibacterials?

Antibacterials may be divided into two groups according to their speed of action and residue production. The first group contains those that act rapidly to destroy bacteria, but quickly disappear (by evaporation or breakdown) and leave no active residue behind (referred to as non-residue-producing). Examples of this type are the alcohols, chlorine, peroxides and aldehydes. The second group consists mostly of newer compounds that leave long-acting residues on the surface to be disinfected and thus have a prolonged action (referred to as residue producing). Common examples of this group are triclosan, triclocarban and benzalkonium chloride.

### How common are antibacterials in consumer products?

Many cleaning compounds contain quaternary ammonium compounds. Because these compounds have very long chemical names, they often are not easily recognized as antibacterial agents on packaging labels. More recently, triclosan has been bonded into the surface of many different products with which humans come into contact, such as plastic kitchen tools, cutting boards, highchairs, toys, bedding and other fabrics.

### Is the use of antibacterial agents regulated in the U.S.?

Whether an antibacterial agent is regulated depends upon its intended use and its effectiveness. The U.S. Food and Drug Administration (FDA) regulates antibacterial soaps and antibacterial substances that will either be used on the body or in processed food, including food wrappers and agents added to water involved in food processing. If a substance is not intended for use on or in the body, it is registered by the U.S. Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act. Substances are registered either as public health or as non-public health antimicrobial agents.

### What is the difference between bacteriostats, sanitizers, disinfectants and sterilizers?

The EPA classifies public health antimicrobials as bacteriostats, sanitizers, disinfectants and sterilizers based on how effective they are in destroying microorganisms. Bacteriostats inhibit bacterial growth in inanimate environments. Sanitizers are substances that kill a certain percentage of test microorganisms in a given time span. Disinfectants destroy or irreversibly inactivate all test microorganisms, but not necessarily their spores. Sterilizers destroy all forms of bacteria, fungi and other microorganisms and their spores.

Disinfectants can be further categorized as broad- or limited-spectrum agents. A broad-spectrum disinfectant destroys both gram-negative and gram-positive bacteria. A limited-spectrum disinfectant must clearly specify the specific microorganisms against which it works.

### How beneficial are antibacterials?

Antibacterials are definitely effective in killing bacteria, but there is considerable controversy surrounding their health benefits. The non-residue-producing agents have been used for many years and continue to be effective agents for controlling disease organisms in a wide variety of health care and domestic settings.

When used under strict guidelines of application, the residue-producing agents have proven effective at controlling bacterial and fungal infection in clinical settings such as hospitals, nursing homes, neonatal nurseries and other health care facilities where there may be a high risk of infection. A certain few consumer products have demonstrated effectiveness for specific conditions: antibacterial toothpaste helps control periodontal (gum) disease; antibacterial deodorants suppress odor-causing bacteria; and antidandruff shampoos help control dandruff. However, to date, there is no evidence to support claims that antibacterials provide additional health benefits when used by the general consumer.

### Are antibacterial agents safe?

When used as directed for external surfaces, antibacterial agents are considered to be relatively non-toxic. However, some may cause skin and eye irritation, and all have the potential for doing harm if not stored or used properly. Furthermore, evaluations of risk are based on single agents and do not consider the effects of multiple uses or multiple compounds.

Recently, triclosan has been reported in surface waters, sewage treatment plants, the bile of fish and breast milk, but the significance of these findings is presently unknown.
Do antibacterials create resistant bacteria?

Because of their rapid killing effect, the non-residue-producing antibacterial agents are not believed to create resistant bacteria. Resistance results from long-term use at low-level concentrations, a condition that occurs when consumers use residue-producing agents such as triclosan and triclocarban. Until recently, it was accepted that these agents did not affect a specific process in bacteria, and because of this, it was unlikely that resistant bacteria could emerge. However, recent laboratory evidence indicates that triclosan inhibits a specific step in the formation of bacterial lipids involved in the cell wall structure. Additional experiments found that some bacteria can combat triclosan and other biocides with export systems that could also pump out antibiotics. It was demonstrated that these triclosan-resistant mutants were also resistant to several antibiotics, specifically chloramphenicol, ampicillin, tetracycline and ciprofloxacin.

Resistance to antibacterials has been found where these agents are used continuously (as in the hospital and food industry); however, at the present time, this modest increase in resistance has not yet created a clinical problem.

Can the widespread use of antibacterial agents lead to bacteria that are more resistant?

Many scientists feel that this is a potential danger, but others argue that the laboratory conditions used in the research studies do not represent the “real world.” So far, studies of antibacterial use in home products such as soap, deodorant and toothpaste have not shown any detectable development of resistance. However, such products have only been in use for a relatively short time, and studies of their effects are still extremely limited.

Are there other concerns about the use of antibacterial agents?

Yes, experts believe that the use of these agents creates a false sense of security that may cause individuals to become lax in their hygiene habits. Antibacterial use should not be considered an alternative to normal hygiene, except where normal hygiene practices are impossible.

It should always be remembered that most bacteria are harmless and in many cases, even beneficial. Very few bacteria actually cause disease. Antibacterials are not discriminating, and an all-out attack on bacteria in general is unjustified. Constant use of disinfecting agents tends to disrupt the normal bacteria that act as barriers against invading pathogens. This may cause shifts in bacterial populations and create a “space” for disease-causing bacteria to enter and establish infection.

In addition, some scientists have gathered evidence showing that overly hygienic homes during early childhood may be linked to the appearance of allergies later in life. In this “hygiene hypothesis,” allergies develop because the childhood immune system fails to mature properly due to lack of contact with immune-stimulating bacteria. This hypothesis remains controversial and requires further research for validation.

When are antibacterials useful?

While there is no evidence that the routine use of antibacterials confer a health benefit, they are useful where the level of sanitation is critical and additional precautions need to be taken to prevent spread of disease.

Thus, they are important in hospitals, day care centers, salons and health care facilities and other environments with high concentrations of infectious bacteria. In the home environment, they may be needed for the nursing care of sick individuals with specific infections, or for those whose immune systems have been weakened by chronic disease, chemotherapy or transplants. Under these circumstances, antibacterials should be used according to protocol, preferably under the guidance of a health care professional.

Please visit the following link to learn more about antibiotics: http://www.cdc.gov/ncidod/ep/antibiotics.htm.

Addressing the problem

You have a responsibility to control exposure to pathogens by decontaminating your environment and tools using what are known as universal precautions, standards used in health care and other environments.

Remember that pathogens collect any time an object or surface is exposed to air. Doorknobs, handles, the telephone, money, cabinets, and the cash register – all are surfaces touched by co-workers and clients that may harbor harmful pathogens, so all must be decontaminated to some degree. Cleaning is only the first step of the process. The following sections review the meaning of sanitation, sterilization, and disinfection, terms that are commonly used interchangeably, but have very different meanings and require different procedures.

Sanitation

Sanitation is the lowest level of decontamination. Sanitation will reduce germs on a surface, but will not kill all organisms. Sanitation provides a minimum level of cleanliness, protecting public health by preventing the spread of some, but not all, bacteria and fungi. Instruments that are sanitized are not sterile. Countertops and workstations should also be sanitized, wiped down with soap and water; this process should not be confused with, and does not replace, disinfection, which requires an appropriate disinfectant. Remember that soap and water will kill most of the bacteria on your hands, workstations, or chair, but will not kill all the bacteria or fungal spores.

The term “sanitation” is most often used in reference to cleaning the hands. Hand washing is absolutely essential to controlling bacteria and the most effective way to prevent the spread of infectious agents from one person to another. Hands cannot be sterilized because it is impossible to remove all microorganisms from the surface of the skin.

Water and soap, in fact, are not sterile, and can introduce new bacteria and infectious agents.

Both resident and transient organisms populate your hands. Resident organisms are a normal part of your skin’s environment, their natural habitat. They grow and multiply in an oxygen environment, and rarely cause infection or harm the individual who is their host. These organisms cannot be removed easily by hand washing. Sanitation controls minimize exposure to transient organisms. These organisms, like E. coli and salmonella, cause dangerous infections in humans. In contrast to resident organisms, transient organisms cannot live long on the surface of our skin. They function poorly in an oxygen environment, usually surviving less than 24 hours. These organisms can be removed easily through the process of hand washing, using friction, soap and water.
Wash your hands

Hand washing is a simple thing, and it’s the best way to prevent infection and illness.

Clean hands prevent infections. Keeping hands clean prevents illness at home, at school, and at work. Hand hygiene practices are key prevention tools in healthcare settings, in daycare facilities, in schools and public institutions, and for the safety of our food.

In healthcare settings, hand washing can prevent potentially fatal infections from spreading from patient to patient and from patient to health care worker and vice-versa. The basic rule in the hospital is to cleanse hands before and after each patient contact by either washing hands or using an alcohol-based hand rub.

At home, hand washing can prevent infection and illness from spreading from family member to family member and sometimes throughout a community. In the home, the basic rule is to wash hands before preparing food and after handling uncooked meat and poultry; before eating; after changing diapers; after coughing, sneezing, or blowing one’s nose into a tissue; and after using the bathroom.

Wash your hands: The right way

When washing hands with soap and water:
- Wet your hands with clean running water and apply soap. Use warm water if it is available.
- Rub hands together to make a lather and scrub all surfaces.
- Rinse hands well under running water.
- Dry your hands using a paper towel or air dryer. If possible, use your paper towel to turn off the faucet.
- Always use soap and water if your hands are visibly dirty.
- If soap and clean water are not available, use an alcohol-based hand rub to clean your hands. Alcohol-based hand rubs significantly reduce the number of germs on skin and are fast-acting.

When using an alcohol-based hand sanitizer:
- Apply product to the palm of one hand.
- Rub hands together.
- Rub the product over all surfaces of hands and fingers until hands are dry.

Hand washing: The beginning of infection control

Unquestioned today as the most important tool in the health care worker’s arsenal for preventing infection, hand washing was not readily accepted in Dr. Semmelweis’s era. Indeed, his pleas to make hand washing a routine practice throughout the hospital were largely met with derision. Another 50 years would pass before the importance of hand washing as a preventive measure would be widely accepted by the public.

Hand washing: The right way

The result was a death rate five times higher for mothers who delivered in one clinic of the hospital than for mothers who delivered at another clinic not attended by the student physicians.

In an experiment considered quaint at best by his colleagues, Dr. Semmelweis insisted that his students wash their hands before treating the mothers — and deaths on the maternity ward fell fivefold.

Cleaning agents for hands

Cleaning agents assist in the process of removing substances from surfaces. Soaps and detergents are two common cleaning agents that are often confused for one another, but are composed of very different ingredients, with different cleaning properties. Soaps are the product of a chemical reaction, formed by vegetable oil reacting with lye, for example, and chemicals that add a desirable smell or quality to the soap, such as glycerine, to make it milder. While soap does not kill microorganisms, soap and water will help remove them from surfaces.

Detergents are manufactured for the express purpose of cleaning specific substances off specific items, and are created using chemicals that can be very harsh to skin. In contrast to detergents that do not leave a residue or require rinsing, soaps leave a coating or residue on the body, typically one designed to make skin smoother or more attractive. Soaps also remove less dirt from the skin than detergents, which have a drying quality and may strip the skin. Be sure to use the appropriate cleaning agent for the job. Different cleaning and disinfecting agents have many different properties. Always read the ingredients, instructions and recommendations for use on the item’s label.

Sterilization and disinfection

“Sterile” means free from all germs; sterilization is the most effective level of decontamination, involving the removal of all bacterial life from a surface. This is the level of decontamination required for tools and surfaces in hospital surgeries. Hospitals use steam autoclaves to heat instruments to a very high temperature and many salons are investing in autoclaves to reassure clients that their safety is the number one priority.

Disinfection is the process of killing specific microorganisms, bacteria or germs using physical or chemical processes. Disinfectants are chemical agents that destroy organisms on contaminated instruments or surfaces. Disinfectants can be dangerous and must be used with caution. Disinfectants are used to destroy bacteria on equipment and implements, but they should not be used on the skin. In a salon atmosphere, disinfectants must be able to kill viruses, fungus and dangerous bacteria.
Disinfectants

Controlling bacteria in a salon requires some degree of effort, vigilance and good sense. In choosing a disinfectant, always look for the EPA registration number (awarded by the Environmental Protection Agency) to ensure you are using an approved disinfectant. This number indicates a level of safety for specific kinds of disinfection. To be registered by the EPA, it must be effective in killing bacteria, including Staphylococcus, aureus, salmonella and pseudomonas. Cosmetology salons must use not only EPA-approved disinfectants, but also those with an EPA rating of hospital-level (tuberculocidal) quality. These disinfectants are especially effective for salon use and are capable of killing viruses, dangerous bacteria and fungus. Disinfectants can be hazardous if prepared incorrectly. Consult the manufacturer’s material safety data sheets (MSDS) for information on preparing the solution; check the listing of chemicals in the disinfectant and how they can pose safety hazards, if any. Be certain to follow manufacturers’ instructions and all written directions for the preparation and use of a specific disinfectant. Remember to follow all directions when using this type of disinfectant or any other disinfectant.

What are efficacy tests?
The tests used to measure the effectiveness of disinfectants on various pathogenic (disease-causing) organisms are called efficacy tests. The EPA must pre-approve all “efficacy test methods” used to measure the effectiveness of disinfectants against specific microorganisms. The most common efficacy test prescribed by EPA is the Association of Official Analytical Chemist (AOAC) test. Currently, for a disinfectant cleaner to be registered by EPA as hospital strength, it must be effective at its recommended dilution in killing target pathogens in the presence of 400 ppm hard water and 5 percent organic serum and must kill 100 percent of the target test organisms. It is a good idea for you to require the manufacturer or distributor of a disinfectant or disinfectant-cleaner to provide efficacy data to you before you select it for use in your salon.

What factors affect how well a disinfectant works?
There are six main factors:

1. Concentration – This is dilution rate. Proper dilution is very important. Read label for complete dilution directions.
2. Contact time – For most all disinfectants, such as bleach, contact time is not very critical.
3. PH – Certain disinfectants work best under acidic conditions, and others work best under alkaline conditions.
4. Temperature – Certain disinfectants work best in cold water (bleach). Most work best in warm water.
5. Soil load – Disinfectants do not know the difference between soil and bacteria. That is why heavy soil should be removed before disinfecting. See explanation above for more details.
6. Organism type – Not all disinfectants work on all types of organisms. When in doubt, read the product label for a complete list.

How can you calculate active parts per million (ppm) of the disinfectant you are using?
To calculate active ppm, you’ll need three things – the active ingredient list from the disinfectant label, dilution rate of the product and a calculator. The following is an example of how this would be done using a neutral germicidal cleaner:

- **Step 1:** Add together active ingredient percentages from the label:
  - For example, 5.07 percent + 3.38 percent = 8.45 percent total active ingredients.

- **Step 2:** Multiply by 10,000: 8.45 X 10,000 = 84,500.
- **Step 3:** Divide the result of Step 2 by the dilution rate (128 in this example): 84,500 / 128 = 660 ppm.

Parts per million (ppm) is a ratio figure that represents the amount of one substance that is in one million parts of another substance.

**NORTH CAROLINA SANITATION RULES**

You will learn more regarding the laws rules governing the state of North Carolina later in our course, but below is a major section regarding sanitation rules in your salon. Failure to follow these rules can result in substantial fines.

**Copy of rules to cosmetology students**
Cosmetic art schools shall give a copy of the sanitation rules governing the practice of the cosmetic arts to each student for study.

**Copy of rules to beauty establishments**
The board shall give copies of the rules of sanitation governing the practice of cosmetic art to all beauty establishments.
Sanitary ratings and posting of ratings

a. The sanitary rating of a beauty establishment shall be based on a system of grading outlined in this subchapter. Based on the grading, all establishments shall be rated in the following manner:
   1. All establishments receiving a rating of at least 90 percent or more shall be awarded a grade A;
   2. All establishments receiving a rating of at least 80 percent and less than 90 percent shall be awarded grade B;
   3. All establishments receiving a rating of at least 70 percent or more and less than 80 shall be awarded grade C.

b. Every beauty establishment shall be given a sanitary rating. A cosmetic art school shall be graded no less than three times a year, and a cosmetic art shop shall be graded once a year.

c. The sanitary rating given to a beauty establishment shall be posted in a conspicuous place at all times.

d. All new establishments must receive a rating of at least 90 percent before a license will be issued.

e. The willful operation of a beauty establishment which fails to receive a sanitary rating of at least 70 percent (grade C) shall be sufficient cause for revoking or suspending the letter of approval or permit.

f. A re-inspection for the purpose of raising the sanitary rating of a beauty establishment shall not be given within 30 days of the last inspection, unless the rating at the last inspection was less than 80 percent.

g. A whirlpool and foot spa sanitation record must be kept on each whirlpool and foot spa for inspection on a form provided by the board.

Water supply

a. A beauty establishment shall have a supply of running hot and cold water in the clinic area, approved by the local health department.

b. When a service is provided in a room closed off by a door, the water supply required in this rule must be within 20 feet of the door or 25 feet from the service table or chair. The restroom sink shall not be used to meet this requirement.

Floor coverings

All floor coverings shall be washable and kept clean and in good repair.

Ventilation and light

a. All doors and windows shall be kept clean and, if open for ventilation, effectively screened.

b. Necessary ventilation shall be provided at all times. In the clinic areas of all cosmetic art schools and in the areas where patrons are serviced in all cosmetic art shops, there must be an adequate, continuous exchange of air.

c. Adequate light shall be provided for each operator.

Bathroom facilities

a. Toilet and hand washing facilities consisting of at least one commode and one lavatory with hot and cold running water, liquid soap and individual towels shall be provided.

b. A residential beauty salon shall furnish bathroom facilities separate and apart from the residence.

c. Each licensee and student shall wash his or her hands with soap and water or an equally effective cleansing agent immediately before and after serving each client.

Cleanliness of operators

a. All operators and students shall be personally clean and neat.

b. Every person employed in a beauty establishment shall wear clean, washable outer garments with sleeves while serving patrons.

c. Each licensee and student shall wash his or her hands with soap and water or an equally effective cleansing agent immediately before and after serving each client.

d. All combs, brushes, and implements shall be cleaned and disinfected after each use in the following manner:
   1. They shall be soaked in a cleaning solution that will not leave a residue and, if necessary, scrubbed.
   2. They shall be disinfected in accordance with the following:
      A. EPA registered, hospital/pseudomonacidal (bactericidal, virucidal, and fungicidal) or tuberculocidal, that is mixed and used according to the manufacturer’s directions; or
      B. 1⅓ cup of 5.25 percent household bleach to one gallon of water for 10 minutes.
   3. They shall be rinsed with hot tap water and dried with a clean towel before their next use. They shall be stored in a clean, closed cabinet or container until they are needed.

Cleanliness of clinic area

a. The clinic area shall be kept clean.

b. Waste material shall be kept in covered receptacles. The area surrounding the waste receptacles shall be maintained in a neat and sanitary manner.

c. Sanitation rules which apply to towels and cloths are as follows:
   1. Separate and clean protective drapes, linens and towels shall be used for each patron.
   2. After a protective cape, drape, linen or towel has been used once, it shall be placed in a clean, closed container until laundered. Any paper or nonwoven protective drape or covering shall be discarded after one use.
   3. There shall be an adequate supply of clean protective drapes, linens and towels at all times.
   4. All plastic capes used on patrons shall not be allowed to come in contact with the patron’s neck.
   5. Clean drapes, linens and towels shall be stored in a covered receptacle when not in use.

d. At least six combs and brushes shall be provided for each cosmetology operator and cosmetology student.

e. All new establishments must receive a rating of at least 90 percent before a license will be issued.

f. The willful operation of a beauty establishment which fails to receive a sanitary rating of at least 70 percent (grade C) shall be sufficient cause for revoking or suspending the letter of approval or permit.

g. A re-inspection for the purpose of raising the sanitary rating of a beauty establishment shall not be given within 30 days of the last inspection, unless the rating at the last inspection was less than 80 percent.

h. A whirlpool and foot spa sanitation record must be kept on each whirlpool and foot spa for inspection on a form provided by the board.
f. Disposable and porous implements must be discarded after use or upon completion of the service.  
g. Product that comes into contact with the patron must be discarded upon completion of the service.  

**Cleanliness of scissors, shears, razors and other equipment**

a. All scissors, shears, razors, and other metal instruments must be cleaned and disinfected after each use in the following manner:

1. If the implement is not immersible, it shall be cleaned by wiping it with a moistened clean cloth and disinfected with a disinfectant used in accordance with the manufacturer’s instructions that states the solution will destroy HIV, TB or HBV viruses and approved by the federal Environmental Protection Agency.

2. If it is immersible, it shall be disinfected by immersion and whenever it comes in contact with blood, with:
   a. Disinfectant, used in accordance with the manufacturer’s instructions, that states the solution will destroy HIV, TB or HBV viruses and approved by the federal Environmental Protection Agency.
   b. EPA-registered, hospital/pseudomonacidal (bactericidal, virucidal, and fungicidal) or tuberculocidal, that is mixed and used according to the manufacturer’s directions; or
   c. Household bleach in a 10 percent solution for 10 minutes.

3. If the implement is not used immediately after cleaning, it must be stored in a clean, closed cabinet until it is needed.

b. Furniture, equipment and fixtures must be of a washable material and kept clean and in good repair.

c. Lancets, disposable razors, and other sharp objects shall be disposed in puncture-resistant containers.

**Care of creams, lotions, and cosmetics**

All creams, lotions, and other cosmetics used for patrons must be kept in clean, closed containers, and must conform in all respects to the requirements of the Pure Food and Drug Law. Lotions or fluids must be poured into a clean glass or other sanitized container and applied to patrons by means of cotton or other sanitized methods.

**First aid**

Each beauty establishment must have antiseptics and other necessary supplies available to provide first aid when necessary.

**Animals**

Animals or birds shall not be in a beauty establishment. Trained animals accompanying disabled persons are exempt.

**Systems of grading beauty establishments**

The system of grading the sanitary rating of cosmetic art schools and shops based on the rules set out in 21 NCAC 14H .0106 to .0117 shall be as follows, setting out areas to be inspected and considered, and the maximum points given for compliance:

1. Clean and repaired entrance and reception room 2.
2. General condition of the entire establishment 8.
3. Water system; hot and cold running water 2.
4. Walls, ceiling and floors:
   a. Construction and coverings 4;
   b. Clean 4;
   c. Good repair 3.
5. Lighting and fresh continuous ventilation (windows included); their adequacy and cleanliness 3.
6. Public toilet:
   a. Clean and ventilated 5;
   b. Liquid soap and individual towels furnished 5;
   c. Hot and cold running water 2.
7. Appearance of operators and students 4.
8. Linens:
   a. Supply of clean drapes, linens and towels stored in clean closed containers 2;
10. Equipment cleanliness:
    a. Disinfectants selected from those approved by the Federal Environmental Protection Agency 6;
    b. Disinfectants used properly 5;
    c. All implements cleaned, disinfected, and properly stored 12;
    d. Furniture, fixtures, and equipment clean and in good repair 7.
11. Working area:
    a. Workstation clean 4;
    b. Lavatories clean 4;
    c. Jars and containers closed, clean and disinfected 2;
    d. No unnecessary articles in work area 2.
12. Antiseptics and first aid supplies on hand 1.
13. Cosmetics:
    a. Clean and sanitary conditions 2;
    b. Storage area for supplies clean and in order 3.
14. No animals or birds kept or allowed in the establishment except as provided by Rule .0117 of this subchapter.

**Whirlpool, foot spa and facial steamer sanitation**

a. As used in this rule, whirlpool or foot spa means any basin using circulating water.

b. After each patron, each whirlpool or foot spa must be cleaned and disinfected as follows:

1. All water must be drained and all debris removed from the basin;
2. The basin must be disinfected by filling the basin with water and circulating:
   a. Two tablespoons of automatic dishwashing powder and ¼ cup of 5.25 percent household bleach to one gallon of water through the unit for 10 minutes; or
   b. Surfactant or enzymatic soap with an EPA-registered disinfectant with bactericidal, fungicidal and virucidal activity used according to manufacturer’s instructions through the unit for 10 minutes.
3. The basin must be drained and rinsed with clean water; and
4. The basin must be wiped dry with a clean towel.

c. At the end of the day, each whirlpool or foot spa must be cleaned and disinfected as follows:
   1. The screen must be removed and all debris trapped behind the screen removed;
   2. The screen and the inlet must be washed with surfactant or enzymatic soap or detergent and rinsed with clean water.
   3. Before replacing the screen, one of the following procedures must be performed:
      A. The screen must be totally immersed in a household bleach solution of ¼ cup of 5.25 percent household bleach to one gallon of water for 10 minutes; or
      B. The screen must be totally immersed in an EPA-registered disinfectant with bactericidal, fungicidal and virucidal activity in accordance to the manufacturer’s instructions for 10 minutes.
   4. The inlet and area behind the screen must be cleaned with a brush and surfactant soap and water to remove all visible debris and residue; and
   5. The spa system must be flushed with low-sudsing surfactant or enzymatic soap and warm water for at least 10 minutes and then rinsed and drained.

Prohibited practices

a. Licensees must not use or possess in a shop any of the following products:
   1. Methyl methacrylate liquid monomer, a.k.a. MMA;
   2. Razor-type callus shavers designed and intended to cut growths of skin such as corns and calluses;
   3. Permanent makeup, defined as beautifying the face by inserting or implanting facial cosmetic pigment under the surface of the skin or mucosa;
   4. FDA-rated Class III devices;
   5. Any adulterated chemical exfoliating substances;
   6. Carbolic acid (phenol) over 2 percent strength;
   7. Animals including insects, fish, amphibians, reptiles, birds or mammals to perform any service; or
   8. Variable speed electrical nail file on the natural nail unless it has been designed for use on the natural nail.

b. A licensee must not:
   1. Use product in any other manner than the product’s intended use;

d. Every week after cleaning and disinfecting pursuant to Paragraphs (a) and (b) of this rule, each whirlpool and foot spa must be cleaned and disinfected in the following manner:
   1. The whirlpool or foot spa basin must be filled with water and ¼ cup of 5.25 percent household bleach for each one gallon of water;
   2. The whirlpool or foot spa system must be flushed with the bleach and water solution pursuant to Subparagraph (d)(1) of this rule for 10 minutes and allowed to sit for at least six hours; and
   3. The whirlpool or foot spa system must be drained and flushed with water before use by a patron.

e. A record must be made of the date and time of each cleaning and disinfecting as required by this rule, including the date, time, reason and name of the staff member that performed the cleaning. This record must be kept and made available for at least 90 days upon request by either a patron or inspector.

f. The water in a vaporizer machine must be emptied daily and the unit disinfected.

OTHER THINGS YOU CAN DO

Cleaning salon computers and reception areas

Almost all modern salons now work with computers and computer appointment books. These computer appointment books are generally at the reception desk and are also found in break areas so that salon workers can view their schedules.

Few people think about the germ havens these areas have become. Experts say the computer keyboard, phone and desk areas of salons are major germ areas that must be sanitized.

Believe it or not, you could put your fingers on a toilet seat and collect fewer germs than the average desk or keyboard. Charles Gerba, a microbiologist at the University of Arizona, counted bacteria on several surfaces.

He found the office toilet seat had an average of 49 germs per square inch. When he looked at keyboards, he found 3,295 bacteria per square inch, 60 times higher than the toilet seat. Even worse were tops of desks at 21,000 bacteria per square inch and telephones at 25,000 per square inch. People are constantly coughing and sneezing on them. Germs from unwashed hands can remain alive for days. In other words, if you share computer keyboards in your salon, a phone or a desk, you are sharing germs.

To combat the problem, you must assign cleaning duties to staff. First, you should remove the screws on the underside of the keyboard and separate the two parts. Brush the debris away and then wipe with a sanitizing cloth.

Once you put it back together, spray the entire keyboard with a disinfectant spray like Lysol. Do this lightly so as not to ruin the electronics. You can also use sanitation wipes commonly found in drug stores.

Staff should clean phones daily with a disinfectant spray and more often when someone is known to be sick or feels sick. Also, remember to daily disinfect your workstation. Often stylists forget to perform this important step, yet they routinely place combs, scissors and other items on top of the workstation.
**Disease and infestation**

Salons and schools should not knowingly permit a person afflicted with an infection or parasitic infestation capable of being transmitted to a patron to serve patrons or train in the establishment or school.

In addition, salons and schools should not knowingly require or permit a licensee or student to work upon a person with an infection or parasitic infestation capable of being transmitted to the licensee or student.

Infections or parasitic infestation capable of being transmitted between licensee or student and patron include the following:

- Cold, influenza or other respiratory illness accompanied by a fever, until 24 hours after resolution of the fever.
- Streptococcal pharyngitis ("strep throat"), until 24 hours after treatment has been initiated, and 24 hours after resolution of symptoms.
- Purulent conjunctivitis ("pink eye"), until examined by a physician and approved for return to work.
- Pertussis ("whooping cough"), until five days of antibiotic therapy has been completed.
- Varicella ("chicken pox"), until the sixth day after onset of rash or sooner if all lesions have dried and crusted.
- Mumps, until nine days after onset of parotid gland swelling.
- Tuberculosis, until a physician or local health department authority states that the individual is noninfectious.
- Impetigo (bacterial skin infection), until 24 hours after treatment has begun.
- Pediculosis (head lice), until the morning after first treatment.
- Scabies, until after treatment has been completed. No person working or training in an establishment or school should massage any person upon a surface of the skin or scalp where such skin is inflamed, broken (e.g., abraded, cut) or where a skin infection or eruption is present.

The cosmetology industry is booming, and one of the only factors that has a chance to harm your industry is if clients do not feel safe. Therefore, you must make safe sanitation techniques a part of your daily routine and encourage co-workers to do the same.

**Conclusion**

As you can see from the preceding section, sanitation issues have a direct impact on the health and welfare of clients and the livelihood of the salon professional. The importance of maintaining proper sanitation procedures cannot be overstated; it can literally be a matter of life or death! Following proper sanitation guidelines will greatly reduce the potential risks to you, your clients and co-workers.
**Final Examination Questions**

Choose the best answer for the following questions 1 through 10 and mark your answers online at [Cosmetology.EliteCME.com](http://Cosmetology.EliteCME.com).

<table>
<thead>
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<th>Question</th>
<th>Options</th>
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| 1. Why do cosmetologists need to complete sanitation continuing education? | a. Killer organisms can occur in the salon if we are not informed and following proper procedures.  
   b. MRSA is on the rise.  
   c. We will increase our business.  
   d. Nonpathogenic bacteria are dangerous. |
| 2. Nonpathogenic bacteria that live on dead matter are known as: | a. Cocci.  
   b. Streptococci.  
   c. Staphylococci.  
   d. Saprophytes. |
| 3. Pus-forming bacterial cells that form in long chains and cause blood poisoning are called: | a. Diplococci.  
   b. Spirilla.  
   c. Streptococci.  
   d. Staphylococci. |
| 4. Rod-shaped bacterial cells are known as: | a. Cocci.  
   b. Bacilli.  
   c. Spirilla.  
   d. Staphylococci. |
| 5. The client has been diagnosed with MRSA. Which type of bacteria is the cause of this disease? | a. Spirilla.  
   b. Streptococci.  
   c. Staphylococci.  
   d. Saprophytes. |
| 6. The common cold, hepatitis and measles are examples of: | a. Beneficial diseases.  
   b. Communicable diseases.  
   c. Saprophytes.  
   d. Nonpathogenic diseases. |
   b. Pathogenic bacteria.  
   c. Nonpathogenic bacteria.  
   d. Mildew. |
| 8. Plants or animals that live on or obtain nutrients from another organism are known as: | a. Bacteria.  
   b. Internal parasites.  
   c. External parasites.  
   d. Spores. |
| 9. Infection control is divided into the following categories: | a. Bacteriology, ecology, and first aid.  
   b. Sanitation, disinfection and sterilization.  
   c. Contamination, immunity and inoculation.  
   d. Decontamination, antiseptics and concentration. |
| 10. Which of the following steps should a cosmetologist perform immediately prior to a service? | a. Rinse hands in cold water.  
   b. Dry hands with a communal cloth towel.  
   c. Wash hands with warm water and antimicrobial, liquid soap.  
   d. Spray hands with a disinfectant. |