

Welcome Bacteriology & Infection Control

After the successful completion of this course, the student will be able to use their knowledge of hygiene, sanitation, and disinfectants in a spa or medical setting. This is the study of professional hygiene and various methods of sanitation for facial implements and equipment used in the salon and medical practice.

Class Type: Theory

Purpose of Training Bacteriology & Infection Control

Course Objectives:

The student successfully mastering this course will:

- I. List the types and classifications of bacteria.
- II. Define Hepatitis and AIDS and explain how they are transmitted.
- III. Discuss the different types of disinfectants and how they are used.
- IV. Describe how to safely sanitize and disinfect various salon tools and surfaces.
- V. Explain the differences between sterilization, disinfection, and sanitation.

(Lesson) Facts & Benefits (Minor) Bacteriology & Infection Control

Bacteria

- Bacteria Growth and Reproduction Micro-organisms & Bacteria
 - **Bacteria**
 - are one-celled microorganisms with both plant and animal

characteristics.

- are also known as germs or microbes.
- exist almost anywhere.
- Bacteria
 - ***Nonpathogenic***
 - Most bacteria are nonpathogenic — that is, helpful or harmless and do not cause disease.
 - ***Pathogenic bacteria***
 - are also called microbes or germs.
 - are harmful and cause disease when they invade plant or animal tissue.
- Pathogenic Bacteria
- Cocci (round)
 - Staphylococci
 - Streptococci
 - Diplococci
- Bacilli (rod)
- Spirilla (spiral)
- Bacterial Growth & Reproduction

Life Cycle of Bacteria

- ***Active stage*** — multiply best in warm, dark, damp, or dirty places
- ***Inactive Stage*** — can form spherical spores with tough outer coverings

during inactive stage

Viruses

- Viruses
- Viruses have a submicroscopic structure.
- They cause the common cold, influenza, smallpox, hepatitis, polio.
- Viruses live only by penetrating cells and becoming part of them.
- Viruses are hard to kill without harming the body.
- They are resistant to antibiotics.
- Viruses

HIV and Hepatitis

- **HIV** (*Human Immunodeficiency Virus*) is the virus that causes AIDS.
- **AIDS** (*Acquired Immune Deficiency Syndrome*) breaks down the body's immune system.
- **Hepatitis**
 - is marked by inflammation of the liver.
 - is caused by a virus similar to HIV in transmission.
 - is more easily contracted than HIV.

How Pathogens Enter the Body

Bloodborne Pathogens

- How Pathogens Enter the Body

- A break in the skin, such as a cut, pimple, or scratch
- The mouth (contaminated water or food)
- The nose (air)
- Eyes or ears
- Unprotected sex
- Blood-borne Pathogens
- *Blood-borne pathogens* are disease-causing bacteria or viruses carried through the body in blood or body fluids, such as HIV and Hepatitis.
- Blood-borne Pathogens
- In most instances, clients who are infected with Hepatitis B Virus or other bloodborne pathogens are ***asymptomatic***, which means that they show no symptoms or signs of infection.

Infection

- Infection
- Infection occurs when body tissues are invaded by pathogenic microorganisms.
- Pus
 - is a fluid product of inflammation.
 - is a sign of a bacterial infection.
 - contains white blood cells and debris of dead cells, tissue elements, and bacteria.
- Infection

- Contagious infections include
 - common cold.
 - ringworm.
 - viral infections.
- Chief sources of contagion include
 - unclean hands and implements.
 - open sores, pus, mouth and nose discharges.
 - shared drinking cups, towels.
 - uncovered coughing or sneezing.
 - spitting in public.
- Infection
- A **local infection** is confined to particular part of body and indicated by a lesion containing pus, such as a pimple or abscess.
- In a **general infection**, the bloodstream carries bacteria or virus and their toxins (poisons) to all parts of body.
- How the Body Fights Infection
- Unbroken skin — body's first line of defense
- Body secretions — perspiration and digestive juices
- White cells within blood that destroy bacteria
- Antitoxins counteract toxins produced by bacteria and viruses

Parasites

- Parasites
- Parasites are vegetable or animal organisms that live in or on another living organism and draw their nourishment from that organism.
- Parasites are not capable of sustaining their own life without a host.
- Parasites
- **Vegetable (plant) parasites**
 - Also known as fungi (FUN-gi), they include molds, mildews, and yeasts.
 - Fungi can produce contagious diseases, such as ringworm and favus (FAY-vus).
- ***Animal parasites***
 - include head lice and scabies.
 - can also cause contagious diseases and conditions.
- Parasites
- Contagious diseases and conditions caused by parasites should never be treated in a salon.
- Refer clients to a physician.
- Contaminated countertops should be cleaned with pesticide or insecticide according to manufacturer's directions.
- Immunity

Immunity

- Immunity is the ability of the body to destroy bacteria that have gained entrance

and to resist infection.

- There are two types of immunity:
 - *Natural immunity* — partly inherited, partly hygienic living
 - *Acquired immunity* — through vaccination or overcoming a disease
- Principles of Prevention
- Maintain the highest level of cleanliness throughout the salon.
- Follow rigorous health standards as outlined and regulated by OSHA (Occupational Safety and Health Administration).
 - Mixing, storing, and disposal of chemicals

Scope of Practice (Major) Bacteriology & Infection Control

Principles of Prevention

General safety in the workplace

- Infection Prevention Guidelines
- Infection Prevention Guidelines
- Universal Precautions

- These guidelines and controls, published by the Centers for Disease Control and Prevention (CDC), require employer and employee to assume that all human blood and specified human body fluids are infectious for HIV, HBV, and other bloodborne pathogens.
- Universal Precautions
- Wash hands frequently.
- Use gloves and other personal protective equipment such as goggles.
- Prevent injuries in the workplace.
- Properly handle and dispose of needles, sharp instruments, and products that have been contaminated by blood or body fluids.
- Your Professional Responsibility
- Protect your client's health and safety as well as your own.
- Never take shortcuts when it comes to sanitation and disinfection.
- Understand and comply with all government regulations.

OSHA
Decontamination
Sterilization
Disinfection

Choosing a disinfectant

Types of Disinfectants

- **Disinfection** — second only to sterilization

- Disinfectants destroy most bacteria and some viruses.
- Do not use disinfectants on human skin, hair, or nails.
- Must be approved by the EPA (Environmental Protection Agency)
- Material Data Safety Sheet (MSDS) are provided by manufacturers containing all important product information.

Disinfectant Safety

Proper Use of Disinfectants

- Implements
- Linens
- Electrical Equipment
- Workstation

Cross Contamination

Aseptic Procedure
Blood Spill Disinfection
Sanitation

- Sanitation and Disinfection
 -
- Decontamination
- The use of physical or chemical means to remove, deactivate, or destroy pathogens
- Three levels of decontamination:

- Sterilization
- Disinfection
- Sanitation
- Decontamination
- **Sterilization** — highest level of decontamination
 - kills all microorganisms.
 - methods include
 - steam.
 - dry heat.
 - Autoclave — apparatus for sterilization by steam under pressure.
- Decontamination
- Material Data Safety Sheets (MSDS), required by federal law from the manufacturer to provide important product information, contain:
 - product use directions.
 - safety precautions.
 - list of active ingredients.
 - associated hazards.
 - combustion levels.
 - storage requirements.
 - these sheets should be available for every product used in the salon.
- Choosing a Disinfectant

- Read and follow the manufacturer's instructions.
- They must have the correct efficacy (effectiveness) to be used against bacteria, fungi, and viruses.
- They must be pseudomonacidal, bactericidal, fungicidal, virucidal, and tuberculocidal to be "formulated for Hospitals and Health Care Facilities."
- Types of Disinfectants
 - Quaternary Ammonium Compounds (QUATS)
 - Phenols
 - Household bleach
 - Some drawbacks
 - More effective as laundry additive
 - Ethyl and Isopropyl Alcohol
 - These are widely used in salons.
 - Strength of ethyl alcohol must be no less than 70 percent.
 - Disinfectant Safety
- Follow manufacturer's recommendations.
- Always wear gloves and safety glasses when mixing chemicals.
- Always add disinfectant to water, not water to disinfectant.
- Use tongs, gloves, or baskets to remove implements from disinfectants.
- Never pour disinfectants over the hands.
- Using Disinfectants
 - Items used on a client must be disinfected, sterilized, or discarded after each

use.

- Thoroughly clean implements before soaking to avoid contaminating the disinfecting solution.
- Linens should be used only once and laundered with bleach. Store in a closed closet or cabinet.
- Electrical equipment should be wiped or sprayed with a disinfectant created for electrical equipment.
- Disinfect workstation, furniture, and tools after each client.
- Aseptic Procedure
- The process of properly handling sterilized and disinfected equipment and supplies so that they do not become contaminated by microorganisms until they are used on a client
- Aseptic Procedures
- Before beginning any treatment, lay out all items for use.
- Once treatment has begun, never open any package or container or touch a product without a spatula or tongs.
- Any object touched during treatment must be discarded, disinfected, or autoclaved.
- Aseptic Procedures
- Use clean linens, headband or plastic cap, and gown.
- Wash and sanitize hands after touching client's hair.
- Wear latex or vinyl gloves during and after extraction.

- Aseptic Procedures
- Remove creams and products from containers using spatulas, pumps, or squeeze bottle dispenser caps.
- Throw away disposable items in a covered trash container.
- Place lancets or other sharp implements in a Sharps box.
- Disinfect or sterilize all items to be reused.
- Discard leftover products.
- Wipe down all surfaces with disinfectant.
- Decontamination
 - **Sanitation** — third or lowest level of decontamination
 - Sanitation significantly reduces the number of pathogens or disease-producing organisms found on a surface.
 - Cleaning with soaps or detergents sanitizes tools and surfaces.
 - Washing hands is an example of sanitation.
 - Sanitation
- Antiseptics
 - retard, kill, or prevent growth of bacteria.
 - are weaker than disinfectants — thus safer for application to skin.
 - are considered *sanitizers*.
 - not adequate for use on instruments and surfaces.
- Sanitation

- All areas of the salon require regular sanitizing.
 - **Trash cans** — made of nonporous material that can be cleaned and sanitized.
 - **Treatment rooms** — often damp from steam or showers. Clean and sanitize to prevent mold and mildew growth.
 - **Air Systems** — inadequate air systems transport allergens and pathogens. Grates should be cleaned monthly.

- **Blood Spill Disinfection**

If blood spills occur, follow these steps.

- Stop service; clean injured area.
- Apply antiseptic without contaminating container.
- Cover injury with appropriate dressing.
- Use a finger guard or gloves.
- Clean client and workstation.
- Discard all disposable contaminated objects by double bagging. Use Biohazard sticker or container for contaminated waste. Deposit sharp disposables in a Sharps box.
- Blood Spill Disinfection
- Remove gloves. Wash hands with soap and warm water before returning to service.
- All implements that come into contact with blood or bodily fluids must be

immersed in an EPA-registered, hospital-grade disinfectant.

Bacteriology & Infection Control Vocabulary List

Acquired Immunity - Immunity developed after the body overcomes disease or through inoculation.
AIDS -Acquired Immunodeficiency Syndrome; a disease caused by the HIV virus that breaks down the body's immune system.
Acute Describes the rapid-onset, short-term initial stage of disease. Contrast with chronic
Allergy – Reaction due to sensitivity to certain food, chemicals or other normally harmless substances
Antiseptics - Chemical agents that may kill or retard or prevent the growth of bacteria; not classified as disinfectants.
Antibacterial Destroying or stopping the growth of bacteria.
Aseptic Procedure - Process of properly handling sterilized and disinfected equipment and supplies so that they do not become contaminated by microorganisms until they are used on a client.
Asymptomatic - Showing no symptoms or signs of infection.
Asepsis Sterility; a condition free from germs and any form of life.
Autoimmune Disorder A disease in which the body produces a defective immunological response against itself. Normally the body's immune mechanisms can distinguish between normal and foreign substances. In autoimmune diseases the immune system produces antibodies against normal parts of the body to such an extent as to cause tissue injury.
Autoclave - Apparatus for sterilization by steam under pressure.
Bacilli - Short rod shaped bacteria; the most common bacteria; produce diseases such as tetanus (lock jaw), typhoid fever, tuberculosis, and diphtheria.
Bacteria - One celled microorganisms with both plant and animal characteristics; some are harmful, some harmless also known as microbes or germs.
Bactericidal - Capable of destroying bacteria.
Bacterial Spores reproductive cells, usually unicellular, produced by plants and some protozoa; they are remarkably resistant to heat, drying, and the action of disinfectants
Blood Borne Pathogens - Disease causing bacteria or viruses that are carried through the body in the blood or bodily fluids.
Clean – A mechanical process that uses soap and water or detergent and water to remove visible dirt and disease causing germs.
Bioburden The number of viable organisms in or on an object or surface or the organic material on a surface or object before decontamination or sterilization.
Centers for Disease Control and Prevention (CDC) A federal agency that establishes

guidelines and makes ensuring public health.
Chronic Describes long-term or persistent disease. Contrast with acute.
Cocci - Round bacteria that appear alone or in groups.
Contagious Disease - Communicable or transmittable by contact from one person to another
Contaminants - Substances that can cause contamination.
Contaminated - When an object or product has microorganism in or on it.
Cross Contamination - Contamination that occurs when you touch an object such as the skin and then touch an object or product with the same hand or utensil.
Decontamination -Removal of pathogens and other substances from tools and surfaces.
Deficiency Syndrome – AIDS; a disease that breaks down the body's immune system
Diagnosis – Determination of the nature of a disease from its symptoms and or diagnostic tests. Federal regulations prohibit salon professionals from performing a diagnosis
Direct Transmission – Transmission of blood or body fluids through touching, kissing, shaking hands, sneezing, and coughing
Disease –An abnormal condition of all or part of the body, it's systems or organs that makes the body incapable of carrying on normal functions
Diplococci - Spherical bacteria that grow in pairs and cause disease such as pneumonia.
Disinfectants - Chemical agents used to destroy most bacteria and some viruses and to disinfect implements and surfaces.
Disinfection - Second highest level of decontamination, nearly as effective as sterilization but does not kill bacteria spores; used on hard non porous surfaces.
Efficacy - Effectiveness
Endogenous Infection An infection that occurs when bacteria travel from a site where they were harmless to a site where they cause infection
Engineering Controls devices that isolate or remove bloodborne pathogen hazards from the workplace. Examples include, but are not limited to, sharps containers hand washing facilities, eyewash stations, and labels
Exposure Incident – Contact with broken skin, body fluid, or other potentially infectious materials that is the result of the performance of the employees duties
Exposure Incident Report a report that details the contact between the eye, the mouth, other mucous membranes, nonintact skin, or other parenteral contact with blood or other potentially infectious material (OPIM) that results from the performance of job duties.
Fungi - Vegetable (plant) parasites, including molds, mildews and yeasts.
Fungicidal - Capable of destroying fungi.
General Infection - Infection that results when the bloodstream carries bacteria or viruses and their toxins to all parts of the body.
Hepatitis - Disease marked by inflammation of the liver and caused by bloodborne virus. A bloodborne virus that causes disease and can damage the liver.
HAV The hepatitis A virus.
HBV The hepatitis B virus.
HCV The hepatitis C virus.
HDV The hepatitis D virus.
HIV - Human immunodeficiency virus, virus that causes AIDS

Hospital Disinfectants - Disinfectants that are effective for cleaning blood and body fluids.
Human Papillomavirus Abbreviated HPV and also known as <i>plantar warts</i> ; a virus that can infect the bottom of the foot and resembles small black dots, usually in clustered group
Immunity - Ability of the body to destroy any bacteria that have gained entrance to the body and to resist infection in general.
Immunization The process of becoming immune or rendering a person immune to a pathogen
Infection - The invasion of body tissues by disease causing pathogenic organisms; having evidence of pus.
Infection Control The methods used to eliminate or reduce the transmission of infectious organisms.
Infectious Caused by or capable of being transmitted by infection
Indirect Transmission Transmission of blood or body fluids through contact with an intermediate contaminated object such as a razor, extractor, nipper, or an environmental surface.
Isolation – A system of precautions to prevent contact with bodily substances and fluids by using protective garments to prevent the spread of communicable disease
Local Infection - Infection that is confined to a particular part of the body and is indicated by a lesion containing pus.
Material Safety Data Sheet (MSDS) - Material safety data sheet; information compiled by a manufacturer about its product ranging from ingredient content and associated hazards to combustion levels and storage requirements.
Mechanical Irritation Tissue damage due to repeated physical contact to the tissue.
Microbiology The branch of biology that studies microscopic organisms, some of which can be infectious, and their effects on humans
Microorganism - Microscopic plant or animal cell.
Mildew A type of fungus that affects plants or grows on inanimate objects, but does not cause human infections in the salon.
Mucous Membrane a membrane that lines a passage or cavity that communicates with the air. It consists of a surface layer of epithelium, a basement membrane and an underlying layer of connective tissue. Mucus-secreting cells or glands usually are present in the epithelium but may be absent.
Multiuse Also known as reusable; items that can be cleaned, disinfected, and used on more than one person, even if the item is accidentally exposed to blood or body fluid.
Mycobacterium Fortuitum A microscopic germ that normally exists in tap water in small numbers
Natural Immunity - Natural resistance to disease, partly inherited and partly developed through hygienic living.
Nosocomial Infection An infection acquired in a hospital or other health care environment as the result of medical treatment
Nonpathogenic - Not harmful; not disease producing.
Occupational Disease Illness resulting from conditions associated with employment, such as prolonged and repeated overexposure to certain products or ingredients

Occupational Exposure - Bacteria that will not cause harm when on a healthy host, but once they have entered the skin and the chain of infection is not broken, they can cause infection and disease
Opportunistic Bacteria -Bacteria that will not cause harm when on a healthy host, but once they have entered the skin and the chain of infection is not broken, they can cause infection and disease
Organism Any living thing, plant, or animal. May be unicellular (bacteria, yeasts, protozoa) or multicellular (all complex organisms, including humans).
Other potentially infectious material (OPIM) human body fluids including, but not limited to, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid, any body fluid that is visibly contaminated with blood, and all body fluids to differentiate between body fluid in situations in which it is difficult or impossible to differentiate between body fluids.
Parasite - Organism that lives in or on another organism and draws its nourishment from that organism.
Parasitic Disease A disease caused by parasites, such as lice and mites.
Parenteral Hazards Describes the risks involved in piercing of mucous membranes or the skin barrier through
Pathogenic -Causing disease; harmful.
Pathogenic Disease A disease produced by organisms, including bacteria, viruses, fungi, and parasites.
Personal Protective Equipment Abbreviated PPE; protective clothing and devices designed to protect an individual from contact with bloodborne pathogens; examples include gloves, fluid-resistant lab coat, apron, or gown, goggles or eye shield, and face masks that cover the nose and mouth
Phenol - Carbolic acid; caustic poison; in 5% solution is used to sanitize metallic implements.
Phenolic Disinfectants Powerful tuberculocidal disinfectants. They are a form of formaldehyde, have a very high pH, and can damage the skin and eyes.
Porous Made of or of a material that has pores or openings Porous items are absorbent constructed
Pseudomonacidal Capable of destroying Pseudomonas bacteria.
Pus - Fluid product of inflammation that contains white blood cells and the debris of dead skin cells, tissue elements and bacteria.
Resident Microorganisms Microorganisms that are often present on the surface of the human body.
Quaternary Ammonium Compounds - Disinfectants that are considered nontoxic, odorless and fast acting.
Safety Plan A plan for avoiding potential exposure and for dealing with it should exposure occur
Sanitation - Third level decontamination; significantly reducing the number of pathogens or disease producing organisms found on a surface.
Sanitizing A chemical process for reducing the number of disease-causing germs on cleaned surfaces to a safe level
Scabies - Contagious disease caused by an itch mite burrowing under the skin.

Sharp Any object that can penetrate the skin. Examples include, but are not limited to, needles, razors, scissors, & broken glass
Single-Use Also known as disposable; items that cannot be used more than once. These items cannot be properly cleaned so that all visible residue is removed, or they are damaged or contaminated by cleaning and disinfecting in exposure incident
Spirilla - Spiral or corkscrew shaped bacteria that cause syphilis, Lyme disease and other diseases.
Sodium Hypochlorite Common household bleach; an effective disinfectant for the salon.
Staphylococci - Pus forming bacteria that grow in clusters like a bunch of grapes cause abscesses, pustules and boils.
Staphylococcus Aureus Abbreviated MRSA; a type of infectious bacteria that is highly resistant to conventional treatments such as antibiotics.
Standard Precautions Abbreviated SP; precautions such as wearing personal protective equipment to prevent skin and mucous membrane where contact with a client's blood, body fluids, secretions (except sweat), excretions, non-intact skin, and mucous membranes is likely. Workers must assume that all blood and body fluids are potential sources of infection, regardless of the perceived risk
Sterilization - Highest level of decontamination; completely kills every organism on a nonporous surface.
Streptococci - Pus forming bacteria arranged in curved lines resembling a string of beads; cause infections such as strep throat and blood poisoning.
Systemic Disease Disease that affects the body as a whole, often due to under-functioning or over-functioning of internal glands or organs. This disease is carried through the blood stream or the lymphatic system
Toxins Various poisonous substances produced by some microorganisms (bacteria and viruses).
Transient Microorganisms Microorganism's that travel easily on hands, clothing, or inanimate objects. They are removed through hand washing and proper cleaning and disinfection of work areas.
Tuberculocidal Capable of destroying the bacteria that causes tuberculosis.
Universal Precautions - Set of guidelines and controls published by the Centers for Disease Control and Prevention (CDC) that require the employee to assume that all human blood and specified human body fluids are infectious for HIV, HBV and other bloodborne pathogens.
Virucidal Capable of destroying viruses.
Virus - Submicroscopic structure capable of infesting almost all plants and animals, including bacteria; infectious agent that lives only by penetrating cells and becomes part of them.
Work Practice Controls Pathogens or other potentially infectious material, techniques, methods, and practices to minimize the risk of exposure to bloodborne pathogens or other potentially infectious material