

Disinfection: The use of chemicals and procedures designed to destroy or reduce the number of pathogens on inanimate objects such as equipment and clinic surfaces. It must be recognized that some bacteria, spores, and viruses may resist the often lethal effects of many chemicals.

Sterilization: The use of procedures that destroy all microbial life, including viruses. This is a rigid, uncompromising term. There is no such thing as partial sterility. In acupuncture, sterilization is required for all instruments that pierce the skin (needles, plum-blossom needles, seven-star hammers, and lancets) and insertion tubes.

BASIC PRINCIPLES

Clean needle technique (CNT) includes the following basic principles:

1. Always wash hands between patients, and before and after needling.
2. Always use sterile single-use needles and other instruments that may break the skin, such as seven-star hammers and lancets.
3. Always establish a clean field before performing acupuncture.
4. Always immediately isolate used needles and other sharps.

Besides the obvious necessity for sterile needles, lancets, and seven-star hammers, hand washing is the single most important action in preventing cross-infection. Hands should be washed with liquid soap under running water between patients, as well as before and after performing acupuncture, and whenever the practitioner's hands may have become contaminated with potentially infectious material. Potential sources of contamination include touching the hair, clothes, or unswabbed skin of the patient; paperwork; or any other unclean surface or object in the treatment environment. The main goal of universal precautions is the prevention of exposure and nosocomial disease.

In the event that it is impractical or impossible for the practitioner to wash her or his hands with soap and water, an alcohol-based hand disinfectant may be substituted. Alcohol-based hand disinfectants are effective for reducing the presence of potentially infectious agents but will not be effective in the event that the practitioner's hands are soiled. When the practitioner's hands are soiled, washing hands with soap and water remains the best way to remove contamination. For proper use of alcohol-based hand disinfectants, please see the manufacturer's instructions.

Contaminated needles are the greatest source of risk to the practitioner and patient. It is essential to minimize handling used needles during disposal. These basic principles will be discussed in the sections that follow. It is essential to be

meticulous in following all aspects of clean needle technique protocol and universal precautions. This includes the use of sterile needles, hand washing between treatments, and isolation of used sharps. Skin and mucus membrane contacts frequently can be prevented with the use of barrier precautions such as gloves, masks, gowns, and goggles when necessary; however, the greatest risk of blood-borne pathogen transmission comes from needlestick injuries. Such accidents are not prevented by barriers but instead require strict adherence to CNT protocols by practitioners, including the immediate isolation of used sharps, the continuing recognition of the need to handle all patients as if they were potentially infectious, and the need to train all staff in clean needle protocols and universal precautions.

Precautions are the same for hepatitis and AIDS as well as for other diseases that might be transmitted by needlestick accidents. Health care workers are advised to develop standard and habitual procedures for all patients that provide the necessary protection against the transmission of potentially infectious agents.

HAND WASHING

According to the CDC, hand washing is the single most important procedure for preventing infection in a health care setting. Hand washing has been shown to eliminate or markedly reduce pathogenic organisms on the skin. Hand washing includes the steps outlined below:

1. Gather the equipment needed to wash hands: paper towels, soap, and running water. Liquid soap is recommended due to the risk of contamination when using bar soap.
2. Roll up long sleeves; remove watch and jewelry, if applicable. A plain ring like a wedding band is acceptable, but bulky jewelry or rings with stones or intricate work should be removed. (Jewelry can harbor infectious agents in crevices that are not easily accessible.)
3. Wet the soap and hands thoroughly.
4. Rub the soap to make lather.
5. Wash the entire surface of the hands between the fingers, around and under the fingernails and up to above the wrist.
6. Run water over the hands again to clean them.
7. Lower the hands so that water and soap drain off the fingertips as they are thoroughly rinsed.
8. Turn off the tap with a towel or use an elbow so that hands do not become soiled. Do not dry hands with the towel used to turn off the tap.

9. Dry the hands carefully using a clean paper towel or shake the hands dry in the air.

There are two types of infectious agents on the skin: resident and transient. Transient agents include those that are picked up from one patient and possibly carried to another. Soap is adequate for cleansing the surface of the skin of this type of infectious agent. Resident agents, which lodge deeper in the skin, present additional risk for an immunocompromised patient and germicidal soap or an alcohol-based hand disinfectant should be used. *Therefore, it is strongly recommended that antimicrobial products be used for washing before and after treating patients who are severely immunocompromised (e.g., those with HIV or who are undergoing chemotherapy or dialysis).*

It is strongly recommended that acupuncturists always wash their hands:

1. Immediately before the acupuncture procedure.
2. After contact with blood or body fluids or obvious environmental contaminants.
3. At the end of a treatment.^{32,33}

Hand washing with soap and running water is the most effective form of hand-washing. However, when there is no sink available, practitioners may use an alcohol-based hand disinfectant. An alcohol-based hand disinfectant can de-germ hands in less than 30 seconds and enhance killing of transient hand flora without the use of running water, soap, and hand-drying facilities.³⁴ Studies have shown that clinicians find them convenient, accessible, and less irritating to the skin.³⁵ The CDC has also accepted the use of antiseptic hand cleansers or towelettes.³⁶

The necessity of hand washing between patients and the use of universal precautions reflects the importance of treating all patients as if they were carriers of hepatitis or HIV. Beyond this, the need to wash the hands is based on whether the hands become contaminated during the course of treatment. Practitioners must wash their hands between patients, before and after inserting needles, and after contact with potentially infectious body fluids.

Sources of contamination include body fluids such as blood and saliva, vaginal secretions, and fecal contamination, and fluids from open lesions. Body fluids may contain bacteria such as *Staphylococcus species*, and viruses associated with hepatitis and HIV/AIDS. It is absolutely imperative that potentially infectious fluids not be transferred from one person to another through the acupuncture provider's hands, or from the patient to the practitioner and/or other members of the clinic staff. This is most effectively done by carefully washing hands whenever needed. Hand washing should also take place before and after answering the phone, whenever the practitioner touches her or his face or hair, eats, or engages in any other non-clinical activity.

The CDC recommends hand washing under the following circumstances³⁷:

1. When hands are visibly dirty or contaminated. (Wash with soap and water.)
2. If hands are not visibly soiled. (Wash with soap and water or use an alcohol-based disinfectant.)
3. Before contact with patients.
4. After contact with patient's intact skin.
5. After contact with fluids or patient's dressing.
6. After removing gloves.
7. Before and after eating.

EQUIPMENT

Needles

It is critical that all acupuncture needles and instruments that penetrate the skin be sterile for each insertion.³⁸ This includes acupuncture needles, plum-blossom or seven-star needles, and any other equipment that might break the skin.

It is critical that acupuncture be performed with filiform (solid) acupuncture needles. The round polished points of acupuncture needles do minimal damage to the skin and deeper tissue during penetration and stimulation of the needle. Hollow medical injection needles are not recommended because they have a beveled edge and cause more tissue damage. In addition, they may catch blood or tissue in the needle lumen. Stainless steel is the material of choice for acupuncture needles since softer metals are more likely to pit, corrode, tarnish, or break. Gold or silver plated needles should not be used when performing electro-stimulation because of the risk of loss of the electroplating.

Disposable, single use needles must be used to perform acupuncture. The use of disposable, single use needles prevents the potential for contamination caused by inadvertent mixing of sterile and non-sterile needles, the risk of operator error, equipment failure during sterilization, or the risk of breakage of needles exposed to repeated sterilization cycles. The use of disposable needles, however, does not solve all problems relating to safety and clean needle practices.

The following still require careful attention:

1. *Packaging must be appropriate.* Some bubble-type packages loosen around the edges so that contamination becomes possible. Packaging that binds the needles too tightly increases risk of contamination when attempting to remove the sterile needle from tight packaging. Packages that have been bent, have a broken seal, or show evidence of moisture damage should be discarded.