

## AT A GLANCE

## Personal Services and Infection Risks

This document is an excerpt from the [Guide to Infection Prevention and Control in Personal Service Settings](#). It provides a description of common personal services. Where there is supporting evidence, associated infection risks are also described. For more information, please consult the full Guide, visit the [IPAC in Personal Service Settings webpage](#) or email [ipac@oahpp.ca](mailto:ipac@oahpp.ca).

## Contents

Aesthetic Services .....	2
Body Modification.....	2
Body Piercing .....	2
Branding.....	3
Colon Hydrotherapy.....	3
Dermal Punching.....	4
Earlobe Piercing .....	4
Ear Shaping .....	4
Electrolysis .....	5
Eyeball Jewellery.....	5
Eyeball Tattooing .....	6
Genital Beading/Pearling.....	6
Hairdressing .....	6
Hair Removal.....	7
Intense Pulsed Light .....	7
Laser Hair Removal .....	8
Laser Tattoo Removal .....	8
Makeup application .....	9
Manicure.....	9
Microdermabrasion .....	9
Microblading .....	10
Microneedling .....	10
Micropigmentation .....	10

Mud Bath .....	11
Paraffin Wax Treatment (see Manicure) .....	11
Pearling (see Genital Beading/Pearling) .....	11
Piercing (see Body Piercing or Earlobe Piercing) .....	11
Pedicure .....	11
Scarification.....	12
Skin Stretching .....	12
Subdermal Implant.....	12
Suspension .....	13
Tattooing.....	13
Threading .....	14
Tongue Splitting .....	14
Waxing .....	14
References .....	15

## Aesthetic Services

These include, but are not limited to, hairdressing, barbering, threading, manicures, pedicures, and waxing.

**Infection risk:** See **Hairdressing, Manicure, Pedicure, Threading,** and **Waxing** for their respective associated risk.

## Body Modification

This is the practice of physically altering a human body, and can include branding, pearling, genital beading, eyeball jewellery, subdermal implants, tongue splitting, ear shaping, scarification, saline injections, skin stretching, dermal punching, suspension, and eyeball tattooing.

**Infection risk:** See **Branding, Genital Beading/Pearling, Eyeball Jewellery, Subdermal Implant, Tongue Splitting, Ear Shaping, Scarification, Skin Stretching, Dermal Punching, Suspension,** and **Eyeball Tattooing** for their respective associated risk.

## Body Piercing

Piercing is the act of penetrating the skin with a sharp instrument for the purposes of inserting jewellery. Body piercing includes piercings of body sites other than the earlobe, such as the face, nose, nipple, genitalia, tongue, lip, brow and others. Upon completion of the piercing, jewellery is inserted into the piercing site.

**Infection risk:** Microorganisms can infiltrate the tissue under the skin or mucous membrane at the piercing site and cause an infection. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment (e.g., piercing equipment or jewellery).

- Ear piercing guns/devices used on parts of the body other than the ear lobes (fleshy part only).<sup>55</sup>
- The client's own bacteria on the skin and mucous membrane (e.g., oral and genital piercings are particularly problematic, because the site cannot be sanitized with an antiseptic).
- Unclean hands touching the treated area.

The result may be localized skin or tissue infections caused by bacteria such as *Staphylococcus aureus*, *Mycobacterium* spp. or *Streptococcus* spp., or more serious systemic infections of the bloodstream, heart valves, and brain abscess.<sup>10</sup>

## Branding

Branding is a form of scarification by intentionally applying a hot or cold object to the skin to cause third-degree burns and produce a permanent scar.

**Infection risk:** Skin branding can incur the same risks associated with any third-degree burn. Infections can occur when microorganisms enter the open skin burn wound. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- Client's own bacteria from different parts of the body.
- Contaminated environment.
- Unclean hands touching the treated area.

The infectious agents can be bacterial (e.g., *Staphylococcus aureus*, *Pseudomonas aeruginosa*), fungal (e.g., *Candida* spp., *Aspergillus* spp.) or even viral (e.g., herpes simplex virus).<sup>67</sup> Invasion of microorganisms into the tissue layer under the skin can result in more severe complications such as bloodstream infections and organ dysfunction.<sup>67</sup>

## Colon Hydrotherapy

Colon hydrotherapy (sometimes called a colonic or colonic irrigation) involves the instillation of various fluids into the client's colon. In machine-regulated processes, a pump pushes the water into the colon and then collects the resulting wastewater. In manual processes, an operator uses a tube with an attached bottle (or similar device) to irrigate the colon, and the client expels the waste liquid after the procedure is complete.

**Infection risk:** Colon hydrotherapy treatments involve a significant risk of infection if the proper procedures are not followed, because the mucous membranes of the colon are more susceptible to infection than intact skin. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment (e.g., tube that is inserted into the anus).
- Contaminated solution being instilled.
- Unclean hands touching the treated area.

More severe infections can result if the tube used for the treatment perforates the intestinal wall, which can introduce pathogens directly to into the bloodstream.<sup>56</sup>

## Dermal Punching

Dermal punching involves making a hole through the cartilage or into the skin anywhere on the body, accompanied by removing some flesh and cartilage to accommodate a larger piercing. It is performed using a dermal or biopsy punch. Any jewellery or item that is inserted may be secured with an anchor.

**Infection risk:** Microorganisms can infiltrate the tissue under the skin or mucous membrane at the procedure site and cause an infection. The risk of infection is expected to be greater than that of body piercing due to the size of the wound. Similar to body piercing, the potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria on the skin and mucous membrane (oral procedures are particularly problematic, because the site cannot be sanitized with an antiseptic).
- Unclean hands touching the treated area.

Aftercare is especially important in the days following the procedure to prevent infiltration of microorganisms while the wound heals.<sup>68</sup>

## Earlobe Piercing

This involves perforating or piercing a client's earlobe and inserting jewellery.

**Infection risk:** Microorganisms can infiltrate the tissue under the skin at the piercing site and cause an infection. Infections in this area are more difficult to treat, because immune cells generally do not circulate to the earlobe. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment (e.g., the piercing equipment, jewellery).
- The client's own bacteria on the skin at the piercing site.
- Unclean hands touching the treated area.

The result may be localized skin infections caused by bacteria, or more serious systemic infections of the bloodstream or heart valve.<sup>10</sup>

## Ear Shaping

Ear shaping is the removal of portions of the ear to modify its shape. It can be called ear cropping, cutting or pointing. The process is usually performed by removing portions using a scalpel, and suturing or cauterizing the wound.

**Infection risk:** As with any puncture wound or incision, procedures involving skin cutting can lead to an infection if microorganisms are introduced into the wound. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria on the skin.
- Contaminated environment.

- Unclean hands touching the treated area.

Infections are commonly caused by bacteria such as *Staphylococcus* spp., *Streptococcus* spp. and *Pseudomonas* spp. These infections can be superficial in the skin, or they can get deeper into the muscles, tissues and body organs.<sup>69</sup>

## Electrolysis

Electrolysis is a form of hair removal that involves inserting a sterile needle into a hair follicle. An electric current is sent through the needle to damage or destroy the root of the hair.<sup>70</sup>

**Infection risk:** Treatment by electrolysis typically results in red, swollen and tender skin. There is a risk of skin scarring, including enlarged keloid scars. Proper insertion of an electrolysis needle typically does not puncture the skin. However, electrolysis equipment can become contaminated with bacteria, fungi and viral blood-borne pathogens such as hepatitis B virus, hepatitis C virus, or human immunodeficiency virus (HIV).<sup>70</sup> The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria on the skin.
- Contaminated environment.
- Unclean hands touching the treated area.

## Eyeball Jewellery

Selling, offering for sale, or providing implantation of eyeball jewellery is prohibited in Ontario, as per the *HPPA*.<sup>8</sup>

This involves inserting a foreign object beneath the outer layers (conjunctiva) of the white portion (sclera) of a person's eye. It is sometimes called an extraocular implant.

**Infection risk:** In addition to sustaining mechanical damage to the eye, the client may develop an infection. Because this procedure involves a small incision in the conjunctiva, there is a risk that microorganisms could be introduced underneath the membrane, causing conjunctivitis. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria.
- Unclean hands touching the treated area.

Microorganisms known to cause conjunctivitis include *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus* spp., adenovirus, and herpes virus.<sup>71</sup>

## Eyeball Tattooing

Selling, offering for sale, or providing scleral tattooing (eyeball tattooing) is prohibited in Ontario, as per the *HPPA*.<sup>8</sup>

Eyeball tattooing is the process of permanently altering the coloration of the eyeball by injecting ink or dye directly beneath its surface; also called scleral tattooing (over the white of the eye).

**Infection risk:** The risk of eyeball tattooing is the risk of mechanical damage to the eye and the risk of infection. Because the procedure involves a small incision in the conjunctiva to inject the ink or dye, which is trapped between conjunctiva and the sclera of the eye, microorganisms could be introduced underneath the membrane, causing eye infections. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment/ink
- The client's own bacteria in the eye.
- Unclean hands touching the treated area.

Organisms known to cause bacterial and viral infections to the eye include *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus* spp., adenovirus, and herpes virus.

## Genital Beading/Pearling

Genital beading/pearling is a form of subdermal implant whereby small objects or beads are inserted under the skin of the genitals. Most often the items are inserted under the skin of the shaft of the penis, but in rare instances may be inserted under the skin of the labia.

**Infection risk:** The procedure is closely related to piercing. The difference is that the skin is allowed to heal over top of the inserted item (leaving the appearance of a lump or bulge), and the piercing does not pass entirely through the tissue. Similar to piercing, the risk with genital beading is that microorganisms can be introduced into the tissue beneath the site, causing a localized tissue infection, or a more widespread bloodstream infection. Another risk is that the item may be rejected by the body, which could prevent proper healing and lead to infection. Because of the proximity of the site to the mucous membranes of the urethra or vagina, there is also a risk that microorganisms could be introduced to these sites. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment (e.g., the piercing equipment, jewellery).
- The client's own bacteria on the skin at the piercing site.
- Unclean hands touching the treated area.

Microorganisms of concern include bacteria such as *Staphylococcus aureus*, *Streptococci* spp. and viruses such as human papillomavirus, hepatitis B virus, and hepatitis C virus.<sup>10</sup>

## Hairdressing

This includes hairdressing, hairstyling, barbering, and anything done to the hair of a person's head or face. Examples include cutting, colouring (e.g., dyeing, streaking, tinting, highlighting/lowlighting), styling, curling, straightening by heat or relaxant chemicals, blow drying, extensions, scalp treatments, or hair treatments (e.g., hair repair, conditioner, strengthener).

**Infection risk:** While the infection risk of barbering and hairstyling is low, procedures involving the use of a razor carry the risk of cutting the client. The open wound may allow entry of microorganisms. The potential sources of these microorganisms are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria.
- Contaminated environment.
- Unclean hands touching the cut area.

Barbering using a razor has been associated with bacterial infection (e.g., skin infections caused by *Serratia marcescens*) and viral infections (e.g., hepatitis B, hepatitis C). Transmission of an infection of methicillin-resistant *Staphylococcus aureus* onto a client's hairline through inadequately reprocessed hairdressing equipment has also been reported.<sup>72</sup>

## Hair Removal

Hair removal is the removal of hair from virtually any skin surface (e.g., legs, arms, underarms, sideburns, chin, eyebrows, upper lip, bikini line, perianal, perineal areas, toes, back, stomach, shoulders, chest) through various procedures, including waxing, electrolysis, laser, threading, tweezing, and extraction of ingrown hairs.

**Infection risk:** See **Electrolysis, Waxing, Intense Pulsed Light, Threading, and Laser Hair Removal** for individual associated risk.

## Intense Pulsed Light

Intense pulsed light uses high intensity pulses of visible light to improve the appearance of skin, such as acne and removal of unwanted hair.<sup>73</sup> The energy penetration and wavelength in this procedure is generally longer than that of cutaneous and diode laser systems.<sup>73</sup>

**Infection risk:** Intense pulsed light may result in various side effects, including changes in skin pigmentation, blisters, crusts and folliculitis or infection of the hair follicle.<sup>74</sup> With too much melanin in the adjacent skin, the light energy can be absorbed into the surrounding epidermis, causing epidermal damage. This is less common for intense pulsed light than for cutaneous and diode lasers.<sup>74</sup> The potential sources of infections are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria on the skin.
- Contaminated environment.
- Unclean hands touching the treated area.

Infections can be bacterial (e.g., *Mycobacterium chelonae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*), fungal (e.g., *Candida* spp., *Aspergillus* spp.) or viral (e.g., herpes simplex virus).<sup>67</sup> Rare side effects include post-inflammatory hyperpigmentation and burns with blisters.<sup>74</sup>

## Laser Hair Removal

Laser hair removal involves a thermal injury of the hair follicle to produce long-term reduction or removal of hair.<sup>73</sup> The laser source targets the melanin in the hair shaft. The energy penetration and wavelength of cutaneous lasers is generally shorter than that of intense pulsed light.<sup>73</sup>

**Infection risk:** Laser hair removal may result in various side effects, including changes in skin pigmentation, blisters, crusts and folliculitis or infection of the hair follicle.<sup>74</sup> With too much melanin in the adjacent skin, the light energy can be absorbed into the surrounding epidermis, causing epidermal damage.<sup>74</sup> This is less common for intense pulsed light than for cutaneous and diode lasers. The potential sources of infections are:

- Contaminated or improperly reprocessed equipment.
- The client's own bacteria on the skin.
- Contaminated environment.
- Unclean hands touching the treated area.

Infections can be bacterial (e.g., *Mycobacterium chelonae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*), fungal (e.g., *Candida* spp., *Aspergillus* spp.) or viral (e.g., herpes simplex virus).<sup>67</sup> Rare side effects include post-inflammatory hyperpigmentation and burns with blisters.<sup>74</sup>

## Laser Tattoo Removal

A procedure that uses laser beams to break down tattoo ink particles by emitting a laser light spectrum appropriate to the corresponding tattoo pigment.

**Infection risk:** While laser tattoo removal is generally considered a non-invasive procedure, laser treatment may cause superficial burn wounds, blisters, or scabs. Bacterial, fungal, and viral infections can occur if the skin layer is damaged and microorganisms are introduced to the site. The potential sources of these microorganisms are:

- Use of contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin
- Unclean hands touching the treated area.

Common side effects of laser tattoo removal include pinpoint bleeding, edema, crusting of the skin and blistering.<sup>75</sup> Blisters and pinpoint bleeding are generally more common in darker skin types.<sup>76</sup> Local allergic reactions can occur in the form of papules, nodules or plaques. Rarely, systemic reactions following laser treatment of allergic tattoos have been reported. In a large prospective study of laser tattoo removal, adverse effects were observed in 6.2% of patients with hyperpigmentation.<sup>76</sup> Spot size, fluence, and pulse duration are important considerations in laser tattoo removal.



## Makeup application

Makeup is a type of cosmetic applied to a person's face. Makeup application procedures entail the use of instruments such as facial sponges, cotton balls, tissues, applicators, and brushes in the application of products such as lipstick, mascara, eye shadow, and foundation.

**Infection risk:** Makeup application can lead to infection through non-intact skin or mucous membranes. This may allow the entry of pathogenic microorganisms to the open site. The potential sources of these microorganisms are:

- Use of contaminated makeup (contamination during manufacturing or from consumer use).
- Use of contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Unclean hands touching the treatment area.

Infections can be bacterial (e.g., *Staphylococcus* spp., *Pseudomonas* spp.), fungal (e.g., *Aspergillus* spp.) or even viral (e.g., herpes simplex virus).<sup>77</sup> Contact allergy caused by ingredients in cosmetic products is also a well-known problem,<sup>77</sup> which has the potential risk of causing secondary infections.

## Manicure

Includes a variety of treatments of a person's fingernails/hands. These procedures entail use of instruments such as files, cuticle sticks, nail clippers/nippers, or scissors. Procedures included are applying nail polish, gel nails, acrylic nails, shellac nails; removing of gel polish; paraffin treatments, soaking; nail filing, buffing, and shaping; pushing back, softening, or cutting cuticles; hand scrub/massage; applying lotion; using pumice stick to remove calluses (see **Pedicure**).

**Infection risk:** Manicure can lead to infection through open wounds from a variety of procedures, such as cutting of the skin/cuticles and scrubbing of the skin. This may allow the entry of pathogenic microorganisms to the open site. The potential sources of these microorganisms are:

- Use of contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Manicure can lead to bacterial, fungal, or viral infections.<sup>72</sup>

## Microdermabrasion

Microdermabrasion is a cosmetic procedure in which aluminum oxide crystals or other abrasive substances are blown onto the treated skin area and then vacuumed off using a single hand piece.<sup>78</sup>

**Infection risk:** After microdermabrasion, treated skin will be red and swollen, with changes to pore size and possibly skin colour.<sup>78</sup> The potential sources of infections are:

- Contaminated and/or improperly reprocessed equipment.
- Contaminated environment.

- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Microdermabrasion can lead to bacterial, fungal, or viral infection, or possible flare up of pre-existing herpes simplex virus.<sup>79</sup>

## Microblading

A semi-permanent form of eyebrow micropigmentation performed using a pen-sized blade with a tip composed of several tiny needles/blades. The pigment is applied to the site, and then pushed under the skin manually using the microblade.

**Infection risk:** The infection risk with microblading is that microorganisms are introduced under the skin during the procedure, causing either a localized skin infection or a more serious bloodstream infection.<sup>80</sup> The potential sources of these microorganisms are:

- Contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

While infection risk specific to microblading is limited in the literature, due to penetration of the microblade into the skin the risk is expected to be similar to that of tattooing/micropigmentation.<sup>80</sup>

## Microneedling

Microneedling (sometimes called mesotherapy) is performed using a motorized pen-style device or a manual roller-style device with many needles mounted to its surface. A series of small needles are used to create tiny puncture holes in the skin, triggering the production of collagen and elastin. It is used primarily to treat scars or stretch marks, but may also be used to deliver pharmaceutical or cosmetic products into the skin.

**Infection risk:** The risk of infection depends on the length of the needles being used (needles range in length from 0.25 mm to 3 mm) and the thickness of the skin at the treatment site. Although rare, infections can occur.<sup>81,82</sup> The potential sources of infections are:

- Contaminated and/or improperly reprocessed equipment (e.g., if a contaminated cosmetic product is applied in conjunction with the needling).
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

## Micropigmentation

A method of colouring the skin designed to mimic the effect of makeup; can be referred as permanent or semi-permanent makeup.

**Infection risk:** Similar to tattooing, micropigmentation uses a needle to deliver pigmentation underneath the skin. Therefore, infection risks are similar to tattooing (see **Tattooing**).

## Mud Bath

Mud baths involve immersion of the body or a part of the body into a container or tub filled with mud.

**Infection risk:** To estimate the risk of infection by a mud bath, one study analyzed <sup>46</sup> mud samples before and <sup>76</sup> after for fecal and total coliforms. Infections can be bacterial (e.g., *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*) or fungal (e.g., *Candida* spp., *Aspergillus* spp.). *Pseudomonas aeruginosa* was found in 11% of samples in both groups. Fecal bacteria or fungi in mud baths are unlikely to be swallowed and therefore are unlikely to cause further harm.<sup>83</sup>

## Paraffin Wax Treatment (see Manicure)

## Pearling (see Genital Beading/Pearling)

## Piercing (see Body Piercing or Earlobe Piercing)

## Pedicure

Includes a variety of treatments of a person's toenails/feet. These procedures entail the use of instruments such as files, cuticle sticks, and nail clippers or scissors. Procedures included are applying nail polish, gel nails, acrylic nails, shellac nails; removing of gel polish; soaking; nail filing, buffing, and shaping; pushing back, softening, or cutting cuticles; foot scrub/massage; applying lotion; and using a pumice stick to remove calluses (see **Manicure**).

**Infection risk:** Pedicure can lead to infection from open wounds resulting from a variety of procedures, such as cutting of the skin/cuticles and scrubbing of the skin. This may allow the entry of pathogenic microorganisms to the open site. The potential sources of these microorganisms are:

- Contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Pedicure can lead to bacterial, fungal, or viral infections. More specifically, nail bed infections and mycobacteria outbreaks have been reported related to the use of footbaths.<sup>72</sup> Also, nail dust may aerosolize fungus and body fluid particles when using a rotary tool during nail care, increasing the risk of infection.

## Scarification

The removal or destruction of skin with the intention of causing or increase levels of scarring. It may involve the action of cutting, scratching or burning/branding.

**Infection risk:** Scarification involves a range of procedures. Branding can lead to the same risks associated with any third-degree burns; cutting can lead to open-wound infections similar to any incision procedure. Infections can occur when pathogenic microorganisms enter the open skin wound site.<sup>67,69</sup> The potential sources of these microorganisms are:

- Contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Infections can be bacterial (e.g., *Staphylococcus* spp., *Pseudomonas* spp.), fungal (e.g., *Candida* spp., *Aspergillus* spp.), or even viral (e.g., herpes simplex virus).<sup>67,69</sup> These infections can be superficial, affecting the skin areas only, or they can go deeper, into the muscles, tissues and body organs. Invasion of microorganisms into the tissue layer under the skin can cause more severe complications, such as bloodstream infections and even organ dysfunctions.<sup>67</sup>

## Skin Stretching

Also known simply as stretching, this is the process of expanding a healed piercing hole by increasing the size of piercing jewellery in small increments over a long period (one to two months between sizes) until the desired size is reached. It is commonly performed on earlobes.

**Infection risk:** Considered a non-invasive procedure, skin stretching, if done properly, does not create openings in the skin and thus involves minimal risk of infection. Problems arise when the skin is stretched too quickly, which can result in tearing and wound creation. If this happens, infection can occur. The potential sources of infections are:

- Contaminated and/or improperly reprocessed equipment (e.g., taper, piercing jewellery).
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

## Subdermal Implant

A foreign object inserted under the skin. Intended to be permanent, these objects can take the form of magnets, metal shapes, etc. Implanting an object under the skin risks serious infection if the object is not sterile and/or not inserted using sterile procedures.

**Infection risk:** This procedure is closely related to piercing, with the added risk of complications associated with the choice/size of implanted material. Subdermal implants look extreme, but the procedure is to involve very little tissue damage. The small incision in the skin allows the item/material

to be pushed underneath the skin, above the underlying flesh. The risk is that microorganisms may be introduced underneath the skin.

The potential sources of these microorganisms are:

- Contaminated and/or improperly reprocessed equipment. (e.g., scalpel blade, forceps)
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Organisms of concern include bacteria such as *Staphylococcus aureus*, *Streptococci* spp., and viruses such as hepatitis B and hepatitis C.<sup>10</sup>

## Suspension

A procedure involving insertion of hooks through either previously implanted piercings, or temporarily through the skin itself. The hooks are then used to raise the person off the ground. The hooks used for suspension are larger than a standard piercing.

**Infection risk:** Suspension involves a risk of infection similar to a large piercing. For piercings, the risk is that pathogenic microorganisms will infiltrate the tissue under the skin at the piercing site and cause an infection. The potential sources of these microorganisms are:

- Contaminated and/or improperly reprocessed equipment (e.g., suspension hooks).
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

For suspension, there is also the risk that the weight of the client's body will cause the skin to tear, leading to a much larger wound. In this case, proper wound care is essential to prevent contamination of the site and subsequent infection.

## Tattooing

Tattooing involves inserting needles into the skin and injecting dyes or inks.

**Infection risk:** Tattooing induces physical damage to the skin, which may cause or promote infections if microorganisms are introduced under the skin during the process. The potential sources of microorganisms include:

- Tap water used to dilute the ink.
- Contaminated and/or improperly reprocessed equipment or ink
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

Potential infections can be caused by bacteria (e.g., *Mycobacterium* spp. or *Staphylococcus aureus*), fungi (e.g., *Candida endophthalmitis*), or even viruses (e.g., human immunodeficiency virus [HIV],

hepatitis B virus, hepatitis C virus).<sup>76</sup> There have been outbreaks of bacterial infection (non-tuberculous mycobacterial) caused by ink that was contaminated prior to distribution. Such bacterial infection can cause several diseases such as lung disease, joint infection, eye problems, and other organ infections.<sup>84</sup>

## Threading

Threading is a form of epilation (removal of the entire hair by the root). The technique involves rapidly rotating a twisted loop of thread across the skin to entrap and rapidly remove single or multiple hairs.<sup>85</sup>

**Infection risk:** The dermatologic side effects of threading include folliculitis, pseudofolliculitis, molluscum contagiosum, bullous impetigo, hyperpigmentation, and vitiligo koebnerization. There have been case reports linking human papilloma virus verrucous growths to threading.<sup>85</sup> The potential sources of microorganisms include:

- Contaminated and/or improperly reprocessed equipment.
- Contaminated environment.
- Client's own bacteria on the skin.
- Unclean hands touching the treatment area.

The significance of proper technique, disposable threads and disinfection of reusable materials is emphasized to reduce the risk of infection and ensure client safety.

## Tongue Splitting

Tongue splitting is also called tongue bifurcation. A scalpel or blade is used to bifurcate (partially split, or fork) the tongue, creating an effect similar to a reptile's tongue.

**Infection risk:** While infection risk specific to tongue splitting is limited in the literature, the risks of complications from surgical incision procedures are well documented. As with any incision wound, procedures such as tongue splitting can lead to infection if pathogenic microorganisms are introduced into the wound. The potential sources of these microorganisms are:

- Contaminated and improperly disinfected equipment.
- Contaminated environment.
- Client's own bacteria that spread to the wound.
- Unclean hands touching the treatment area.

Bacterial infections are commonly caused by *Staphylococcus* spp., *Streptococcus* spp. and *Pseudomonas* spp. These infections can be superficial in the skin, or they can get deeper into the muscles, tissues, and body organs (e.g., endocarditis).<sup>69</sup>

## Waxing

Waxing involves the use of warm wax (or sugar) applied to the skin with a single-use applicator (e.g., cloth strip, spatula, roller cartridge). A disposable cloth strip is pressed onto the wax and rapidly pulled away from the skin to remove the hairs.<sup>86</sup>

**Infection risk:** Waxing may result in compromised skin and increased risk of mucous membrane exposure, heightening the risk of infection. The potential sources of infections are:

- Contaminated and improperly disinfected equipment (e.g., product contamination).
- Contaminated environment.
- Client's own bacteria that spread to the wound.
- Unclean hands touching the treatment area.

Infections can be bacterial (e.g., *Staphylococcus aureus*, *Streptococcus pyogenes*, *Pseudomonas aeruginosa*), fungal (e.g., *Candida* spp., *Aspergillus* spp.), or viral (e.g., herpes simplex virus).<sup>86</sup> An outbreak of methicillin-resistant *Staphylococcus aureus* (MRSA) infection has also been reported. Personal service providers are to inform clients about the risks of waxing when taking anti-acne medication, as this may increase risk of infection by damaging the skin and potentially removing the epidermis (top layer of the skin).

## References

The following references follow the order of the original document. For a full reference list please refer to [Guide to Infection Prevention and Control in Personal Service Settings](#).

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