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Principles of infection control for the tattoo and body piercing industry

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The causes of infection

An infectious disease is an illness caused by a pathogen, which invades body tissues and causes damage.

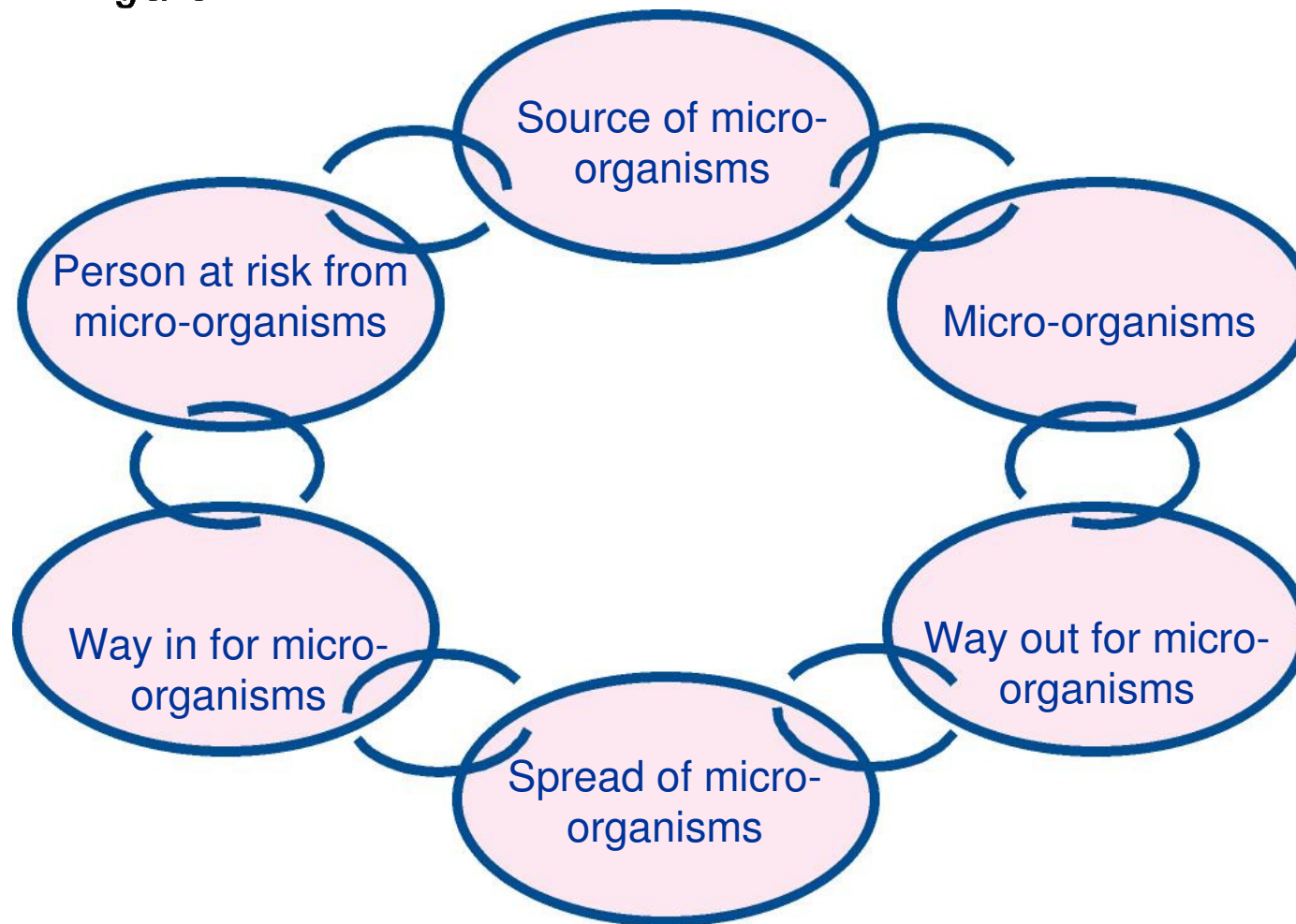
A pathogen is an organism capable of invading the body and causing disease. Such an organism is termed pathogenic *

Groups of organisms capable of causing infection:
Bacteria, Viruses and Pathogenic Fungi

*Bannister B, Gillespie S and Jones J (2006). Infection Microbiology and Management. 3rd edition. Blackwell Publishing ■



How infection spreads



Breaking any link in the chain will help to prevent the spread of micro-organisms



Infection control definition

Infection Control:

- Different methods and strategies used to reduce or prevent the occurrence and/or spread of infection(s)
- Based on best evidence
- 'Standard Principles of Infection Control' is one recognised method



Infection risks in tattooing/ body piercing

- Environment/shared facilities
- Equipment
- Ventilation and heating
- Staff- training, turnover
- Hygiene standards (policies/procedures) and governance
i.e. audit



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Why infection control is important in tattooing/ body piercing

- Unsafe/unhygienic practices can lead to the spread of infectious diseases that can affect the health of the client **and/or** the practitioner
- Of particular concern is the risk of blood borne viruses, for example Hepatitis B, Hepatitis C, Hepatitis D or HIV, which can have more serious and long term health



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Preventing and controlling the spread of infection in tattooing/body piercing

- Risk assessment
- Standard Principles
- Education/training
- Legislation e.g. Health & Safety Work Act etc (1974) and Health & Protection Regulations (2010) including Part 2A Orders
- Policy Development
- Vaccination and immunisation
- Outbreak recognition and management



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Infection control 'Standard Principals'

1. Hand washing
 2. Practices and procedures
 - a) Personal Protective Equipment (PPE) – e.g. gloves, aprons
 - b) Procedures (evidence based written procedures and governance)
 3. Environmental cleaning (cleaning and disinfection)
 4. Decontamination of equipment
 5. Waste handling and management
 6. Sharps handling & disposal including needlestick injury management (NSI)
 7. Blood and body fluid spills management
 8. Use of chemicals
 9. (Linen)
- (Occupational Health- Hepatitis B vaccination)



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Assessment of risk for IC practice*

Anticipated level of exposure	Wear disposable gloves	Wear plastic or fluid repellent apron	Wear eye and face protection
No exposure to blood/ body fluids anticipated	X	X	X
Exposure to blood/ body fluids anticipated but low risk of splashing	Yes	Yes	X
Exposure to blood/ body fluids anticipated with high risk of splashing to the face	Yes	Yes	Yes

*from PHE/CIEH/HSL/TPIU Tattooing and body piercing guidelines toolkit (2013)





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Handwashing (1)

Area of the hands most frequently missed during hand washing





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Handwashing (2)

Bacteria on a hand after using the toilet and before washing hands



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Bacteria on a hand after touching an old dishcloth



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See how by washing your hands thoroughly, the bacteria is removed



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Risks of infection & decontamination levels for instrument risk groups

HIGH - Anything that enters a normally sterile body area or is in contact with a break in the skin or mucous membrane- Sterilised or sterile single-use

MEDIUM - Anything in contact with intact mucous membrane - Sterilised, heat disinfected, single-use, chemical disinfection only if thermolabile.

LOW - Anything in contact with intact skin - Heat or chemical disinfected, single-use, cleaned.

MINIMAL – Items not in close contact with people or their immediate surroundings - Cleaning; disinfection in exceptional circumstances (e.g. blood spills)



Sterilisation

Is most practically achieved by **heat**, either by

- Wet heat (steam) in a steam steriliser (uses steam at above atmospheric pressure – above 100°C)
- Dry air in a hot air steriliser

Method	Temperature (°C)	Holding time (minutes)
Steam	121	15
	126	10
	134	3
Dry heat	160	120
	170	60
	180	30



Energy transfer in sterilisation

- Hot air transfers heat by conduction - less efficient
- Steam transfers heat by condensation transferring latent heat - very efficient
- Steam has to be able to reach and condense on every surface of an item
- This means that all air, which would prevent condensation of steam, has to be removed to sterilise hollow or porous loads (such as wrapped) instruments
- To remove air, it needs a steam steriliser that pulls a vacuum on its chamber and replaces it with steam, pulling air out of all items in the load
- These are termed “vacuum sterilisers” or “porous load sterilisers”
- They are more expensive to buy and maintain than simple (“downward displacement”) sterilisers *and are only needed if wrapped, porous or hollow loads are to be sterilised*



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Types of steam steriliser

“Benchtop” steam steriliser: Any steam steriliser that generates its own steam and can be powered by a domestic electricity socket.

Three types:

Type N – Non-vacuum “downward displacement” sterilisers: Suitable for non-porous, non-wrapped, non-hollow items.

Type B – Vacuum sterilisers: Suitable for porous, wrapped and hollow items.

Type S – Vacuum sterilisers suitable for specified hollow loads only (usually dental handpieces)



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Other methods of “sterilisation”

Hot air

Poor quality assurance (in temperature control and exposure time), longer cycle times and more damaging to materials.

Ultraviolet (UV) light

Multiple problems: Needs a precise UV spectrum (many UV emitters change their spectrum as they age, but still look the same), will have no effect if target in shadow or obscured, questions as to UV dose required

Glass bead sterilisers

Essentially: hot air sterilisers with heat transfer by contact rather than conduction through air. Temperatures vary throughout bead pile and control over temperatures often poor. Most will not indicate if fuse has blown or otherwise not at correct temperature. QA for length of exposure on user.



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Disinfection

- Essentially, making safe without sterilisation. (Poorly defined)
- Usually achieved by chemicals (though the use of heat, as milk pasteurisation or in cooking food is far more widespread)

Factors affecting disinfection:

- *Activity*: Microbicidal range; inactivation by organic matter, detergents, other chemicals; pH; dilution
- *Contact*: barriers; air bubbles; full immersion, coverage of large areas.
- *Time*: Avoid short exposures (due to evaporation, dunking)



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Cleaning

- Cleaning should always precede sterilisation and disinfection.
- Important that cleaning does not present a hazard to whoever does it – care with sharps, care with splashes.
- Cleaning efficacy governed mainly by diligence of whoever does it and time between contamination and cleaning.
- Validation of cleaning – visual inspection. Care: the most difficult area to clean are also the most difficult areas to see.
- Ultrasonic cleaners – clean very effectively in hard-to-reach areas.



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Layout of decontamination facility

Whatever the context (separate room, same room as client procedures), there needs to be a clear flow from “dirty” to “clean”.

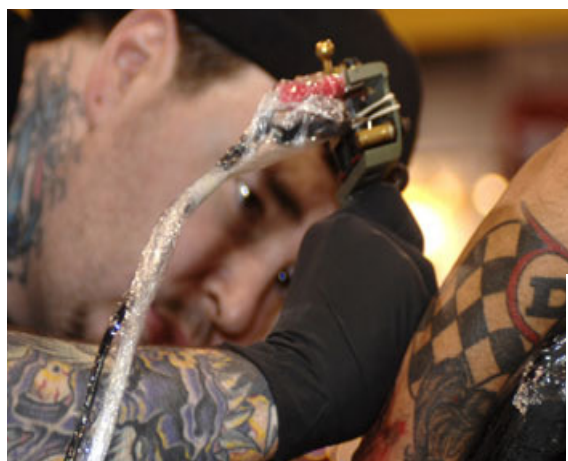
This is important for two main reasons:

1. So that when someone picks up a clean-looking item, they know where in the sequence of decontamination (used or cleaned or sterilised) it is.
2. So that when someone takes an item from the steriliser, it is not placed on a surface contaminated by a dirty item.



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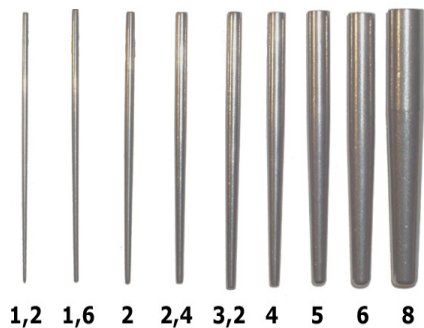
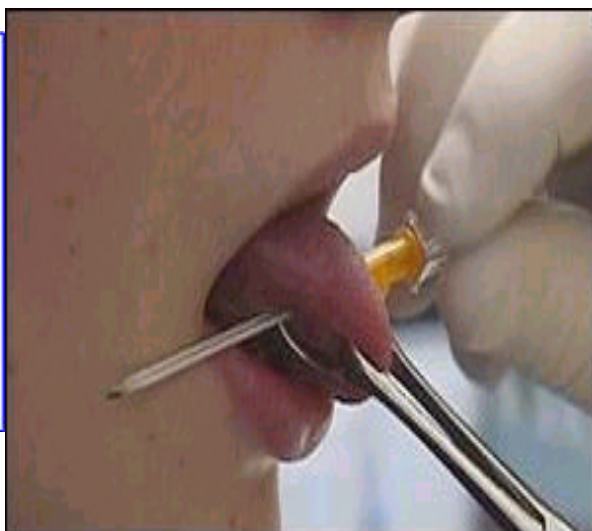
Tattooing in practice





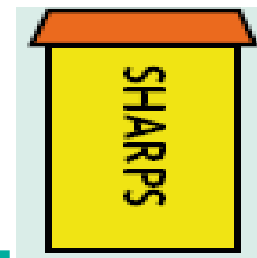
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Body piercing in practice



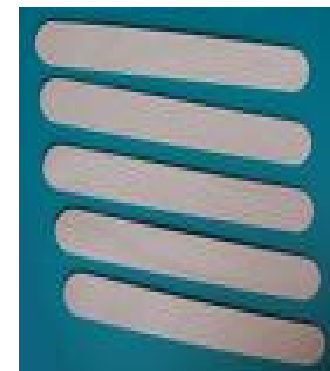


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Common issues identified

- Dedicated hand washing basins appropriately sited
- Poor/inappropriate PPE use or access
- Variable use of documentation/ aftercare/ policies especially needlestick injury management
- Potential for multi-use items e.g. deodorant sticks, marker pens, spatulas
- Variable use of sterile dressings
- Diverse aftercare advice
- Limited area to operate, including area to allow dirty to clean segregation/ separation and flow
- Inadequate waste/sharps management
- COSSH and chemical storage PLUS....





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Decontamination



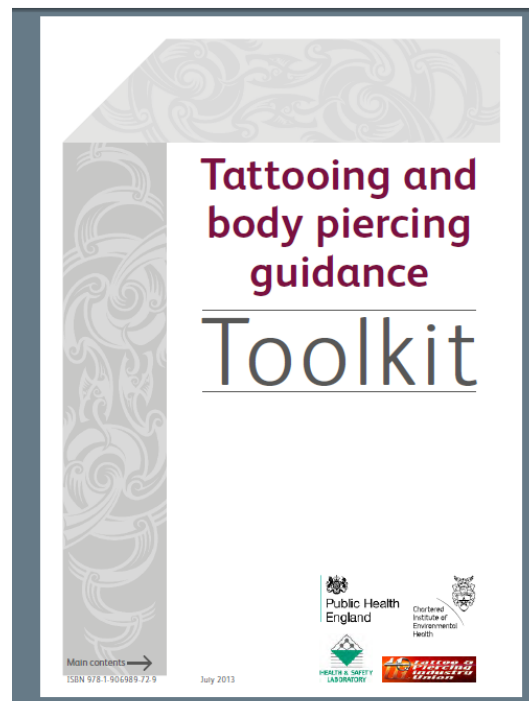
- Cleaning equipment - brushes, sinks, PPE
- Ultrasonic baths - lids, solution, emptying
- Autoclaves - vacuum versus non vacuum, pouches, water, emptying, service contracts, documentation, training and daily/weekly checks





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To address the gap in standardised and evidence based practice:





Potential barriers/tensions

- Time
- Management support/objectives- roll out and engagement
- Variable integration of H&S and licensing teams in some local authorities
- Variable succession management/organisation memory
- ‘reinvention of wheels’ – NOT USING STANDARD AND EVIDENCE BASED GUIDANCE
- Need to formally monitor best practice using appropriate resource tools e.g. use of Audit
- Need for standardised training

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