

Guidance on the management of the public health risks from fish pedicures



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Foreword

One of the primary roles of Environmental Health Practitioners in local authorities is to control the spread of infection. So called 'special treatments' require careful auditing to ensure that staff and customers are properly protected from infection.

This type of treatment is relatively new and I am delighted to recommend and endorse this guidance which will be of great value to members of the Chartered Institute of Environmental Health as they seek to address the infection control issues presented by the growth of businesses seeking to offer this treatment service to customers.

I am grateful to members of the CIEH and all the other organisations involved in its production and I commend its use.



G. Jukes
Chief Executive
Chartered Institute of Environmental Health

I am honoured to have been invited to provide a foreword to this guidance and take this opportunity to congratulate all who were involved in its production.

The guidance provides valuable support and assistance for Environmental Health Officers and technical support staff working in Scotland's local authorities and will, I've no doubt, be of assistance to the owners of establishments offering this novel treatment.

The production of the guidance is an excellent example of what can be achieved through positive inter-organisation co-operation and I have no hesitation in endorsing the guidance on behalf of Scotland's environmental health community.



Tom Bell
Chief Executive
The Royal Environmental Health Institute of Scotland

Introduction

An increasing number of establishments offering 'fish pedicures' are opening in the UK. This practice involves immersing the feet in a tank of water containing *Garra rufa* fish (a small toothless species of freshwater carp) that nibble off dead and thickened skin. The use of *Garra rufa* fish is long established in Turkey, India and the Far East where it has a history as a treatment for a variety of skin conditions and, more recently, as a cosmetic treatment for the removal of dead and hardened skin from the feet. In Turkey, a treatment centre near the town of Kangal is based around a series of thermal springs and can accommodate more than 1,000 people per day.

Fish pedicures involve the use of living fish. Therefore, conventional methods of sterilisation and disinfection of water and equipment are not applicable because they would kill the fish. This has led to concerns about the potential transmission of infection and, in addition, the welfare of fish. The practice has been banned in some countries on safety grounds. However, there is little evidence in scientific literature of the potential public health risk to users.

This guidance was produced by an expert group that included representatives from the Health Protection Agency, Health Protection Scotland, the Health and Safety Laboratory and local authorities. It is intended for public health and environmental health practitioners who may be asked to provide advice on fish pedicures in the UK. The guidance may also be of interest to the industry. It has been agreed by the Department of Health, Social Services and Public Safety in Northern Ireland and Public Health Wales.

1.1 Aim and scope

This guidance aims to provide easily accessible advice, based on evidence, or expert consensus where this is lacking, on the potential public health risks from fish pedicures, and the practical measures that should be taken to mitigate these.

The scope of this guidance is restricted to the use of *Garra rufa* fish for fish pedicures as a cosmetic treatment. A minority of premises are also offering fish manicures and the guidance is equally applicable to manicures. It does not consider the medicinal use of *Garra rufa* fish, whole body immersion, or the use of other types of carp with teeth such as Chin Chin fish.

Concerns about fish welfare have also been raised. Whilst these issues are outside the scope of this document, there is evidence that poor environmental conditions affect fish health, which in turn may potentially increase the risk of infection in humans. These guidelines do not provide advice on the use and care of *Garra rufa*, and further advice should be sought from appropriate veterinary experts (see Appendix 1).

1.2 Acknowledgements

Many agencies and individuals across the UK contributed to the consultation process. These included public health professionals, the Chartered Institute for Environmental Health, various local authorities, Local Government Regulation, Defra, Centre for Environment Fisheries and Aquaculture Science, Health and Safety Executive, Royal Society for Prevention of Cruelty to Animals, Ornamental Aquatic Trade Association, National Companion Animal Forum, Fish Veterinary Society, and Hairdressing and Beauty Industry Authority. Their contributions are gratefully acknowledged.

2 Background

2.1 Definitions

For the purpose of this document a fish spa is taken to be any premises offering fish pedicures. A fish pedicure is the process in which the user places their feet in a tank of water (which may be for individual use or shared) to mid-calf level and *Garra rufa* fish preferentially 'nibble' the thickened skin from the feet, usually for between 15 to 30 minutes. This time limitation is in place to ensure that the fish do not nibble too far into skin and cause bleeding, although bleeding has been anecdotally reported in UK fish spas. However, longer durations have been used in other settings without reported significant adverse effects.^{1,2}

2.2 Current UK situation

There has been a rapid expansion in the number of premises providing fish pedicures in the UK over the past 12 months. A recent (Spring 2011) survey among environmental health practitioners identified 279 fish spas in 119 local authorities across the UK, with further spas planned. As this represents approximately 1/3 of all local authorities it is likely that the total number of fish spas in the UK is considerably greater. In addition to the spas themselves, at least a dozen new companies have been established supplying fish spa systems and equipment.

Fish spa premises include dedicated salons, hairdressers, beauty therapists, as well as mobile spas in shopping centres and other locations. Reports from environmental health practitioners indicate that the level of health and safety awareness, infection control and risk assessment varies considerably between establishments. In addition, some operators are actively promoting fish pedicures for persons with medical conditions such as eczema, psoriasis and diabetes.

2.3 International situation

Whilst the use of *Garra rufa* fish is long established in parts of the Middle and Far East, there are few formal publications regarding their use, and those that do exist relate to treatment for psoriasis. One study in Turkey¹ described the use of prolonged immersion (approximately seven hours per day) in the Kangal hot springs containing *Garra rufa* for 87 patients with psoriasis. No information on adverse events was included. An Austrian study² involved 67 patients with moderate to severe chronic plaque psoriasis who underwent three weeks of therapy involving immersion in a bathing tub containing *Garra rufa* fish for two hours per day, combined with a short course of UV-A sunbed treatment. Each patient was allocated to a single bathing tub for the duration of the three-week treatment, and fish were used on a single client only. The water in the tubs was constantly (700 l/hr) filtered and disinfected by a filter pump and a UV-C water disinfection device. The water was exchanged on a continuous basis three to four times a day and the temperature was maintained at 36-37°C. Although water testing was undertaken, no results were reported. No adverse events were noted, although 'mild transient bleeding' was reported in one patient with eczema. These two small studies suggested that ichthyotherapy under the direction of a dermatologist could have a beneficial effect, however, as both used fish therapy in conjunction with other medical therapies, the relative benefit of the fish therapy is far from clear.

Despite the paucity of scientific evidence, fish pedicures have been banned in a number of US states, and Canadian provinces and territories. In the US, the procedure has been banned in 18 states³ by the respective State Boards of Cosmetology mainly on the grounds that it contravenes regulations applicable to beauty procedures. State bans are based on a combination of the following: equipment (i.e. the tanks and fish) used in the workplace cannot be disinfected; animals, including fish, are prohibited from salons; and concerns around animal welfare (due to reports that the fish may be starved to eat skin). Whilst the US

Centers for Disease Control (CDC) has not undertaken a national risk assessment, it has confirmed that it is not aware of any documented infections associated with fish spas.⁴

In Canada³, the procedure has so far been banned in Ontario, British Columbia, Alberta and Manitoba on the grounds that fish used as 'instruments' for pedicures cannot be cleaned and disinfected or sterilised between clients. Guidance from Ontario states that "water samples collected from the intended footbath-type tanks showed an overgrowth of *E. coli*, total coliforms, *Staphylococcus* and *Pseudomonas* bacterial species. As no fish pedicures had been performed, it is likely that the fish themselves were the source of these bacterial species." Fish spas remain legal in other Canadian provinces and territories, although the issue has not specifically been addressed by all of them.

Within Europe, the issue has been addressed in Germany where spas planned to offer the service for psoriasis.⁵ Extensive requirements were placed on the service provider by the authorities, including: written patient consent; proof that patients are free of hepatitis B and C viruses and HIV, and not colonised with named bacteria; specified technical requirements for equipment and spa management; premises to have a specialist vet; and an extensive quality assurance programme. No information is available from other EU member states as to whether the practice takes place and if so what control measures are implemented.

3 Public health risks from fish spas

The main public health concern about the use of fish spas relates to the potential for the transmission of infection. Depending on the route of transmission this may include bacterial, viral and parasitic infections. Fish tank water has been shown to contain a variety of bacterial species.⁶ The water in the spa tank is heated to maintain a temperature of 25-30°C (suitable for fish health) which will encourage bacterial growth and increase skin porosity on prolonged immersion.

There are three potential routes of transmission: fish to person, water to person, and person to person. These are considered in more detail below. In each case, the risk of infection will be increased if the client has an underlying health condition that reduces the effectiveness of their natural defences against infection, or if there is broken skin.

Whilst fish welfare is not the primary focus of this guidance, there is evidence that handling, poor water quality and overcrowding can lead to chronic stress, deteriorations in fish health, compromised immune function and mortality.⁷ Many apparently healthy fish can harbor pathogens without obvious signs of disease, but outbreaks in fish can occur when they are subjected to poor environmental conditions.⁸ Outbreaks of disease in fish could potentially increase the numbers of water-borne bacteria and increase the risk of transmission to fish spa clients.

3.1 Transmission from fish (or fish tank surface) to person⁹

3.1.1 Bacterial infections

Erysipelothrix rhusiopathiae and *Streptococcus iniae* are both typically associated with handling fish out of water and zoonotic infection is rare even in those who handle fish frequently. Fish infected with *Streptococcus iniae* have a high mortality and are likely to die quickly. In this setting, both bacteria are considered to be low risk human pathogens.

Aeromonas species are found in many aquatic habitats (including drinking water) and in association with fish. Some can cause infection in situations where there is invasive contact with the skin, for example following water-related trauma¹⁰, and infections associated with medicinal leech treatment have been reported from a number of countries.^{11,12} Reports of serious infections are rare and have been associated with immunocompromised patients. This organism more typically causes diarrhoeal disease via a food-borne route and is likely to be a low risk pathogen in this setting.

Streptococcus agalactiae (a Group B streptococcus) has recently been identified in the UK as the cause of death of consignments of *Garra rufa* destined for fish spas.¹³ It is not yet known how frequently it is associated with *Garra rufa*, but further inspections of consignments may yield more information in the future. Human infections with *S. agalactiae* usually occur in neonates or as a cause of puerperal sepsis, and the organism is a well recognised pathogen in patients with diabetes. The organism is generally considered to be a low risk human pathogen in this setting.

Mycobacteria, principally *Mycobacterium marinum*, cause cutaneous infections such as 'fish tank granuloma' or 'swimming pool granuloma'. *M. marinum* is associated both with the presence of fish¹⁴ and in situations consistent with the presence of a biofilm (as seen in non-chlorinated swimming pools). The organism is typically transmitted to the skin when an open wound, graze or cut comes into contact with the organism in the biofilm. Other non-tuberculous mycobacterial infections associated with footbaths have been reported in salons, with shaving prior to foot bathing identified as a risk factor for mycobacterial furunculosis.^{15,16} These pathogens therefore pose a greater risk than other microorganisms in the fish spa setting.

Other bacteria such as salmonellae (which have been reported in association with fish tanks and tropical fish) and non-toxicogenic *Vibrio cholerae* (which has been identified in consignments of *Garra rufa*) are generally associated with ingestion and are unlikely to feature when only the feet are in contact with water. There would, however, be a possibility of hand-mouth transmission following a fish manicure. This would be substantially reduced by hand washing after the procedure.

3.1.2 Parasitic Infections

Fish flukes and tapeworms can be transmitted to people by eating undercooked fish. These are not therefore a hazard in the context of a fish pedicure. Although potentially zoonotic species of *Giardia* and *Cryptosporidium* have been found in fish, there is no evidence that these could be transmitted via the mouths of *Garra rufa*, nor via the water, as ingestion will not occur.

3.2 Transmission from water to person

3.2.1 Bacterial infections

Pseudomonas aeruginosa may be present in the water, most likely associated with its ability to colonise biofilms on underwater surfaces. In other spa situations, investigations have indicated that duration or frequency of exposure, bather loads, bather age and using the facility later in the day can be significant risk factors for folliculitis.¹⁷⁻¹⁹ This usually manifests itself as a self-limiting pustular rash and prior shaving is an additional risk factor. In the fish spa setting the client is likely to have transient contact. It is probable that the biofilms giving rise to planktonic (free-flowing) *P. aeruginosa* and other bacteria will be grazed by the fish, if accessible, and overall levels may thus be reduced.

Rapidly growing mycobacteria are ubiquitous in water, including tap water supplies. A number of these non-tuberculous species have been associated with furunculosis following footbath use in nail salons. Shaving and waxing prior to footbath use has been identified as a risk factor for these infections.^{15,16}

Other bacterial species may be present in the tank water⁶ following contamination by both fish and clients but are unlikely to pose a significant health risk as they rarely cause infections where skin is intact. *Legionella* species may also be present but will not pose a risk of disease in this setting because fish pedicures do not generate the profuse aerosols seen with whirlpools and hot tubs.

3.3 Person to person, via water

3.3.1 Bacterial infections

Although *Staphylococcus aureus* is shed from skin, the lower limbs and feet are not generally preferential sites of colonisation (usually the nose, axilla and groin). The exception to this might be colonised patients with active eczema or psoriatic plaques on the lower limbs. If this organism does pose a risk, this is more likely from skin contact with surfaces outside the water where inocula would not be diluted (seating and towels for example); the risk here would be similar to that in a gym. The dilution that would occur in the water makes water-borne transmission very unlikely by comparison.

3.3.2 Blood-borne viruses

Blood-borne viruses (BBVs) including hepatitis B and C, and HIV can be transmitted via blood and other body fluids from one person to another. Of the UK population, it is estimated that around 0.5% are chronically infected with hepatitis C (HCV) and therefore infectious, and a similar proportion (around 0.4%) are infectious for hepatitis B (HBV). An estimated 0.14% of the UK population are HIV positive. However, many people are unaware of their BBV status.

Of the BBVs, HBV is the most readily transmissible and capable of surviving in the environment. However, relevant transmission data are scant. There are few papers on HBV survival beyond the needlestick context, though a small risk has been associated with injuries acquired in contact sports.²⁰ Survival of hepatitis B virus has been reported in the environment for seven days on dry surfaces²¹ although there are no data on survival in water. Hepatitis C virus remains viable for a few days in moist environments, although infectivity declines at room temperature.²²

Whilst *Garra rufa* are said to only nibble dead skin, anecdotally fish spa clients are said to have bled into the tank water, indicating that skin breaks could occur. Any BBVs contaminating fishes' mouths are not likely to remain on their mouths to effect subsequent transmission. However, there is theoretical potential for BBV transmission to occur if blood from one client gets into an open cut, abrasion or wound on another client using the same tank. While the risk of BBV transmission via this route is likely to be minimised due to the dilution factor in the water, there are no useful models corresponding to this situation.

There was, however, a large outbreak of hepatitis B in Sweden in the 1960s, where one of the suggested routes of transmission was associated with bleeding into shared washing water.^{23,24} During this outbreak more than 500 cases were seen over a two to three year period. Cases were 'track-finders', runners who ran bare-legged through rough terrain including woodland, frequently sustaining wounds and scratches that would bleed. Communal water and washing vessels were used at the end of some races. Improved washing facilities and protective clothing brought the outbreak to a close. The applicability of this incident to occasional, minor bleeding in fish spas is doubtful, although it may be a model should more major bleeding occur.

Based on the available evidence, the risk of infection with a BBV as a result of a fish pedicure is likely to be extremely low, however, this cannot be completely excluded.

3.4 Person to person, via surface contact

Many pathogens, including fungi (such as those that cause athlete's foot) and papillomaviruses (the cause of verruca), are known to survive on inanimate surfaces for prolonged periods.²⁵ Transmission could therefore occur person to person via contact with the floor in the spa area if clients walk barefoot. Note that this route of transmission is not unique to fish spas.

4 Interventions and Quality Assurance/Testing

Maintenance of water quality is important to reduce the risk of infection to clients, and for fish welfare. Guidance on water quality for fish welfare is available from the Ornamental Aquatic Trade Association (OATA)²⁶ (see Appendix 1).

4.1 Interventions for water quality

A variety of interventions exist to improve water quality. However, they all have limitations in the fish spa setting, and whilst they may benefit fish welfare and customer aesthetic considerations, they are unlikely to affect microbiological parameters. They include chemical water treatments, UV light and filtration.

4.1.1 Microbicidal chemical water treatments

Chemical water treatments used in other settings such as spa baths and conventional pedicures include chlorine, other chemicals or ozone. In general, chemicals typically treat the whole body of treated water and will be toxic to fish at microbiologically effective concentrations, so are therefore not applicable in this situation.

Ozone treatment has been used in both aquaria and fish spas, however, levels that are considered safe for the fish may have little microbicidal effect, particularly on established biofilms. Operators using ozone have to comply with workplace exposure limits, a process requiring its own risk assessment.

4.1.2 High intensity UV light

This would be damaging to both clients' skin and the fish. The use of ultraviolet (UV) light is not always an effective method of water treatment because organic matter or sediment can be inhibitory. It can be used within a recirculation chamber external to the main tank, but here it would have no effect on the biofilms that generate planktonic microbes, nor on any microbes carried on the fish, unless they came under direct UV illumination. Even a regular treatment of the water with UV light cannot ensure the maintenance of water quality once fish are reintroduced.

4.1.3 Filtration

Many types of water filters are available for fish tanks, but these will be comparatively coarse and will not remove planktonic micro-organisms. Filters, even those that do retain microbes, will have no effect on the biofilms that generate planktonic microbes, nor on any microbes carried on the fish. Fine filters become blocked readily and may rapidly cease to be effective. The presence of particulate matter, such as skin cells and fish faeces, means that clogging of filters is likely to occur, and unless such filters receive continuous monitoring (by continuous measurement of the pressure differential across the filter) and maintenance, they will be unreliable in practice. Variation in effectiveness is likely dependent on client numbers, size of water system, and efficiency and maintenance of the filtration unit.

4.1.4 Water heating

Additional heating of the water (to 70°C once daily for an hour) has been proposed as a way of managing mycobacteria in waters that cannot be disinfected.²⁷ Obviously, this could not be achieved with fish *in situ*, and would require specialist heating equipment and long cooling times before fish could be reintroduced. Any system incorporating a biofilter could not be heated without compromising the biofilter's effectiveness.

4.1.5 Water changing

Whilst a complete change of water between clients would not be tolerated by the fish (due to thermal shock), a continual or proportional water exchange may be an acceptable alternative. This has a gradual but continued dilution effect and a diminishing proportion of the original contaminated water remains. For example, after five complete changes of water <1% of the original load will be left, assuming no further recontamination. Unfortunately, in practice new contamination is continually introduced while the tank is in use, and preliminary data indicated no improvement in microbiological water quality in one fish spa that increased the daily water change from 20% to 40%.

The rate of water change that fish are able to tolerate will vary depending on tank volume, types of filter, stocking density and behavioural stressors. Water change raises particular problems for those shopping mall fish spas where there is no readily accessible piped water supply, and those where there are large daily numbers of clients. In these settings, maintenance of water quality is especially important.

4.2 Water testing standards

Various guidelines exist²⁷⁻³¹ for microbiological testing of different categories of recreational water, for example spa pools, swimming pools, and bathing waters, however, none of these are directly applicable to fish spas. Fish pedicure spas are different from all other recreational water exposures in that the user is not at risk of ingesting water, the user is not exposed to aerosols and the water cannot be chemically treated. In addition, facilities are not in hospital settings and therefore standards for hospital hydrotherapy pools are inappropriate.

Guidelines for water quality in aquaria exist²⁶ but these are based on pH and chemical parameters important for fish welfare, rather than microbiological measures. No validated tests are available for measuring virus contamination of water.

Results of testing to date by environmental health practitioners at different fish spas show contamination with *E. coli*, other coliforms, mixed aerobes, and *P. aeruginosa*. From the limited data available there is no clear evidence that the water treatment measures instituted have been effective in reducing the bacterial load. As pathogens are likely to be present in biofilms, and additional contamination continually occurs from the fish and clients' feet, testing the water is likely to have poor predictive quality with regards to client safety.

There are other possible means of assessing the apparent microbiological quality, such as clarity, odour, and colour. However, it should be noted that, in samples collected so far water appearance has been variable and did not necessarily correlate with subsequent water testing results.

5 Legislation

The Health and Safety at Work etc. Act 1974, and the Control of Substances Hazardous to Health (COSHH) Regulations 2002, both require operators to assess risks and put appropriate control measures in place to ensure the health and safety of employees and other persons. Health and safety enforcement officers have a range of powers to ensure compliance with the legislation.

Under the Animal Welfare Act 2006, fish spa operators have a legal duty of care³² for fish at their salons. Under this Act, an appointed inspector can take action if premises fail to comply with its requirements.

It is an offence under the Wildlife and Countryside Act 1981, and the Salmon and Freshwater Fisheries Act 1975, to release live fish into the wild. Legislation applicable to the safe and legal disposal of dead fish is contained within the Animal By-Products Regulations 2005. Fish that have died of unknown cause would be classified as Category 1 Animal By-Products and disposed of accordingly.

Equivalent provisions to all the above named acts and regulations will apply in other parts of the UK.

Spa facilities offering fish pedicures for cosmetic purposes fall outside regulation by the Medicines and Healthcare products Regulatory Agency, even if medical claims are made for the treatment.

6 Conclusions

On the basis of the evidence identified and the consensus view of experts, the risk of infection as a result of a fish pedicure is likely to be very low, but cannot be completely excluded. In order to reduce this risk even further, premises providing fish pedicures should implement the measures outlined in the Recommendations (section 7).

Certain groups of clients such as those who are immunocompromised or have underlying medical conditions including diabetes and psoriasis (for a complete list see Section 7.2.1), are likely to be at increased risk of infection and fish pedicures are not recommended for such individuals. There is a lack of clear evidence of therapeutic benefit from fish pedicures, and operators of fish spas should not actively promote treatment for these groups.

Existing interventions to improve water quality all have limitations in the fish spa setting, and there is little evidence that they affect microbiological parameters. However, maintenance of water quality remains important for fish welfare and customer aesthetic considerations. To date, there are insufficient data from fish spa water sampling to identify an acceptable range for detectable micro-organisms in fish spa tanks. It is therefore recommended that a well structured sampling programme be undertaken nationally in order to compile the required evidence base for the development of fish spa microbiological standards.

Whilst not considered here, Chin Chin fish should not be used as an alternative to *Garra rufa*. Chin Chin fish develop teeth as they age and thus the public health risk from these is likely to be greater. It is therefore recommended that they should not be used for this purpose.

7 Recommendations

7.1 Premises and facilities

- Spa owners should have a “suitable and sufficient” risk assessment in place (such as that described in HSE document *Five steps to risk assessment*³³), which includes infection control issues. Whilst the requirement to record the risk assessment specifically applies to premises with five or more employees, keeping a written record would be useful for all premises.
- Spas should have a procedures document which records company policy for use, cleaning and maintenance of the fish spa, and associated staff training procedures.
- General standards of hygiene and infection control as required for beauty salons should be followed as a minimum standard.³⁴ Towels used to examine or dry feet should be white, and washed at 60°C.³⁴
- Washbasins with running water should be provided so that parts of the body (hands or feet) which are to be treated can first be washed with soap and water, then rinsed and dried. Where the provision of mains-fed washing facilities is impractical, mobile washing stations with running water are a suitable alternative. A supply of non-running water, cold water alone, or the use of wipes or sprays are not acceptable.
- Floors and other surfaces near the pedicure tanks should have suitable slip-resistant coverings that are non-absorbent and readily cleanable. They should be regularly cleaned throughout the day to prevent transfer of contamination while walking barefoot.
- An incident log should be maintained which details adverse events such as bleeding detected (i.e. on client, in tank, on surfaces), or fish showing signs of ill health, and any actions subsequently taken.
- Local authorities should develop their own checklists for use as an aide-memoire when visiting fish spa premises. A sample list is provided in Appendix 2.

7.2 Client Interactions

7.2.1 Preparation for treatment

- Clients should be provided with information about fish pedicures including contraindications prior to treatment. This should include advice on medical conditions that may increase the risk of infection, or pose an infection risk to other clients. These may include, without limitation:
 - Leg waxing or shaving in last 24 hours (micro-abrasions increase infection risk).
 - Any open cuts/wounds/abrasions/broken skin on the feet or lower legs.
 - Infection on the feet (including athlete’s foot, verruca).
 - Psoriasis, eczema or dermatitis affecting the feet or lower legs.
 - Diabetes (increased risk of infection).
 - Infection with a blood-borne virus such as hepatitis B, hepatitis C or HIV.
 - Any immune deficiency due to illness or medication.
 - Bleeding disorders or on anticoagulant medication (e.g. heparin or warfarin).
- Clients should be asked to sign a form (similar to that used prior to other salon treatments) to confirm they have read and understood the information given, and are not aware of any contraindications to treatment. If any client is unsure about answers to any of the questions, they should seek advice from their GP before having the procedure.

- Pre-immersion foot examination: specific training on how to inspect feet should be provided by a suitably trained individual. This could be a podiatrist or a beauty therapist with a nationally recognised qualification in pedicure. Staff should document that a foot inspection has been carried out.
- As a minimum, staff should be competent to: confirm skin integrity, detect any signs of fungal infection between the toes or of nails, or any lesions, ulcers, verrucas, or poor circulation (discolouring). As with all training, this should be documented. Staff should wear single-use, non-latex gloves to perform foot inspections.
- Clients should remove jewellery, false nails and nail polish that may mask signs of infection.
- Washing feet with soap and water is necessary before the treatment partly to remove any lotions or chemicals present on the skin which could be toxic to the fish, but also as good practice to minimise shedding of micro-organisms into the water.²⁷ This should be followed by thorough rinsing to remove any traces of soap.

7.2.2 Following treatment

- Post-immersion foot inspection: staff should perform foot inspection to look for evidence of bleeding. Staff should wear single-use, non-latex gloves, and use a fresh white towel to dry the feet so as to aid visualisation of low level bleeding
- Hands should always be washed after contact with the water to prevent inadvertent hand to mouth transmission of any possible gastrointestinal pathogens present.

7.3 Actions in the event of bleeding

- If, following treatment, there is visual evidence of blood in the tank or a client has evidence of bleeding, the fish should be removed to a holding tank while the spa tank is cleaned and refilled. Fish present in a tank where bleeding has occurred must remain in the holding tank for a minimum of 48 hours. They may then be re-used
- The following approach should be used for cleaning the tank if a bleed has occurred. These steps will remove most of the organic matter that would inactivate the hypochlorite, and ensure effective disinfection: 1) drain the tank; 2) clean with detergent and warm water; 3) rinse thoroughly; 4) treat with hypochlorite made up freshly at a concentration of 1,000 parts per million available chlorine (use hypochlorite in tablet form and follow manufacturer's instructions); 5) rinse very thoroughly. Because residual chlorine will adversely affect fish, standardised test strips for measuring chlorine may be useful to confirm adequate rinsing.
- Suitable Personal Protective Equipment including gloves, apron and plastic safety spectacles to avoid eye splash (refer to the cleaning products safety data sheet), must be worn by the operator while carrying out the above procedures.
- If bleeding has occurred, any visible blood on surfaces where other clients could walk barefoot should be cleaned and then the area disinfected with hypochlorite solution at 10,000 parts per million available chlorine. This must be left in contact for 10 minutes and then rinsed off.

7.4 Equipment and maintenance

- Specialist advice should be sought on the equipment and conditions required to achieve and maintain suitable conditions for fish health (see Appendix 1 and OATA Code of Conduct³⁵).
- Tanks and other equipment including filters should be cleaned and maintained according to supplier or manufacturer's advice. This process should be documented in the risk assessment (see section 7.1).

- Cleaning should be undertaken in such a way as to minimise splashes, droplets or aerosol generation.
- Direct visual inspection of water quality should ensure that water is clear and odourless, and any particles or debris visible in the tanks after use should be removed.
- Water should be changed according to manufacturers' instructions, or as frequently as tolerated by the fish. This will depend on the tank volume, types of filter, stocking density and behavioural stressors. Further advice should be sought (Appendix 1). Water quality monitoring should comply with the OATA water quality criteria.²⁶
- Staff should receive appropriate training in the basic care and welfare of fish.³⁵
- Advice must be sought on the safe and legal disposal of unwanted, sick or dead fish (from the local authority in the first instance).

7.5 Monitoring for adverse events

- Clients should be informed of the potential risks and encouraged to report any ill-effects to their GP or the local Health Protection Unit. Complaints should be made to the local Environmental Health department
- GPs and other clinicians, microbiologists, public health practitioners, chiropodists and beauty therapists should be made aware of the potential risks from fish spas, and to consider this exposure in patients presenting with foot or other unusual infections. Any such cases seen should be reported to the local Health Protection Unit.

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9 Appendix 1. Sources of information and advice

Fish welfare

Local veterinary practice

Fish Veterinary Society: www.fishvetsociety.org.uk (This is a general website, but [members can be contacted](#) for specialist advice on aspects of fish welfare.)

Ornamental Aquatic Trade Association (OATA): www.ornamentalfish.org

- Code of Conduct (2008), available at <http://www.ornamentalfish.org/association/code/Code.pdf>
- Water Quality Criteria (2008), available at <http://www.ornamentalfish.org/association/code/Water%20Quality%20Final.pdf>

“Your Legal Duty Of Care For Keeping Fish Under The Animal Welfare Act” 2008. Available from the Federation of British Aquatic Societies website at <http://www.fbas.co.uk/FISH%20CARE%20and%20LAW.pdf>

British Veterinary Association: www.bva.co.uk/default.aspx

Royal Society for the Prevention of Cruelty to Animals (RSPCA): www.rspca.org.uk

Local authority (for advice in the first instance on disposal of sick or dead fish under the Animal By-Products Regulations)

The Centre for Environment, Fisheries and Aquaculture Science (CEFAS)
www.cefas.defra.gov.uk

Legislation

- Animal Welfare Act 2006: <http://www.legislation.gov.uk/ukpga/2006/45/contents>
- Animal By-Products Regulations 2005: <http://www.legislation.gov.uk/uksi/2011/881/introduction/made>
- Control of Substances Hazardous to Health Regulations 2002 <http://www.legislation.gov.uk/uksi/2002/2677/introduction/made>
- Health and Safety at Work etc. Act 1974 <http://www.legislation.gov.uk/ukpga/1974/37/introduction>
- Salmon and Freshwater Fisheries Act 1975: <http://www.legislation.gov.uk/ukpga/1975/51/introduction>
- Wildlife and Countryside Act 1981: <http://www.legislation.gov.uk/ukpga/1981/69/introduction>

NB. Equivalent provisions to all the above named acts and regulations will apply in other parts of the UK.

Spa management

Advice may be sought from Habia, the government-appointed, standards-setting body that provides guidance on legislation and salon safety for beauty therapists. www.habia.org

10 Appendix 2. Sample local authority checklist

Completed by:
Premises name:
Address:

Position:
Date of visit:

Contact person (manager / owner) Name:
Phone:

Facilities

Number of tanks

- *Single* client
- *Multiple* client
- Average number of treatments per tank, per day

Equipment supplier

Tank construction and condition

Are tanks covered when not in use?

Are tanks checked for leaks?

Type(s) of filter present

Does each tank have its own filter system or are multiple tanks fed by the same filter system?

Filter cleaning method

Are the filter(s) changed according to manufacturer's instructions?

UV treatment system

- Daily bulb checks recorded
- Hours of use of UV bulbs recorded

Ozone treatment system

- Risk assessment done and recorded

Electrical safety appropriate?

Residual Current Device on electrical appliances (as appropriate)

Other testing required (Specify)

Slip-resistant, non-absorbent flooring

Washing facilities:-

- Hand washbasins
- Foot washing facilities
- Hot and cold running water
- Mobile washing units

Water

Is the water temperature checked daily and recorded [optimum for fish welfare 30 – 35°C]?

Is the water microbiologically tested? If so, who by and what frequency?

Are there records of microbiological testing results?

Is the water quality checked for appropriate fish welfare standards? If so, who by and what frequency?

What action is taken if the quality is not optimal?

Are there records of water quality testing (for fish welfare)?

Is the water changed at a frequency and in manner suitable for fish health?

Is the water clear, colourless and odourless?

Fish

- *Garra rufa*
- Other (specify)
- Unknown type

Name of fish supplier
Records of dates and numbers of fish supplied
Number of fish per tank
Stocking density
Frequency of fish inspection for evidence of infection
Is this done by a specialist? If so, their name and qualifications?
Are fish fed commercially available fish food?
Is the feeding regime recorded?
How is fish mortality managed?
Is fish mortality recorded?
How are dead fish disposed of?

Clients

Is an appropriate screening form completed by each client?
Are clients' feet/hands washed with soap and water before and after treatment?
Are nail polish/false nails removed prior to treatment?
Are clients feet inspected for intact skin and signs of infection?
Are clean white towels used for each client?
Are towels laundered at 60°C after each client?
Are feet observed after treatment to ensure no signs of bleeding?
Is the water checked for evidence that bleeding has occurred?
Is the water changed when there is evidence of blood after immersion/obvious contamination?

Staff

Are staff trained in

- use of fish tank
- cleaning of fish tanks
- welfare of fish
- signs of deteriorating fish health
- legal responsibilities under the Animal Welfare Act 2006
- assessment of clients' feet (If so, by who)
- procedures for dealing with bleeding incidents
- manual handling?

How often is this training reinforced?
Do staff wear gloves for normal cleaning of fish tanks?
Do staff wear gloves when inspecting clients' feet?
Do staff wear PPE for cleaning when there is obvious contamination or blood in water?

Documentation

Health and Safety risk assessment
COSHH risk assessment
Manual handling assessment
Staff training records
Client records
Electrical safety checks (including PAT testing)
Equipment maintenance and cleaning records (Pipework, UV treatment, Ozone treatment)
Written procedures (Bleeding incident, cleaning and disinfection, maintenance)
Cleaning check records
Water testing records (temperature, microbiology, quality for fish welfare, water changes)
Fish records (supplier, feeding, mortality, disposal)

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