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Review of the Hairdressing Beauty Therapy & Skin Penetration Legislation

Risk Report

SKM ECONOMICS

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Contents

1. Purpose and Scope

This document has been prepared as part of the Review of Hairdressing, Beauty Therapy and Skin Penetration legislation. It is a working document designed to facilitate the completion of the Public Benefit Test process.

The purpose of this paper is to address the following issue:

"A risk assessment of the degree of risk and potential risk from infections/communicable diseases to the community arising from hairdressing, beauty therapy and skin penetration activities/procedures and an assessment of the most effective means of minimising those risks."

There are a number of commercial activities that do not clearly fall into the area of hairdressing, beauty therapy or skin penetration or which have not been enforced by regulators in a consistent and equitable manner. The activities identified include those carried out by operators offering "colonic cleansing" or bowel wash-outs and treatments for baldness including hair transplantation not under the supervision of a medical practitioner. These activities have been considered briefly in this document when reviewing the potential modes of spread of infection. The potential risks of cross infection associated with these activities have been included in the risk tables and the ways of minimising those risks are listed along with the other recommendations.

The focus on control of blood borne micro-organism infections is one that has been legitimised by both the Australian NH&MRC and the Centres for Disease Control (CDC) and Prevention in Atlanta Georgia. Control of blood borne infections is known to also reduce the likelihood of other (autogenous and cross) infections. The principles recommended for control of blood borne micro-organisms are more stringent than for infections caused by other micro-organisms.

References in this document to "professional" activities including minor surgery, podiatry, vaccination and dentistry are provided as comparators to highlight that similar activities (deliberate blood loss as part of the procedure and accidental blood loss) with the same "risks" as those that exist in the hairdressing, beauty therapy and skin penetration industries, are currently being undertaken in a variety of different settings.
The current legislation attempts to address infection risk issues through:

- Licensing premises at which hairdressing, beauty therapy and skin penetration services are provided;
- Establishing premises standards;
- Prescribing hygiene standards for the conduct of operators; and
- Prescribing the means of cleaning, disinfection and sterilising equipment and items used in the conduct of hairdressing, beauty therapy and skin penetration practices.

The primary purpose of the risk assessment paper is to consider the risks and degrees of risk of infection to the public from hairdressing, beauty therapy and skin penetration businesses and to make recommendations in respect of the most effective means of minimising these risks.

In considering the risks of infection from hairdressing, beauty therapy and skin penetration activities, the risk assessment team also considered (for comparative purposes) other health care settings in which similar activities could or do take place. These settings included medical treatment rooms in general practitioners' offices, dental surgeries, "first aid" clinics, podiatry clinics, and pathology specimen collection centres.

Regulatory and other arrangements used to minimise the risks and potential risks to the community arising from activities including skin penetration activities in these clinics have also been examined, where available, and are considered in the risk assessment and risk minimisation recommendations.

There are currently a core of known diseases spread by the blood borne route which have serious consequences due to the high likelihood of subsequent development of chronic, debilitating and potentially fatal infections. These diseases include Hepatitis B (HBV), Hepatitis C (HCV), Hepatitis D (HDV) and Human Immunodeficiency Virus (HIV) infections.

The identified risk factors for spread of these and other micro-organisms and the recommended ways in which spread of these and other infection or potentially infectious agents are reviewed.

2. Risk Assessment Methodology

A major component of the overall Public Benefit Test Process is the development of a defensible and reliable risk assessment of the potential communicable diseases and infections associated with the various activities captured by the legislation being reviewed. The project team's communicable disease specialists undertook this task (refer to **Appendix H** for descriptions of team qualifications):

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Dr. Michael Harrison

In the context of this project, risk is defined as the potential exposure of the community to the possibility of harm arising from infectious conditions/communicable diseases.

In order to measure this risk in socio-economic terms, a key element is the assessment of the likelihood (probability) and consequences (severity) to the public as a result of infectious (communicable disease) condition transference by the various activities being regulated.

In order to assess the potential risks associated with the legislation and any proposed risk management (mitigation) measures, the process to be followed in this project mirrors the Australian/New Zealand Standard (ANZS:4360) approach to risk management and is illustrated in **Appendix A**.

In applying this framework, a number of possible approaches to measuring and assessing risk were considered. These included:

- Micro-level industry risk assessment;
- Segmented activity based risk assessment; and
- Disease specific risk assessment.

Our approach seeks to identify the causal factors influencing the communication of specific diseases in relation to particular activities. We have hypothesised that if the mechanics of disease transference are addressed, then the risks of communicating the disease are minimised irrespective of the industry being considered. In addition, we have segmented these mechanisms into two major categories:

- skin penetration; and
- non-skin penetration.

The reasons for this initial breakdown relates to the serious outcomes (morbidity and mortality) associated with inoculation of micro-organisms compared with simple skin or mucous membrane contact without actual

skin penetration by the procedure. Micro-organisms inoculated through the skin are more easily spread in the body and micro-organisms in the clients blood stream can contaminate the operator and the equipment posing a risk to sequential patients if the equipment is not discarded or thoroughly and effectively cleaned and sterilised.

As a result, our approach combines the assessment of each disease to identify its underlying potential to be communicated under alternative activities (ie. skin penetrating or non-skin penetrating).

Once this overall probability matrix is developed, the various broad industry segments (ie. hairdressing, beauty therapy, tattooists etc.) can be classified according to the types of activities they undertake as opposed to the industry definitions currently identified in the existing legislation.

Further, this framework eliminates the need for industry based regulation, as the criteria for risk management will be driven through ***activities*** and the population risk factor assigned to the activity. Rather it focuses on the likelihood of disease transference associated with any given transmission mechanism and ranks activities accordingly.

This process will be applied to each disease and is illustrated in **Table 2.1**:

Table 2.1 Risk Assessment Matrix

Likelihood due to: **Transference Mechanism**	**Risk Classification**	**Skill/Knowledge of Person in applying infection control practices**	**Equipment**		**Premises**
			Single-Use Disposable	Reusable	
Skin Penetration	Non-bloodletting				
	Accidental				
	Consequential				
Non-Skin Penetration	Non-bloodletting				
	Accidental				
	Consequential				

The underlying premise of this approach is the identification of the basic elements or principles of communicable disease/infectious condition management that need to be introduced irrespective of the activity undertaken.

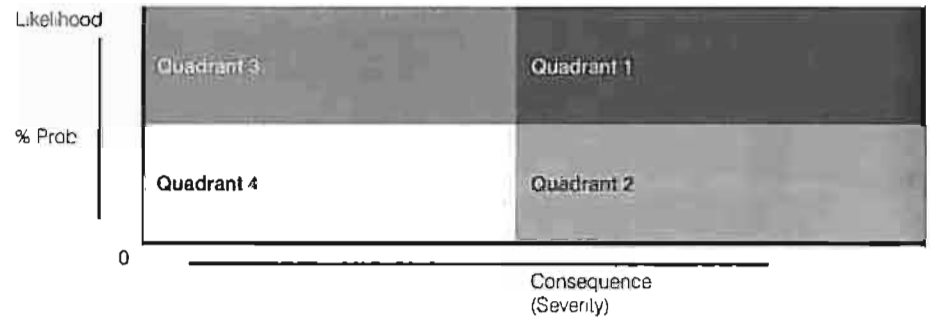
Further, this framework allows any proposed legislation to adapt to changing technologies, such as non-invasive inoculation devices that

penetrate the skin without causing bloodletting, without compromising the integrity of the underlying risk analysis or management strategy.

Similarly, it facilitates the ranking of industry on the basis of macro level ***activities*** and avoids the need for detailed, prescriptive regulations and focuses on specific elements that require special consideration.

Finally, the framework embodies the underlying objective of the legislation, that is, infectious condition/communicable disease control, and targets the nature of the risk and the circumstances for exposure (ie. skin penetration or non-skin penetration) in relation to its dependent factors (ie. person, equipment and premises). This will facilitate the ranking of potential activities according to the likelihood and consequence of their infection risk. This concept is illustrated in **Figure 2.1**:

Figure 2.1 Risk Assessment Ranking Matrix



The primary focus of this analysis will be on Quadrants 1 and 2 which could be expected to minimise the majority of infectious risks associated with any given activity. Those industries that undertake activities that lie in these quadrants are likely to be most affected by any proposed risk management initiative proposed under this project, be it regulatory or some alternative mechanism.

This is consistent with a philosophy that does not seek to eliminate risk, but instead considers the impacts of risk on the day to day operations of stakeholders and the consequences of the risk to the public if left unmanaged. This philosophy embodies the cost-effective management of risk and accepts the need, in some cases, to accept a minimum level of risk.

By assessing the probability of exposure and the level of patronage for each activity, a global risk assessment can be completed without needing a complete list of stakeholders. This eliminates the potential errors that can

arise from a base level assessment of individual workplaces and participants.

Thus, this phase of the project considers the following issues relating to hairdressing, beauty therapy and skin penetration:

a) Evidence of the transmission mechanisms associated with major communicable diseases (eg. HIV, Hepatitis A, B & C) and autogenous and environmental disease causing micro-organisms.
b) The infection risk factors and the likely infecting micro-organisms that are inherent in the activities/procedures undertaken by participants;
c) Evidence of infection risks to the public, the likelihood of those risks and the magnitude of their consequences based on the combined probabilities identified in (a) and (b) above; and
d) A risk based prioritisation of activities according to their relative risk exposure.

In completing this risk assessment phase, the Project Team and Queensland Health undertook a detailed consultation process and undertook a literature review of available risk data.

A Value Management Workshop was held on the November 25 1998, to which all stakeholders[1] attending the project's Stakeholder Reference Committee meetings were invited. In addition, individual meetings/site inspections with stakeholders were held in Brisbane and Toowoomba to assist in the identification and explanation of key activities undertaken by affected participants. The outcomes of this consultation process are incorporated within this report.

[1] Refer to Appendix E for details of attendees.

3. Summary of Findings

It appears from the following analysis, that attempts to minimise the transmission risk of infectious conditions or communicable diseases through the regulation of premises is unlikely to have a material impact. Therefore, on transmission risk grounds alone, there is a need to introduce a more effective policy such as the application of standard infection control procedures within higher risk activities. Therefore the primary findings of this report are:

- **The primary focus of any legislation should reflect the serious public health effects of uncontrolled skin penetration activities, on the likelihood of development in both client and operator of infection with known or currently unknown (yet to be discovered) blood borne micro-organisms.**
- **The current requirements in relation to licensing premises are not considered to be an effective means of minimising the more serious disease risks associated with deliberate or accidental skin penetration and blood loss activities.**
- **The most effective means of minimising the risks to the public from blood borne virus infections would be to:**

1. **Ensure that all persons involved in skin penetration activities have undergone a course of instruction/certification in infection control which incorporates specific information on managing blood/body fluid management; and**

2. **Ensure that all other operators meet a minimum standard of infection control knowledge and understanding, that reflects the risk of the activities they are undertaking. The lowest standard would be referred to as basic infection control, with additional requirements being imposed for activities of greater risk.**

Furthermore, it appears that ensuring that all skin penetration operators have a quality management system in place (one possible mechanism is by accreditation) would positively contribute to risk minimisation.

The recommendations outlined above will also have an impact on the number of other unknown (potential) infections that may exist within these environments. A requirement for infection control skills and knowledge certification, prior to allowing the operation of skin penetration activities, will have a positive community impact through improved infection control practices and in turn, lower rates of transmission.

4. Risk Data & Surveillance

4.1 Consideration of Available Data

Notification of infectious diseases is legislated separately in each Australian State and Territory. Data on notifiable diseases in Queensland is collected from the general public, medical practitioners and pathology laboratories in Queensland. Blood borne viruses are included in this notification but because Hepatitis C and HIV may be acquired without obvious illness, it is often difficult to determine the source of infection. There are no reports of Hepatitis C or HIV sourced from a hairdressing, beauty therapy or skin penetration service in Australia. The Queensland AIDS Medical Unit, provided a summary of the Queensland HIV cases 1995-1997 inclusive, and confirmed that HIV infections in Australia had not been sourced to either hair dressing, beauty therapists or skin penetration activities. However, a case of HIV cross infection has been reported from a dental surgery in the USA and a minor skin surgery clinic in Sydney although the actual modes of transmission were never conclusively determined.

There are reports of 'barber-associated' Hepatitis C virus transmission from Italy and there are many reports of Hepatitis B associated with skin penetration activities (tattooing and acupuncture) both in Australia and world-wide prior to the introduction of disposable equipment and basic infection control practices.

There is considerable anecdotal evidence in published papers on the adverse consequences of acupuncture, body piercing and tattooing. Much of this literature relates to activities, which occurred before the recognition of the HIV and Hepatitis C viruses and the widespread use of the Hepatitis B vaccine and the adoption of basic infection control techniques including "standard precautions". (*Johnson C. et al. Ear piercing and Hepatitis JAMA, 1974; 227: 1165, Long GE, Rickman LS, Infectious complications of tattoos. CID. 1994; 18: 610-9*). A recent paper from the Sydney, (*Davis A, MJA, 1995; 163:556*) is the only anecdotal data possibly relating HCV transmission to skin penetration. Dr Davis noted that a higher proportion of NSW blood donors who were tattooed had evidence of HCV, without other risk factors (5/13). There is also one report of a possible case of HIV-1 infection from skin penetration and although this was in a homosexual man who had had sexual contacts, they had not been of a "risky" (undefined) nature. (*CID March 1998*)

Of course while the above activities continue, the risks also continue. But use of appropriate infection control practices has shown that the risks can be minimised and are not currently associated with legitimate professional operators using approved practices.

Toowoomba City Council carried out a survey amongst Toowoomba general practitioners in 1998 to identify whether there were GP consultations for post-piercing health complications in the District. The questionnaire and the results are shown in the material comprising **Appendix G.**[2]

Briefly, 28% of GP's (31/112) responded to the questionnaire. Over three quarters (78%) had received fewer than 5 consultations from patients suffering from a post body piercing injury. The major reason for the consultations that did occur was mild infection/inflammation of the navel (65%), ear lobe (48%), or ear cartilage (35%), the most commonly infected sites. It appears that while body piercing is common in Toowoomba (estimated 2500/year), complications are infrequent and associated with poor after care by the recipients (90%).

Current Hairdressing and Beauty Therapy regulations have not been shown to lead to improved outcomes with regard to environmental cleaning in a study carried out by Queensland Health in Brisbane in 1996. Fifty-one premises were randomly selected for surveillance and a questionnaire and 372 swabs were collected in a standard manner during the study. Premises which complied with current legislation regarding cleaning were just as likely to grow micro-organisms on their equipment as those premises which did not comply.

This suggests that the current legislation is not effective in reducing the numbers of *S aureus* or *P aeruginosa* detected in the compliant premises. Non-compliant premises did not demonstrate higher numbers of the target bacteria. This provides further evidence of the need to address microbial contamination of equipment in an alternative manner to that set out in the current legislation if there is ongoing concern about the presence of these bacteria.

An attempt was made to find how many prosecutions for unsatisfactory or non-compliant hairdressing, beauty therapy or skin penetration premises had been laid by Queensland Local Governments or Queensland Health. No prosecutions were found over the past five years. (Refer to material comprising **Appendix G**)

The current licensing requirements provide local governments with details as to the provision of equipment, number and location of premises where these activities are undertaken, the standard of the premises and provides

2 Brian Witherspoon, Toowoomba City Council, Potential Health Complications Associated with the Positioning and Inadequate Care of Body Piercings, unpublished, 1998
NB: This study, which was based on a survey of 112 general practitioners in the Toowomba area, does not claim to be conclusive, and notes that it can only be taken as an indication of trends.

some cost recovery for enforcement activities. Although the current legislation provides local governments with the opportunities to revoke licenses where there is serious non-compliance with infection control standards, operator practice or premises maintenance, no such actions appear to have been undertaken.

The NHMRC document "*Infection in the health care setting*" 1996 states that "the design of the premises is fundamental to (facilitate) infection control (practices) and (the) implementation of standard and additional precautions". The document also stresses that regular, routine cleaning of the health care establishment premises can be carried out much more efficiently if the design of the building is adapted to its function with impermeable surfaces and there are sufficient and well placed numbers of hand basins with running (hot and cold) water. However, the depth and scope of diseases that may arise in a health care setting is considerably greater than those likely to arise from hairdressing, beauty therapy and skin penetration industries and the clientele associated with these industries would be expected to be, on average, healthier than those obtaining services in a health care setting.

Therefore, whilst it is acknowledged that the design of the premises where the activities are carried out can facilitate the hygienic practices necessary to ensure that spread of infection is minimised, the physical environment in which the hairdressing, beauty and skin penetration activities are carried out is not seen to have a major role in increasing the infection risks to the client or the operator.

It appears from both industry and scientific evidence that improving operator skill and knowledge and the implementation of basic infection control procedures are more appropriate mechanisms to reduce the incidence of infection. Whilst the role of the environment is one which enables the achievement of the appropriate infection control standards, it is not in itself a mechanism for risk minimisation.

4.2 Literature Review

"Over the past 40 years life expectancy has improved more than during the entire previous span of human history" (*World Development Report-World Bank p1 quoted in the Better Health Outcomes for Australians . National goals , targets and strategies for better health outcomes into the next century 1994*)

Australians can now be expected to live well in to their 70's or early 80's due to improved public health services, better diets and living conditions

and other social and lifestyle changes. Preventable diseases are a target for continued improved health outcomes into the 21st century.

Hairdressing, beauty therapy and skin penetration activities for reward have increased in the past few decades and concomitantly there has been the discovery of new infectious diseases which can be accidentally spread by the use of blood contaminated skin penetrating instruments containing these blood borne micro-organisms. It has long been recognised that skin penetration activities have the ability to spread disease. (*Long GE, Rickman LS. Infectious complications of tattoos CID 1994; 18:610-9*).

In the 1800's, tattooists used saliva, urine, dirty water and tobacco juice typically during and after tattooing and serious infections such as syphilis or bacterial infections were common. These were of particular concern because antibiotics had not yet been discovered. What today would be a trivial infection able to be successfully and cheaply treated with simple and non toxic antibiotics was in the 1800's a potential death threat and at the very least would result in severe morbidity and chronic and debilitating disease. With the recognition in the 1970s of Hepatitis B virus and in the early 1980s, HIV-1 (Human Immunodeficiency Virus type 1), and in the late 1980's Hepatitis C virus and the ability of these viruses to be spread by blood contaminated penetrating instruments, new concerns were raised about the use of non sterile equipment when skin penetrating activities were undertaken in medical, dental and other professional practice.

Only Hepatitis B can be prevented by vaccination prior to exposure. No vaccine currently exists to protect against Hepatitis C or HIV infection transmitted by inoculation or other means.

The following data was supplied by the Communicable Diseases Unit of Queensland Health (CDU) with respect to Hepatitis B and C infection rates in Queensland 1995-97. CDU have no data on the exposure source for the notified infection nor do they have any data on the rates of percutaneous exposure compared to other sources of infection.

Year	Hepatitis B per 100 000	Hepatitis C per 100 000
1995	1.95	90.52
1996	0.97	85.49
1997	1.29	88.61

The Southern Zonal population Health Unit have recently (1998) developed a detailed questionnaire to use when following up notified cases of blood borne virus infections. This should provide useful risk factor data in the future. It is currently used only by the Public Health Units when undertaking follow up of notified cases of infection with blood borne

viruses and it is appropriate that this remain a Public Health function rather than be used generally by hospitals/doctors in following up cases of blood borne infections.

HIV infection can be caused by inoculation of infected blood into a recipient. The risk of contracting an infection with HIV following a needlestick injury is dependent on both the volume of blood inoculated and the severity of the injury. There have been numerous reviews of the "risk" of acquiring HIV following a needlestick injury. Current estimates are that 1/200 people who have a needle stick injury with HIV positive blood may contract HIV infection (*The Blue Book, Guidelines for the control of Infectious diseases, Infectious Diseases Unit, Public Health Division, Victorian Government of Human Services 1996*).

There is also data to indicate that a needlestick injury occurring through latex gloves will transmit less infectious virus than if the injury occurs through skin, unprotected by latex gloves (Gerberding et al 1994). Hollow needle injuries are more likely to transmit HIV infection than solid needles. This is probably related to the dose of virus inoculated with a hollow needle, which will be greater than with a solid needle.

Scissors and equipment used in body piercing, tattooing and beauty therapies can be likened to solid needles and thus should be less of a risk to operators suffering accidental inoculation injuries. According to the Queensland AIDS Medical Unit (QAMU), HIV is not as easily transmitted in comparison to the Hepatitis B and C viruses, since relatively large quantities of blood are needed for HIV transmission to occur. The figures below, for HIV infections in Queensland, were provided by the QAMU.

Year	AIDS			HIV			MSM	IDU	
	Male	Female	Total	Male	Female	Total		Male	Female
1995	130	6	136	208	16	224	-	-	-
1996	103	4	107	214	15	229	192	5	4
1997	64	10	74	166	23	189	129	7	3
Percutaneous (#)	0			0			0		

MSM= Men who have sex with men (includes MSM who also inject drugs
IDU= Injecting drug user-heterosexual only
#Inoculation (penetration eg by a sharp object such as a needle or knife/scalpel) through the skin

Although only one person throughout the Western world is reputed to have contracted HIV-1 by tattooing (*Pugatch et al. CID 1998; 26: 767-8*), there are large numbers of published reports about Hepatitis B and Hepatitis C spread by acupuncture, public shaving and tattooing prior to the implementation of hygienic measures to minimise the risk of blood sharing by these practices. (*Mele et al. Beauty treatments and risk of parentally transmitted hepatitis: results from the hepatitis surveillance system in Italy,*

Scand J Inf Dis. 1995; 27: 441-444, Kent et al. A large outbreak of acupuncture associated hepatitis B, Am J Epid. 1988; 127: 591-598, Limentani et al. An outbreak of hepatitis from tattooing, Lancet 1979; July 14:86-88, Ko et al. Tattooing as a risk of Hepatitis C Infection J Med Virol. 1992; 38: 288-291).

Cavagnino et al. (*Mens Hairdressing survey south western Sydney-1996, Env Health Rev. 1998; Nov: 23-31*) discuss the risks that they found in mens barber shops in Sydney. Re-use of disposable razor blades without cleaning and the methods used to arrest bleeding were determined to have the potential for cross contamination of blood between clients. In NSW the infection control requirements under the regulation on skin penetration include but are not specific to hairdressing activities. Re-use of disposable blades is not specifically proscribed and was adhered to by only 20% of the operators examined in this study.

Over 200,000 people carry Hepatitis C virus in Australia and more than 10,000 new cases occur each year according to the Cavagnino article. Eight out of ten people who become infected with the virus continue to carry it in their blood even after they develop detectable antibodies. Six of these 8 will develop symptoms of hepatitis and it is estimated that between 5 and 10% of those infected with Hepatitis C will die from chronic liver disease. Justine Ferrari reported in the Australian on the 29th Sept 1998 that Hepatitis C virus may remain infectious in blood in a syringe for several weeks. This research was carried out at the Victorian Infectious Diseases Reference Laboratory and showed that Hepatitis C virus remained viable in a blood filled syringe for 9 weeks although the amount of virus did decrease slightly during that time. Clotted blood is presumed to protect the virus from desiccation and death.

It has been estimated that the risks of acquiring a blood-borne virus following injury with a needle contaminated with virus-infected blood are less than 1% for HIV, around 3% for Hepatitis C and around 30% for Hepatitis B virus infection following a needlestick injury. These estimates are supported by a number of studies[3].

[3] Germanaud J, Causse X, Dhumeaux D. Transmission of HCV by Accidental Needle Stick Injuries Presse Medical 23 (23): 1078-82, 1994. "Risk of Transmission of HCV 0-3% and may be up to 10% if patient (donor) is HCV RNA positive up HBV risk 7-30%". RACS Policy Document Infection Control in Surgery. Management of AIDS (HIV) and Hepatitis B. February 1994 Appendix 11 pp14-16. C. Burrell; Today's Life Science. October 1992, p12-16. "HBs Ag eAg pos 106-108 infectious doses/ml". Global Program on AIDS. Report of a WHO Consultation on the Prevention of HIV and Hep B Virus Transmission in the Health Care Setting. Geneva 11-12 April 1991 WHO p1. "HBV is found in very high titres (often>10x106 ID/ml) 7-30% risk of HBV infection after needle stick exposure. HIV is less common the virus is present at concentrations of 10-100 ID/ml. <0.5% of HCW sustaining a needle stick exposure to the blood of a HIV positive patient have acquired HIV". Ippolito G, Puro V, Petrosilla N, Pugliese G, Wispelwey B,Tereskerz PM, Bentley M, Jagger N. Prevention Management of Occupational Exposure to HIV. Advances in Exposure Prevention. University Virginia USA 1997 p12-13. October 1992, p12-16. "HBs Ag eAg pos 106-108 infectious doses/ml". Global Program on AIDS. Report of a WHO Consultation on the Prevention of HIV and Hep B Virus Transmission in the Health Care Setting. Geneva 11-12 April 1991 WHO p1. "HBV is found in very high titres (often>10x106 ID/ml) 7-

A 1999 study reported a stringent follow up protocol for post needle-stick injuries and followed 55 health care workers who sustained needle-stick injuries from HCV positive patients. Only 2 staff (ie 4%) developed post-accident HCV infections[4].

During the course of this review, the study team did not become aware of any specific data documenting the risks following non-health care associated accidental needle stick injury.

Bouwman et al. (Infection Control and Hygiene practices in skin penetration businesses, NSW Public Health Bulletin 1998; 9(4):47-50) reviewed the infection control and hygiene practices in skin penetration businesses in NSW. They randomly selected 86 (51%) of the skin penetration services registered with the local councils. All those approached agreed to participate. The first survey occurred in 1991 and the follow up survey was carried out in 1994. Over half of the premises were used solely for ear piercing or acupuncture. They found in the premises surveyed that depilatory wax was never re-used for more than one client, that disposable equipment was used appropriately and that there were a variety of methods in use for the cleaning of re-usable items. Only 1 of 37 businesses re-using equipment had an autoclave. Two thirds of the premises had no hand basins, soap and towels. Of interest is the finding that the practices did not change after the introduction of the skin penetration guidelines in NSW in 1991. In spite of the estimated 150 procedures carried out with inappropriately sterilised re-usable equipment, there is no data to support widespread occurrence of disease associated with these practices. However, the low prevalence of blood-borne viruses in the community, their asymptomatic nature early in the course of infection (particularly with hepatitis B and C, the more prevalent viruses) would mean that the authors would be unlikely to detect such a public health impact, even if there was transmission of disease.

A paper by *Cooper et al. (Infection Control in General Practice 1994-95, NSW Public Health Bulletin 1998; 9(4): 51-52)*, reviewing the infection control practices in general practices in NSW showed a similar lack of uniform good infection control practices between 1994 and 1995. This was a telephone survey, so may have recorded desired rather than actual activity, but only 70% of practices used sterile equipment and only 39% had

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30% risk of HBV infection after needle stick exposure. HIV is less common the virus is present at concentrations of 10-100 ID/ml. <0.5% of HCW sustaining a needle stick exposure to the blood of a HIV positive patient have acquired HIV". Ippolito G, Puro V, Petrosilla N, Pugliese G, Wispelwey B,Tereskerz PM, Bentley M, Jagger N. Prevention Management of Occupational Exposure to HIV. Advances in Exposure Prevention. University Virginia USA 1997 p12-13.

[4] Hamid SS, Farooqui B, Rizvi Q, Sultana T, Siddiqui AA. *Risk of transmission and features of hepatitis C after needlestick injuries* Hospital infection and Hospital Epidemiology 1999: 20(1), 63-64.

autoclaves to ensure that sterility could be achieved on the premises. Those that did own autoclaves did not necessarily use them in an acceptable manner. Pre-sterilisation cleaning, monitoring maintenance and testing of equipment were notably lacking[5]. This highlights the importance and need for universal adherence to "safe" practices to ensure that any risk to patients is minimised.

Ear piercing, while a skin penetrating activity, seems to cause problems of bacterial infection at the site of the penetration rather than due to cross infection with blood borne microorganisms (*Biggar RJ, Haughie GE Medical problems of ear piercing, NY State Journal of Medicine, 1975: August: 1460-1462*). However, there is one report of hepatitis occurring after ear piercing (*Johnson et al. Ear piercing and hepatitis. JAMA 1974; 227: 1165*).

Most of the complaints received by Queensland Health about these practices have involved the occurrence of infection after the body piercing, and often this has been in juveniles less than 15 years of age. The use of ear piercing guns to penetrate other body parts (navel, nipple, tongue, penis, nose) has also resulted in complaints due to the occurrence of bacterial infection after the event. The published literature as well as local investigations suggest that these infections are due to poor after care rather than cross infection or transmission of diseases from operator to client or between clients.

Draft codes of practice have been developed by Queensland Health for Hairdressing (1996), Body Piercing (Draft 2 1996), Tattooing (Draft 3 1996), Acupuncture (Draft 3 1996), and Beauty treatment (Draft 1996). These codes address the infection control principles and other practices that are necessary to ensure that cross infection does not occur between clients or to and from the staff and clients in the specific listed industries.

Queensland Health's Infection Control Guidelines (1999) deal with infection control practices in health care settings in Queensland. Some stakeholder infection control guidelines could be used to provide useful guidance to legislators as to acceptable practices and procedures in the affected industries.

Acceptance and wide adoption of infection control guidelines across Queensland would provide a basis for evidence based practice to minimise the risks to public health from personal contact and skin penetrating

[5] Queensland Health has indicated its belief that the majority of general medical practitioners do very little skin penetration that does not involve sterile disposable needles and syringes, so the risk of nosocomial infection transmission to patients would be low.

activities, whether in the hospital/medical/health professional stream or in the hairdressing, beauty therapy and skin penetration industries.

The various associations involved in providing hairdressing, beauty therapy and skin penetration services have themselves also developed practice guidelines. The Australian Acupuncture Association Ltd has produced Infection Control Guidelines (1997) and the Professional Tattooing Association of Australia (PTAA) has a close association with the Commonwealth Department of Health and Family services who have produced brochures for the public, informing them of the risks and safety measures that they can take to ensure that the potential risks associated with tattooing are reduced. This data can also be accessed on the world wide web at the following address:
http:\\www.health.gov.au/pubhlth/publicat/ document/tatpst.pdf

Many other professional associations have also produced guidelines for their members regarding the importance of infection control in their practice. The Royal Australian College of Surgeons (RACS) updated their policy document "Infection Control in Surgery" in 1998. The Dental Associations have developed Practice Guidelines and the April 1997 "Blood Borne Viruses Dental Services Project " summarises the challenges posed by blood borne viruses to the provision of dental services in a non-discriminatory manner.

Queensland Health Communicable Diseases Unit provided a ranking order for conditions which may be transmitted by practices in the health and beauty industries, based on the seriousness of consequences. The diseases/conditions listed as having the most serious consequences were blood-borne diseases such as HIV, hepatitis B and hepatitis C. The conditions listed as having less serious consequences included head lice, pseudomonas, and bacterial and viral conditions. The latter may result from the sharing of "beauty " items such as mascara, nail treatments, and other items applied directly to the skin or mucous membranes without directly penetrating the skin or mucous membranes.

There are anecdotal reports in the literature confirming the potential risks of these activities. Cross infection due to commercial activity was not found to have occurred although the potential exists because of the ability of cosmetics to support the growth of microbes. (*Ahearn et al. Microbial growth in eye cosmetics: contamination during use. Chapter 22 pp. 211-216 (Title and date not stated), MMWR, Pseudomonas aeruginosa corneal infection related to a mascara applicator trauma- Georgia. JAMA 1990; 263: 1616, Thomas ET, Barton SN, The role of eye cosmetics in the pathogenesis of eye infection: an epidemiologic investigation. Ala J Med Sci. 1978; 15: 246-251, Schwartz et al. Investigation of an outbreak of*

Moraxella conjunctivitis at a Navajo boarding school. Am J Ophth. 1989; 107: 341-347).

Nails are susceptible to bacterial infections with *Pseudomonas aeruginosa*. It is apparent from discussions with nail operators that infections in artificial nails usually only occur when the nail has been poorly applied, leaving gaps where moisture can accumulate and bacteria can flourish. *Ps aeruginosa* is a ubiquitous organism and prefers moist environments. It would be difficult to prove whether such an infection was due to cross infection or from an environmental organism in the home unless the organisms were examined using molecular techniques (genetic fingerprinting) to determine their likeness or differences. Such infections reflect operator failure (skill) rather than the premises where the procedure was carried out.

4.3 Surveillance

Surveillance is a method of documenting the number of new cases detected over specific periods so that the success (or otherwise) of specific interventions can be monitored and resources allocated appropriately.

Over recent years a standard core list of notifiable diseases has been developed with States and Territories adding specific diseases with significant local morbidity/mortality.

Laboratory notification increases the accuracy of notifiable disease detection (provided the laboratory uses approved and controlled test methods) and ensures that all laboratory detected cases are included in the surveillance figures, including positive results from atypical clinical presentations, detection of asymptomatic carriers of infectious agents (eg. HCV, HBsAg), or chronic (continuous) infections (eg. syphilis, salmonellosis).

Clinical notification is dependent on:

- Compliance with legislation;
- Clinical suspicion of the condition; and/or
- Presentation of the disease – whether typical or atypical.

Unfortunately, many potentially serious infectious conditions may be completely asymptomatic, meaning that there will be no notification of the condition unless the patient has a blood test and their infectious condition is revealed.

Collection of data such as: infections post-manicuring, blood loss while waxing, scissor nicks while cutting hair or infections post-body piercing are

not routinely collected and would require clients to report back to operators at varying times after the procedure. Accurate data collection is unlikely to be achieved because they:

- May be perceived to reflect poor skills and knowledge;
- Take time;
- Are unlikely to change outcomes overall; and/or
- Probably do not reflect a major risk to either the individual or the general public given the lack of statistical evidence or reports to the contrary.

Hairdressers, beauty therapists and skin penetration operators are NOT currently expected to notify infectious conditions although they and other persons in the community can report conditions to the Chief Executive Officer (CEO) of Queensland Health if they have any concerns regarding the public health implications of any condition or activity.

Selvey et al. (Investigation of notifications of Hepatitis C in 1994: the experience of three health departments. ANZ J Pub Hlth 1994; 20: 525-529), investigated 963 Hepatitis C notifications in Queensland, the Northern Territory and the ACT. They found that the most common risk factor was injecting drug use, that most cases had occurred over 12 months prior to detection, and that there were very few cases with unknown risk factors. Only 5 of 686 (0.73%) reported Hepatitis C cases in Queensland and the ACT in this study had tattoos as the only risk factor. It is acknowledged that the findings of this report were biased by the large number of prisoners having compulsory HCV testing and that persons presenting for such tests are more likely to be at risk of infection and thus request testing. As a result, the data may not have reflected the true prevalence of disease in the general community. Nevertheless, it does provide an indication of the major risk factors.

A case controlled study by *Kaldor et al. (Risk factors for Hepatitis C virus infection in blood donors: a case-control study. MJA 1992; 157: 227-230)*, on the risk factors for Hepatitis C in volunteer blood donors, reflects the general Sydney population 1990-91, shortly after commercial testing for Hepatitis C became available. 220 HCV positive donors and 210 HCV negative donors were compared for sexual, parenteral and other potential risk factors. In this population injecting drug use was again the main risk factor. Tattoos and an increased number of sexual partners were also independent risk factors for a positive HCV test. The study did not investigate other skin penetration activities other than tattooing but it is clear that at the time, tattooing was a significant risk factor for the acquisition of HCV as 30% of HCV positive donors had a tattooing history compared with only 4% of the controls.

Review of the submissions received by Queensland Health in response to the Department's discussion document confirmed the lack of data available to determine whether the industries under review do constitute a health risk or not.

The development of a register to determine the numbers of procedures, the outcome of procedures (early and late), the operator and their professional status, as well as the processes used for the procedure, and compliance of operators with infection control and hygiene practices, would enable collection of useful data to provide information on which to more reliably assess health risks.

The Centres for Disease Control and Prevention, Atlanta Georgia (1998), have recently published a strategy for the 21st Century, which focuses on the importance of surveillance and response. This is defined as the detection, investigation, and monitoring of emerging pathogens and the diseases they cause as well as the factors influencing their emergence and the response necessary to address the problems as they arise. Strengthening infectious disease surveillance and response is seen as a primary activity in this strategy and could be used with effect in the hair dressing, beauty therapy and skin penetration industries in Queensland.

Further, it is apparent that application of the principles of infection control must be standardised across all participants in the affected activities if the public health is to be protected and maintained effectively.

4.4 Performance of the existing regulations

A key aspect of risk management is the introduction of appropriate management practices. A desktop review of the effectiveness of the current regulations was undertaken to identify the level of enforcement of the current legislation and the extent of its effectiveness.

Surveys were sent by Queensland Health to Local Governments and Public Health Units across Queensland. Responses from Public Health Units found that the majority of complaints received appeared to suggest that if and when infections did occur, the premises met the requirements of the legislation and therefore could not, in its current form, mitigate the transmission risk of infectious conditions/communicable diseases. Further, anecdotal evidence from industry participants and the Office of Consumer Affairs suggests that many clients were unwilling to 'force' the issue through formal mechanisms such as legal proceedings. In addition, the feedback obtained from Local Governments indicated that the majority of complaints levelled at any of the industries currently captured by the legislation received little or no enforcement action.

5. Transmission of Infectious Conditions/Communicable Diseases

Infectious diseases/conditions may be divided into those that are "contagious" (ie. Spread by contact) (Oxford Dictionary Definition); or 'Infectious' (term applied to a microbe – bacteria, virus, rickettsia, protozoa, fungi, chlamydia, parasite, mycoplasma) capable of (having the power of communicating, Oxford Dictionary) causing an infection which may or may not be "contagious" eg. "infected with disease".

Infections may be endogenous, ie caused by microbes already present on the body as 'normal flora' which are able to cause infection if they have access to a site other than where they are normally found (eg E.coli is 'normally' present in the bowel but if it is found in the urinary tract or the blood it is said to be causing 'infection').

An infection is defined as the presence of multiplying microbes with an associated inflammatory response – fever (or increase in temperature), swelling, redness, pain, loss of function (tumor, rubor and calor).

Infections may occur as a result of transfer of organisms from one person to another (cross infection). Here, the organisms from one person are transmitted to another either directly or indirectly (eg by objects or fomites) and the other person develops an infection with the organism infection from the first person.

The risk of infection by inoculation of blood from asymptomatic carriers of blood-borne micro-organisms is the greatest hazard to both operators and to clients. There is no vaccine or specific curative treatment for either HIV or Hepatitis C virus infections.

5.1 How do people get infected?

Microbes can be spread in a number of ways. These methods are summarised in **Table 5.1**.

Table 5.1 Methods of Spreading Infections

Method of Spread	Comment	Examples
Ingestion	The infectious organisms are swallowed, ie taken by mouth	Food poisoning Hepatitis A
Inhalation	The infecting organisms are breathed (inspired) in	Legionella TB Influenza Chicken pox
Direct Contact	The organisms are spread directly from one person to another	Staphylococcal infection in wounds spread from the hands of attendant(s) Streptococcal infections from hands of attendant to skin of client Herpes simplex virus from hand of attendant to client or vice versa Scabies
Indirect contact	The organism is spread via a fomite (inanimate item) which is contaminated with the microbe, eg: reusable needles used in acupuncture or tattooing which have not been adequately sterilised	Contaminated needle: Hepatitis C, Hepatitis B, HIV infection Contaminated comb: head lice, dermatophytes (ringworm)
Nosocomial Infection	Occur in a health care institution	Any infection that is not incubating on admission and develops $\geq$ 48 hours after the patient was admitted
Inoculation	Penetration usually by a sharp object through skin or mucous membranes (eg oral mucosa)	Needle stick or sharps injury with prior contamination of the sharp with infectious material
Vertical transmission	From mother to baby during or near delivery (parturition)	HCB,HCV, HIV, HSV, Syphilis, CMV
Endogenous	From the "normal flora" of the person infected	Staph infection following ear or nose piercing even with the use of sterile equipment

Many microbes can cause an infection by multiple infectious routes (For example, hepatitis A infection is usually caused by ingestion of the agent but it can also follow a blood transfusion from a patient incubating the disease).

Endogenous micro-organisms are found as "normal flora" on individuals. These organisms have a protective role and often produce substances (bacteriocins) which inhibit or prevent the establishment of other microbes on the skin or in the gut. While these organisms remain in their ecological niche they provide a useful function but if they gain access to other areas of the body eg. the subcutaneous tissues, or the blood stream, they can multiply and cause disease before the body defence mechanisms can mount a response.

Environmental micro-organisms may arise from plants, the soil, animals and insects, or simply represent residual human micro-organisms shed in skin squames or secretions such as faeces, urine, saliva, blood or sputum.

There are a vast number of micro-organisms in the world although only a few are commonly associated with human disease. Some micro-organisms such as Hepatitis A virus are only found in humans. Other micro-organisms are ubiquitous, although different strains (same family but different species)

may colonise different animal and plant species. Many of these organisms can cause infections in humans if they are able to invade the skin barrier or be breathed or swallowed by humans. A rule of thumb commonly used in infection control practice is that **ALL ORGANISMS ARE POTENTIALLY PATHOGENIC** if they are able to evade the normal defence mechanisms of the body or if the defence mechanisms are weakened or absent (ie. immuno-suppressed).

Alertness to the presence of micro-organisms is essential to ensure that they can be adequately controlled. Knowledge of how micro-organisms can spread, where they can be found and how the spread can be prevented is an essential prerequisite to their control. Operators carrying out skin penetrating activities must have such an understanding because failure to maintain aseptic techniques could result in the inoculation of environmental organisms into the client during the skin penetrating activity.

Environmental microbes include filamentous fungi and moulds (eg Aspergillus, Mucor, Penicillium), Gram positive bacteria such as *Nocardia sp*, mycobacteria, and *Bacillus species*, some Gram negative bacteria such as some strains of *Pseudomonas sp, Klebsiella sp, Vibrio sp* and *Aeromonas sp*.

For example, if body piercing equipment (eg. a nose ring) was dropped on to the floor before it had been used and the equipment was not resterilised, organisms could contaminate the equipment and could be inoculated (ie. penetrate the skin) into the patient while the procedure was being undertaken. Washing the item under the tap may not remove the organisms and may, in fact, allow tap and tap water microbes to further contaminate the equipment placing the patient at further risk. It is impossible to "sterilise" a floor and it is not expected that this should be attempted. Many experiments using powerful disinfectants on floors have shown that the micro-organisms recur within two hours of exposure to the disinfectant. Modern hospitals no longer use powerful floor disinfectants, recognising that the implementation of appropriate instrument cleaning and handling processes is more cost effective and reliable. Further, the risk of contamination for the patient arises from the 'equipment' not being resterilised after being dropped and not the floor itself.

Therefore, of the various routes of transmission noted above, only two are relevant to hairdressing, beauty therapy and skin penetration activities. These are <u>direct contact</u> (operator to/from client) and <u>indirect contact</u> (via equipment eg needles or other sharp items). The *mode* of infection from a contaminated sharp is by <u>inoculation</u>, ie injected into a person either directly or by accident.

Legionellosis may be associated with inadequately maintained air conditioning but this is not relevant here, as the spread of disease is independent of the activity or industry being undertaken.

There is no evidence that blood borne or other disease transmission in the hairdressing, beauty therapy or skin penetration industry is associated with any factors related to premises (buildings, services).

5.2 Why do people get infected?

A number of factors influence whether an infection occurs after exposure to an infectious agent. These factors are shown in the **Table 5.2**:

Table 5.2 Factors influencing the transmission of infectious conditions

FACTOR	REASON
The (size) dose of the microbe (microbial exposure)	A larger dose of microbes is more likely to cause infection than a smaller dose. Smaller doses may result in immunity to infection without the development of overt disease (infection) by stimulating the immune system but not overwhelming it and causing symptoms (disease).
The virulence of the organism	Virulence is a term used to reflect the ability of the organism to cause disease. This may be associated with the production of extra cellular products (enzymes), which facilitate tissue invasion or the ability to adhere to specific tissues eg. influenza virus adheres to respiratory epithelium, poliovirus invades and destroys motor neurone cells in the spinal cord.
The site of entry of the microbe – (route of primary infection).	For example, inoculation of *S.aureus* into the skin may cause a local abscess, inhalation may cause a lung abscess and invasion into the blood stream with deposition and abscess formation in many organs including bone, the heart valves, brain, muscle etc.
Immune status of the individual	People who have been immunised/vaccinated against infection with specific microbes for which a vaccine is available will be unlikely to develop an infection when exposed to that organism. Examples of available vaccines are measles, rubella, diphtheria, polio, TB, Hepatitis A & B. *Haemophilus influenzae* type b. People who have previously been infected with the organism are unlikely to be reinfected. Examples are chicken pox, Hepatitis A or B and measles virus infections. People with abnormal immune systems due to cancer or immunosuppressive drug therapy will be more susceptible to infections to which they have previously been exposed because their natural defence mechanisms (white cells, antibodies, immunoglobulins) are not functioning optimally. Organisms that rarely cause disease can infect these persons. People with loss of skin due to trauma (eg burns) or disease (eg pemphigus) will be more susceptible to infection due to loss of their normal skin defensive barrier. People with invasive devices through skin eg. IV lines, urinary catheters, have an easy route for microbes to enter areas of the body to which they do not normally have access. These microbes can colonise the invasive devices and be protected from the activity of anti microbial agents by the formation of biofilm on the catheter surfaces.
Source of the infecting microbe	Although most infecting organisms come from a person's own flora, environmental and animal microbes can cause human disease. Sometimes these diseases are difficult to treat because the animal or environmental micro-organisms are not susceptible to the available antibiotics.
Environmental factors	Ambient temperature, dust, lack of sunlight, humidity, moist areas (damp cloths) may provide an environment, which encourages the growth of micro-organisms and is difficult to alter/control eg. *Legionella sp.* in tap spouts/shower/roses, *Pseudomonas sp.* in damp areas such as foam rubber sponges, nail brushes.
Transmission vectors	Rodents, flies, cockroaches, mosquitoes can transmit micro-organisms indirectly from their external skeleton or excreta or as part of the life cycle of the organism eg. Malaria/Ross River virus infection.
Mode of transmission	Inoculation is more effective than inhalation, which can be more effective than ingestion and direct contact - but other factors including dosage size and microbial virulence must be also considered.

6. Risks associated with various Activities

6.1 Activities and Risks

Infectious diseases for which the general public are at greatest risk are those that fulfil the following criteria:

1. **No effective curative treatment;**
2. **Highly contagious and/or easily spread (eg aerosolisation);**
3. **Highly virulent (pathogenic);**
4. **Do not result in effective immunity in normal (non-immunocompromised) hosts;**
5. **Cause chronic, non-resolving infection**
6. **No preventative vaccine;**
7. **Difficult to control (aerosol spread, natural reservoirs).**

The above criteria are independent risk factors. However, if more than one of the above factors is present then the risk is exacerbated.

Diseases that meet criteria 1, 4, 5 and 6 are HIV/AIDS and Hepatitis C and these diseases are considered to pose the most significant health risks to consumers of hairdressing, beauty therapy and skin penetrating services.

Other diseases of concern include Hepatitis B and D. Hepatitis B is a highly infectious blood borne virus. Infection with this organism may lead to lifelong carriage and a risk of chronic liver disease and hepatocellular carcinoma. Carriage of this organism is low amongst the "general" Australian population (0.1%) although high risk groups have been identified in published studies. There are estimated to be over 300 million people infected with Hepatitis B virus world wide (Blue Book, 1996) but carrier rates vary widely between populations with parts of Asia, Africa and Oceania having carriage rates of up to 20%. It has been usual practice in Queensland since 1994 to vaccinate the babies of high risk groups and mothers identified to be Hepatitis B carriers. Thus, while those who are already carriers remain infectious for life, there has been a reduction in newly infected persons in the general community.

Contact sports (eg rugby league, rugby union, boxing) also require their players to be Hepatitis B vaccinated and increasingly school children and other average risk groups are being vaccinated although this is not part of a "general" public vaccination program. Although the "general public" are not routinely vaccinated with this vaccine, there are increasing numbers of people rendered immune to Hepatitis B by the above processes.

Notifications of acute Hepatitis B are uncommon in Queensland. Queensland Health population data for Hepatitis B notes that there were

fewer than 2 persons per 100 000 notified with Hepatitis B between 1995 and 1997 inclusive. The frequency of unreported or misdiagnosed Hepatisis B is not known, however it is clear that Hepatitis B in Australia and Queensland in particular is not the major problem that it is in Asia and Oceania. The high uptake of Hepatitis B vaccine, while not "universal", is improving the safety of the general public to the risk of Hepatitis B and its passenger (co) Hepatitis D virus.

Hepatitis B virus transmission can be controlled and there is an effective vaccine. Although Hepatitis B is highly infectious, outbreaks of infection do not seem to have occurred in recent years. Although Hepatitis B will not be specifically discussed further because of the above, it should be considered in all situations where there is an unvaccinated person and blood exposure. Hepatitis B is therefore considered a potential risk to consumers in the hairdressing, beauty therapy and skin penetration industries.

Hepatitis D is only a risk to persons who are carriers of Hepatitis B virus. The Hepatitis D virus requires the presence of Hepatitis B virus to enable it to infect a recipient. Thus Hepatitis D virus, while recognised as a blood borne virus is only a threat to Hepatitis B carriers or to people who become concurrently infected with Hepatitis B and Hepatitis D. Immunity to Hepatitis B through effective vaccination with Hepatitis B vaccine will provide protection against the risk of infection with Hepatitis D. The role of Hepatitis D will become less important as more people are vaccinated against Hepatitis B.

All of the diseases identified above (ie HIV/AIDS, Hepatitis B, C and D) are blood borne micro-organisms. Their major route of spread is by inoculation or vertical spread from mother to baby at the time of delivery, but they are also spread by direct blood to blood contact or following unprotected sexual contact. Vector spread, ingestion and inhalation are not relevant in the spread of these diseases. Infection with these agents may lead to a shortened life span and significant morbidity.

The risks of each hairdressing, beauty therapy and skin penetration procedure are considered below as to whether it is associated with inoculation of the skin, whether blood letting occurs accidentally or as part of the procedure, and whether operator knowledge of these diseases and operator skill in applying infection control practices can lead to a lower risk of transmission.

It should be noted that these diseases (ie. HIV, Hepatitis B, C & D) should receive the primary focus of any legislation as other diseases with lower or minimal risk are likely to be monitored and controlled in

an effective manner by any procedures designed to mitigate the more severe diseases.

In order to assist this process, a matrix was developed at a Value Management Workshop that discussed, amongst other things, the mode of transmission of a list of particular disease causing organisms identified as being important in the context of Queensland Health communicable disease control.

The matrix (**Table 6.1**) lists the activities and primary risk factors influencing the transmission of infections (ie. whether the activity is skin-penetrating or non-skin penetrating, the role of operator knowledge/skill in infection control practices, and the role of equipment and premises). Other factors may also be implicated in the transmission of infections, for example, the presence or absence of skin lesions.

The relative importance of equipment usage and the influence that it has on the potential risk to the public or the operator (eg whether re-useable items need to be simply cleaned or sterilised) and the role, if any, that the premises have in the subsequent development of infection, are all summarised in **Table 6.2**.

Table 6.1 Analysis of infections/diseases

Disease/Infectious Condition	Likelihood of transmission	Organism's living environment	Role of Skin penetration in the development of infection	Role of knowledge and skill of operator on the likelihood of disease transmission	Role of equipment as a potential reservoir in the mode of transmission	Role of premises as mode of transmission
Pseudomonas sp (bacteria)	Low risk of transmission	moist environments, (drains, surface water, wet cloths, mops)	Nil	Important	Important	n/a
Staphylococcus sp	Low risk of transmission	Present on skin (ie. Exogenous bacteria)	Yes (skin penetration inoculates organisms)	Important	Not important	Very unlikely
Streptococcus sp	High risk of transmission	Fomites, skin, throat	Nil. (Spread through saliva cough, direct skin-to-skin contact)	Important	Not important	Very unlikely
Micrococcus sp	Low risk of transmission	Present on skin (ie. Exogenous bacteria)	Nil. (Direct skin to skin contact)	Important	Not important	n/a
Sporotrichosis	Low risk of transmisssion	Environmental organism on plants (rose thorns)	Yes (Inoculation required to cause infection)	n/a	n/a	n/a
Ringworm (Tinea)	Low to medium risk of transmission Children below puberty most at risk	Skin and hairs of humans and animals	Nil (Direct skin-to-skin or indirect (fomite))	Important	Important	Unlikely
Head lice	Medium to high risk of transmission	lice lay eggs that hatch	Nil (Sharing combs, hats is the mode of transmission)	Important	Important	n/a
Herpes simplex	Medium to high risk of transmission especially when skin broken	Human skin. Organism dies in extreme heat and if dried	Nil (Direct contact (Genital/mouth)	Important	n/a	n/a
Warts	Low risk of transmission	Human skin	Nil (Direct skin to skin contact or from contaminated non- disposable equipment)	Important	Important	Very unlikely
Candida sp	Low risk of transmission	Stomach, bowel & genital tract	Nil	n/a	n/a	n/a
Cladosporium sp	Low risk of transmission	Wood, soil	Nil (Direct skin to skin contact)	n/a	n/a	n/a
Onychomycosis	Low risk of transmission	Human nails (esp. toenail)	Nil	n/a	Important	n/a
Moraxella, Enterobacter	Low risk of transmission	Part of the normal flora of the human	Nil	Important	n\a	n/a

Disease/Infectious Condition	Likelihood of transmission	Organism's living environment	Role of Skin penetration in the development of infection	Role of knowledge and skill of operator on the likelihood of disease transmission	Role of equipment as a potential reservoir in the mode of transmission	Role of premises as mode of transmission
aerogenes, Klebsiella pneumoniae, E coli, Serratia sp, Proteus sp		respiratory and or intestinal tract.				
Conjunctivitis (viral and bacterial)	Medium risk of transmission most common in children.	humans are carriers	Nil (Direct contact with eye secretions is the usual mode of transmission)	Important	Important	n/a
HIV/AIDS	Low risk of transmission, need more than 1ml injected blood to cause infection	carried in blood stream.	Yes (sexual intercourse, mother-to-baby, and inoculation)	Important	Important	n/a
Hep B	High risk of transmission of infection to non-immune people following infected inoculation (needlestick)	carried in blood stream.	Yes (sexual intercourse, mother-to-baby, inoculation in non immune)	Important	Important	n/a
Hep C	Medium risk of transmission 6% of people suffering a Hepatitis C virus infected needlestick become infected	carried in blood stream.	Yes (sexual intercourse, mother-to-baby, inoculation)	Important	Important	n/a
Hep D	Low risk of transmission unless to carrier of HbsAg or as a coinfaction with Hepatitis B virus	carried in blood stream.	Yes (sexual intercourse, mother-to-baby, inoculation with Hepatitis B virus or to hepatitis b virus carrier	Important	Important	n/a
Mycobacterium tuberculosis	Medium risk of transmission (aerosolisation)	Sputum, urine, infected untreated animal milk or tissues	Nil (respiratory inhalation,)	n/a	n/a	n/a
Syphilis	Low risk of transmission (Infectious for 24 to 48 hours)	Human blood, genital secretions	Nil (direct (sexual) contact or mother to baby.	n/a	n/a	n/a

Table 6.2 Activity risk factors for the transmission of blood-borne infections

Activity	*Does skin penetration occur as a normal part of the procedure Y/N*	*Does blood letting /body fluid release occur as a normal part of the procedure? Y/N/Accidental*	*Is infection control knowledge/skill of operators a key risk factor in the transmission of blood-borne infections? Y/N*	*Is skin penetrating equipment (disposable or reusable) a key risk factor in the transmission of blood-borne infections? Y/N, Possible or Not Applicable (NA)*		*Are business premises (eg walls, floors, air quality) a key risk factor in the transmission of blood-borne infections? Y/N/Possible*
				Single Use Disposable	Reusable	
Acupuncture	Yes	Yes	Yes	No	Yes	No
Body Piercing	Yes	Yes	Yes	No	Yes	No
Body Wrap	No	No	No	NA	NA	No
Burning/ Branding (using heated appliance, not sharp instrument)	Yes	Yes (body fluid release)	Yes	No	No (heat destroys micro-organisms)	No
Collagen Implantation	Yes	Yes	Yes	No	Yes	No
Colonic washout	No	Accidental	Yes	No	Possible, if blood contaminated equipment is not sterilised before reuse	No
Cuticle Cutting	Yes	Accidental	Yes	No	Possible if blood contaminated equipment is not sterilised before reuse.	No
Diathermy	No	Accidental	Yes	No	Possible, if blood contaminated equipment is not sterilised before reuse.	No
Ear/Nose piercing using a closed piercing gun	Yes	Accidental	Yes	No (provided disposable cartridges are always used and the gun is cleaned between each use)	Possible, if blood contaminated gun is not cleaned before reuse	No
Electrolysis	Yes (equipment penetrates dermal layer)	Accidental	Yes	No	Possible, if blood contaminated equipment is not sterilised before reuse	No
Electromagnetic Therapy	No	No	No	NA	NA	No
Extractions (using sharp equipment on skin, eg to extract blackheads)	Yes	Accidental	Yes	No	Possible, if blood contaminated equipment is not sterilised before reuse	No
Eye make up	No	No	No	No	NA	No

Activity	*Does skin penetration occur as a normal part of the procedure Y/N*	*Does blood letting /body fluid release occur as a normal part of the procedure? Y/N/Accidental*	*Is infection control knowledge/skill of operators a key risk factor in the transmission of blood-borne infections? Y/N*	*Is skin penetrating equipment (disposable or reusable) a key risk factor in the transmission of blood-borne infections? Y/N, Possible or Not Applicable (NA)*		*Are business premises (eg walls, floors, air quality) a key risk factor in the transmission of blood-borne infections? Y/N/Possible*
				Single Use Disposable	Reusable	
Face & Skin Peels/Facial Scrub (using chemicals)	No	No	Yes	NA	NA	No
Hair Cutting	No	Accidental	Yes	No	Possible, if blood-contaminated equipment (eg scissors) not sterilised before reuse	No
Hair Styling/ Blow Drying	No	No	No	NA	NA	No
Hair transplantation	Yes	Yes	Yes	No	Yes	No
Laser treatment	No (not in the same sense as a needle or a knife)	No	No	NA	NA	No
Lash Perms	No	No	No	NA	NA	No
Liposculpture (ie, using massage or similar, non surgical techniques)	No	No	No	NA	NA	No
Lymphatic Drainage (non surgical)	No	No	No	NA	NA	No
Lymphatic Drainage (surgical)	Yes	Yes	Yes	No	Yes	No
Make up Application	No	No	No	NA	NA	No
Microdermabrasion	No	Accidental	Yes	No	Possible	No
Micropigmentation	Yes	Yes	Yes	No	Yes	No
Minor surgery	Yes	Yes	Yes	No	Yes, if equipment is not sterilised before reuse	Possible
Nail Application/ nail mending ((eg acrylic nails)	No	No	No	NA	NA	No
Nail cutting/ filing/cleaning	No	Accidental	Yes	No	Possible, if blood-contaminated equipment is not sterilised before reuse	No
Perming	No	No	No	NA	NA	No
Red Cross Blood Services	Yes	Yes	Yes	No	Yes	No
Scarring (using knife or other sharp instrument)	Yes	Yes	Yes	No	Yes	No
Shampoo	No	No	No	NA	NA	No
Shaving with reusable blade (eg cut-throat)	No	Accidental	Yes	No	Possible, if blood contaminated razor is not sterilised before reuse	No
Tattooing	Yes	Yes	Yes	No	Yes	No

Activity	*Does skin penetration occur as a normal part of the procedure Y/N*	*Does blood letting /body fluid release occur as a normal part of the procedure? Y/N/Accidental*	*Is infection control knowledge/skill of operators a key risk factor in the transmission of blood-borne infections? Y/N*	*Is skin penetrating equipment (disposable or reusable) a key risk factor in the transmission of blood-borne infections? Y/N, Possible or Not Applicable (NA)*		*Are business premises (eg walls, floors, air quality) a key risk factor in the transmission of blood-borne infections? Y/N/Possible*
				Single Use Disposable	Reusable	
Tinting	No	Accidental (eg if tinting hooks are used)	Yes	No	Possible, if blood contaminated equipment (eg tinting hooks) are not sterilised before reuse	No
Vaccination	Yes	Yes	Yes	No	Yes	No
Waxing	No	Accidental	Yes	No	Possible, if blood-contaminated wax is not appropriately decontaminated before reuse	No

Having considered the broad range of hairdressing, beauty therapy and skin penetration activities listed in **Table 6.2** above, a risk segmentation was undertaken to identify a spectrum of ***"higher risk"***, ***"moderate risk"***, ***"lower risk"*** and ***"no risk"*** categories.

The following approach was adopted to determine the risk categories:

Higher Risk Activity	*Any activity that causes blood or other body fluid to be released as a normal consequence of the procedure*
Moderate Risk Activity	*Any activity (not being a Higher Risk activity) that:-* ❑ *Has the potential to cause blood or other body fluid to be released accidentally; or* ❑ *Results in such small quantities of blood or body fluid being released that minimal risk exists; or* ❑ *As a result of the equipment being used (eg single use, pre-sterilised needles), mitigates the risk of infections*
Lower Risk Activity	*Any activity that does not cause blood or other body fluid to be released as a result of its execution, but may still create the opportunity for transmission of infectious conditions/diseases*
No Risk Activity	*Any activity that effectively generates no material risk of infectious conditions/diseases*

Waste disposal issues are not considered here in detail but the disposal of used sharps must comply with Queensland Health and Workplace Health and Safety requirements for their safe disposal.

Table 6.3 lists **examples** of activities within the various risk categories, and the types and mode of spread of micro-organisms associated with those activities.

Table 6.3a: Risk Segmentation of Activities - Higher Risk Category

Activities/Procedures undertaken in the hairdressing, beauty therapy and skin penetration industries	**Micro-organisms**	**Mode of Spread**
Higher Risk Activities (Blood flow arising as a consequence of the activity)		
Acupuncture	Blood borne micro-organisms (eg hepatitis B, hepatitis C, HIV) Skin micro-organisms	Inoculation from non sterile equipment Direct contact
Body piercing (excluding the used of closed piercing guns with disposable cartridges)	Blood borne micro-organisms Skin micro-organisms *(eg S aureus)*	Inoculation from non-sterile equipment Direct contact – skin micro-organisms such as *S aureus* causing a subsequent infection.
Collagen implantation	Blood borne micro-organisms Skin micro-organisms	Inoculation from non-sterile equipment or foreign material Direct contact
Finger Prick Testing	Blood borne micro-organisms Skin micro-organisms	Inoculation from non-sterile equipment Direct contact
Implantation (Hair or any other substance)	Blood borne organisms Skin micro-organisms	Inoculation from non-sterile equipment or foreign material Direct contact
Lymphatic drainage through the use of skin penetrating devices. (Eg. Tubes etc.)	Blood borne micro-organisms Skin micro-organisms	Inoculation from non-sterile equipment Direct contact
Micropigmentation	Blood borne organisms Skin micro organisms	Inoculation from non-sterile equipment or endogenous skin bacteria Direct contact
Red Cross Blood Services	Blood borne micro-organisms Skin micro organisms	Inoculation from non-sterile equipment and/or techniques Direct contact – skin micro-organisms such as *S aureus* causing a subsequent infection.
Scarring/Cutting/Bleeding (using a knife or other sharp instrument)	Blood borne organisms Skin micro-organisms	Inoculation from non-sterile equipment or endogenous skin bacteria. Direct contact
Tattooing	Blood borne micro-organisms Skin micro-organisms	Inoculation from non-sterile equipment. Direct contact – skin micro-organisms such as *S aureus* causing a subsequent infection.

NB: Risks from the above activities are significantly reduced if new pre-sterilised items are used once only and disposed of carefully into a rigid sealable container which is then incinerated.

Table 6.3b: Risk Segmentation of Activities - Moderate Risk Category

Activities/Procedures undertaken in the hairdressing, beauty therapy and skin penetration industries	**Micro-organisms**	**Mode of Spread**
Moderate Risk Activities ***(Accidental bloodletting or body fluid release, or risk is minimised through the use of disposable equipment)***		
Burning/branding (with heated equipment)	Normal skin organisms on person	Heat destroys micro-organisms, however localised skin infections may develop from endogenous bacteria
Cuticle Cutting (cuticles are keratin and do not have a blood supply; if bleeding occurs the operator has gone too deep ie beyond the cuticle)	Blood borne micro-organisms if equipment contaminated with blood Skin micro-organisms	Inoculation if skin penetration occurs accidentally; and if non-sterile equipment is used Direct contact
Ear Piercing and Nose Piercing (using closed piercing guns and pre-sterilised disposable cartridges)[6]	Blood borne micro-organisms if equipment contaminated with blood Skin micro-organisms	Inoculation if non-sterile equipment is used Direct contact
Electrolysis (involves needling the hair follicles)	Blood borne micro-organisms Skin micro-organisms	Inoculation if non-sterile equipment is used Endogenous microbial inoculation into the site of the procedure Direct contact
Extractions (using sharp equipment on skin, eg to extract blackheads)	Blood borne micro-organisms Skin micro-organisms	Inoculation from non-sterile equipment Direct contact
Haircutting (NB razors are used in shaving as well as haircutting. The role in haircutting may be to shave the neck or to create a "rough" hair cut)	Blood borne micro-organisms if equipment contaminated with blood Skin micro-organisms	Inoculation if skin penetration occurs accidentally, and if scissors/razor are contaminated with infected blood from previous customer or from operator Inoculation of operator may also occur accidentally, ie with blood stained scissors or razor Direct contact
Micro dermabrasion (eg with wire brush or other implement that comes into contact with skin)	Blood borne organisms Skin micro organisms	Inoculation from non-sterile equipment Local inoculation of endogenous organisms or cross infection Direct contact
Nail cutting/filing/cleaning	Blood borne micro-organisms if equipment contaminated with blood Skin micro-organisms	Inoculation if skin penetration occurs accidentally, and if equipment is contaminated with infected blood from previous customer or from operator. Direct contact
Shaving (Cut throat or non-disposable razors)[7]	Blood borne micro-organisms Skin micro-organisms, eg: *S aureus* Streptococcus pyogenes Herpes simplex	Inoculation if skin penetration occurs accidentally, and if non sterile razors are used Direct contact
Tinting/Colouring (Hair)	Blood-borne micro-organisms if	Inoculation if skin penetrated accidentally,

[6] Whilst piercing with a closed gun may occasionally result in minor blood loss, the risk is regarded as moderate as disposable cartridges are used.

[7] Non-disposable razors (eg cut-throat razors) must be thoroughly cleaned before each re-use and if accidentally contaminated with blood, must be sterilised before reuse

(if hooks are used)	hooks used in tinting are contaminated with blood	and if hooks are contaminated with infected blood
Waxing	Skin micro-organisms, eg: *S aureus* *Pseudomonas sp*	Direct contact from inadequately heated re - used wax, which may result in local skin infection where wax applied. NB: There is NO literature evidence that blood borne micro-organisms have been spread by this technique.

Table 6.3c: Risk Segmentation of Activities - Lower Risk Category

Activities/Procedures undertaken in the hairdressing, beauty therapy and skin penetration industries	**Micro-organisms**	**Mode of Spread**
Lower Risk Activities (No blood or body fluid release)		
Application and/or mending of acrylic/artificial nails	*Pseudomonas sp.* *Candida sp.*	Environmental, if nails not sealed properly Customer's own flora
Application of cosmetics (including eye cosmetics)	Skin micro-organisms Pseudomonas	Endogenous micro-organisms Direct contact with contaminated product
Body wrap	Skin micro-organisms	Direct contact if wrap is contaminated
Diathermy/Red vein treatment	Nil during treatment, possibly in the healing phase with endogenous skin micro-organisms	Diathermy heat coagulates blood and destroys micro-organisms, however, endogenous organisms from adjacent skin may invade damaged tissue and cause infections
Face and Skin Peels/Facial scrub (using chemicals)	Skin micro-organisms	Direct contact from contamination in re useable chemicals
Hair 'styling' with brush/comb contaminated with hair or secretions from previous customer(s)	Head lice Ringworm organisms Streptococcus pyogenes *S aureus*	Direct contact resulting in 'surface' contamination of customer and subsequent potential risk of infection development.
Massage (if contact with open lesions)	Skin micro-organisms Scabies	Direct Contact
Other manicure services (eg application of nail polish)	Skin micro-organisms	Direct Contact

Table 6.3d: Risk Segmentation of Activities – No Risk Category

Activities/Procedures undertaken in the hairdressing, beauty therapy and skin penetration industries	**Micro-organisms**	**Mode of Spread**
No Risk Activities ***(No risk of infectious condition or communicable disease transmission)***		
Blow Wave/Blow Drying	No Risk	No risk
Electromagnetic therapy	No Risk	No risk if equipment wiped clean
Lash perm and extensions	No risk	No Risk
Lymphatic drainage without skin penetration	No risk	No Risk
Liposculpture (non surgical)	No risk	No risk
Massage (no contact with open skin lesions)	No risk	No risk
Perming	No Risk	No Risk
Shampooing	No Risk	No Risk
Shaving (single use disposable razors)	No Risk	No risk except to the operator who may be exposed to blood or the risk of inoculation with blood borne micro-organisms if cut with a blood stained razor

6.2 Risk of Infection Acquisition by Operators

The risk of infection to operators is generally lower than that of clients because skin penetration is accidental not intentional. Risks are dependent on the following:

- Dose of the microbe
- The microbe's virulence (ability to cause disease);
- Site of inoculation;
- Immune status of individual operator prior to exposure (eg. prior vaccination); and
- Availability of an effective vaccine/treatment
- Other factors, usually individual (eg concomitant disease(s)

Both clients and operators may be at risk of acquiring an infection from each other, either directly or from used equipment. . Many infectious agents may be carried asymptomatically by either a client or an operator and thus not suspected.

Careful waste disposal of used sharps and adherence to State and Local government regulations must occur to minimise the risk of accidental sharps injury to operators, clients and waste disposal personnel.

6.3 Focus on Blood-borne micro-organisms

Due to the more serious implications arising from blood-borne diseases, it is recommended that prevention of infection with blood borne micro-organisms should be the primary focus of any future regulatory approach in relation to hairdressing, beauty therapy and skin penetration activities.

In view of the serious nature of these conditions and the risk to public health, consideration should also be given to extending these regulations to cover other simular activities in medicine, dentistry, podiatry and any other area where deliberate or accidental blood loss, which may contaminate patients or operators, could occur (refer **Appendix B**).

6.4 Wound care

Careful washing of the skin with soap and copious water following a sharps injury will decrease the number of microbes around the entry point but will not have any effect on microbes inoculated into the wound. These microbes can be washed out by bleeding or be sealed in the coagulum that forms at the wound site. The use of antiseptics on wounds is in general proscribed because it may impede healing. Modern wound care practice involves careful washing of the wound under running water, removal of any foreign

bodies and covering with a water proof dressing to prevent the entry of extraneous microbes while undertaking any activities, then removing the dressing as soon as possible to allow natural healing to take place. The extent and site of the wound will all influence wound care. Moist wound healing is recognised as resulting in less scarring and a stronger wound.

6.5 How infections are minimised

Infection risks can be minimised through a number of methods irrespective of their settings:

6.5.1 The quality cycle

1. Development of protocols based on accepted standards (eg ICPAQ, NH&MRC, QH);
2. Education;
3. Monitoring of compliance with protocols;
4. Follow up of breaches (eg information from the public, complaints, outbreaks of disease);
5. Continuing education;
6. Performance monitoring; and
7. Stakeholder and regulatory feedback.

6.5.2 Infection Control Training Accreditation

Accreditation with an appropriate accreditor such as Queensland Health (or other entities, eg ACHS for hospitals, NATA for medical (pathology) laboratories) may assist public health enforcement procedures by ensuring that all training courses for practitioners meet the minimum standard identified and that ongoing education/information can be readily accessed by practitioners. At present, courses are on a voluntary basis and designed with or without Queensland Health input. Some activities have professional associations, although the associations typically represent less than 50% of all industry participants. A clear example of this can be found in the Professional Tattooist Association of Australia, which represents approximately 30% of all participants in its industry.

6.5.3 Legislation

There is currently no legislative requirement for infection control in respect of health practitioner's premises although this may be reviewed.

The hairdressing, beauty therapy and skin penetration regulations currently target specific industries that are defined in terms of their activities. However, with the advent of changing technologies and service delivery

mechanisms, the distinction between industries such as beauty therapy and body piercing are becoming more blurred. Many beauty therapists are undertaking cosmetic tattooing and body piercing, whilst physiotherapists and doctors are undertaking acupuncture and body piercing. The exclusion of any particular group from the basic requirements of any regulation governing infectious disease transfer is likely to create significant equity issues in dealing with providers who have exemptions under the existing legislation.

The disjointed nature of both consumers and service providers within the industries captured under the existing regulations makes the enforcement of any legislation difficult and potentially costly.

As a result, it is recommended that (due to the serious nature of and the potential infection risks of any skin penetration activity) infection control requirements apply to any operator who provides a skin penetration service either through new skin penetration/infection control regulations or through alternative regulatory routes currently being investigated. No exemptions should occur, as the consequences of the diseases are the same irrespective of the practitioner and the guidelines developed should reflect the minimum standards only. Any practitioner who provides a service above these minimum standards (eg. medical practitioners, Red Cross etc.) would automatically comply with the minimum requirements stipulated in any legislation.

The role of premises in enabling acceptable infection control activities is acknowledged, but is not regarded as a critical element in minimising disease transmission in the hairdressing, beauty therapy and skin penetration industries.

6.5.4 Infection Control Practices

Health care providers are generally subject to industry codes of practice or guidelines on the implementation of infection control practices and procedures. Most States have introduced guidelines on infection control and have been seeking support for incorporation into standard practice amongst health care providers. As noted earlier, the basic infection control procedures are termed "Universal" or (more recently) "Standard" precautions. Additional measures depending on the mode of transmission have been identified for specific diseases such as HIV and Hepatitis C and D.

Queensland Health should investigate the opportunity for introducing infection control guidelines for all participants in all industries undertaking activities that may potentially give rise to the risk of infection to the public.

At present, no such standard set of precautions exist for the hairdressing, beauty therapy or skin penetration industries.

7. Infection Control Principles

There is a broad general acceptance of the importance of basic infection control principles in all activities involving skin penetration or direct contact. The Australian Acupuncturists and the Professional Tattooing associations have both adopted the principles of infection control in to their day to day practices and the results have been shown by the cessation of outbreaks of infection associated with the activities of these reputable operators. "Backyard" operators are unlikely to have this level of knowledge[8], and this is borne out by the complaints received by Queensland Health.

Infection control principles are taught in some hairdressing/beauty therapy courses, and Queensland Health is presently engaged in negotiations to have infection control training incorporated into all relevant training courses.

7.1 Control of Infections involves the following:

1. Knowledge of infectious agents, major routes of transmission and methods of interruption of transmission;
2. Skills to apply above knowledge in practice;
3. Monitoring and surveillance of outcome of activities; and
4. Support from management to implement the required techniques (gloves, equipment, cleaning procedures) – time and funds.

7.2 Principles of Infection Control:

1. All clients should be considered to be potentially infectious.
2. All operators should have a level of knowledge and understanding of infection control procedures and practice that reflects the risks associated with the activities they are undertaking.
3. Ensure that clean equipment is used for each client. Use disposable equipment wherever practical (eg body piercing) and ensure careful cleaning of holders (if these are used). If disposable equipment is not used it must be thoroughly cleaned and sterilised if it is to be used for any skin penetration activity
4. Have procedures in place which contain and remove blood from both expected and accidental bleeding and ensure that staff recognise the risk that blood has for both the operator and the client.
5. Recognise the importance of basic hygiene and the need for washing, cleaning and drying all non-disposable blood-contaminated equipment.
6. Advise potential clients of the risks associated with the service being purchased and clearly illustrate the standards of infection control that are to be followed by the operator.

[8] Research Summary – Tattoo Legislation – USA, Karla MacDonald Legislative Projects Units, 1 April 1998

7. Maintain an accident record for staff and clients – name, date, whom, what happened, what action was implemented to prevent recurrence.
8. Establish a quality system that can record matters such as usage of disposable equipment, client complaints, injuries etc. This can assist in the audit of any disease outbreaks and help establish an operator's due diligence in any civil or statutory action.

8. Infection Control Recommendations

Based on the findings of the risk assessment, the following infection control recommendations are made with respect to hairdressing, beauty therapy and skin penetration activities:

1. All clients should be treated as potentially infectious. This means that each client must have clean (sterile) or new disposable equipment where blood loss is expected to occur.

2. All operators should observe approved infection control standards. "Higher risk" operators should also have a demonstrated knowledge of infectious agents, their major routes of transmission and the means whereby infectious agents are prevented/controlled.

3. All operators must wash their hands before and after touching each client and immediately when their unprotected skin is contaminated with blood or body fluids.

4. Carefully wash in hot water and detergent and dry any re-useable equipment that becomes accidentally contaminated with blood. A standard dishwashing cycle is satisfactory to wash and dry these items. All piercing guns should be treated similarly. Operators are advised to use only heat (dishwasher) resistant equipment.

5. Observe appropriate procedures to contain and remove blood from both expected and accidental bleeding[9]. Use rubber gloves (as personal protection) when cleaning sharp equipment.

6. Operators involved in activities that are expected to result in significant blood loss (eg. tattooing, cutting, scarring etc.) should, where practical, also:
   - Wear disposable latex (or similar) gloves (a new pair for each client).
   - Use only new disposable equipment or equipment that has been appropriately sterilised using steam under pressure.
   - Inform clients of the potential risks of the procedure, the means taken to minimise those risks and the after care required by the client.

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[9] Appropriate procedures:
- Blood contaminated equipment that is accidentally contaminated with blood and is to be re-used (eg. scissors) must be sterilised.
- Blood should be contained using a clean (sterile) dressing and direct pressure on the area until bleeding ceases.
- Blood stained dressings and disposable equipment should be placed in a standard sharps container for eventual disposal by incineration or other appropriate method.
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7. Wax that has been contaminated with blood must not be reused unless it has been decontaminated appropriately.

8. A rigid container for disposal of sharps waste (which complies with AS4031) must be provided.

9. Disinfectants are NOT necessary for soaking or cleaning. Detergent and hot water are adequate for routine cleaning.

10. Use heat following cleaning to reduce infectious risk of blood on equipment where blood contamination occurs. (The amount and duration of heat treatment depends on the methods used and should follow published guidelines eg AS4187 (1997)).

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10. Glossary of Terms

Abbreviation	Meaning
ACHS	Australian Council of Health Services
AIDS	Autoimmune deficiency syndrome
CDC	Centres for Disease Control and prevention
CDU	Communicable Diseases Unit (QH)
CEO	Chief Executive Officer
CID	Clinical Infectious Diseases
GP	General Practitioner
HCV	Hepatitis C virus
HIV	Human Immunodeficiency Virus 1
ICPAQ	Infection Control Practitioners Association of Queensland
IDU	Injecting drug user
JAMA	Journal of the America Medical Association
MJA	Medical Journal of Australia
MMWR	Morbidity and Mortality Weekly Report
MSM	Men who have sex with men
NA	Not Applicable
NATA	National association of Testing authorities
NH&MRC	National Health and Medical Research Council
PTAA	Professional Tattooing Associations of Australia
QH	Queensland Health
RACS	Royal Australasian College of Surgeons
sp	Species
WHO	World Health Organisation