Updated February 2011

Please read this section of the guidance carefully as it has new important text and the paragraphs have been re-arranged and re-numbered, although the *original* contents are not substantially changed from the previous version [12.08]. The previous version [12.08] has been archived.

ADVICE & GUIDELINES ON PROFESSIONAL CONDUCT

FOR DISPENSING OPTICIANS

SECTION 4: INFECTION CONTROL

Guideline

4.1 The dispensing optician should practise appropriate infection control procedures, for the protection of both the dispensing optician and their patients.

Advice

General

4.2.1 It is in the patient's and the practitioner's best interests to avoid the transmission of any infection between patient and practitioner or between patients.

4.2.2 Practitioners should maintain high levels of hygiene.

Introduction

4.3.1 Infection is recognised as a common, but largely avoidable, complication in healthcare provision. Patients may present to the dispensing optician in practice with an infectious illness, either knowingly or unknowingly, and pose a risk of cross infecting the dispensing optician or passing on the infection to other patients through use of medical devices. Dispensing Opticians themselves may also be harbouring infectious disease, which they may be at risk of passing on to their patients. In addition, the practice environment may pose a microbiological hazard and provide an infection risk to both staff and patients.

4.3.2 The main routes through which infections may be transmitted are: through physical contact, contact with body fluids and via airborne particles. The risk of the accidental transmission of infection in optical practice is low compared with that encountered in some other healthcare disciplines. Nevertheless, the direct transmission of skin infections, respiratory infections and enteric infections does occur, and ophthalmic infections such as bacterial and viral conjunctivitis may also be transmitted if inadequate infection control measures are in place. The close proximity (< 1m) between staff and patients in optical practice poses special risks which must always be borne in mind.

4.3.3 In recent years, attention has been drawn to the risk of transmission of blood borne viruses such as human immunodeficiency virus (HIV) and hepatitis B and C. The main risk of transmission is associated with invasive procedures in which injury e.g. needlestick, could result in blood from the infected individual entering open tissues of another person. The risk of transmission of blood borne viruses in practice is extremely low

but transmission of skin infections e.g. staphylococcus, herpes simplex, fungi, respiratory infections (e.g. tuberculosis) and enteric infections (e.g. viral gastroenteritis) are more likely. Ophthalmic infections e.g. bacterial and adenoviral conjunctivitis may also be transmitted within the practice if inadequate infection control measures are in place.

4.3.4 Concern has also been raised about how to treat patients infected or colonised with Meticillin (formerly Methicillin)-Resistant Staphylococcus aureus (MRSA) or Clostridium difficile (C. diff) to avoid contracting or transmitting the infection. Defence against these infections in common with most others, is largely down to fastidious hand hygiene.

4.3.5 The theoretical transmission of prion proteins, implicated in Creutzfeldt Jakob Disease (CJD) and variant CJD (vCJD), through re-useable ophthalmic devices and trial contact lenses has been identified as a risk by the Department of Health (DH). Currently, there is no evidence that such transmission has occurred.

4.3.6 The Health and Safety at Work Act (1974) places a general duty on the employer to provide a working environment that is safe and without risks to health. Thus, infection control procedures in the practice are essential to protect anyone working in or visiting the practice and to ensure that the legal obligations of the employer are met.

4.3.7 This advice is aimed at dispensing opticians in general practice. Hospital opticians and optometrists should abide by the infection control procedures of their Trust.

Immunisation	Keep up to date with tetanus, polio, tuberculosis Hepatitis B
Hand hygiene	Before patient contact Between patients (see below for more detail) After contact with body fluid
Maintain integrity of skin	Cover cuts to skin with waterproof dressing[preferably coloured. Dry skin properly with paper hand towels after washing. Use hand cream as appropriate. Jars of hand-cream should not be shared with others,
Protective clothing	Use to protect against direct contact with body fluid
Sharps safety	Use equipment with safety devices Use safe handling and disposal procedures
Decontamination of equipment	Decontaminate equipment after use(see below) Disinfect used linen by laundering Use protective clothing whilst handling and cleaning
Decontamination of the environment	Keep environment clean and free from dust Disinfect spills of body fluid

Principles of cleaning, sterilisation and disinfection

4.4.1 There are numerous pieces of equipment that regularly come into contact with patients e.g. trial frames, chin rests, refractor heads, hand held occluders and rulers, as well as ophthalmic devices which come into direct contact with ocular tissues e.g. tonometer heads, gonioscope and other contact lenses. It is essential that they are all appropriately decontaminated, for example by wiping headrests and/or chin rests with a disinfectant wipe, to reduce the risk of transmission of infection.

There are three levels of decontamination:

(a) Cleaning – The removal of organic and inorganic debris from a surface which might support micro-organisms and provide insulation that reduces the efficiency of disinfecting or sterilisation procedures. Detergents and ultrasonic cleaners are frequently used for cleaning purposes.

(b) Disinfection – A treatment that reduces the number of viable micro-organisms but not necessarily bacterial spores or some viruses. Disinfection can be achieved by physical methods such as heat or by the use of chemical disinfecting agents. Chemical disinfection can be an uncertain procedure as it involves an integration between the chemical used, the micro-organism and exposure time.

(c) Sterilisation – A treatment, which completely kills or removes all kind of micro-organisms including spores. Sterilisation can be achieved by ionising radiation, by gaseous ethylene oxide, by gaseous hydrogen peroxide, by low pressure steam and formaldehyde, by filtration, by dry heat (hot air oven) or by moist heat (autoclave).

4.4.2 To be effective all items must be physically clean before being exposed to any sterilisation or disinfection process.

4.4.3 Not all equipment, however, needs to be sterile before use and the following is a general guideline:

- Sterile - Equipment introduced into a sterile body area or in contact with a break in the skin or mucous membrane
- Disinfected - Equipment in close contact with body surfaces or intact mucous membranes, such as the ocular surface e.g. tonometer heads, gonioscope and other contact lenses
- Clean - Equipment not coming into close contact with mucous membranes or sterile body areas e.g. trial frames, refractor heads

4.4.4 Surfaces in the consulting room should be cleaned periodically with detergent and water unless contaminated with body fluids. If contaminated with body fluids a chlorine based disinfectant should be used. All consulting rooms should have access to a wash hand basin and it is good practice for this to be within the consulting room.

Hand hygiene

4.5.1 Handwashing is perhaps the single most important means of preventing the spread of infection. There are a number of organisms present in healthy skin, some are resident organisms (also called skin commensals) and are mostly harmless, although some are known to cause mild eye infections.

4.5.2 There are other transient organisms that can be deposited on the skin, including certain gram-negative bacteria which could lead to more serious corneal infections. Most of these transient organisms can be removed with a thorough wash with liquid soap and water. The skin commensals, however, are mostly left on the skin after washing with soap and water but can be greatly reduced in number by washing with an antiseptic detergent preparation.

4.5.3 The National Institute for Health and Clinical Excellence (NICE 2003) recommends that hands must be decontaminated immediately before each and every episode of

direct patient contact or care and after any activity or contact that could potentially result in hands becoming contaminated.

4.5.4 There is no set frequency for washing your hands, this is determined by actions that are completed and those that are about to be performed.

The following list gives some examples of when hand hygiene may be appropriate:

- Before and after contact lens insertion/removal
- After going to the toilet
- When hands are visibly dirty
- Before (and after as applicable) contact with ocular surfaces/adnexa
- Before (and after as applicable) administering medication e.g. eye drops
- After any possible microbial contamination (e.g. contact with body fluids, wounds, clinical waste)
- After handling soiled / contaminated materials
- Before wearing and after removing gloves

4.5.5 This technique is usually all that is required for most procedures performed in the clinical setting

- Wet hands under running water.
- Dispense soap/antiseptic into cupped hand (N.B. bar soap should not be used).
- Rub hands vigorously and thoroughly for 10-15 seconds without adding more water.
- Ensure all surfaces of the hands are covered.
- Rinse hands thoroughly under warm running water.
- Dry hands with a disposable paper towel. The use of non disposable towels is not good practice.

4.5.6 The table below shows agents recommended for cleaning and disinfection procedures

AGENT	**PREPARATION**	**EXAMPLES OF USE**
Liquid soap	As supplied	Handwash
Chlorhexidene Gluconate 4% skin cleanser	500 ml bottles with pump dispenser e.g. Hibiscrub	Antiseptic handwash
Chlorhexidene 5% in 70% Isopropyl Alcohol	500 ml bottles with pump dispenser e.g. Hibisol	Antiseptic handwash for clean hands
Detergent	General purpose detergent Detergent impregnated wipes e.g. Cutan Multisurface wipes	Cleaning of hard surfaces
Isopropyl alcohol 70%	Impregnated swabs e.g. Mediswabs or wipes e.g.Mediwipes	Disinfection of hard surfaces, chinrests etc.
Hypochlorite solution (1,000 ppm available chlorine)	Available from pharmacies e.g. Milton or own brand 'sterilising solution' (dilute to concentration required)	General disinfection
Hypochlorite solution (10,000 ppm available chlorine)		Disinfection of body fluid spills

Hypochlorite solution (20,000 ppm available chlorine)		Decontamination of trial contact lenses and tonometer heads

Hand washing agents

4.6.1.Soap

Hand washing with soap and water is effective in removing most transient micro-organisms and is usually all that is necessary to prevent cross infection. In clinical areas, soap should be supplied as liquid soap in disposable containers or containers that are washed and dried before refilling. The containers should never be "topped up".

4.6.2 Antiseptic

Antiseptic agents are more effective in reducing both transient and resident micro-organisms (e.g. chlorhexidine, povidine - iodine). Chlorhexidine (4%) preparations have shown to be more effective as they have a residual effect against transient organisms influencing the survival time on hand surfaces. The use of an antiseptic agent is recommended:

- Before and after direct contact with patients in clinical settings where there is an outbreak of antimicrobial resistant organisms (e.g. Residential or Nursing Homes);
- Where there is heavy microbial contamination;
- Before performing invasive procedures/minor operations.

4.6.3 Antibacterial (alcohol-based) handrub

Antibacterial handrubs (generally but not exclusively alcohol based) are effective antiseptic agents which rapidly destroy micro-organisms on the skin surface. It is indicated that, when used correctly, alcohol hand rubs reduce microbial load and increase compliance with hand hygiene. However they are not a cleaning agent and should not be used if hands are visibly dirty or contaminated with blood, bodily fluids or other potentially infectious agents. To be effective against staphylococci, including MRSA, hand rubs must contain 70% of either ethyl or isopropyl alcohol. They are especially useful in situations where handwashing and drying facilities are inadequate e.g. domiciliary visits, or between patient contacts.

Using an unperfumed alcohol-based hand rub prior to contact lens insertion has been shown to have a negligible effect on ocular comfort, redness and lens wettability providing that the hand-rub has been allowed to dry on the hands as per the manufacturer's instructions (often 15 seconds).

Whilst the efficacy of alcohol hand rubs has been proven, they are not to be used as a substitute for good handwashing technique using soap and water when available. Good hand-washing is strongly advised at the start and finish of a session. Alcoholic hand-rubs are not effective against Clostridium difficile spores or norovirus (a cause of viral gastro-enteritis)

Hand washing technique

4.7.1 Frequent hand washing and the use of alcohol preparations can cause damage to the skin. Cracked skin may harbour more bacteria and increase the risk of the transmission of infection. Soap should always be applied to wet hands to minimise irritation to the skin. Thorough drying and the regular use of hand creams may help to prevent skin damage. Jars of hand cream should not be shared with others.

4.7.2 The World Health Organisation has produced guidance on handwashing and handrubbing technique (see below).

WHO Cartoon as ABDO

Airborne infection

4.8.1 Potentially infectious respiratory aerosols are generated when an individual sneezes, coughs or talks. A single cough can transmit up to 100 000 particles and a sneeze 20 times this number. Particles over 5 microns in diameter do not normally travel more than 1m but smaller particles can travel longer distances and remain airborne for longer. Large particles are deposited in the vulnerable mucous membranes (nose, eyes, mouth). Small particles can reach the respiratory tract including its lower parts. Environmental conditions, including temperature, humidity and airflow, influence the transmission of disease by droplet infection. Infections that can be transmitted in this way include a number of respiratory diseases such as the common cold and influenza.

4.8.2 Because of their professionally-necessary proximity to the patient's nose and mouth, practitiners are at a special risk of airborne infection and of infecting their patients in the same way.

4.8.3 The risk of airborne infection can be minimised in a number of ways:

- People who are coughing and/or sneezing should cover their nose and mouth whilst coughing/sneezing and use tissues to catch their cough or sneeze
- People should dispose of these tissues into the nearest receptacle as soon as possible after use (tissues should be disposed of in normal domestic refuse and do not require special treatment
- Hand hygiene should be performed after coughing/sneezing.

In addition

- People should avoid touching their mouth, eyes and/or nose, unless hand hygiene has been performed.

Masks

4.8.4 Research into whether the use of masks can help prevent infection is inconclusive. According to the Epic2 Guidelines research has not proved that facemasks prevent the transmission of hospital CA infections in routine procedures so the routine use of masks is not recommended or needed unless there is a serious respiratory risk involved (e.g. tuberculosis within the first two weeks of treatment or epidemic or pandemic flu (where there is no vaccination available)). NICE (2003) has concluded that surgical masks are not effective protection and specialised respiratory protective protection should be worn (e.g. particular filter mask).

4.8.5 The Royal College of Ophthalmologists does not issue advice to wear masks for normal ophthalmic examinations and minor procedures where there is no likelihood of cross-inoculation with bodily fluids.

Situation of increased concern

4.9.1 Whilst all infections should be avoided wherever possible, infections such as MRSA and C. diff have caused particular concern in recent times.

MRSA

4.9.2 Staphylococcus aureus is a bacterium that can reside on the skin, or can be found in the nose. About one third of healthy individuals carry S. aureus . It is generally non-pathogenic except where it gains access to deep tissues, such as; broken skin, resulting in wound infection; the bloodstream, leading to bloodstream infection (bacteraemia), and to the lungs causing for example ventilator-associated pneumonia. MRSA is a less common variant of S. aureus which may be resistant to many antibiotics making it more difficult to treat than normal strains of the bacterium. MRSA may be a problem in many hospitals and, although the risk of serious infection with MRSA is lower in the community, it still exists and this organism is increasingly seen in community health care units such as nursing homes.

4.9.3 The impact of MRSA is considerable; patients with a MRSA bloodstream infection are twice as likely to die from their infection as patients with bloodstream infection caused by meticillin-sensitive S. aureus. Measures to control the emergence and spread of MRSA are justified therefore because the options available for the treatment of these infections are reduced and because they may spread amongst vulnerable, at risk, patients.

4.8.4 It is important to note, however, that MRSA infection does not cross intact skin and that there is very little risk of infection for normal, healthy clinical staff.

MRSA in the community

4.9.5 MRSA detected in the community may be the result of:

- Patients discharged from hospital with MRSA
- Nursing home residents who have acquired MRSA
- MRSA transmitted to non-hospitalised patients or individuals from MRSA patients
- MRSA arising naturally in the community.

4.9.6 It has been shown that 12% of MRSA cases are community-associated , and skin and soft tissue infections are more common among community-associated cases compared with those acquired in hospital.

4.9.7 A patient/resident from whom MRSA is isolated, but who is not suffering from an obvious infection is said to be colonised with MRSA. People may be unknowingly colonised with MRSA for many years, and therefore anybody from whom MRSA has been isolated at any time in the past may still be carrying the organism. Unlike those who are infected with MRSA, those who are colonised are not treated with antibiotics but should exercise good personal hygiene control.

Infection control measures

4.10.1 Staphylococci are common in skin folds and contaminated skin scales may contaminate flat surfaces if they become airborne, for example during activities such as bed making, or if the affected person has a condition such as eczema. Staphylococci that are shed into the environment may survive for long periods in dust. Flat surfaces act as reservoirs for S. aureus, including MRSA, and contamination will transfer easily to hands when such surfaces are touched. Contamination on hands and/or gloves may be similarly transferred by contact with curtains, equipment, switches, phones, computer keyboards, door handles, light switches etc.

4.10.2 When examining a patient/resident with a MRSA infection, or who is known to be colonised with MRSA, the following precautions are advised -

Personal

4.10.3 Hand hygiene is the single most important intervention to prevent transmission of infection.

(a) Hand hygiene must be carried out before and after each patient contact and before and after leaving the patient's home or care facility. Hands should either be washed using an effective technique (see above) using liquid soap and water or a 70% alcohol hand rub should be used;
(b) Hands should be dried thoroughly preferably using a disposable paper towel;
(c) While alcohol hand gels and rubs are a practical alternative to soap and water, alcohol is not a cleaning agent. Hands that are visibly dirty or potentially grossly contaminated must be washed with liquid soap and water and dried thoroughly;
(d) Suitable preparation increases the effectiveness of hand washing. You should therefore:

- Keep nails short and clean and free of nail varnish
- Where possible avoid wearing jewellery, especially rings with ridges or stones
- Avoid wearing wristwatches
- Artificial nails should not be worn;

- Cuts or breaks in the skin of anyone coming into contact with a known
- MRSA patient or carrier should be covered with impermeable waterproof
- dressings (preferably coloured);
- To prevent possible contamination from the skin and skin flakes consider:
- Wearing short sleeves or rolling up long sleeves
- Not wearing a tie.

Gloves

4.10.4 NICE (2003) recommend that gloves are worn for invasive procedures, contact with sterile sites and non-intact skin or mucous membranes, and for all activities that have been assessed as carrying a risk of exposure to blood, body fluids, secretions or excretions, or sharp or contaminated instruments.

4.10.5 Gloves may be required (to protect the dispensing optician from the patient, and subsequent patients from cross infection), but only if contact with body fluids (e.g. tears) or other contaminated material (e.g. dressings) is likely. Gloves do not provide complete

protection so hand hygiene measures are necessary before wearing, and after the removal of gloves. If you believe that the gloves are contaminated they should be considered as likely to cause an infection and disposed of appropriately. Many care homes will have dedicated disposal facilities.

4.10.6 There are two types of disposable gloves available – disposable examination gloves, and close fitting sterile surgical gloves, which are individually packaged for surgical procedures. The disposable gloves (which are not individually packaged) are not sterile.

4.10.7 When deciding whether or not to use gloves practitioners should consider the risk of infection. Factors to consider include:

- Whether the patient has an overt infection such as ulcerative blepharitis, acute viral or bacterial conjunctivitis;
- The degree of contact with body fluids or infected tissue;
- The consequences of infection;
- The fact that latex gloves may cause asthma in the wearer or their co-workers.

4.10.8 The Royal College of Ophthalmologists does not issue advice to wear gloves for normal ophthalmic examinations and minor procedures where there is no likelihood of cross-inoculation with bodily fluids. They suggest that hand hygiene is sufficient for contact lens fitting.

4.10.9 The most contagious condition that practitioners are likely to encounter in the tears of patients is adenovirus. Previous experience with adenovirus outbreaks in eye departments has shown that transmission can be prevented by strict hand hygiene, single use tonometer prisms and disinfection of surfaces (especially slit lamps).

Equipment

4.10.10 The following precautions are advised in the case of any equipment or instruments that come into contact with a patient known to be infected with MRSA, who is known to be colonised with MRSA, or where the environment is contaminated or suspected of being contaminated:

(a) Hand washing before and after contact with every potentially contaminated piece of equipment.
(b) Clean and dry all equipment

- Cleaning may comprise washing with soap or detergent, or alcohol if suitable.
- Please note some modern trial frames with rubberised finishes are not suitable for cleaning with alcohol.

4.10.11 The principles described above apply to all situations where patients or the dispensing optician are at risk of any known transmissible infection. This could include situations where patients spend time in close proximity to each other. Examples include residential or nursing homes, schools and workplaces.

4.10.12 Dispensing Opticians are also advised to take appropriate hygiene measures when leaving a patient's house or care home. Environments such as care homes and

hospitals frequently provide hand gels for visitors to use. Dispensing Opticians should use these according to the instructions given by the care home or hospital.

Contamination via contact lens solutions and medicine bottles

4.11. Dispensing Opticians must ensure that all contact lens care products and medicines used during the examination are carefully maintained and discarded prior to their expiry date. Any multidose container can be a source of cross infection and varying levels of contamination exist in the plastic bottles containing contact lens solutions. Clinicians should note when these bottles are opened and discard them in accordance with manufacturer's guidelines, which vary depending on the product and its use. Care must be taken not to contaminate the dropper tip and the lid must be replaced on the container after use as all solutions are susceptible to contamination during the time that caps are removed. If suspected of contamination, solutions should be disposed of immediately. Single use drug delivery systems are recommended where possible.

The re-use of contact lenses and ophthalmic devices

4.12.1 There are no known cases of transmission of variant Creutzfeldt-Jakob Disease (vCJD) by contact lenses or ophthalmic devices. However, the Spongiform Encephalopathy Advisory Committee (SEAC) in 1999 advised the Department of Health (DH) of a remote theoretical risk of transmitting prions from one patient to another by the re-use of contact lenses or ophthalmic devices that come into contact with the eye. Whether such a risk could exist has been called into question by a study[1] which found abnormal prion protein in the retina and optic nerve of a vCJD victim, but not in any of the anterior segment structures that were examined. The Ophthalmology Sub-Group of the Government's Advisory Committee on Dangerous Pathogens (ACDP) Transmissible Spongiform Encephalopathy (TSE) working group re-visited the topic in 2009, following the redesignation of the anterior eye as low risk. Where single patient use of lenses and devices contacting the surface of the eye is impracticable, best decontamination procedures should be applied. These procedures include the use of a solution of sodium hypochlorite (see later).

4.12.2 Clearly the risk of transmission of disease has to be balanced against the benefits that patients receive from contact lenses and ophthalmic devices, both directly and indirectly, so that other clinical outcomes are not compromised. Decontamination procedures include the removal of cellular and proteinaceous deposits from surfaces followed by the use of a disinfection agent to eliminate microorganisms. Future advice may vary with the advent of new lenses, materials and decontamination procedures, and increasing knowledge of prion disease.

These guidelines are intended to assist a clinician to render whatever services are clinically and professionally necessary to serve the best interests of the patient.

General principle

4.12.3 Wherever practicable, a contact lens or ophthalmic device that comes into contact with the ocular surface should not be used on more than one patient, as to do so may expose patients to unnecessary risk through the transmission of disease. Where this is impracticable suitable items should be decontaminated using a recognised method[2].

Contact lenses

4.12.4 The definitions below apply to the following categories of lenses:

- Hydrogel lenses;
- Silicone hydrogel lenses;
- Hybrid lenses; and
- Rigid lenses (including corneal lenses, scleral lenses, scleral shells and ocular prostheses).

(a) Trial contact lens: a lens that is used to assess fitting, following which it is either disposed of by the clinician or dispensed to the patient. Currently the majority of contact lens patients are fitted with single patient use lenses of various types.

(b) Special complex diagnostic contact lens: a lens used by the clinician to assess performance of the design on the eye. It is recognised that in certain cases, particularly where there is disease or abnormality of the lid, cornea or ocular surface, special complex diagnostic contact lenses may be necessary for a successful clinical outcome. These lenses may need to be re-used.

4.12.5 Special complex diagnostic lenses may be of any type. When using such lenses, the following conditions shall be observed:

(a) The lenses should be used solely within the clinician's premises and under the control of the clinician at all times.
(b) The clinician should ensure that decontamination is carried out to the highest possible standards.
(c) The clinician should keep full records to show the usage of each lens.
(d) The clinician should inform the patient of all the relevant risks and benefits associated with contact lens fitting. It is best practice to obtain the patient's signature on an acknowledgement form. A suitable form of words recommended by the DH can be found in the College Guidance on fitting contact lenses (chapter G2).

Ophthalmic devices

4.12.6 An ophthalmic device is any instrument that comes into contact with the ocular surface. There are many examples, but commonly used devices are tonometers, contact pachymeters, gonioscopes and other lenses to aid diagnoses of disease.

4.12.7 The single use of these devices may be practicable in some cases, for example disposable tonometer heads. Alternatively some devices can be decontaminated using a recognised method (see below). Where a disposable form of the device is not available and the device is not able to withstand decontamination the optometrist must exercise professional judgement as to the risks and benefits of re-using the device, bearing in mind that undetected disease may have sight- or life-threatening consequences.

Information for the patient

4.12.8 When a device that cannot withstand decontamination is to be re-used in the management of a patient, the risks and benefits of using the device must be explained to that patient.

Decontamination of contact lenses and ophthalmic devices

4.13.1 The DH has issued the following advice on the proper decontamination of surgical instruments before re-use, which also has relevance for the re-use of contact lenses and ophthalmic devices that come into contact with the ocular surface:

> 'The abnormal protein associated with Transmissible Spongiform Encephalopathies (TSEs), including vCJD, is very resistant to all common methods of inactivation. Expert advice is that effective cleaning of surgical instruments prior to sterilisation is of the utmost importance in reducing the risk of transmission of vCJD via surgical procedures. It is therefore essential that all existing cleaning and sterilisation procedures operate to the highest standards.'[3]

Alcohol wipes

4.13.2 The practice of decontaminating contact devices with alcohol wipes alone is not sufficient to remove prion material, and may in fact fix the prion protein to the surface of the instrument[4].

How to decontaminate

4.13.3. It is now agreed that there is a low potential for prion infectivity via the anterior eye and corneal and conjunctival surfaces. The guidelines on decontamination of contact lenses and ophthalmic devices that come into contact with the patient's eye have therefore been revised. Prion proteins adhere strongly to materials including smooth surfaces. A key stage in the decontamination of the device is therefore to ensure that it is thoroughly cleaned to remove adhered debris as the potential for the transmission of cellular and proteinacious debris via tonometer prisms has been demonstrated [5,6]. The concentration of the sodium hypochlorite advised has been reduced to a level that is appropriate for inactivating infectious agents such as bacteria and viruses, and is probably less harmful to the eye if it accidentally comes into contact with it[7]. It has been reported that all viruses tested in saline (>99.9%) were inactivated within 10 min by 0.1-0.5 ppm chlorine and that protozoan cysts (*Giardia, Acanthamoeba* and *Naegleria* spp) were significantly reduced (>90%) by 1-4 ppm chlorine[8]. The 1% solution that is recommended by the ACDP working group should therefore eradicate conventional microorganisms, including protozoal cysts.

4.13.4 Equipment needed for decontamination of contact lenses or other ophthalmic devices:

- Water for irrigation BP or sterile normal saline
- Cleaning solution, such as liquid soap or detergent

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[3] HSC 1999/178 Variant Creutzfeldt-Jakob disease (vCJD): Minimising the risk of transmission. August 1999. NHS Executive

[4] Department of Health (2009). Managing CJD/vCJD risk in ophthalmology (para L32). Guidance from the TSE Working Group (http://www.dh.gov.uk/ab/ACDP/TSEguidance/index.htm)

[5] For cellular debris: Lim R, Dhillon B, Kurian KM et al *Retention of corneal epithelial cells following Goldmann tonometry: implications for CJD risk* Br J Ophthalmol 87(5) 583-586 2003

[6] For proteinaceous debris: Amin SZ, Smith L, Luthert PJ et al *Minimising the risk of prion transmission by contact* tonometry Br J Ophthalmol 87(11) 1360-1362 2003

[7] Buckley R *Decontamination* Optometry in Practice 11(1) 25-29 2010

[8] Sobsey MD *Inactivation of health-related micro-organisms in water by disinfection processes* Water Sci Technol 21 179-195 1989 cited in Rutala WA and Weber DJ *Uses of inorganic hypochlorite (bleach) in health-care facilities* Clinical Microbiology Reviews 1997 p.602

- Sodium hypochlorite solution 10 000 ppm

4.13.5 If a contact lens or ophthalmic device is to be reused it needs to be decontaminated and made ready for its next use. The essential steps are:

- The item must not be allowed to dry. Immediate decontamination is ideal, but if this is not possible, the item should be kept in a container of water for irrigation BP or sterile normal saline until it can be decontaminated.
- The item must be thoroughly cleaned (including by rubbing) to remove cellular debris and adherent protein.
- The item must then be decontaminated using sodium hypochlorite. Sodium hypochlorite is extremely toxic to the eye and it is vital that it is **thoroughly** rinsed off before re-use.
- The item can then be reused, unless other steps are necessary (subsequent to decontamination), to enable it to be reused

Current advice is (adapted from Buckley 2010[9]):

Step	ACDP TSE WG, 2009 recommendation	Coll Optom / ABDO 2001 (included for comparison purposes only)
When to decontaminate	Immediately after use	-
Drying	Do not allow to dry	Do not allow to dry
Rinsing	In Water for Irrigation BP/sterile normal saline for at least 30 sec	-
Cleaning	Rubbing with liquid soap or detergent	In usual manner
Rinsing	In Water for Irrigation BP/ sterile normal saline for at least 30 sec	-
Hypochlorite	10,000 ppm for 10 min	20,000 ppm for one hour
Rinsing	In Water for Irrigation BP/ sterile normal saline for at least 10 min with 3 changes of water/saline	Thorough rinse in saline or boiled water
Drying	Shake off excess, dry with tissue, reuse immediately or store dry	-
Further measures.	If necessary.	Conventional disinfection to follow

The item may then be safely re-used.

4.13.6 Agents or procedures capable of binding proteins to surfaces (e.g. isopropyl alcohol, glutaraldehyde, autoclaving) should **never** be used unless devices are first decontaminated using the protocol above[10]. See para 4.12.1.

4.13.7 A lens or device intended by the manufacturer for single use should not be re-used.

Recognised risk categories

4.14.1 Although the risk of transmission of prion disease via contact lenses and ophthalmic devices is no more than theoretical in people with no predisposition to developing Transmissible Spongiform Encephalopathies (TSEs), there exist certain patient groups which have been identified as being at greater than normal risk of developing classical CJD:

- Recipients of pituitary derived hormones such as human growth hormone or gonadotrophins;
- People known or assumed to have had human dura mater implanted, including people who have had brain surgery before August 1992, and people who have had an operation for a tumour or a cyst of the spine before August 1992;
- People diagnosed or suspected of suffering from CJD of any type, or with a family history of CJD;
- People with degenerative neurological diseases of unknown causation.

4.14.2 Before carrying out any procedure that might involve re-use of a contact lens or ophthalmic device the practitioner should as far as possible question the patient to establish whether he or she falls into any of these categories. In such a situation, only single patient use items should be used. If this is not possible the clinician should consider referring the patient to the Hospital Eye Service.

4.14.3 If emergency management of a patient who falls into one of the above groups necessitates the use of a re-usable item, it should be discarded immediately after use.

Contamination via contact lens solutions and medicine bottles

4.14.4 Dispensing opticians must ensure that all contact lens care products and medicines used during the examination are carefully maintained and discarded prior to their expiry date. Any multidose container can be a source of cross infection and varying levels of contamination exist in the plastic bottles containing contact lens solutions. Clinicians should note when these bottles are opened and discard them in accordance with manufacturer's guidelines, which vary depending on the product and its use. Care must be taken not to contaminate the dropper tip and the lid must be replaced on the container after use as all solutions are susceptible to contamination during the time that caps are removed. If suspected of contamination, solutions should be disposed of immediately. Single use drug delivery systems are recommended where possible.

Safe disposal of waste

4.15.1 Under section 34 of the Environmental Protection Act 1990 any person who '…imports, produces, carries, keeps, treats or disposes of…' controlled waste has a duty of care to take all reasonable steps to deal with it appropriately. Controlled waste is defined as being waste from households, commerce or industry. Dispensing Opticians therefore

have a responsibility to dispose of the waste that they produce responsibly. This applies to producers of both non-hazardous and hazardous waste.

4.15.2 Clinical waste is defined in the Controlled Waste Regulations 1992 10. It means any waste which consists wholly or partly of:

- human or animal tissue;
- blood or bodily fluids;
- excretions;
- drugs or other pharmaceutical products;
- swabs or dressings; or;
- syringes, needles or other sharp instruments;

which unless rendered safe may prove hazardous to any person coming into contact with it. And:

- any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment, care teaching or research, or the collection of blood for transfusion, being waste which may cause infection to any person coming into contact with it.

4.15.3 The disposal of waste must be safe, environmentally sound and legal.

4.15.4. For information, common optical/ophthalmic waste should be categorized and disposed of as follows

Optical/Ophthalmic items	Waste Category	Method of disposal
Used or unused minims Used or unused fluorets	Non-hazardous pharmaceutical waste	Store in a rigid leakproof container Incinerate
Empty CL solution bottles Tonometer probes Large quantities of CLs [eg time expired bank lenses]	Non-hazardous healthcare waste	Place in tiger bags [Yellow/ black striped bags] Dispose of in the offensive waste stream
Chloramphenicol	Hazardous waste	Store in a rigid leakproof container Send for specialist incineration

See Appendix F[4] for detailed information on the disposal of waste

Further information can be found at

www.advisorybodies.doh.gov.uk/acdp/tseguidance/faq.htm

www.defra.gov.uk/environment/waste/topics/clinical.htm Accessed 16/10/08 Further information

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