

# **ADVICE & GUIDELINES ON PROFESSIONAL CONDUCT**

## **FOR DISPENSING OPTICIANS**

### **SECTION 4: INFECTION CONTROL**

#### **INTRODUCTION**

4.1.1 The Health & Safety at Work etc. Act (1974) requires employers to ensure, so far as is reasonably practical, the health, safety and welfare at work of all employees. The Act covers the provision and maintenance of equipment, the handling and storage of articles and substances, the provision of instruction, training and supervision and the provision and maintenance of a safe working environment.

4.1.2 In order to comply with the Act, all equipment must be properly maintained and all clinical procedures must be carried out safely. Drugs and harmful substances must be handled with care and stored safely.

4.1.3 It is the duty of all employers and practitioners to update their hygiene routines in the light of new information and products.

#### **INFECTION AND CROSS-INFECTION**

4.2.1 Infection is the pathological state that results from the invasion of the body by pathogenic micro-organisms. Cross-infection (or nosocomial infection) is infection contracted during the course of clinical care in a hospital or other healthcare facility (such as an optical practice).

4.2.2 Cross-infection is a common, but partly avoidable, complication of healthcare provision. A patient may present at a clinic or practice with an infectious illness, which may be either symptomatic or asymptomatic, and pose a risk of infecting the practitioner or passing on the infection to other patients either directly or through the use of medical devices. Practitioners themselves may also be harbouring infectious disease, which they may be at risk of passing on to their patients. In addition, the clinic or practice environment may pose a microbiological hazard and present an infection risk to both staff and patients.

4.2.3 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.

## CONTAGIOUS DISEASES

### Infections transmitted by physical contact

4.3.1.1 Physical contact can be directly between individuals, for example hand-lid contact during the course of examination or contact lens fitting. It can also be indirect, between objects or surfaces and individuals. Examples of such indirect contact are soiled tissue wipes and trial rigid contact lenses.

4.3.1.2 Viruses that can be transmitted by direct and indirect physical contact include adenovirus, herpesvirus, papilloma virus and molluscum contagiosum.

4.3.1.3 Bacteria that can be transmitted in this way include methicillin-resistant *Staphylococcus aureus* (MRSA).

4.3.1.4 Fungal infections can also be transmitted through contact. Examples are athlete's foot (*Tinea pedis*) and Ringworm (*Tinea corporis*).

### Infections borne in the blood and other body fluids

4.3.2. Blood-borne and other body fluid-borne infections are transmitted by contamination by blood or body fluids. The commonest examples are HIV, hepatitis B and C and viral haemorrhagic fever. These are all viral diseases. Other diseases, including TSEs (transmissible spongiform encephalopathies also known as prion diseases] have been transmitted by the transfusion of blood and blood products. There is a small degree of risk to practitioners, support staff and patients from cross-infection with such diseases. Infection may be transmitted via contaminated instruments and devices including contact lenses. It is necessary to be aware of this possibility and to observe strict infection control procedures in the course of clinical practice. No case has yet been identified of the transmission of a prion disease during optical practice, but the possibility is thought to exist.

### Airborne infection

4.3.3.1 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 while 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.

4.3.3.2 Because of their professionally-necessary proximity to the patient's nose and mouth, optical practitioners (along with other healthcare workers such as ophthalmologists, otorhinolaryngologists and dentists) are at special risk of airborne infection and of infecting their patients in the same way.

4.3.3.3 The risk of airborne infection can be minimised in a number of ways. Persons with signs and/or symptoms of a respiratory infection of any type should be instructed:

- to cover the nose and mouth when coughing
- to use disposable tissues to contain respiratory secretions
- to dispose of tissues in the nearest receptacle after use
- to perform hand hygiene after contact with respiratory secretions and contaminated objects or materials

### **Influenza and Droplet Transmission**

4.3.4 [ Information currently being updated ]

### **CJD / vCJD**

4.3.5.1 The theoretical transmission of prion proteins, implicated in Creutzfeldt Jacob 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). These untreatable diseases affect the central nervous system and some other tissues and are invariably fatal.

4.3.5.2 The entire population of the UK currently above the age of ten years has been identified as having been exposed to beef or beef products contaminated with the bovine spongiform encephalopathy (BSE) agent. This agent has caused disease (vCJD) in 162 individuals since 1990.

4.3.5.3 In addition to the general risk of vCJD, certain patient groups have been identified as being at greater than normal risk (which is one per million per annum) 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 cyst of the spine before August 1992
- people diagnosed of suffering from CJD of any type or with a family history of CJD
- people with degenerative neurological diseases of unknown causation

As a precautionary measure, patients in any of these groups who require ocular interventions of any kind should be referred to the Hospital Eye Service.

## **PRINCIPLES OF INFECTION CONTROL**

### **Routine infection control precautions**

4.4.1 There are routine infection control procedures which can be used to minimise the transmission of infection [summarized in the table below]. Although contact with body fluids and use of sharps is rare within optical practice, it is important that the practitioner understands how to minimise the risk of infection and uses the appropriate techniques to ensure his safety and the safety of the patient. Sharps e.g. needles may be used in optical

practice for the removal of foreign bodies and the metallic caps from contact lens bottles may also cause a sharp injury.

Immunisation	Keep up to date with tetanus, polio, tuberculosis Hepatitis B
Hand hygiene	Before and after contact with all patients (see below for more detail) After contact with body fluid
Maintain integrity of skin	Cover cuts to skin with waterproof dressing. Dry skin properly with paper hand towels. Use hand cream as appropriate
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

## Personal Protection

4.4.2.1 Immunisation - All practitioners and support staff should be up to date with immunisations against infectious diseases including tetanus, polio, hepatitis B and tuberculosis.

4.4.2.2 Barrier Techniques - All cuts and abrasions should be covered with waterproof sticking plasters. Although HIV has been isolated in tears it is considered unlikely that this would lead to a risk of cross-infection between patient and practitioner.

## Hand hygiene

4.4.3.1 Good hand hygiene practice is now widely acknowledged as being the single most effective intervention for reducing the risk and preventing the spread of infection. It is a means of removing transient micro organisms and significantly reducing resident microorganism [also called skin commensals] to a level which is not harmful to patients. Hand hygiene also removes blood, body fluids and any other infectious or hazardous agents

4.4.3.2 It is recommended that sinks with warm water used only for hand washing are available in all clinical areas and that they are easily accessible.

4.4.3.3 The National Institute for Health and Clinical Excellence (NICE) 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 .

4.4.3.4. 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.

Hand hygiene should always be performed:

- Before and after contact lens insertion/removal
- After going to the toilet
- Before [and after as appropriate] contact with ocular surfaces/adnexa in each and every episode of patient contact /care
- Before and after 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
- When hands are visibly dirty
- Before wearing and after removing gloves

4.4.3.5 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.
- 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.

#### 4.4.4 Hand washing agents.

##### 4.4.4.1 Soap

Handwashing with soap and water is effective in removing most transient micro-organisms and is usually all that is necessary in most situations to prevent cross infection. In clinical areas, soap should be preferably supplied as liquid soap in disposable containers or containers that are washed and dried before refilling. The containers should not be "topped up".

##### 4.4.4.2 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 shown 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 /Nursing Homes)
- Where there is heavy microbial contamination
- Before performing invasive procedures/minor operations.

##### 4.4.4.3 Alcohol-based handrub.

Alcohol based handrubs are effective antiseptic agents which rapidly destroy microorganisms on the skin surface. It is indicated that, when used correctly, alcohol hand rubs reduce microbial load and increases 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 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.

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.

#### 4.4.4.4 Handwashing technique

The World Health Organisation has produced guidance on handwashing and handrubbing technique:

[ World Health Organisation - Pictorial Advice on Handwashing ]

A rapid decontamination of the hands can be achieved by rubbing the whole surface with an alcoholic solution e.g. Hibisol.

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. Regular use of hand creams may help to prevent skin damage.

### **Cleaning, disinfecting and decontamination**

4.4.5.1 There are numerous pieces of equipment and appliances with which patients regularly come into contact, 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, gonioscopes 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.

Decontamination is defined as the process of cleansing to remove microorganisms or foreign matter from contaminated materials. There are three levels of decontamination:

- **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.
- **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.

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

4.4.5.2 To be effective all items must be physically clean before being exposed to any sterilisation or disinfection process. 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 is in contact with a break in the skin or mucous membrane
- Disinfected - Equipment in close contact with body surfaces of intact mucous membranes, such as the ocular surface e.g. tonometer head, gonioscopes
- Clean - Equipment not coming into close contact with mucous membranes or sterile body areas e.g. trial frames, refractor heads.

All surfaces used as a preparation area for dealing with patients and disinfected/sterile appliances must also be cleaned and disinfected regularly. Surfaces should be cleaned with detergent and water unless contaminated with body fluids, then a chlorine based disinfectant should be used. It is considered good practice for the consulting room to contain a wash hand basin and for the practitioner to maintain good hand hygiene between patients and certain procedures as necessary.

The table below summarises agents recommended for cleaning, disinfection and decontamination 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	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)	Available from pharmacies e.g. Milton or own brand 'sterilising solution' (dilute to concentration required)	Disinfection of body fluid spills
Hypochlorite solution (20,000 ppm available chlorine)	Available from pharmacies e.g. Milton or own brand 'sterilising solution' (dilute to concentration required)	Decontamination of trial contact lenses and tonometer heads

## **CONTACT LENSES AND OPHTHALMIC DEVICES**

### **Contact Lens Solutions**

4.5.1.1 Contact lens opticians must ensure that all contact lens care products used during the examination are carefully maintained and discarded prior to their expiry date. As recent studies have demonstrated, 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. All solutions run the risk of infection during the time that caps are removed, they must therefore be replaced immediately after each application.

4.5.1.2 Chlorine can be toxic to the eye. Should any sodium hypochlorite solution come into contact with the eye, irrigate with sterile normal saline, check the ocular area for inflammation and for damage using fluorescein, and if there are any clinically significant signs, re-examine the next day or refer as appropriate.

### **Contact Lens Practice**

#### 4.5.2. General points

All surfaces used for preparation prior to contact lens fitting or aftercare should be disinfected regularly. All containers used for temporary storage, whilst the patient is undergoing an examination, should be cleaned and disinfected before and after use.

The re-use of trial contact lens fitting sets ceased in 1999, following advice from SEAC [the Spongiform Encephalopathy Advisory Committee] to the Medical Devices Agency. Since that time single patient use contact lenses have been considered to be best practice. However it was agreed that special complex diagnostic contact lenses might be re-used and decontamination was recommended after each use.

### **Re-use of contact lenses and ophthalmic equipment**

#### 4.5.3 Decontamination

A solution containing 20,000 parts per million of available chlorine sodium hypochlorite is effective in reducing Transmissible Spongiform Encephalopathies, including vCJD.

Decontamination of contact lenses and ophthalmic devices should be carried out using the following procedure:

1. The item should not be allowed to dry following use.
2. It should be cleaned as usual and then soaked in 2% sodium hypochlorate (Milton) solution for one hour.
3. It should be removed from the solution and residual solution shaken off.
4. It should be thoroughly rinsed with sterile solution saline or boiled water.
5. Then disinfected using the normal procedure before storage.

The item may then be safely used.

## **SAFE DISPOSAL OF WASTE**

4.6.1 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. Optometrists and 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.

4.6.2.1 The Hazardous Waste Regulations 2005, which came into force in July 2005 have reclassified waste to fall in line with European legislation. This has two main implications for optometrists and dispensing opticians:

4.6.2.2 The separate category of 'special waste' (pharmaceutical waste) has been removed. POMs are now either hazardous (which depends upon their toxicity and concentration) or not. The POMs commonly used by optometrists and dispensing opticians are not of a sufficient concentration to be classed as hazardous and so are not subject to the consignment regulations that used to apply to special waste.

POMs that are not classed as 'hazardous' do not need a consignment note, or special transportation arrangements. However, as 'medicinal waste', the POMs may possess hazardous properties and therefore require appropriate disposal. Under their duty of care (see para 8.1 above) optometrists and dispensing opticians must identify any medicines in their waste to their waste disposal company, to ensure they are able to dispose of them properly.

It is recommended that best practice is to have a waste transfer note system with the waste contractor to ensure that the waste is incinerated at high temperature. Waste medicines should as far as possible be disposed of in their original packaging.

4.6.2.3 Clinical waste is defined in the Controlled Waste Regulations 1992. 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.

4.6.3 Waste is considered to be hazardous if it is amongst other things irritant, harmful or infectious.

4.6.4 The 'soft' healthcare waste produced by most optical practices (e.g. used contact lenses, tonometer probes, tissues etc) is unlikely to be considered hazardous, and as such is not classed as clinical waste. This can be disposed of in the normal refuse unless it is of large quantities in which case it can be considered as 'offensive waste'. For non-hazardous healthcare waste, DEFRA and the RPSGB recommend the separate packaging of large quantities of offensive wastes under the heading 'Does the quantity of waste produced affect its classification?', but this is good practice rather than a requirement.

4.6.5 If the waste is likely to be infectious it is classed as hazardous (and it is therefore within the definition of clinical waste), and must not be mixed with non-hazardous waste. Advice from the DH states that where a patient in the community has been diagnosed with MRSA and is being cared for by a healthcare worker, the healthcare waste generated is not necessarily infectious .

4.6.6 Clinical waste should be segregated from other types of waste and be treated/disposed of appropriately in suitably permitted, licensed or exempt facilities on the basis of the hazard it poses.

4.6.7 Contact lenses and solutions do not normally fall within any of the categories of Hazardous Waste and should be classified as non-infectious healthcare waste.

4.6.8 Sharps are defined as items that could cause puncture wounds. These would include needles, broken glass ampoules, scalpels etc. Sharps should be disposed of in sharps boxes. They are considered to be Hazardous Waste if their collection and disposal is 'subject to special requirements to prevent infection' (SI 895 of 2005 18.01.03). Sharps which are classed as non-hazardous will be treated differently for transport and disposal, but they should still be in sharps boxes. A separate box should be used for 'hazardous' and non-hazardous sharps. Practitioners who use sharps should contact their waste contractor who will be able to advise on the most appropriate form of disposal.

4.6.9 In England and Wales details of the premises at which hazardous waste is produced or from which it is removed must be notified to the Environment Agency. There is an exemption for various types of premises, which we have been assured includes optometrists and dispensing opticians, providing that they produce less than 200kg of hazardous waste in any 12 month period. It is extremely unlikely that any optical practice will produce this quantity of hazardous waste, if any, so they will not need to notify the Agency. In Scotland and Northern Ireland premises do not have to be registered. Instead of registration the relevant authorities must be notified of any movement of hazardous waste at least 3 days in advance. Further details of the consignment regulations can be found at [www.ehnsi.gov.uk/pubs/publications/Hazardous\\_Waste\\_leaflet\\_2005.pdf](http://www.ehnsi.gov.uk/pubs/publications/Hazardous_Waste_leaflet_2005.pdf). In Scotland Hazardous Waste is termed 'Special Waste', but is defined as that

waste which is hazardous waste as defined by Article 1(4) of the Hazardous Waste Directive .

4.6.10 Further information for those classified as waste producers can be found in the Department of Health's guidance on the Safe Management of Healthcare Waste (Health Technical Memorandum 07-01) . This guidance also applies to offensive/hygiene and infectious waste produced in the community from non-NHS healthcare sources. The producers of waste should complete and sign a waste transfer note (or consignment note for hazardous waste) prior to waste being transferred to another party. Prior to waste being disposed of, it should be stored securely on site.

A summary of the different types of waste and their disposal is tabulated below:

Item	Classification	Disposal method	Responsible person	Legislative information
<b><u>DRUGS / PHARMACEUTICAL PRODUCTS</u></b> Ophthalmic - POMs	Non-hazardous	Incineration *	Contractor	No consignment note required No special transportation Waste contractor must be informed of nature of waste under 'duty of care'.
<i>* Best practice - Have a waste transfer note system with a waste contractor to ensure high temperature incineration</i>				
<b><u>GENERAL OPHTHALMIC HEALTHCARE WASTE</u></b> - used contact lenses, blunt tonometer probes, tissues etc	Non-hazardous healthcare waste	Small quantities - normal refuse disposal Large quantities - are considered 'offensive waste'	Contractor	DEFRA Advice RPSGB Advice DH Guidance See <i>text</i>
<b>Contact lens solutions and cases</b>	Non-hazardous	Normal refuse disposal		
Infectious healthcare waste is classed as <b><u>CLINICAL WASTE</u></b>	Hazardous	Must be packaged separately to non-hazardous waste	Contractor	Consignment note required for hazardous waste <sup>1</sup>
<b>SHARPS</b> Anything able to cause a puncture wound. This would include soft CL glass bottles and their metal caps,	Non hazardous - unless infected	Sharps box  Separate Sharps box if infected		See text
<i>See text for further information</i>				

4.6.11 A national colour coding system has been suggested. This is not mandatory, but may help to aid the identification and segregation of waste to aid appropriate treatment and disposal. The colours that would apply to optometrists are:

Suggested colour coding	Description
Yellow bin	Waste which requires disposal by incineration such as POMs
Yellow bin marked 'sharps' with orange lid	Sharps not contaminated with medicinal products
Yellow/black striped bag	Offensive/hygiene waste
Orange bin/bag	Infectious waste or potentially infectious waste (must be treated prior to disposal).
Black	Domestic (municipal) waste. Clear/opaque receptacles may also be used for domestic waste.

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This section of the Advice and Guidelines has been revised by the ABDO Working party on Infection Control – Professor Roger Buckley, Dr Cindy Tromans, Rosemary Bailey.