

IV

Occupational Safety for Medical Device Reprocessing



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1 Introduction

In every central sterile supply department (CSSD) where medical devices are reprocessed we are dealing with myriad appliances and hazardous substances (e.g. disinfectants, detergents, etc.).

This situation is further compounded by working practices necessitating the lifting of heavy loads.

To prevent accidents and “near accidents” it is important that all areas be scrutinized to see whether they present any dangers (actual risks) or hazards (potential risks) for employees. If dangers or hazards are noticed, measures must be defined to protect the employees. The provisions regulating occupational safety are enshrined in each country’s national legislation.

2 Dangers in a CSSD

Potential dangers and hazards must be recognized and brought to the attention of staff.

Examples of the hazards encountered in a CSSD:

When using working appliances

- Burn hazards due to hot surfaces and exposure to steam at the sterilizer.

Measures: briefing and use of appropriate protective equipment (protective gloves)

Nature of working procedures

- Risk of injury due to pointed or sharp instruments
- Transport routes blocked by containers
- Tasks carried out at a high altitude

Measures: briefing and use of appropriate containers, appropriate climbing aids

Hazards posed by working materials

- By contaminated instruments (instruments harbouring blood, pus, urine, faeces, sputum, etc.).

Measures: briefing and use of appropriate protective equipment (waterproof protective clothing, gloves, orofacial mask and goggles)

Hazards posed by physical influences

- Alcohol vapours, heat, steam, compressed air, gases, etc.

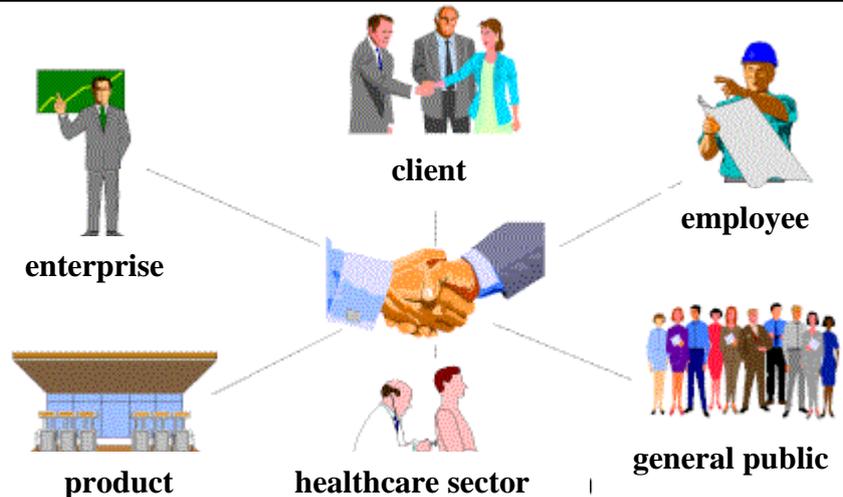
Measures: briefing and use of protective clothing

Hazards posed by physical exertion

- Lifting and carrying loads (containers)

Measures: briefing on appropriate lifting and carrying techniques

Occupational safety and accident prevention is beneficial to all!



3 Working materials

If materials are endowed with certain properties, they are classified and labelled as hazardous.

Following the changes ushered in accordance with the Globally Harmonized System (GHS) the square, orange-coloured hazardous substances' symbols used hitherto are being replaced by a new system of hazard pictograms (red diamond-shaped signs, i.e. a square set at a point, with black symbols on a white background).

GHS is aimed at establishment of a worldwide uniform system for classification and labelling of chemicals. The GHS regulation (EC Regulation No. 1272/2008) has been in force since 20 January 2009 and, for example, in Austria it is applied directly without any need for transposition into national legislation.

The following transition periods apply for the use of "old" signs:

- Substances until December 2010
- Preparations (to be called mixtures in future) until June 2015

The transition provisions of the GHS regulation also state that classification and labelling of substances and mixtures as per the GHS regulation is also permitted before expiry of the transition periods.

3.1 Working materials / labelling

Hazardous working materials must never be filled into foodstuffs' containers (drinks' bottles, conserve jars, etc.) because of the risk of confusion!

The symbols depicted in the following figures will make it relatively easy for staff to recognize a hazardous working material.

Gefahrenkommunikation heute	Zukünftige Begriffe mit GHS	Gefahrenkommunikation in Zukunft
 R 2 R 3 [R 5] [R 6] Explosions- gefährlich	Instabile, explosive Stoffe/Gemische Explosive Stoffe/Gemische Unterklassen 1.1 bis 1.3 Selbstzersetzliche Stoffe/Gemische Typ A (Typ B) Organische Peroxide Typ A (Typ B)	 H 200 H 201, H 202, H 203 H 240 (H 241) H 240 (H 241)
KEINE KENNZEICHNUNG	Explosive Stoffe/Gemische Unterklasse 1.4	 H 204 Warnung
 R 12 Hochentzündlich	Flüssigkeiten und Dämpfe, Gase, Aerosole - extrem entzündbar	 H 224 H 220 H 222
 R 11 Leichtentzündlich	Flüssigkeiten und Dämpfe - leicht entzündbar	 Gefahr H 225
KEIN SYMBOL R 10	Flüssigkeiten und Dämpfe, Aerosole - entzündbar	 H 226 H 223 Warnung
KEINE KENNZEICHNUNG Flammpunkt 56 - 60 °C	Selbstentzündliche (pyrophore) Flüssigkeiten und Feststoffe	H 250
 R 17 Leichtentzündlich	In Berührung mit Wasser entzündbare Gase entwickelnd Kategorien 1, 2 und 3	 H 260 H 261 H 261
KEINE KENNZEICHNUNG	Selbsterhitzungsfähige Stoffe und Gemische Kat. 1 & 2 Selbstzersetzliche Stoffe und Gemische Typ B, C und D; Typ E und F	 Gefahr H 251 Warnung H 252
 R 7 Brandfördernd	Organische Peroxide Typ B, C und D; Typ E und F	H 241 H 242 H 242
 R 9 R 8 Brandfördernd	Entzündend (oxidierend) wirkende Flüssigkeiten Kategorien 1, 2 und Kategorie 3	 H 271 Gefahr H 272 Warnung
KEINE KENNZEICHNUNG	Unter Druck stehende Gase	 H 280 H 281 Warnung
KEINE KENNZEICHNUNG	Auf Metalle korrosiv wirkend	 H 290 Warnung

Hazard statement at present	Future terms as per GHS	Hazard statement, in the future
Explosion hazard	Unstable, explosive substances / mixtures Explosive substances / mixtures divisions 1.1 to 1.3 Self-reactive substances / mixtures type A (type B) Organic peroxides type A (type B)	Danger
NO LABEL	Explosive substances / mixtures Divisions 1-4	Warning
Highly flammable	Liquids and vapours, gases, aerosols - extremely flammable	Danger
Slightly flammable	Liquids and vapours - slightly flammable	
NO SYMBOL	Liquids and vapours, aerosols - flammable	Warning
NO LABEL Flame point 50-60 °C		
Slightly flammable	Self-heating (pyrophoric) liquids and solids	Danger Warning
Slightly flammable	Emit flammable gases when in contact with water, categories 1, 2 and 3	
NO LABEL	Self-heating substances and mixtures, categories 1 and 2 Self-reacting substances and mixtures, type B, C and D; type E and F	
Combustible	Organic peroxides Type B, C and D, type E and F	
Combustible	Flammable (oxidising) liquids Categories 1, 2 and category 3	Danger Warning
NO LABEL	Gases under pressure	Warning
	Corrosive to metals	Warning

Gefahrenkommunikation heute	Zukünftige Begriffe mit GHS	Gefahrenkommunikation in Zukunft
 R 26 R 27 R 28 Sehr giftig	Akute Toxizität Tödlich bei Einatmen, bei Hautkontakt, bei Verschlucken	 H 330 H 310 H 300
 R 23 R 24 R 25 Giftig	Akute Toxizität Giftig bei Einatmen, bei Hautkontakt, bei Verschlucken	 Gefahr H 331 H 311 H 301
 R 39 R 48 R 45 R 49 R 46 R 60 R 61 Giftig	Spezifische Zielorgan-Toxizität bei einmaliger Exposition, bei wiederholter Exposition Karzinogenität Keimzell-Mutagenität Reproduktionstoxizität	 H 370 H 372 H 350 H 350 H 340 H 360 H 360 Gefahr
R 42 R 65  R 68 R 48 R 40 R 68 R 62 R 63 Gesundheitsschädlich	Sensibilisierung der Atemwege Aspirationsgefahr Spezifische Zielorgan-Toxizität bei einmaliger Exposition, bei wiederholter Exposition Karzinogenität Keimzell-Mutagenität Reproduktionstoxizität	 H 334 H 304  H 371 H 373 H 351 H 341 H 361 H 361 Warnung
R 20 R 21 R 22  R 34 R 35 Ätzend	Akute Toxizität Gesundheitsschädlich bei Einatmen, bei Hautkontakt, bei Verschlucken Ätzung der Haut (irreversible Wirkungen)	 H 332 H 312 H 302 Warnung  H 314 H 314 Gefahr
 R 41 Reizend	Schwere Augenschädigung (irreversible Wirkungen)	 Gefahr H 318
 R 36 R 37 R 38 R 43 Reizend	Augenreizung Spezifische Zielorgan-Toxizität Atemwegsreizung Reizung der Haut Sensibilisierung der Haut	 H 319 H 335 H 315 H 317 Warnung
KEIN SYMBOL R 67	Spezifische Zielorgan-Toxizität betäubende Wirkungen	 H 336 Warnung

Hazard statement at present	Future terms as per GHS	Hazard statement in the future
Very toxic	Acute toxicity Fatal if inhaled, on skin contact, if swallowed	Danger
Toxic	Acute toxicity Toxic if inhaled, on skin contact, if swallowed	
Toxic	Specific target organ toxicity On single exposure, on repeated exposure Carcinogenicity Germ cell mutagenicity Reproductive toxicity	Danger
Damage to health	Respiratory tract sensitization Aspiration hazard	Warning
	Specific target organ toxicity On single exposure, on repeated exposure Carcinogenicity Germ cell mutagenicity Reproductive toxicity	
	Acute toxicity Damage to health if inhaled, on skin contact, if swallowed	
Corrosive	Skin irritation (irreversible effects)	Danger
Irritant	Serious eye damage (irreversible effects)	
Irritant	Serious eye damage Specific target organ toxicity Respiratory tract irritation Skin irritation Skin sensitization	
NO SYMBOL	Specific target organ toxicity Narcotic effects	Warning

3.2 Hazardous working materials / explosive atmospheres

An explosive atmosphere is a mixture of air and flammable gases, vapours, mists or dusts that can explode.

An explosive atmosphere can therefore occur anywhere such substances are being used.

Personnel must be briefed accordingly.

Example:

Handling an alcohol-based surface disinfectant

- Use only on small surfaces
- No not operate any electrical equipment in the immediate vicinity while this is being used (specify zones)

3.3 Safety data sheets

Safety data sheets should be available for all hazardous substances, where the substance is described in detail (e.g. composition, ingredients, application instructions, protective equipment, emergency measures, etc.).

For easy access to all staff members during routine operations, it is advisable that the safety data sheets be kept together in a file or on an intranet

If necessary, a brief summary of the most important contents (e.g. first aid measures, protective clothing, etc.) should be compiled as operating instructions for handling the respective substance.

3.4 Briefing / working substances

In particular as regards the use of such substances, it is important that all staff members be briefed and know how to use such substances and what precautionary and protective measures should be taken.

Example:

Changing a disinfectant container for the washer-disinfector:

Extreme care must be taken when using such materials. Just wearing gloves is not enough, an orofacial mask, goggles and disposable apron are also needed. If necessary, explosion-protection measures must also be taken.



Surface disinfection:

Use correct disinfectant dose and avoid direct skin contact by wearing protective gloves.

3.5 Working appliances

What are working appliances?

Working appliances are all the machines, apparatus, equipment and systems placed at the disposition of employees.

The CSSD disposes of numerous appliances needed for reprocessing instruments.

Examples:

- Washer-disinfectors
- Ultrasonic equipment
- Heat sealing machines
- Sterilizers
- Steam generators

But the assortment of appliances encountered for routine operations in a CSSD is not confined to those needed for instrument reprocessing, one also finds machines for cleaning the floor as well as surgical equipment which have to be cleaned, disinfected and sterilized.

Working appliances must:

- be suited to the intended task in terms of safety and health protection.
- meet the legal provisions governing health and safety with respect to their design and construction.
- by assuring regular maintenance, be kept in a condition that complies with the pertinent legal regulations

The instructions provided by the manufacturer or by the person placing the respective appliances on the market must be observed (e.g. operation, maintenance and test instructions).

In the case of working appliances for which a maintenance logbook has been provided, entries must always be kept up to date.

Example: Sterilizer

Already at the time of purchasing the sterilizer, it is important to ensure that it meets the requirements set out in the relevant standard. Furthermore, the room in which the sterilizer is installed must meet the standard requirements.

The manufacturer will have specified instructions for operation of the sterilizer and these must be observed.

Hence it is important that every staff member should know where to find these instructions and also complies with them.

Maintenance tasks must be carried out on a daily, weekly, monthly or yearly basis.

The persons(s) responsible for discharging such tasks must be designated and trained, with evidence of such training being provided.

Conductance of all workflow patterns in the proper sequences and documentation of all tasks in the maintenance logbook will also enhance safety for personnel.

This is because a well-maintained appliance is less susceptible to malfunctioning than is a device that is not, or only inadequately, maintained.

Working appliances / briefing

All staff members should be trained in how to handle appliances and machines.

Everyone should know how to handle the appliance.

Appliances should be used with the requisite care so that they will continue to function properly.

The person(s) responsible for maintenance tasks must also be designated.



Written standard operating procedures (SOPs) detailing how tasks are to be carried out should be available.

Likewise, each staff member should know what action is needed if an appliance malfunctions.

Example:

Uncontrolled steam escape from sterilizer:

Everyone must know:

- where the EMERGENCY OFF BUTTON is located
- how this is operated, and this must be done in the event of malfunctioning or
- who should be notified.

4 Employees' duties

- Protective measures must be taken as specified in the respective instructions and briefings.
- Working appliances must be used correctly.
- Personal protective equipment must be used as intended.
- Avoid danger to oneself and to others.
- Protective devices or equipment must not be removed or taken out of operation.
- Avoid any impairment caused by alcohol, illicit drugs or medication.
- Report workplace accidents, near accidents or dangers.

5 Vaccinations

All CSSD staff should be vaccinated against hepatitis B.

This should also be documented.



Despite these protective measures, the danger of contracting infection through blood is not ruled out. This is because, to date, there are no vaccines available for hepatitis C or HIV.

It is therefore important that all staff members be aware of this danger and take the utmost care when handling blood-contaminated instruments or equipment and that they make sure they are using their personal protective equipment properly.

6 Personal protective equipment (PPE)

Personal protective equipment should be made available to personnel.

This equipment is understood to mean apparatus used to protect one's own health.



6.1 Disposable gloves

Disposable (single-use) gloves must really be used only once and then disposed of.

Disposable gloves should always be used when handling disinfectants, detergents, contaminated instruments and machines.

6.1.1 Dangers posed by wearing gloves:

Wearing gloves for too long can give rise to a build-up of heat and moisture, thus causing the skin to become soft (maceration).

The components used in gloves can cause allergies, such as latex or powder allergy.

Gloves must be cared for as specified by the manufacturer.

Their protective effects will be forfeited if used incorrectly.

6.1.2 Criteria for selecting protective gloves

NOT EVERY GLOVE IS SUITABLE FOR EVERY USE!!

As regards the workplace:

Is there a likelihood of cuts or puncture injuries?

Are acids, alkalis, etc. being handled?

As regards working conditions:

Tactility, firm grip, dexterity, etc.

Use conditions:

Duration of wear, perspiration, etc.

Personal requisites:

Sizes, sensitivity, etc.

One can determine how comfortable and suitable disposable gloves will prove to be for the intended use if one is aware of the requirements to be met and one has a chance to try out different test samples. Only after the product has been deemed suitable for the respective use should the price be considered.

Staff should be briefed about how to use gloves properly, and this must be documented.

6.1.3 Glove types / examples

Household gloves are generally impervious to chemicals. They are mainly used for cleaning and disinfection tasks. They can be reused.

Disposable gloves (e.g. made of latex) are commonly used in the medical setting. They protect against pathogens but not all of them are impervious to chemicals.

Special gloves protect, depending on the type, against special chemicals, cold, heat, etc.

6.1.4 Skin protection

If disposable gloves are worn, meticulous care must be taken of one's skin by using creams and lotions.

6.2 Orofacial mask

An orofacial mask should be worn for all tasks where there is a risk of splashing liquids (e.g. when flushing hollow instruments with a spray pistol).

6.3 Goggles

Goggles should be worn for all tasks where vapours are formed (alcohol-based preparations) or if there is a risk of splashing liquids (flushing hollow instruments with a spray pistol).

6.4 Protective clothing

(disposable apron and headgear)

This helps prevent contamination / wetting of clothing with liquids such as disinfectants, blood or other body fluids.

7 Briefing

The term “briefing” (training) is understood to mean explaining to staff members the correct procedures to be used when handling working materials and working appliances as well as for correct workflow patterns.

The goal of briefing is to ensure that all employees will have a certain standard of relevant knowledge.

Staff must be briefed in a manner that ensures they will understand the explanations given and they should document this by means of their signature.

Staff should be briefed regularly and repeatedly (yearly).

Briefing sessions should be held when a new staff member takes up employment, changes are made to the workplace or when new working materials and working appliances are being used.



8 Workplace accident

8.1 What is a workplace accident?

A workplace accident is an accident occurring in relation to work (in the workplace or on the way to/from work).

8.2 What is a near accident?

A near accident is a situation in which an accident has almost occurred but just managed to be prevented (“a lucky escape”). In such a case, it is important to eliminate potential hazards so that a similar situation will not arise in future (e.g. replacement of a damaged cable).

8.3 Reporting an accident

The person(s) responsible for reporting the accident and to whom this is to be reported must be regulated in the workplace.



9 Hazards posed by special pathogens

Blood and other body fluids can pose a danger to CSSD staff. The following instruction sheets explain the main pathogens involved here and how they are spread.

To highlight the importance of observance of all accident-prevention measures, the instruction sheets give a brief description of the different symptoms of disease caused by the respective pathogens.

They also explain what emergency measures must be taken on coming into contact with blood or other body fluids.

Of paramount importance is to, from the outset, have in place measures to avoid injuries or other sources of transmission (e.g. splashed liquids getting into one's eye).

10 Instruction sheets

10.1 HIV instruction sheet

Causative organisms and routes of transmission

- ➡ The causative organisms (pathogens) involved here are human immunodeficiency viruses (HIV-1 and HIV-2)
- ➡ HIV infection gives rise to a defect in the immune system, whose most severe form is AIDS (Acquired ImmunoDeficiency Syndrome).
- ➡ In the **blood, seminal fluid (semen) and vaginal secretions** of infected persons high viral concentrations of HIV are mainly found. The virus is spread either through parenteral contact or (less commonly) through splashing of these pathogenic fluids onto mucous membranes. The virus can also be spread in **breastmilk**.
- ➡ **The 3 main routes of transmission:**
 - **unprotected sexual intercourse** (the hepatitis B virus can also be spread in this way!)
 - **introduction of virus-containing blood or blood products into the bloodstream** (= parenteral transmission, e.g. through needlestick injuries, needle exchange among intravenous drug users, transfusion of contaminated blood conserves or blood products)
 - **transmission from an infected mother to her child:** before, during or after birth (through breastfeeding)
- ➡ **HIV is NOT spread through:**
 - body contacts in an everyday social sense (shaking hands, etc.)
 - sharing crockery or cutlery
 - sharing sanitary facilities
 - insect bites
 - droplet infection (coughing, speaking)
 - the **risk of infection** is particularly high during the first weeks after contracting infection (before antibodies have been formed!) and with progressive immunodeficiency and onset of clinical symptoms.

HIV instruction sheet continued (Page 2 of 3)

- the transmission risk posed by injury with HIV-contaminated, pointed or sharp objects (needlestick injuries) is markedly less in the case of HIV than in that of hepatitis B:

HIV: approx. 0.3 %

HBV: approx. 30 %

Symptoms

⇒ **Incubation time:** 6 days - 6 weeks

⇒ **HIV – initial infection:** fever, acute swelling of the lymph nodes, difficulty swallowing, etc. In general, symptoms are very mild and resolve after around 1 to 2 weeks. This initial infection is normally not attributed to HIV, assuming that there has not been any risk of infection. The initial infection then progresses to a

⇒ **Symptomless HIV infection:** this can last from months to several years, and detection of HIV antibody is often the only indication of the existing infection.

⇒ **AIDS:** severe **immune defect** (reduction in the number of CD4 cells) generally manifested through the occurrence of severe **opportunistic infections** (=infections caused by pathogens or microbes that are harmless to, or cause only mild infections in, healthy individuals, e.g. *Candida albicans* infections)
Occurrence of **malignant forms of cancer** (e.g. Kaposi's sarcoma, B cell lymphoma).

Measures to prevent occupational HIV infections in medical device reprocessing

- exercise extreme care when handling instruments or materials contaminated with body fluids
- wear gloves if there is the possibility of contact with virus-containing body fluids
- wear orofacial mask and goggles (and a disposable apron, if necessary) if there is a likelihood of splashing of pathogenic fluids or generation of virus-containing droplets

HIV instruction sheet continued (Page 3 of 3)

- dispose carefully of pointed and sharp objects (cannulas, broken glass) that had come into contact with blood or other body fluids (no “recapping” of cannulas)
- fill containers only to two-thirds of maximum level, (do not push needles into already filled containers, do not transfer container contents into another container)
- carry out disinfection measures with virucidal methods and agents

Compliance with these precautionary measures will also offer protection against hepatitis B and C viruses!!

Measures in the event of injury with contaminated objects (needlestick injuries, cut wounds)

- ➡ induce bleeding, i.e. press out the wound immediately and for sufficiently long (several minutes)
- ➡ disinfect wound at the same time with a virucidal hand disinfectant. It must cause a burning sensation!!!
- ➡ to decide the further course of action, contact without delay the responsible body (doctor on duty, occupational physician, health and safety officer, etc.)
- ➡ after consultation with the responsible physician and clarification of the infection risk, take drug-based prophylactic measures if necessary (the sooner the better)
- ➡ record the incident (or near incident) and take the necessary measures (e.g. personnel protection briefing) to prevent such incidents in the future.

10.2 Hepatitis B instruction sheet

Causative organism and routes of transmission

- ➡ Hepatitis B is one of the most common infectious diseases found worldwide
- ➡ The causative organism of hepatitis B is the **hepatitis B virus (HBV)**,

- ➡ HBV is, just like HIV, found in the **blood** and in other body fluids of infected persons (saliva, sweat, lacrimal fluid, sperm and breastmilk)
- ➡ HBV is, because of the high virus concentration in the blood of infected persons (with up to 10^9 /ml in serum), a highly infectious microorganism
- ➡ **HBV transmission** takes place primarily through the introduction of the blood or other body fluids of an infected person into the bloodstream or tissue of the recipient (= parenteral route)

- ➡ **Routes of transmission:**
 - mainly through:
 - puncture and cut injuries caused by pointed or sharp objects contaminated with blood or blood products (cannulas, lancets, broken glass)
 - unprotected sexual intercourse with an infected person
 - transmission before or during birth from the infected mother to her child (=vertical transmission)
 - blood transfusion or administration of blood products (it has in the meantime been possible to greatly reduce the risk of infection by taking more intensive control measures)
 - sharing drug-injecting equipment
 - dialysis equipment
 - contaminated equipment because of poor hygiene used in the case of acupuncture, manicures, pedicures, tattooing or piercings.

- ➡ **Incubation time:** 1 – 6 months

- ➡ **Symptoms:** two-thirds of HBV-infected persons develop acute hepatitis with or without jaundice, and one-third of infections are symptomless

- 90% of all acute hepatitis B infections in adults completely resolve, giving rise to life-long immunity.

HBV instruction sheet continued (Page 3 of 3)

Approx. 5-10% of infections can progress to chronic hepatitis. In chronic courses, a distinction is made between asymptomatic HBsAg carrier status (the most common source of infection) and chronic hepatitis B.

Without treatment around half of all patients with chronic hepatitis B go on to develop cirrhosis of the liver.

Preventive measures when dealing with infected persons

Best protection: hepatitis B vaccination

- ➡ All healthcare workers who could encounter hepatitis B in the workplace should be vaccinated.
- ➡ The costs for vaccination are, in general, borne by the respective authorities. In Austria, for example, this is the Austrian Institute for Statutory Accident Insurance (AUVA).
- ➡ Adequate vaccine protection is assured if the concentration of the protective antibodies (anti-HBs titres) is above 10 IU/l once the basic immunisation programme has been completed.

Other protective measures:

➡ in the healthcare setting:

- wear gloves if there is the possibility of coming into contact with virus-containing body fluids
- wear orofacial mask and goggles if there is a likelihood of splashing of body fluids or generation of fine, virus-containing droplets (aerosols).
- dispose safely of pointed and sharp objects that have come into contact with blood or other body fluids (no "recapping" of cannulas)
-
- use separate dialysis equipment for infected and non-infected patients
- observe hygiene regulations when reprocessing instruments and objects that have come into contact with blood or other body fluids.

➡ in a private setting:

- do not share razor blades, toothbrushes or manicure instruments
- no unprotected sexual intercourse

10.3 Hepatitis C instruction sheet

Causative organism and routes of transmission

- ➡ The causative organism of hepatitis C is the **hepatitis C virus (HCV)**, and humans are the only natural host
- ➡ HCV is found in the **blood** and (at low concentrations) in other body fluids (saliva, sweat, lacrimal fluid, sperm and breastmilk) of infected persons
- ➡ **HBV transmission** takes place primarily through a parenteral route with the introduction of the blood or other body fluids of an infected person into the bloodstream or tissue of the recipient

➡ Routes of transmission:

mainly through:

- blood transfusion or administration of blood products (it has in the meantime been possible to greatly reduce the risk of infection by taking more intensive control measures)
- sharing drug-injecting equipment
- dialysis equipment

less common or fewer known cases:

- dental treatment procedures where there is bleeding
- endoscopy
- contaminated equipment because of poor hygiene used in the case of acupuncture, manicures, pedicures, tattooing or piercings
- unprotected sexual intercourse with an infected person

➡ **Incubation time:** 15 – 160 days

➡ **Symptoms:** 25% of HCV infected persons develop acute hepatitis, with 50-70% of cases progressing to chronic hepatitis. Around 20% of patients with chronic hepatitis C develop cirrhosis of the liver

HCV instruction sheet (Page 2 of 2)

Preventive measures when dealing with infected persons

➡ in the healthcare setting:

- wear gloves if there is the possibility of coming into contact with virus-containing body fluids
- wear orofacial mask and goggles if there is a likelihood of splashing of body fluids or generation of aerosols.
- dispose safely of pointed and sharp objects that have come into contact with blood or other body fluids (no “recapping” of cannulas)
- test donated blood and other blood products for HCV antibodies
- use separate dialysis equipment for infected and non-infected patients
- .

➡ in a private setting:

- do not share razor blades, toothbrushes or manicure instruments
- no unprotected sexual intercourse

➡ Where is there no danger?

- when sharing glasses, cutlery, bed linen or towels (provided that they are not contaminated with blood from open wounds)
- there is no risk of transmission by breastfeeding mothers!

10.4 *Instruction sheet for contact with biological materials*

Measures when hands come into contact with blood and other biological materials

IMPORTANT: always wear gloves when handling materials contaminated with blood or other biological materials!

- ➡ remove coarse soils from contaminated site with a disposable or cellulose cloth impregnated with disinfectant
- ➡ wash hands thoroughly under running water, avoiding splashing, and then rinse with liquid soap and water
- ➡ dry with disposable towel
- ➡ disinfect hands with virucidal hand disinfectant (leaving it for at least 60 seconds)
- ➡ if skin is cracked or damaged: cover wound and, if necessary, use double gloving

Measures when intact skin and mucous membranes come into contact with biological materials

IMPORTANT: if splashing of biological materials is likely, personal protective equipment must absolutely be worn (goggles and orofacial mask)!!

- ➡ **Skin:** remove coarse soils from contaminated area with a disposable or cellulose cloth impregnated with disinfectant, then disinfect with a virucidal hand disinfectant using a fresh swab
- ➡ **Mouth:** rinse mucous membranes immediately and thoroughly with water and then rinse with a disinfectant tolerated by mucous membranes.
- ➡ **Eyes:** rinse thoroughly and immediately with water (preferentially from an eye cleaning bottle), followed by, if necessary, the use of a disinfectant solution tolerated by mucous membranes (caution: dilute properly)

Measures for avoidance of injuries with pointed and sharp objects

- ➡ dispose immediately of used cannulas, lancets, broken blood tubes, etc. in a puncture- and break-proof waste container that is labelled accordingly
 - ➡ fill containers only to two-thirds of maximum level, (do not push needles into already filled containers, do not transfer container contents into another container)
- ➡ no recapping (i.e. do not hold cap and replace it on used cannula) or only “single-handed recapping” using appropriate capping mechanisms (e.g. metal cones)

Emergency measures in the event of injuries with contaminated objects (needlestick injuries, cut wounds)

- ➡ induce bleeding, i.e. press out the wound immediately and for sufficiently long (several minutes)
- ➡ disinfect wound at the same time with a virucidal hand disinfectant. It must cause a burning sensation!!!
- ➡ to decide the further course of action, contact without delay the responsible body (doctor on duty, occupational physician, health and safety officer, etc.)
- ➡ record the incident (or near incident) and take the necessary measures (e.g. personnel protection briefing) to prevent such incidents in the future.

11 Annex

11.1 Briefing sheet

BRIEFINGS

Workplace/department/establishment:

Document No.-Nr.:

Date	Person briefed	Content of briefing	Briefed by	Briefed and understood (signature)	Next briefing