Biological hazards – Infectious disease control

Dentistry >

This information bulletin provides examples of several safe work practices, which could form the basis of more detailed procedures to be adopted in individual work situations relating to dentistry in various health care environments.

Introduction

This information bulletin should be read in conjunction with the National Code of Practice for the Control of Work Related Exposure to Hepatitis and HIV (blood-borne) Viruses [NOHSC:2010(2003)], which is an Approved Code of Practice under section 187A of the *Workers Rehabilitation and Compensation Act*.

The guidelines in this bulletin were published by the National Health and Medical Research Council (NHMRC) in September 1992 as guidelines for the Prevention of Transmission of Viral Infection in Dentistry.

Universal precautions are based on the concept that all blood, blood products and body fluids of all persons are potential sources of infection, independent of diagnosis or perceived risk.

All staff must adhere rigorously to protective measures, which minimise exposure to these agents. The use of universal precautions involves placing a barrier between staff and all blood and bodily fluids.

Training

It is essential that all dental staff receive initial and ongoing training to enable them to do their duties in a healthy and safe manner and enable them to anticipate and manage situations in which they may be exposed to infectious organisms such as HIV or the hepatitis B virus.

It is also important that dental staff, have access to appropriate professional counselling and follow-up services are available after any possible and definite exposures to blood and body fluids.

Safe work practices

Safe work procedures should be developed within the framework of risk identification, risk assessment and risk control. Every health care environment should address the policy and management issues raised by managing patients with HIV infections/AIDS and other infectious diseases. A system for recording and monitoring occupational exposures to blood or body fluids should be developed and maintained.

NT WorkSafe is the administrative arm of the Work Health Authority and administers the *Workplace Health and Safety Act*, the *Workers Rehabilitation and Compensation Act*, the *Dangerous Goods (Road and Rail Transport) Act*, the *Dangerous Goods Act* and the *Radioactive Ores and Concentrates (Packaging and Transport) Act* and related Regulations on behalf of the Northern Territory Government.

Limiting surface contamination

It is recommended that the dental surgery should be divided into clearly designated 'clean' and 'dirty' areas. Infected or contaminated material can be placed on 'dirty' surfaces, but contaminated material should never be placed on 'clean' surfaces.

In limiting surface contamination, the following procedures should be observed:

- Contamination of work surfaces can be prevented by use of changeable sterilised trays. Where sterilised trays are not used, disposable plastic-backed paper should be placed over 'dirty' surfaces and changed between patients.
- Non-disposable and non-sterilised materials, for example, charts, radiographs and bulk materials, should be placed only on 'clean' surfaces (this includes the interior of cabinets and drawers).
- Where possible, one sink should remain non-contaminated for personal use ('scrub sink') and a second sink should be allocated for cleaning of contaminated instruments ('flush sink').
- Pre-set light and chair positions and determine instrument needs before contact with the patient.
- If adjustments in chair and light positions must be made during treatment, confine handling of this equipment to clearly defined points of contact. Where it is practicable, cover these points with disposable plastic wrap and change the wrap between patients. Disposable plastic bags may be useful as covers for chair controls (particularly if located in headrests) and X-Ray units. Light sources should be contacted only by their handles.
- Wherever practicable, predetermine materials and dispense prior to patient contact. Use disposable or sterilisable mixing instruments. An assistant may be used if other materials, for example, restorative materials, or non-sterilisable auxiliary equipment, for example, amalgamators or curing lights, are required during a procedure. If an assistant is not available, use instrument forceps where practicable to obtain fresh instruments or materials.
- At the completion of treatment, wash gloved hands thoroughly in the 'flush sink' before handling designated points of contact, for example, switches and handles for decontamination.

Suction units

When using suction units:

- ensure intermittent, thorough flushing through of suction lines with water during treatment to prevent coagulation;
- use disposable or freshly sterilised suction tips for each new patient;
- ensure high speed suction tips are placed optimally to minimise aerosols and splashes and to minimise the need for patients to rinse their mouth.

Handpieces, Triplex Syringes and Ultrasonic Scalers

When handpieces, triplex syringes and ultrasonic scalers are required:

- Use a sterile handpiece for each patient. Autoclaving is the preferred method of sterilisation.
- Use a sterile scaler. Autoclaving is the preferred method of sterilisation of ultrasonic scalers and hand scalers.
- Determine the need for high-speed and low-speed handpieces before patient contact.
- Ensure all high-speed handpieces are fitted with ant retraction valves to prevent aspiration of contaminated materials into main water lines when handpieces are switched off.

- Flush air/water spray into high-speed suction tips for 20 seconds at the operating site when treatment is completed with high-speed handpieces.
- Ensure non-heat sterilisable burrs or bur changers are cleaned, rinsed in the ‘flush sink’ and soaked in an appropriate solution after use. Ensure that soaking bowls are covered or sealed to minimise solution vapour.
- Flush water lines of non-autoclavable ultrasonic scalers into suction after use, as for handpieces. Clean tips and chemically decontaminate. Thoroughly decontaminate scaler handles before returning them to brackets.
- Wrap non-detachable, non-autoclavable air/water syringes in disposable plastic wrap, which should be changed after use. Flush out air/water lines as for handpieces. Air/water syringes with disposable plastic nozzles are recommended. Effective suction, precise suction tip placement and rubber dams reduce contamination.
- Intraoral X-Ray Films
- When using intraoral X-ray films:
- Use plastic disposable film envelopes with attachable paper and bite tags to reduce the contamination risk to processing equipment;
- Thoroughly rinse plastic non-autoclavable film holders in the ‘flush sink’ and decontaminate. Ensure that soaking bowls are covered or sealed to minimise solution vapour;
- Rinse contaminated films thoroughly in the ‘flush sink’ before processing.
- Materials Destined for the Laboratory
- With all materials, for example, dentures, impressions, etc, destined for the laboratory:
- Decontaminate before the materials leave the surgery (see below);
- Ensure that transport containers are not contaminated in the surgery.

Single Use or Disposable Equipment

Use disposable equipment wherever appropriate and discard after use. Never use hypodermic needles for more than one patient. Always use single dos anaesthetic containers (carpules) and never use local anaesthetic carpules for more than one patient.

All items sold as, or intended for, single use or as disposables must not be reused and should be discarded after each use.

If use of non-sterilisable, non-disposable items of equipment cannot be avoided, use special precaution. For example, in the case of light-cured restorative materials, cover the surfaces of the light emitter handled by the operator with plastic wrap (if the design permits) and decontaminate prior to returning to the stand.

Personal Hygiene

Do not contaminate the ‘scrub sink’ with contaminated material. After removing disposable gloves, wash hands thoroughly with soap and water in this sink.

Use liquid soap dispensers and paper towels. Do not use linen towels and avoid re-using soap. Do not ‘top up’ liquid soap containers. Single use containers are recommended.

Person Protective Equipment

All staff must:

- Wear gloves for direct contact with blood, mucous membranes or contaminated equipment or materials;

- Wear a mask and protective eyewear or a face shield when aerosols, droplets or spattering are likely, for example, when using a high speed drill;
- Wear a gown or other protective clothing during procedures that are likely to cause spattering of blood or when contact with contaminated material is likely;
- Discard gloves after each patient.
- Discard all sharp objects, for example, needles, scalpel blades, glass ampoules, endodontic instruments, metal matrix bands, orthodontics, surgical and broken instruments, into a rigid-walleded plastic container located in the clinical area.

Waste disposal

After use, place all disposable soft materials in a large plastic bag and all sharp materials in a rigid-walleded plastic sharps container.

Consult local municipal and health authority regulations before disposing of clinical wastes (particularly sharps), used or contaminated disinfectant or sterilising solutions.

Needle disposal

Discard hypodermic needles directly into a rigid-walled plastic container or needle disposal system. Do not reheat needles. If it is necessary to reuse a needle for the same patient, reheat it with care using a single-handed technique using tweezers, haemostats or a recapping device immediately following injection.

Elimination

Use sterilised instruments (including handpieces) for every patient. Autoclaving is the preferred method of sterilisation. Reserve disinfecting chemicals for surface (bench top) alecontamination where disinfection is required after cleaning with neutral detergent and for immersion of non-autodavable instruments and impressions.

Use paper towels to soak up heavy blood or contaminated fluid spills. Clean the area thoroughly with detergent to remove residual blood. Use 0.05% sodium hypochlorite in contact for 10 minutes. (If the area cannot be adequately cleaned prior to disinfection, 0.5% sodium hypochlorite solution should be used). Gloves, protective eyewear and gowns should be worn when handling sodium hypochlorite. Place materials used to absorb blood and body fluids into leak-proof bast to be disposed of properly. Ensure that the area is well ventilated. Use closed containers for soaking items.

After completing a clinical session, the following decontamination sequence is suggested:

- Rinse materials for the prosthetic laboratory, for example, impressions, in the ‘flush sink’ and immerse in a suitable solution in a covered container;
- Rinse instruments in the ‘flush sink’ to remove gross contamination before placing in an autoclave or chemicals;
- Discard all contaminated soft and sharp items appropriately;
- Wash utility gloves thoroughly in the ‘flush sink’ (discard and change if heavily soiled) and then wash hands after removal of the gloves;
- Wipe all designated contact points and surfaces with neutral detergent-impregnated paper towels then follow with chemical decontamination;
- Discard contaminated gloves and wash hands in the ‘scrub sink’;
- Place and transport soiled linen bags that prevent leakage and launder non-disposable linen in hot water with commercial laundry bleach.

Post exposure procedures

In the event that exposure to blood or body fluids does occur, the following should occur immediately:

- It the skin is penetrated, wash the area well with soap and/or water (alcohol-based hand rinses/foams [60-90% alcohol by weight] should be used when water is not available);
- If blood gets on the skin, irrespective of whether there are cuts or abrasions, wash well with soap and/or water;
- If the eyes are contaminated, rinse the area gently but thoroughly with water or normal saline, while the eyes are open;
- If blood gets in the mouth, spit it out and then rinse the mouth with water several times.
- Report immediately to your supervisor. Complete an accident report form and include:
- The date and time of exposure;
- How the accident occurred;
- The name of the source individual (if known)

In the event of exposure to an individual who has been previously tested and confirmed as HIV positive or hepatitis positive, the exposure should immediately be evaluated by a physician with experience in the management of these infections.

Information to supervisors/managers

If an employee has suffered possible or massive exposure, it is important that immediate steps are taken to reduce the risk to the employee of contracting a serious illness. Supervisors/managers should:

- Ensure that the exposed area has been washed thoroughly;
- Arrange for blood to be taken from the employee (informed consent is required);
- Ensure that the employee fills in an incident report form;
- Find out whether a known source individual is involved in the incident and if so, contact a medical officer to organise for blood to be taken from the source individual after obtaining informed consent to be tested for:
- HIV antibody;
- Hepatitis B surface antigen (ABsAg),
- Hepatitis C antibody (anti-ACVI);
- Ensure that all blood samples are collected as soon as practicable after the incident and processed urgently; and
- Ensure that the affected employee is provided with appropriate support and counselling.

Available data provides no basis for recommendations to restrict the practice of dental staff infected with hepatitis B or HIV who perform invasive procedures not identified as exposure-prone (see below) provided the infected dental staff practice recommended surgical or dental techniques and comply with universal precautions and current recommendations for sterilisation/disinfection. These provisions apply equally to students as to practitioners.

Exposure-prone procedures are defined in the Morbidity and Mortality Weekly Report as those in which there is the potential for direct contact between the skin (usually finger or thumb) of the worker and sharp surgical instruments or needles in body cavities or in poorly visualised or confined body sites (including the mouth).

Exposure prone procedures should be identified by medical/surgical/dental organisations and institutions at which the procedures are performed.

More information

A range of information bulletins are available on related topics. Please view www.worksafe.nt.gov.au or contact NT WorkSafe for details.

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