GUIDELINES FOR THE HEALTH AND SAFETY OF HEALTHCARE WORKERS IN BRUNEI DARUSSALAM

2nd edition

Foreword

The culture of the health care industry and the traditional orientation towards patient care had focused efforts towards making sure that patients are cared for, sometimes without applying the same standards of care to its members of staff.

Over the last few years, there has been an increased awareness of the hazards healthcare workers are exposed to. This heightened awareness provides a positive climate for healthcare facilities to develop a comprehensive occupational health and safety programme that will promote the recognition, evaluation, and control of the hazards to healthcare workers.

The healthcare industry has occupational hazards similar to those of other complex employment settings or industries, as well as hazards unique to the healthcare environment. Injuries frequently reported by healthcare workers include musculoskeletal injuries, lacerations, contusions, and needlestick injuries, along with exposure to infectious diseases and various chemicals. With the emergence of bloodborne infections like hepatitis B & C & HIV infection, the transmission of bloodborne infections in the healthcare setting has become an important area of concern for all health care personnel.

A comprehensive occupational health and safety programme will help to identify, evaluate, and control the risks related to these hazards, and such a programme should cover all departments and all jobs.

The Government of Brunei Darussalam through the Ministry of Health is acutely aware of all the potential hazards in the health care industry. There have been independent efforts by various sections and units within the Ministry of Health to develop their own guidelines to care for the health and safety of their staff.

It is hoped that these guidelines will be able to streamline all the previous efforts of the various sections and units and constructively change people's attitudes and responses to a more healthy and safe workplace.

Datin Paduka Dr. Hjh. Intan Binti Hj. Mohd. Salleh
Director General of Health Services
Ministry of Health
Brunei Darussalam

About these guidelines

In carrying out their primary responsibilities to patients, busy healthcare workers may not consider their health and safety to be the highest priority. Enforcing proper health and safety standards takes time and money, two commodities that are not in great supply.

This is particularly so in cases of accidental injury with 'sharps' (e.g. blades, needles) which has long been regarded as an occupational hazard in the health service. The majority of documented cases of occupationally acquired human immunodeficiency virus worldwide have resulted from sharps injuries.

These guidelines have been developed in consultation with members of the Occupational Health and Safety Committee (see Annex 1) who are from diverse areas of the medical field. These guidelines are to assist healthcare providers to manage health and safety and to give guidance on developing the appropriate policies and procedures. They provide information and raise awareness of hazards commonly found in the healthcare industry.

Because of the diversity of activities found in the healthcare industry, these guidelines do not address all areas of the industry. However, all departments of any healthcare facility must have a duty to provide a safe and healthy working environment for their staff.

These guidelines serve as a reference not only to the staff of the Occupational Health Division (OHD) but also to all categories of healthcare personnel, and is essential reading particularly to those who are very junior and inexperienced.

These guidelines will help to train and protect the most valuable resource of the Ministry of Health - its members of staff.

Dr. Hj. Affendy Bin Dato Seri Paduka Hj. Abidin
Director General of Medical Services
Ministry of Health
Brunei Darussalam

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Glossary

Acute toxicity is where a harmful or potentially lethal effect occurs immediately or shortly after a single exposure.

Administrative controls reduce or eliminate an employee's exposure by changing the duration, frequency, and/or severity of exposure. Examples of administrative controls include rotating employees to jobs free of the specific hazard, adjusting work schedules, and providing adequate staffing when the work output is increased.

Blood refers to human blood, human blood components, and products made from human blood.

Bloodborne pathogen means harmful microorganisms that are present in human blood and which can cause disease in humans.

Chronic toxicity refers to the harmful effects of a chemical that occur after repeated or prolonged exposure. Chronic effects may also occur some time after exposure has ceased.

Contaminated means the presence or reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Cytotoxic means being destructive to living cells.

Engineering controls use technological means to isolate or remove hazards from the workplace. Examples of engineering controls include dilution or local exhaust ventilation, or the use of a scavenging system in an operating room to prevent exposure to waste anaesthetic gases.

Mutagen is a chemical or physical agent that has the property of increasing the rate of mutation among cells. Chemicals, ionising radiation, and viruses may act as mutagens.

Mutation is a change occurring in the genetic material (DNA) in the chromosomes of a cell. It is caused by a fault in the replication of a cell's genetic material when it divides to form two daughter cells.

Oncogenic means causing or encouraging the growth of tumours.

OHD means occupational health division

Parenteral is the word applied to the administration of drugs by any other route other than by the mouth or by the bowel.

Prophylaxis means treatment or action adopted with a view to warding off disease.

Sterilisation refers to a physical or chemical procedure to destroy all microbial life, including highly resistant endospores.

Teratogenic means able to produce abnormalities in a developing embryo or foetus, that is, causing birth defects.

Work practice controls refer to controls that reduce the likelihood of exposure to hazards by altering the manner in which a task is performed (e.g. prohibiting the two-handed technique for the recapping of needles after use).

PART ONE

SPECIFIC HAZARDS

INTRODUCTION

Occupational hazards encountered by healthcare workers are well documented and generally fall into five categories:

Biological / infectious hazards - Infectious/biological agents, such as bacteria, viruses, fungi, or parasites, that may be transmitted via contact with infected patients or contaminated body secretions/fluids (e.g. human immunodeficiency virus (HIV); hepatitis B and C viruses; tuberculosis).

Chemical hazards - Various forms of chemicals that are potentially toxic or irritating to the body system, including pharmaceuticals, liquid disinfectants, corrosive solvents and gases (e.g. ethylene oxide, waste anaesthetic gases, glutaraldehyde).

Environmental / mechanical hazards - Factors encountered in the work environment that cause or potentiate accidents, injuries, strain, or discomfort (e.g. poor equipment or lifting devices, slippery floors).

Physical hazards - Agents within the workplace environment, such as radiation, electricity, extreme temperatures, and noise that can cause tissue trauma.

Psychosocial / psychological hazards - Factors and situations encountered or associated with one's job or work environment that create or potentiate stress, emotional strain, and / or interpersonal problems (e.g. stress, shiftwork).

1.1 Biological / infectious hazards

Biological / infectious agents can be transmitted to a person through inhalation, injection, ingestion, or physical contact. The combination of the number of organisms in the environment, the virulence of these organisms and the resistance of the individual ultimately determine whether or not the person will actually contract the disease.

There is a National Infection Control Committee within the Ministry of Health that oversees an Infection Control Programme in all the major hospitals in Brunei Darussalam, which documents the policies, procedures and practices necessary to minimise the risk of disease transmission and occurrence. Please see Annex 2 for members of the National Infection Control Committee.

In order for the programme to be successful, consultation with health care workers and the support of all management and staff is required. As the healthcare facilities in Brunei Darussalam vary considerably in size, patient or resident populations, infectious disease concerns and available resources, it is important that the policy and procedures for infection control should take into account the particular characteristics and infection risks of the individual facility.

All staff in the healthcare facility must be provided with adequate protection against any infection and a safe working environment. Safe work procedures should be developed within the framework of hazard identification, assessment and control.

This should include:

- Baseline monitoring for previous exposures (e.g. Hepatitis B immune status, baseline Mantoux) as part of the employment procedure;

- Staff access to appropriate testing and vaccination programmes;

- Procedures for monitoring personnel health;

- A procedure for personnel to report ill health, accidents and injuries with appropriate follow-up, including investigating all work-related ill health or injuries;

- Reporting serious harm injuries to the OHD;

- Staff education and training in principles, policies and procedures of infection control. This applies to all personnel, those with support responsibilities as well as clinical staff;

- Implementation of controls, e.g. engineering controls, such as an appropriate ventilation system;

- Standard work procedures (and the provision of personal protective equipment if necessary) to protect personnel health;

- Procedures to regularly monitor the work environment and work practices to assess compliance with the facility's infection control and health and safety policies; and,

- Procedures for ensuring that standard precautions are used throughout the facility.

1.1.1 Responsibilities of Health Care Workers

It is the responsibility of all Health Care Workers to take all practicable steps to protect their health and the health of others by following the policies and procedures of the Infection Control Programme for the facility.

1.1.2 Housekeeping and laundry

Policies and procedures of the Infection Control Programme outlined all routine, and any specific purpose cleaning such as isolation areas, surgical suites, used patient care equipment and the handling of contaminated spills.

For the laundry services, there are also policies and procedures for the safe collecting, handling, storage and distribution of laundry. These cover procedures for dealing with soiled items and laundry from people with known infections.

Because bloodborne infections are a significant hazard to the profession, precautions for the prevention of their transmissions are outlined in further detail in part 2. Further information on policies and procedure on infection control can be obtained from members of the National Infection Control Committee.

1.2 Chemical hazards

Many factors can influence the risk of hazards associated with chemicals in the workplace. These include physical, chemical and toxic properties of the substances, work practices, the nature and duration of the exposure, the effects of combined exposures, the routes of entry into the human body, and the susceptibility of the worker.

The principal aim of a chemical safety programme is to systematically identify and investigate potential hazards in order to minimise the risk of adverse health and safety effects due to exposure to chemicals in the workplace. The programme should also aim to ensure that any health care worker with potential for exposure to chemicals used at work are provided with education and training. This should cover the nature of the hazards and means of assessing and controlling exposure to chemicals, including safe storage, waste management and emergency plans for accidents and spillage. Transport, storage, and disposal of waste chemicals, therapeutic and diagnostic agents should comply with appropriate waste management policies.

Information on the chemicals in the form of Material Safety Data Sheet (MSDS) should be properly kept and easily accessible to all staff members.

1.2.1 Principles of operational control

The principles of operational control in the use of chemicals are:

- Elimination of hazardous substances wherever possible.

- Substitution — consider substituting with a less toxic substance, or the same substance in a less hazardous form or process (e.g. using a less flammable solvent; or using detergent rather than acid for cleaning).

- Isolation of the hazardous substance by putting distance or shielding between the substance and the worker. This prevents or at least minimises the dangers associated with the chemical from reaching the worker.

- Minimisation by the provision of general and local ventilation to remove or reduce the concentration of airborne contaminants such as fumes, gases, vapours, and mists.

- Engineering controls — use plant or processes that are able to contain or minimise the generation of hazardous substances (e.g. fume cupboards).

- Protection of the worker by the provision of personal protective equipment to prevent physical contact with the worker.

- Safe work practices — these usually involve management decisions that require persons to work in safer ways (e.g. by allowing access for authorised persons only; reducing the period of exposure; or regular cleaning and decontamination).

1.2.2 Common chemical hazards

Healthcare workers are potentially occupationally exposed to a number of chemicals in the workplace through:

- Anaesthetic waste gases and vapours (gases such as nitrous oxide, enflurane, halothane, and isoflurane);

- Chemotherapeutic agents (genotoxic and cytotoxic drugs, anti-viral or antibacterial drugs);

- Cleaning agents (disinfectants such as isopropyl alcohol, iodine, betadine, chlorine);

- Sterilising agents (such as glutaraldehyde, ethylene oxide);

- X-ray processing chemicals;

- Insecticides;

- Medications as in pharmaceutical preparations such as antibiotics and narcotics;
- Soaps and detergents;
- Solvents (e.g. alcohol, acetone, benzoin);
- Tissue fixatives and agents; and,
- Inorganic mercury.

Below is a brief summary of some of the common categories of hazards.

Anaesthetic waste gases and vapours

Anaesthetic gases can be released into work areas such as the operating room, the recovery room and delivery suites. While faulty seals in equipment account for the majority of gas leaks, other causes include poor administration techniques and exhalation by patients. Low levels of nitrous oxide, halothane, enflurane, and isoflurane may be released by any of these means. Exposure to the gases generated from vapourisers may also occur when anaesthetic technicians fill the vapourisers.

Proper ventilation, gas scavenger systems for extracting waste and exhaled gases in the induction mask, and regular testing of anaesthetic equipment will enhance programmes to limit exposure.

Cytotoxic (antineoplastic) drugs

Cytotoxic drugs are highly hazardous and may have mutagenic, teratogenic or carcinogenic properties. They are also known as antineoplastic drugs or cancer chemotherapy drugs. The greatest risk of occupational exposure to cytotoxic drugs is during their preparation and administration. Other aspects of patient care such as spill and waste management may also pose a risk of exposure leading to occupational hazard.

All health care workers who may be exposed to these hazardous agents need to be fully informed of all potential dangers and the need to take adequate precautions in order to minimise the risk.

The Department of Pharmaceutical Services is in the process of finalising a comprehensive guideline on the safe handling of cytotoxic drugs in the hospital environment targeted to users and personnel who are deemed to be either directly or indirectly involved in the handling of this category of hazardous pharmaceutical preparation. It involves the users and handlers from specific areas of the medical field such as the hospital dispensaries and the Oncology Unit of RIPAS Hospital. On completion, it will be implemented with the aim of providing useful information to the targeted personnel on the hazards and ways of minimising risk due to exposure

during handling and the means to protect both themselves and others from unnecessary exposure. It is hoped that the information provided will assist and be incorporated as part of their written policies and procedure manuals on the safe handling of cytotoxic drug preparations.

Sterilising agents

Ethylene oxide is used in the health industry as a sterilising agent for medical devices and equipment. Areas in the hospital that use sterilising agents include the operating rooms, central supply, renal dialysis units, respiratory therapy departments and areas that autoclave equipment. Its use is especially important in the sterilisation of heat- and moisture-sensitive items that cannot be sterilised by steam, e.g. some plastics.

There is evidence that the inhaled gas may be the cause of leukaemia in sterile services staff. The liquefied gas from the gas cylinder causes dermatitis, blisters and burns when spilt on the skin.

Effective source control measures (i.e. containment or local exhaust ventilation) and work practices must be implemented to reduce the potential for worker exposure. Because the odour of ethylene oxide cannot be detected until the concentration exceeds approximately 700 ppm, significant exposures can occur without the worker's knowledge. This possibility emphasises the need for an effective and reliable system of exposure control measures.

Formaldehyde is a tissue sterilant or preservative used in dialysis units, pathology departments, central supply departments and gross anatomy laboratories. Formaldehyde gas is an irritant to the eyes and respiratory tract. As a liquid in solution, it can cause both primary irritation and sensitisation dermatitis. Formaldehyde exposure has also been linked to occupational asthma in the hospital setting and in other work environments. The US Environmental Protection Agency has listed formaldehyde as a probable human carcinogen; therefore exposure must be controlled to maintain the lowest levels possible.

Staff education regarding chemical hazards, along with health surveillance of exposed workers, will enhance the effectiveness of any safety programme. Adequate ventilation is essential.

Glutaraldehyde is used as a disinfectant, sterilising and cleaning agent, biological tissue fixative and as a component in developer for processing x-ray film. Skin contact with glutaraldehyde solutions, aerosols and vapours can cause eye irritation and either irritant or allergic contact dermatitis. Inhalation of vapours and aerosols can cause nose, throat and lung irritation, headaches, and nausea. Respiratory sensitisation can cause allergic rhinitis and asthma-like reactions.

The substitution of a less hazardous chemical in place of glutaraldehyde, or a change of process is the preferred option.

Enclosure of work procedures and processes where glutaraldehyde is used, appropriate work practices, local exhaust ventilation, and the use of personal protective equipment are required to prevent skin contact and inhalation where substitution is not possible.

X-ray processing chemicals

Because such a wide range of chemicals is used in x-ray film processing, it is important to know precisely what procedures to use to avoid risks to health.

The focus has to be on controlling the chemicals at their source through containment, while also providing ventilation to act as a second line of defence. Where technically possible, the chemicals used should be substituted by safer alternatives.

Skin contact should be avoided at all times, and suitable protective clothing worn when performing routine cleaning of processor units and manual mixing of chemicals.

Inorganic mercury

Mercury contamination in healthcare facilities is predominantly caused by the breakage of thermometers and blood pressure apparatus. The majority of these spills do not pose a high acute risk. The initial response to such spillages should be to isolate the immediate area and begin the cleanup procedure. As with all other hazardous substances in the workplace, there should be procedures in place to deal with spillages and cleaning of contaminated surfaces. Any person involved in mercury cleanup should use the appropriate personal protective equipment, including clothing protection and gloves. Areas where mercury-containing apparatus is handled should have an impervious floor and work surface. The cleanup of a major mercury spill or gross contamination (e.g. ejected mercury from manometers) of laboratory surfaces and equipment should only be carried out by people trained to do so.

Latex sensitisation

The introduction of standard precautions in healthcare has lead to greater use of barriers against infection, with gloves being a primary method of protection. Fear of HIV transmission and other blood-borne diseases means that people working in healthcare make much more extensive use of gloves than they used to.

Latex sensitisation can pose a serious threat to the health and jobs of some health professionals and patients. It can cause a variety of allergic reactions, from urticaria to rare cases of anaphylactic shock.

Workers should be aware of the potential health effects related to latex sensitivity, so that adverse reactions can be recognised and preventative steps taken before symptoms become severe.

Every facility should have a policy to:

- Supply relevant information;
- Encourage staff to seek help if actual or possible allergy presents;
- Provide alternatives to latex-based devices as necessary; and,
- Compile purchasing data so that informed choices can be made when purchasing.

1.2.3 Safety in the laboratory

The Department of Laboratory Services has published a manual entitled "***Laboratory Safety Manual***" with the purpose of providing a source of reference and approach on safe practice in the laboratory.

Assessment of risks in hospital laboratories is particularly difficult when one considers the range of possible hazards — fires, explosions, inhalation of toxic gases, aerosols and vapours, splashes of corrosive chemicals on the skin or in the eyes, thermal burns, cryogenic burns, accidental injections, falls, and cuts and grazes. Of these, the most difficult risks to assess are exposures to chemicals, radiation, or infectious agents. Exposures in laboratories are typically short in duration, intermittent, and involve small quantities (relative to an industrial setting) of mixtures of agents. Little is known about the health effects of such an exposure profile.

Due to the difficulties in quantifying risks, an effective approach to laboratory safety involves development of universal control measures. In this context, the term "universal control" refers to the use of measures such as ventilation, substitution, personal protective equipment, and documented storage, handling, and disposal procedures in order to minimise or even eliminate exposures, irrespective of the agents involved.

1.2.4 Hazardous waste management

Policies for handling hazardous infectious waste have been developed and covered under the Infection Control Programme. Personnel involved includes waste generators, waste handlers and waste disposal staff.

These include policies for:

- Identifying waste materials;

- Comparatively assessing the benefits of using materials against the problems associated with disposing of their waste;

- A transport and disposal flowchart from the waste generator to the disposal site;

- Clear allocation of responsibilities for each step in this process; and,

- Training staff in waste management procedures and hazards.

The waste management policy aims to be environmentally responsible and also the procedures in place should protect the health and safety of persons in the facility and the community. Further information on the policies and procedures can be obtained from any members of the National Infection Control Committee (see Annex 2).

The Department of Pharmaceutical Services has also developed a comprehensive guideline on healthcare waste management for operating units under its administration. It is aimed at the personnel involved either directly or indirectly in the management of chemical and pharmaceutical waste generated within the pharmacy institution or sections within the Ministry of Health that are deemed to be involved in the process. It is still at a drafting stage but once completed, it is hoped to be implemented as a guideline that offers relevant advice on the proper management of chemical and pharmaceutical waste that complements the department's pursue of reducing health problems and eliminating potential risk to not only the health workers but also to the public's health and preservation of the environment.

1.3 Environmental / mechanical hazards

1.3.1 Manual handling

Musculoskeletal injuries and back pain are serious problems within the health industry and are a major cause of loss of work time.

Back injury can occur as a result of a single event, but is more often the cumulative result of many episodes of awkward postures, movements, weights and forces on the back, causing "wear and tear" over time.

Manual handling is related not only to lifting, transferring or positioning patients, but also to work postures adopted in other activities, e.g. work carried out by ambulance staff, orderlies, support services, and personnel in areas such as radiography and physical therapy.

Training and educating health care workers on how to lift cannot by itself address the fundamental problems of manual handling. A broader, multidisciplinary approach is required involving all categories of staff to reduce the risks of manual handling tasks and help prevent injuries.

A systematic approach to the management of manual handling problems, leading to a prevention-based strategy, is necessary. This comprises:

- Identification of manual handling hazards;

- Assessment of which manual handling tasks pose a risk of injury occurring;

- Control of the risk by either removing the hazard entirely, isolating it, or minimising the risk it poses; and,

- Evaluation of the control measures to see if they are working.

Management systems should aim to prevent manual handling injuries.

The identification of manual handling hazards should show both a proactive and a reactive approach. Proactive methods include safety inspections, observation of tasks and the application of ergonomic principles to the design of equipment and facilities. Reactive methods include investigating reports of discomfort, the use of hazard registers to identify existing and potential problems, and the analysis of incident reports to investigate and resolve accidents and incidents.

Assessment of manual handling tasks should take into consideration the following factors:

- Evaluation of how tasks are performed by observation of activities (e.g. nature of loads, work heights, working postures, actions and movements);

- Workplace design or layout and ergonomic principles;

- Duration and frequency of manual handling;

- Location of loads and distances moved;

- Loads and forces (including assessment of patient size, mental co-operation and physical co-ordination);

- Characteristics of loads and equipment;

- Consideration of work organisation and workload;

- Environmental conditions (such as lighting, heat and humidity, noise, vibration, condition of floor surfaces);

- Skills and experience (knowledge about health and safety issues of manual handling and training in how to perform tasks to minimise the risk of injury);

- Physical capacity of individuals;

- Clothing (design of uniforms, comfortable, non-slip footwear);

- Special needs (e.g. pregnancy or disability, gradual return to work); and,

- Equipment and furniture design and maintenance.

Control options could include:

- Design and redesign - ideally all plant and equipment should be designed safe from the outset. Examples include reorganisation or redesign of jobs, tasks or workplace layout, elimination or reduction in the amount of manual handling where possible.

- Manual handling aids to reduce the burden of manual handling.

- Assessment of new equipment/furniture for manual handling risks prior to purchase. Professional ergonomic expertise may be required.
- Provision of education and training on safe manual handling and lifting techniques on induction and planned, regular refresher courses. Provision of training in the correct use of mechanical and other patient handling aids.

- Provision of information and education on injury prevention and the principles of back care (this could be included in a health promotion programme).

- Clothing design should provide the ability to perform manual handling tasks safely and modestly. Footwear should be comfortable, provide good foot support, and have a non-slip sole.

Management of manual handling injury

The manual handling policy should include a system for the early reporting and management of back pain and manual handling injuries. Staff access to appropriate medical and rehabilitation services will provide a well-managed recovery. The policy should also cover follow-up and monitoring of recovery after the person has returned to work.

1.3.2 Prevention of slips, trips and falls

Slips, trips and falls are the most common cause of injury and also the most preventable. Identification of potential slip, trip and fall hazards is important to prevent or reduce the incidence of accidents in all work areas.

Many falls result from longstanding hazards which people get used to, put up with and plan to change but ignore until some incident or accident focuses attention on them. Simply walking down a hospital corridor can often be a challenge — housekeeping trolleys, wheelchairs, extra beds/stretchers and groups of people frequently clutter the corridors.

Basic safety housekeeping and regular maintenance procedures can eliminate many fall hazards. Some prevention measures to consider are:

- Regular inspection of floor surfaces for changes, e.g. lifting or damage;
- Regular inspection of lifts for correct floor approximation;
- Prompt clean-up of spills;
- Educating staff to recognise potential hazards (e.g. to prevent coffee/tea spillage, reduce fill level of cups) and to document control measures;
- Placement of warning signs to highlight spillages or during cleaning;
- Designing for effective drainage;
- Ensuring that all walkways and work areas (including bathrooms and kitchens) are kept clear of unnecessary equipment and furniture;
- Ensuring all walkways and stairs are well lit at all times;
- Securing power leads in all work areas (e.g. patient equipment, computers) and walkways;
- Provision and use of appropriate and safe stools or ladders for high storage areas; and,
- Provision and use of appropriate footwear for the work area.

1.3.3 Repetitive Strain Injury

Repetitive Strain Injuries (RSI's) is a collective term for a range of conditions, characterised by discomfort or persistent pain in muscles, tendons, nerves, soft tissues and joints with evidence of clinical signs. Symptoms such as pain, discomfort and muscle weakness may continue even after initial clinical signs have diminished. The common feature is that they are all caused by prolonged, excessive muscle tension, forceful movements, repetitive actions, and awkward postures.

The development of RSI's may include other factors such as stress, difficult working conditions, and poorly managed workload.

RSI's can affect people in a wide variety of occupations in a healthcare setting, including:

- Professional medical and dental staff;
- Housekeeping staff;

- Kitchen and laundry staff;
- Maintenance staff; and,
- Clerical and other staff using visual display units (VDUs).

The introduction of VDUs into the workplace has changed the structure of jobs, work organisation and the work environment, and the health industry is no exception. While the transition to the electronic workstation has led to increased skills and efficiencies, it has sometimes led to health problems, often caused by lack of knowledge and understanding. RSI's is a health problem that is often raised with VDU use. Please see Annex 3 for proper VDU workstation layout.

As RSI's symptoms may develop over a period of time, and can cause severe loss of bodily function that can lead to injury resulting in absence from work for extended periods, the risk factors for RSI's need to be treated as significant hazards.

These factors include:

- Work organisation and planning (control over workload, task specification, rest breaks);
- Workplace/workstation design (layout based on ergonomic principles);
- The design of equipment and tasks (allows relaxed postures and movements to be used); and,
- Staff education, training and skills (knowledge of safe working techniques, knowledge of the causes and early warning symptoms of RSI's and how to get help).

A system for the early reporting of aches, pains or discomfort should be set up, and the health care worker trained how to use it, so that they can be dealt with promptly before symptoms become severe or chronic. Staff access to appropriate assessment and medical services will benefit from accurate diagnosis and rehabilitation.

Because of the widespread nature of the symptoms and the difficulty of treatment for RSI's, the saying "prevention is better than cure" is particularly important.

1.3.4 Vehicle safety

Vehicles used as part of the normal duties of work are considered as a place of work. In Brunei Darussalam, this includes land vehicle, boats and even helicopters for the Flying Medical Services.

The health and safety of all health care workers travelling regularly on public roads, between worksites, visiting clients, transporting clients and transporting goods and equipment, must be ensured.

All vehicles must be regularly maintained and have a current warrant of fitness. All internal fixtures, such as those used for restraining wheelchairs, stretchers, gas bottles etc., must be regularly checked and maintained. Personnel must hold the correct drivers license and be provided with information, training and supervision to enable them to drive safely.

Depending on the type of driving required, personnel must be provided guidance in safe procedures, and information and training on:

- Safe loading and securing of goods;
- Safe loading and securing of people (e.g. wheelchairs and stretchers);
- Safe manual handling procedures;
- Safe handling and transport of chemicals, including gas bottles;
- Safe handling and transport of medical supplies and samples;
- Provision and use of appropriate fire extinguishers;
- First-aid procedures;
- Defensive driving and driver awareness training;
- Long-distance driving and avoiding fatigue;
- Seatbelt and seat headrest adjustment;
- The use of cigarettes, alcohol, and other drugs while driving; and,
- The use of cellphones in vehicles.

1.3.5 Safe loading

Any staff who drive as part of their normal duties needs training on how to secure loads to prevent them shifting in transit, and how to arrange the weight of a load to ensure a safe balance for steering and braking.

Vans, station wagons and hatchbacks used to carry equipment or other loads should be fitted with appropriate safety screens behind the driving seats to protect the driver or passengers from heavy items flying forward in sudden braking or collision.

If possible, vehicles should be assessed for manual handling risks that could occur during the loading and unloading of vehicles, particularly when these actions will occur several times during one work shift (e.g. district nurses' duties).

1.3.6 Vibration

Noisy processes are often associated with vibration. Intense vibration may be transmitted to personnel who operate some vehicles, equipment, and hand-held tools. Where they are exposed to whole- or part-body vibration, the exposure must be controlled and maintained within limits that protect the staff from adverse health effects.

Reducing vibration is the most effective course of control. Some ways to do this are to:

- Ask about vibration levels before deciding which new tool or machine to buy. Where possible, choose low-vibration equipment;
- Consider whether the job could be done without using high-vibration tools;
- Provide tools designed to minimise vibration;
- Maintain tools and equipment in good condition;
- Make sure that the personnel use the right tool for the job; and,
- Alter the job to reduce the grip and pressure that the staff needs to apply.

Other measures

Where the personnel needs to carry on using high-vibration tools, other measures can help to reduce the harmful effects, such as:

- Designing work breaks to avoid long periods of uninterrupted vibration exposure;
- Advise on exercising fingers and hands to help blood flow; and,
- Information and training should be provided on the hazard, signs of injury, and ways to minimise risk, and report any symptoms.

1.4 Physical hazards

Physical hazards for healthcare workers include exposure to needles and other sharp instruments, noise, ionising and non-ionising radiation, electrical hazards, and compressed gases.

A systematic approach to identify all possible hazards should be implemented. A walk through survey of the healthcare facility by an appropriately trained person, or a selected group from the health and safety committee, in consultation with the staff in each area can be used to perform the identification procedure. All hazards and potential hazards should be identified and recorded.

Once all the potential hazards are identified, an assessment to categorise those deemed to be capable of causing serious harm should be carried out. Once the significant hazards are identified, the hierarchy of steps to eliminate, isolate, or minimise the hazard must be implemented.

Personnel who can potentially come into contact with radiation hazards, such as cleaners and waste management personnel, may not be adequately trained. The requirements of personnel involved in waste disposal also need to be considered.

1.4.1 Noise

Exposure to excessive noise levels can cause hearing loss, annoyance, interfere with communication and reduce personal performance.

In a healthcare facility, excessive noise levels can be encountered in a number of departments - e.g. workshops, laundry areas, orthotics, spraymen (involved in vector control) and plaster rooms.

A preliminary assessment should be carried out to determine the areas where noise levels are likely to, or actually, exceed the exposure limits.

A more detailed assessment may need to be carried out in order to:

- Determine the amount of noise to which personnel are exposed;
- Help identify sources of noise;
- Develop noise control strategies; and,
- Determine appropriate hearing protection needs.

There is a hierarchy of control, with elimination of the noise hazard through engineering controls being the first priority. In the case of machinery or processes where it is not technically feasible to make sufficient reduction in noise levels by engineering methods, noise exposure must be reduced by isolation of the noise hazard from employees. Only if this is not practicable should protection, by means of

personal hearing protectors, be relied on to protect the staff from the hazard on an on-going basis.

New developments in noise control are continually occurring; equipments with the lowest noise rating should be purchased.

The control of excessive noise can be achieved by the introduction of a hearing conservation programme at the workplace. Such a programme may include:

- Identifying hazards to hearing at the workplace;
- Assessing the risks through noise assessments;
- Developing a noise policy and programme of action;
- Implementing control measures;
- Providing audiometric testing to any personnel regularly exposed to excessive noise;
- Providing training in noise reduction and prevention;
- Providing information to enable personnel to work in a safe and healthy manner; and,
- Consulting with personnel at all stages.

1.4.2 Radiation

An extensive programme of radiation protection must accompany the use of radiation in hospitals. Such a programme should aim at protecting patients from excessive exposure to radiation during diagnosis or treatment, and the public and personnel against exposure to leakage radiation-emitting equipment, radioactive sources, or patients who have undergone an isotopic investigation or treatment.

All healthcare workers should be aware of the hazards associated with the use of equipment involving radiation.

1.4.2.1 Non-ionising radiation

Similar to visible light, non-ionising radiation has the ability to increase the temperature of a target material. Different types of non-ionising radiation include:

- Radio waves;
- Microwaves;
- Infrared light;
- Visible light;
- Ultraviolet light;
- Lasers;
- Magnetic fields; and,
- Ultrasound.

Ultraviolet radiation. The biological effects of exposure to ultraviolet radiation are due mainly to destructive, photochemical reactions in tissue and are dependent on the wavelength range of the radiation. As penetration of the radiation is small, effects are limited mainly to the anterior parts of the eyes and to unprotected skin.

When sources are powerful enough to be a hazard, protection against overexposure may be achieved by a combination of:

- Administrative control measures;
- Engineering control measures; and,
- Personal protection.

Emphasis should be placed on administrative and engineering control measures to minimise the need for personal protection.

Lasers. Radiation from lasers can cause damage to living tissue, primarily by thermal effects. The extent of the damage depends on the frequency of the radiation, the power intensity of the beam, the exposure time and the type of tissue exposed. The tissues most at risk from lasers are the eyes and skin.

In general, the number of persons in the vicinity of an operating laser and their time for potential exposure should be minimised. The operation should be under the control of a competent person who is aware of the hazards. An energised laser, if left unattended, should be made inaccessible to all but authorised users.

Potential hazards from direct or reflected emission may also be reduced by the use of physical barriers (closed rooms, absorbent panels, enclosed instrument casings), interlocks, and shutters.

A laser safety programme must address:

- Establishing policies and procedures for the safe use of lasers;
- Training employees in the proper use of lasers;
- Ensuring that laser impact points are free of flammable and combustible substances;
- Ensuring that warning signs are posted at entrances to laser use areas; and,
- Establishing precautions for the safe use of lasers, including:

— Provision and use of appropriate goggles/glasses for affected patients and healthcare workers;

— Eye, skin and tissue protection while the laser is in use;

— Smoke evacuators, to extract at source (i.e. isolation) if procedure produces a "plume", with provision and use of surgical high-filtration masks (respirators) if this is not practicable; and,

— Baseline and periodic medical surveillance (i.e. eye and skin examinations) for exposed personnel.

Microwave and radiofrequency radiation can be harmful because of its ability to produce heat in body tissue. The amount of heat produced depends on the intensity of the radiation, the duration of the exposure, and on the water content of the tissue and its ability to dissipate heat.

1.4.2.2 Ionising radiation

Ionising radiation has the same properties as non-ionising radiation plus the ability to create ions in exposed material. Such production of ions could result in direct damage to the genetic material of the cells (the cell is the basic constituent of biological material) and/ or the production of cellular poison (e.g, peroxide).

The different types of ionising radiation are:

- Alpha particles;
- Beta particles;
- Neutrons;
- X-rays; and,
- Gamma rays.

Ionising radiation is used for a variety of diagnostic and treatment procedures, including:

- Radiographs (x-rays);
- Fluoroscopy;
- Angiography;
- Computerised axial tomography (CAT) scans;
- Nuclear medicine scans;
- Teletherapy; and,
- Cobalt treatments.

Ionising radiation has cumulative and long-term effects that may damage tissue. Patients and staff must be monitored and protected from scatter and non-essential direct exposure.

Radiation protection

The Department of Radiology, RIPAS Hospital has devised a Radiation Safety Programme that provides the basis of good/safe practice for workers directly using ionizing radiation as a diagnostic tool or auxiliary staffs that enter a scheme of work that involves the usage of ionizing radiation. There is a Radiation Protection Committee, the list and contact numbers are available in a safety manual termed as the **"*Local Rules on the Medical Applications of Ionizing Radiation, Brunei Darussalam*"**. This manual is found at all the main Radiology Departments throughout the country.

This manual is based on the recommendations of the International Commission of Radiation Protection (I.C.R.P) and the International Radiation Regulations (I.R.R). The contents of this manual specify annual radiation dose limits, regulations, operating procedures and special precautions in the safe usage of ionizing radiation radiation usage.

There is also a Quality Assurance Programme that aims to provide safe, controlled and calibrated equipments and facilities in minimizing radiation dose levels to both personnel and patients. A Quality Assurance Manual for Radiology Departments is available that specified a committee responsible for the testing and calibration of equipment and radiation surveys of facilities.

The basic principle of radiation protection is to avoid all unnecessary exposures to the radiation. There are three fundamental strategies to follow:

Time The shorter the exposure to radiation the smaller the dose. Plan the work to avoid unnecessary exposure.

Distance The greater the distance from a source of radiation, the smaller the radiation dose. Distance is a very effective protective measure against radiation exposure.

Shielding If because of physical conditions it is not possible to reduce the radiation intensity through distance, then suitable absorbing material should be placed between the worker and the source of radiation.

Further information regarding the Radiation Safety Programme can be obtained from the Head of the Radiology Department, RIPAS Hospital.

1.4.3 Electrical hazards

Electricity is a form of energy that can cause death or serious injury if poorly controlled.

All electrical equipment and fixed electrical installations are without risk to health and safety when used correctly.

In general, it must be ensured that:-

- The right equipment has been selected for the task. Consider the environment, design, and capacity;

- The equipment has been installed properly (according to the manufacturers' instructions by a qualified person). Consider whether the electrical installation will be overloaded by the addition of a new machine by consulting with an electrician;

- The operator has been trained to use the equipment - defective, obsolete, redundant, home-made or home-repaired electrical equipment is not used at a workplace; and,

- Equipment is properly maintained by qualified persons; "do not use" and "lockout" tags must be provided and used where appropriate.

It is good preventive maintenance to organise a regular inspection and testing of all electrical equipment in the facility. All new equipments should be inspected, preferably by a licensed electrician, before it is used.

Installations in hazardous areas, for example locations where there may be an accumulation of ignitable dusts, vapours or gases, should have special thought given to their design. This may involve the use of flameproof equipment, purging systems, intrinsically safe equipment and/or dust-excluding, ignition-proof equipment. If the

atmosphere is very corrosive, then protection for the equipment, or the use of different equipment, is recommended.

1.4.3.1 High-voltage equipment

Some laboratory equipment, such as an electrophoresis bath, uses power supplies that are capable of delivering high voltages and currents. This type of equipment and its power supply should incorporate the following:

- Automatic shutdown if earth leakage is detected;
- Overload protection to protect the supply unit;
- Safety interlocks to turn the power off;
- Earthed power points;
- No obstruction of air intakes;
- Clean, unobstructed dust filters; and,
- Be operated only in accordance with the manufacturer's specifications.

When this type of electrical equipment is in use, the cell and the power supply should be labelled with a "DANGER - HIGH VOLTAGE" sign.

1.4.3.2 Cellphones

Because of the high frequencies used in cellphones, these devices are very likely to interfere with electro-medical equipment. Overseas studies have shown that all cellphones create sufficient levels of electromagnetic interference to interfere with electro-medical equipment at distances of 2 metres or closer. This 2 metre distance includes through solid concrete walls, floors, and ceilings, as well as inside rooms. Facilities should have in place a clear policy for the use of cellphones.

1.4.4 Violence at work

Violence in the workplace has received increased attention in recent years, and in the health industry, violence must now be recognised as an important occupational hazard.

The expression of violence includes:

- The use of physical force to injure, endanger or damage people or their property;
- Intimidation, or coercive or fear-inducing behaviour; and,

- Verbal abuse and harassment, including racial or sexual harassment.

Some aspects of violence, such as physical assault, are self-evident. The use of language is harder to gauge - verbal abuse and gestures may be offensive or threatening to some people, and yet this may be the way some people express anger in their everyday lives.

In the health industry, violence at work applies to any incident in which any staff is abused, threatened, or assaulted in circumstances directly connected to the performance of normal duties. This can be from patients, clients, visitors, members of the public or fellow colleagues.

Certain activities place workers at higher risk of assault or aggression. Staff who work in emergency service areas, community and mental health services and those who work alone in isolated areas, are particularly at risk. Violence committed by disturbed people includes those who are disoriented or confused because of age, neurological or psychological impairment, reaction to anaesthesia, or the influence of alcohol or other drugs.

Violence and aggression at work and the fear of it can have wide effects. Any form of violence can lead to low morale within the healthcare facility, financial costs, lost productivity and the personal costs of emotional trauma.

The potential for incidents involving violence is a significant hazard and all practicable steps to protect staff from incidents of violent behaviour that may result in injury, or harm to their health must be undertaken.

All staff has to ensure their own safety while at work and that no action (or inaction) on their part causes harm to another person.

1.4.4.1 Management responsibilities

Early intervention is the most effective way of addressing violence in the workplace. The recommended approach is to eliminate the opportunity for violent or threatening behaviour to occur. An action plan will identify any potential for violence, assess incidents and determine control measures to deal with violence during or after the event. Staff involvement is essential when preparing an action plan.

1.4.4.2 Identification

Information must be provided to staff to increase awareness of violence as a hazard and to encourage the reporting of all incidents of violent behaviour (a confidential reporting system may be appropriate).

Situations must be identified in which violent or threatening behaviour may arise, for example:

- Dissatisfaction with prolonged or poor service;
- Staffing levels inappropriate to client dependency;
- Providing care for people who are stressed, angry or deprived;
- Disturbed people (mental or intellectual impairment, or those affected by drugs or alcohol);
- Working with people in the community who have a history of violence;
- Institutionalised clients who may generate aggressive behaviour toward other residents or staff;
- Where drugs are administered or stored;
- Employees working in isolation; and,
- Staff building and ground security.

Incident/accident reports should be assessed to identify the nature and extent of any violence and to identify areas of particular risk. Grouping incidents with similar features may show a pattern and help in developing preventive measures.

Reporting and investigating procedures also need to be reviewed to determine effectiveness.

1.4.4.3 Control measures

Steps must be taken to control actual or potential incidents of violence. This may involve redesign of the work environment, or administrative systems, such as:

- Changing the system of work to limit the opportunity for violent behaviour; (e.g. improve cash or drug handling procedures);
- Providing clear guidelines on what to do in threatening situations;
- A roster which includes an adequate level of experienced and appropriately trained staff (including weekend and night shifts);
- Having flexible staffing levels to adjust to needs;
- Reducing work pressures and waiting times;
- Provision of training in the prevention and management of violence (including induction training and follow-up information and training);

- Clear policy and procedures to be followed in the case of sexual harassment;

- Effective security and communication systems (surveillance of premises and grounds, controlled access, alarm systems, adequate lighting, planned maintenance, and provision of "bleepers" for staff who need to work in isolated areas); and,

- Monitoring and assessing the effectiveness of the preventive measures; (e.g. a system where staff can provide feedback to check if changes that have been put into place are working).

1.4.4.4 Working in isolation

Measures that may reduce risks for staff working in isolation (e.g. those working alone in the community) include:

- Staff training in recognising signs of disturbance and in conflict resolution;

- Procedures for assessing risk and changes in client condition;

- Providing staff with information on client risk;

- Using two-person work teams;

- Provision of an adequate communication system (e.g. cellphone, periodic reporting to base); and

- Provision of extra security procedures for night work.

1.4.4.5 Help for victims when violent incidents do occur

To minimise the negative effects following a violent incident, an appropriate post-incident response system can provide debriefing and support for staff who have become victims. This may also include colleagues of the victim, especially if they were witness to the violence.

- Provide medical evaluation and treatment for injuries.
- Assist with completing medical and legal reports and if necessary contact the police.

1.5 Psychological / psychosocial hazards

1.5.1 Stress, fatigue and shiftwork

Occupational stress is becoming an increasingly important issue, not only in the management of occupational health and safety, but also in terms of general management concerns such as cost, quality of service and personnel management.

Occupational stress is a complex process in which many issues such as hours of work, job organisation, the physical environment, personal health and the amount of pressure in the individual's private life, are all interwoven.

1.5.1.1 Stress and fatigue

The inter-relationship between work, stressors, stress and fatigue may all have an effect on health and safety at work.

In the health industry, the relationship between workplace stressors leading to symptoms of stress and fatigue can be a significant hazard for some healthcare workers. Constant demands on their time, energy, and professional skills, along with the stress of direct responsibility for patient care, exposure to death and dying, and disturbed and sometimes suicidal people, (all of which may be exacerbated by hectic work schedules that do not allow restful breaks), put them at high risk.

All workers are exposed to some source of stress in the workplace, and many have no ill effect from exposure to work-related stressors.

However, individuals react differently and have a varying ability to cope with situations. The stressors of living can lead to stress when a person's coping mechanisms are overwhelmed. This stress can result in fatigue.

The issues of stress and fatigue at work need to be managed like any other hazard in the workplace.

In some circumstances, the effects of stress and fatigue can be a significant hazard that can lead to "serious harm".

A systematic approach is recommended to identify stress hazards, assess for significant harm, and determine effective control measures.

Work situations differ in each healthcare facility, and within the facility itself. Consequently the nature of various stressors will vary accordingly.

To assist with the identification of potential stress hazards, the reporting of signs and symptoms of stress and fatigue must be encourage by all level of staff. A confidential reporting system may need to be developed.

- The intensity and duration of physical and mental effort (chronic urgency, shift work, inflexible work schedules, unpredictable work hours, long or unsociable work hours);

- The emotional stress of caring for sick people;

- The state of health and physical well being of worker (fit, healthy people often cope better with physical and mental stress);

- Organisational factors (lack of control over work load, poor planning of work, level of experienced staff inadequate for client dependency, poor communication within the workplace, organisational changes leading to job insecurity); and,

- The work environment (lighting, noise, adequate work space, work station design).

Signs of stress amongst personnel may manifest themselves in higher absenteeism, higher staff turnover, lower productivity, lack of concentration and making mistakes, low morale and increased accident and illness rates. Alcohol and drug dependence and depression are also more likely to occur in personnel under stress.

In the past, views on stress at work have focused on the individual rather than the work. A stress management programme for staff will not control the causal factors of stress. Although it may help, it will not remove the hazard, as it deals with the victim rather than the stressor. Managing occupational stress involves organisational changes, including improved communication in the workplace and assistance with personal change (e.g. physical fitness, relaxation, time management).

It is often difficult to know if a personal problem is affecting an individuals' work; therefore it is important to have a system in place to provide staff with the opportunity to seek professional assistance for any possible personal concerns that could adversely affect their work.

1.5.1.2 Shiftwork

The health industry provides continuous care for high-dependency patients and emergency situations. Such a service requires continual mental alertness and co-ordination by all healthcare providers and emergency personnel.

Irrespective of what shift patterns are worked, shiftwork is a significant stressor for most shiftworkers and their families. Most people who work shifts find it difficult to make the biological and social adjustments required by their work. Shiftwork causes circadian rhythm disturbances, poor sleep patterns and social disruption. Night work is particularly tiring because it means working at a time of physiological shutdown and sleeping during the day, which is less restful than night-time sleep.

Fatigue is a particular occupational hazard for shiftworkers. When staff are constantly asked to work excessive or ad hoc overtime, be on-call over 24 hours, work broken

shifts or six-day weeks without adequate recovery time, these work practices constitute an occupational safety and health hazard which needs to be regulated.
Research studies have been undertaken into the organisation of shiftwork systems and roster design in order to reduce the negative impact of shiftwork on workers physical and psychological health and the effect on social and family life.

1.5.2 Substance abuse

Drugs and alcohol can have a significant impact on the occurrence of injury and near misses in the workplace. Drug and alcohol use, apart from increasing a person's risk of injury, can result in reduced productivity, illness, and absenteeism. It not only increases the user's risk of sustaining injury, it also puts other workers at risk. Substance abuse can manifest itself as lateness and absenteeism, lost time and production from accidents and inefficiency and damage to plant, equipment and other property.

The use of prescribed medications should not be overlooked when addressing drugs and alcohol use in the workplace, but may require different strategies.

The issue of substance abuse in the workplace should be part of an overall health and safety strategy that includes the identification and management of hazards.

One measure in addressing drugs and alcohol in the workplace is the development of a policy on alcohol and drugs, rehabilitation and counselling. Prevention should also play a strong role in the enterprise's drug and alcohol policy.

Where it is believed that substance abuse affecting work performance may be occurring, steps must be taken to ensure the health and safety of the individual who may be suffering the effects of substance abuse, along with other staff who may be affected by the actions of that individual. If a staff's work performance could be impaired in such a way that it creates a risk for him/herself, or for his other colleagues, then there is no option than to act to remove that risk.

PART TWO

PRECAUTIONS FOR THE PREVENTION OF TRANSMISSION OF BLOOD BORNE INFECTIONS FOR SPECIFIC HEALTH CARE SETTINGS

PRECAUTIONS FOR THE PREVENTION OF TRANSMISSION OF BLOOD BORNE INFECTIONS FOR SPECIFIC HEALTH CARE SETTINGS

Bloodborne infections like those caused by the HIV, Hepatitis B and C viruses are transmitted from person to person by blood and body fluids. Since clinical examination alone is unable to identify patients who are infected, all health care workers who are exposed to blood and body fluids must assume that all blood and body fluids are potentially infectious and strict infection control guidelines must be observed at all times. These are available from the National Infection Control Committee.

It must be stated that not all procedures undertaken in all healthcare settings within the Ministry of Health can be incorporated in these guidelines. This section outlines additional precautions that must be taken by health care workers in the course of their work in specific health care settings only. This includes precautionary measures to be taken:

1. In medical clinics;
2. During endoscopic procedures;
3. In medical laboratories;
4. During ophthalmic procedures; and,
5. In dental clinics, dental laboratories and dental radiology

As an additional precaution to prevent the possibility of cross infection, patients with HIV infection / AIDS or Hepatitis B or C undergoing any dental and medical procedures should be scheduled last on the procedure list.

2.1 PRECAUTIONS IN MEDICAL CLINICS

	Items	***Precautionary Measures***
1	Disposable gloves	Necessary when doing venepuncture or other invasive procedures or dressings.
2.	Gowns	Necessary when doing invasive procedures or when likely to come into contact with patient's blood or body fluids.
3.	Instruments	Instruments that enter soft tissue, bone or vascular system must be disposable or adequately sterilised after each use. Instruments that come in contact with mucous membranes must be disinfected or sterilised after each use.
	a) Thermometers	• Digital thermometers with disposable plastic sheaths should be used for taking oral temperature in all clinics and hospitals. • Disposable plastic sheaths should be used for tympanic thermometers. • When glass thermometers are used, they must be washed and disinfected with a phenolic or 70% alcohol for 10 minutes. Rinse (if phenolic), wipe dry before use. • Disposable spatulas must be used for the examination of the oral cavity.
	b) Tongue depressors	• In special cases when reusable metal tongue depressors are required e.g. during ENT examinations, these depressors must be washed and disinfected (2% glutaraldehyde for 20 minutes) or preferably heat sterilised after each use.
	c) Needles & Syringes	• Disposable needles and syringes must be used. Discard immediately after use into a puncture resistant container e.g. sharps disposal box. Do not recap or manipulate needle.
	d) Proctoscope, vaginal speculums, etc.	• Use disposables whenever possible. • Reusable items must be washed and then autoclaved or boiled for a minimum of 20-30 minutes or soaked in 2% glutaraldehyde for 20 minutes.
4	Examination couches	• Couches should be cleaned with an appropriate disinfectant daily and whenever soiled. • If paper towels are used, they must be discarded after each patient. • Linen must be changed immediately when soiled.
5	Environment	• Clean floor with a detergent. Mop rather than sweep to prevent circulation of dust into the air.

		• Clean spills and splashes of blood and body fluid with a solution of 10,000 ppm of sodium hypochlorite and then wash clean with a mop.

2.2 PRECAUTIONS DURING ENDOSCOPIC PROCEDURES

	Items	**Precautionary Measures**
1	Disposable gloves	Necessary.
2	Gowns	Necessary.
3	Goggles/Face shields	Necessary. The scope and its accessories must be thoroughly cleaned manually to ensure that all mucous, blood and other biologic materials are removed. Cleaning should include all channels and valves. • Cleaning with an automated machine is usually more effective than a manual process. • In all instances, whether using a manual or a machine washing process, the suction channel should be well brushed prior to subsequent flushing. • Manual disinfection of the scope, accessories and goggles requires a high level disinfectant e.g. 2 % glutaraldehyde for 20 minutes. Monitor regularly the effectiveness of activated in-use glutaraldehyde solution with test strips. Alternatively, sterilise the scope according to manufacturer's instructions. • Endoscopes must be rinsed thoroughly with water (sterile distilled) until it is free from disinfectant. • A sterile water rinse or alcohol rinse (with 70% alcohol) should be performed prior to forced air drying or storage. • Scopes must be properly dried either in an automated machine or manually. Endoscopes should be stored hanging in a dry and well-ventilated area with valve and channel caps removed. • After use on known TB cases, the scope should be properly sterilised or undergo high level disinfection in an automated machine • Use only sterile scopes or those that have undergone high level disinfectant in an automated machine on immuno-compromised patients.

2.3 PRECAUTIONS IN MEDICAL LABORATORIES

The most effective method of preventing infection of laboratory staff is to assume that all specimens are potentially infectious and to apply infection control measures based from the Infection Control Programme.

In addition, all procedures and manipulations of potentially infectious materials must be performed carefully to minimise the creation of droplets and aerosols. Laboratory safety officers must ensure that all staff members receive adequate instructions and that biosafety guidelines are followed.

Laboratory accidents must be reported to the safety officers immediately. Recommended procedures for decontamination and clinical assessment must be followed.

	Items	**Precautionary Measures**
1	Disposable gloves	Necessary when handling blood, body fluids and tissues.
2	Masks, Goggles, Face shields	Necessary when splatter, aerosol or droplets are likely to be generated.
3	Protective clothing	Necessary when splatter of blood, body fluids, secretions or excretions is anticipated.
4	Handwashing	Necessary following the completion of laboratory activities, after removing gloves or protective clothing and before leaving the laboratory.
5	Pipetting	• Mouth pipetting is forbidden. • Mechanical pipetting devices must be used for the manipulation of all liquids in the laboratory.
6	Biological safety cabinets (Class I or II) Primary containment devices e.g. Centrifuge safety cups	Necessary for procedures that have a high potential for generating infectious droplets such as blending, vortexing, grinding, sonicating and vigorous mixing. Necessary in case of spills or breakages e.g. centrifuge safety cups prevent contamination of the centrifuge and the release of aerosols should tubes break during processing. These cups must be removable from the centrifuge rotor so that they can be cleaned and autoclaved.
7	Environment	• Laboratory work surfaces and floors must be decontaminated with an appropriate disinfectant e.g. 1,000 ppm of sodium hypochlorite or a phenolic after completion of work activities. • For spills of potential infectious material, soak with 10,000 ppm of sodium hypochlorite or a phenolic, for at least 5 minutes.

2.4 PRECAUTION DURING OPHTHALMIC PROCEDURES

	Items	**Precautionary Measures**
1.	Handwashing	• Necessary for all health care workers who perform eye examinations or other procedures involving contact with tears. • Hands must be washed with an appropriate antiseptic before, and immediately after a procedure and between patients.
2	Disposable gloves	• Necessary for invasive procedures. • For eye examinations, gloves should be worn when practical and convenient. • Gloves must be worn when there are cuts, scratches or dermatological lesions on hands.
3	Sterilisation / Disinfection -Instruments	• Instruments used for invasive procedures must be sterilized. • Instruments that come into direct contact with external surfaces of the eye must be wiped clean and then disinfected by a 5-10 minutes exposure to: a) a fresh solution of 3% hydrogen peroxide; or b) a fresh solution of 10,000 ppm of sodium hypochlorite; or c) 70% ethanol; or d) 70% isopropanol. Such instruments must be rinsed thoroughly in sterile distilled water or sterile normal saline before use.
	- Contact lenses	Contact lenses used in trial fittings must be disinfected between each fitting by one of the following regimes: a) **Hard Lenses** can be disinfected with a commercially available hydrogen peroxide contact lens disinfecting system currently approved for soft contact lenses. (Other hydrogen peroxide preparations may contain preservatives that could discolour the lenses). Alternatively, most trial hard lenses can be treated with the standard health disinfection regimen used for soft lenses (70^{o}C-80^{o}C for 10 minutes). Practitioners should check with hard lens suppliers to ascertain which lenses can be safely heat-treated. b) **Rigid Gas Permeable (RGP) Lenses** can be disinfected using the above hydrogen peroxide disinfection system. RGP lenses may warp if they are heat disinfected.

		c) Soft lenses can be disinfected using the same hydrogen peroxide system. Some soft lenses have also been approved for heat disinfection. Until other disinfectants used in standard contact lens solutions are shown to be suitable for disinfecting HIV, contact lenses used in the eyes of patients suspected or known to be HIV infected should be disinfected by hydrogen peroxide.

2.5 PRECAUTIONS IN DENTAL CLINICS, DENTAL LABORATORIES AND DENTAL RADIOLOGY

	Items	Precautionary Measures
1	Gloves and hands	• Wear gloves when contact with saliva, mucous membrane, blood or contaminated objects is anticipated. Discard patient care gloves after each use. • Wash hands before wearing and after removing gloves. Dry hands with disposable towels.
2	Protective clothing	• Preferably, change out of street clothing. Otherwise cover street clothing. Change daily or more often when soiled.
3	Masks, eyewear and face shields.	• Dentist and patient to use goggles when splatter or aerosol is anticipated. • Change masks and disinfect face shields daily or when soiled.
4.	Dental supplies e.g. polishing pumice, paste, cotton rolls, gauze, articulating paper and local anaesthetic cartridges.	• Dispense adequate dose for each case or use supplies in individual-patient packaging. • Never use remaining local anaesthetic in cartridges, or other supplies on another patient.
5	Injection needles	• Use disposable needles. Discard after use on each patient. • To prevent needlestick injuries: ■ do not recap or remove needles from *disposable syringes*. Discard needle and syringe as one unit. ■ remove needles from *reusable anaesthetic syringes* by hand after recapping or otherwise with the help of an instrument such as a pair of haemostats or pliers.
6	Prostheses, wax rims/bites, jaw relationship records, casts	• Debride and disinfect items that have been in the patient's mouth before handling, adjustment or dispatch to laboratory. • Disinfect items returning from the laboratory before putting into the patient's mouth.
7	Dental impressions	• Rinse under running tap water to remove saliva, blood and debris. Shake to remove excess water. • Disinfect using an appropriate disinfecting agent that

		requires an exposure time of less than 30 minutes. (Refer to manufacturer's directions regarding compatibility of the impression material with the disinfectant used). ■ impression material made from polysulphide, polysiloxane or *polyether can be immersed in glutaraldehyde, chlorine compound or iodophor. ■ impression material made from *alginate can be immersed in chlorine compound or iodophor. ■ impression material made from zinc oxide eugenol can be immersed in glutaraldehyde or iodophor. **** Impression materials sensitive to prolonged immersion*** Alternatively, dip these impressions in disinfectant, remove and wrap with paper towel moistened with the same disinfectant and store in closed container or plastic bag for the required duration of disinfection; or use a rapid-acting spray disinfectant. • Rinse disinfected impression and proceed with preparation of the model. • If an impression cannot be disinfected without distortion, disinfect the plaster model.
8	Dental instruments	• All critical and semi-critical instruments (including hand pieces) must be sterilised. Critical instruments should be appropriately packed before sterilisation. • Clean instruments manually, in an ultrasonic cleaner or instrument washer before sending them for sterilisation. • Sterilise all heat stable instruments and hand-held equipment by heat. Follow instrument manufacturer's instructions for appropriate method of sterilisation. • Sterilise heat labile instruments in glutaraldehyde, ethylene oxide or other chemical agents. Use disposables if commercially available.

		• There must be appropriate storage of instruments after sterilisation. Critical instruments should be left in sterile packs until use. • Instruments that are dispatched to the vendors for repairs must also be sterilised.
9	Infectious wastes	• Dispose extracted teeth, tissue specimens and other contaminated waste materials in yellow "Biohazard" bags through licensed contractors.
10	Dental unit water lines	• To expel retracted blood and patient materials - flush high speed handpieces, ultrasonic scalers and air-water syringes for 20 seconds after use on each patient. • To expel stagnant water - run water line for a few minutes at the beginning of each clinical day. • Do not use dental unit water for irrigation of open wounds and in surgical procedures involving bone. • Remove debris in traps and spittoon at the end of the day and dispose of as infectious waste. Flush and disinfect suction system and evacuation lines according to manufacturer's recommendations. • Maintain regularly to ensure proper function of antiretraction valves, water line systems and attached equipment.
11	Environment	• Avoid touching with contaminated gloves or hands, anywhere other than a "predefined area" and anything other than the essential items during treatment procedure. • Remove gloves or don over-gloves when there is a need to adjust dental chair and light handle, view X-rays, write notes or answer phone calls. • Use high volume vacuum suction and rubber dam where indicated to reduce contamination of the environment. • Clean and disinfect contaminated dental/X-ray unit surfaces between patients. Alternatively, cover contamination-prone surfaces with impervious

		materials such as aluminium foil and plastics and discard after each patient. Clean these surfaces at the end of the day. • Clean floor with detergent or 1000 ppm of sodium hypochlorite daily.

PART THREE

MANAGEMENT OF ACCIDENT & INJURIES

3.1 Accidents and serious harm (records and notification)

A register of work-related accidents and serious harm must be properly and meticulously kept in each and every unit of a health care facility. This includes every accident that harmed (or might have harmed):

(a) Any health care staff at work;

(b) Any person in a place of work under the Ministry of Health.

All accidents, harm and near-misses must be investigated to determine whether they were caused by a significant hazard and reported to the Occupational Health Division, Ministry of Health. Please see Annexes 4 and 5 for the sample of "Accident at Work Reporting Form" and also the flowchart for the reporting of accidents.

3.2 Injury management and rehabilitation

A comprehensive approach to health and safety management includes the integration of prevention and rehabilitation strategies in a workplace.

Most staff requires only basic medical treatment for injury or illness and will return to work after a short absence without the need for formal rehabilitation. Injury or illness causing serious harm, or long-term absence from normal duties requires a managed procedure to assist with recovery and return to normal work.

This could include:

- Early reporting, intervention and assessment procedures;
- Clearly defined responsibilities for the rehabilitation programme (e.g. appointing a rehabilitation co-coordinator);
- A multi-disciplinary approach to rehabilitation;
- A system for liaison between the injured person, those involved in the workplace and health practitioners;
- A system to monitor and progressively upgrade rehabilitation to match the recovery process;
- Follow-up after the return to normal work; and,
- A system to identify suitable alternative duties.

The objective of a rehabilitation programme is to encourage an early return to work that is designed, programmed and supervised to ensure the recovery process is maintained and that there is no risk of further illness or injury. The rehabilitation policy should be included in the induction programme to ensure that personnel understand the procedure.

Please see Annexes 6 and 7 for flowchart for management of exposures to Hepatitis B and HIV respectively.

3.3 Investigation

It is important that all occupational illnesses or injuries are fully investigated:

- To identify the real cause of injury or illness; and,

- To develop effective methods to prevent future similar accidents/incidents from occurring.

ANNEXES

Annex 1

Members of the National Occupational Health and Safety Committee.

Director General of Medical Services
Director General of Health Services
} *Advisors*

1. Director of Health Services
2. Director of Hospital Services
} ***Co-Chairpersons***
3. Director of Laboratory Services
4. Director of Dental Services
5. Director of Pharmaceutical Services
6. Director of Nursing Services
7. Occupational Health Physicians
8. Head of Radiology Department
9. Hospital Chief Executive Officer – All four Districts
10. Chief Executive Officer (Public Health Services)
11. Infection Control Officer/Nurse

Annex 2

Members of the National Infection Control Committee.

1. Director General of Medical Services
2. Director General of Health Services
3. Director of Nursing Services
4. Director, Department of Healthcare Technology Services
5. Specialist Surgeon, RIPAS Hospital
6. Specialist Anaesthetist, RIPAS Hospital
7. Specialist Pathologist, RIPAS Hospital
8. Head of Disease Control Division, Department of Health Services
9. Chief Executive Officer, RIPAS Hospital
10. Chief Executive Officer, SSB Hospital, Kuala Belait
11. Chief Executive Officer, DPMMPMB Hospital, Tutong
12. Chief Executive Officer, Department of Health Services

Annex 3

VDU WORSTATION LAYOUT

Annex 4

OCCUPATIONAL HEALTH UNIT
DEPARTMENT OF HEALTH SERVICES
MINISTRY OF HEALTH

Accident at Work Reporting Form

Date of reporting: ……..
Case ref:……..

Name :
Sex: *Male / Female*
Date of birth: I/C. No: Colour:
Yellow/Purple/Green
Residential address:

Place of work: Date of employment :

Job designation:
Contact number: (home) (office)
(mobile) (pager)

PART 1: TO BE FILLED BY THE INJURED EMPLOYEE

1. a. Date of accident : …….

   b. Time of accident : ……

   Please state if it occurred during ;

   ?Normal Working Hours

   ?Shift (Please state shift time) …….

2. Place of accident.
   State the following conditions :

   ?Floors - Dry/ Slippery / Wet

   ?Noise - Loud / Quiet

   ?Lighting - Good / Fair / Poor

   ?Environment - Air conditioned / Not

   ?Others - please specify

3. Please explain how did the accident occur and state the type of machine / instrument / objects involved (if used).

4. Nature of injuries.

5. (a) If the injuries involved sharps (needles, blades, etc) / instruments, please state whether they were

   ?sterile

   ?contaminated (Please state body fluid, blood, others) ……

   (b) If sharps (needles, blades, etc) / instrument were contaminated is the source patient known?

   ?No

   ?Yes

   If yes, please state
   Name :
   Date of birth:
   I.C No.
   MRN No.
   Any medical condition(s) of the source patient.

6. Please state if any personal protective equipment were used (if appropriate).

   ?No

   ?Yes Please elaborate

7. Are you up to date with your vaccinations? (e.g. Hepatitis B, Tetanus).

?No

?Yes Please elaborate

8. Are you suffering from any medical condition?

?No

?Yes Please explain

9. Were there any other personnel involved in the accident?

10. What was his/her injury? Please give details.

11. Are you aware of occupational health and safety hazards related to your job?

?No

?Yes Please explain

12. Have you been informed about safety precautions during your job training and before commencing your employment.

Signature of injured employee : Date: Time:

PART 2: TO BE FILLED BY THE SUPERVISOR ON DUTY

I verify that the above accident and the injuries sustained by the above named employee are true.

Name :
Designation : Date :
Time :

I/C No. :

PART 3: TO BE FILLED BY THE ATTENDING PHYSICIAN

1. Any additional relevant history of accident.

   ?No

   ?Yes If yes, details

2. Clinical findings

3. Investigations done

   ?No

   ?Yes - Details

4. Treatment given

   ?No

   ?Yes - Details

5. Admitted to?

?No

?Yes- Details

6. Referred to?

?No

?Yes - Details

7. Any follow up?

?No

?Yes - Detail

8. Medical leave? …… Days

Signature: Date seen: Time seen:

Name of attending physician:

Designation: Department:

ALL COMPLETED FORMS MUST BE PROMPTLY SUBMITTED TO:

OCCUPATIONAL HEALTH DIVISION
Department of Health Services, Ministry of Health
Block 2G, Unit 5 - 03
Bandar Seri Begawan Health Centre
Jalan Ong Sum Ping
Brunei Darussalam
Tel: 2230043, Fax: 2230044

PART 4: FOR OFFICE USE ONLY

Patient investigations

a) Additional history:

b) Results of clinical examinations/investigations:

c) Accident site investigation (if applicable)

	Y	**N**
d) Healing complete	?	?
e) Residual disability	?	?
f) Return to work		
i. Original position	?	?
ii. To another position	?	?

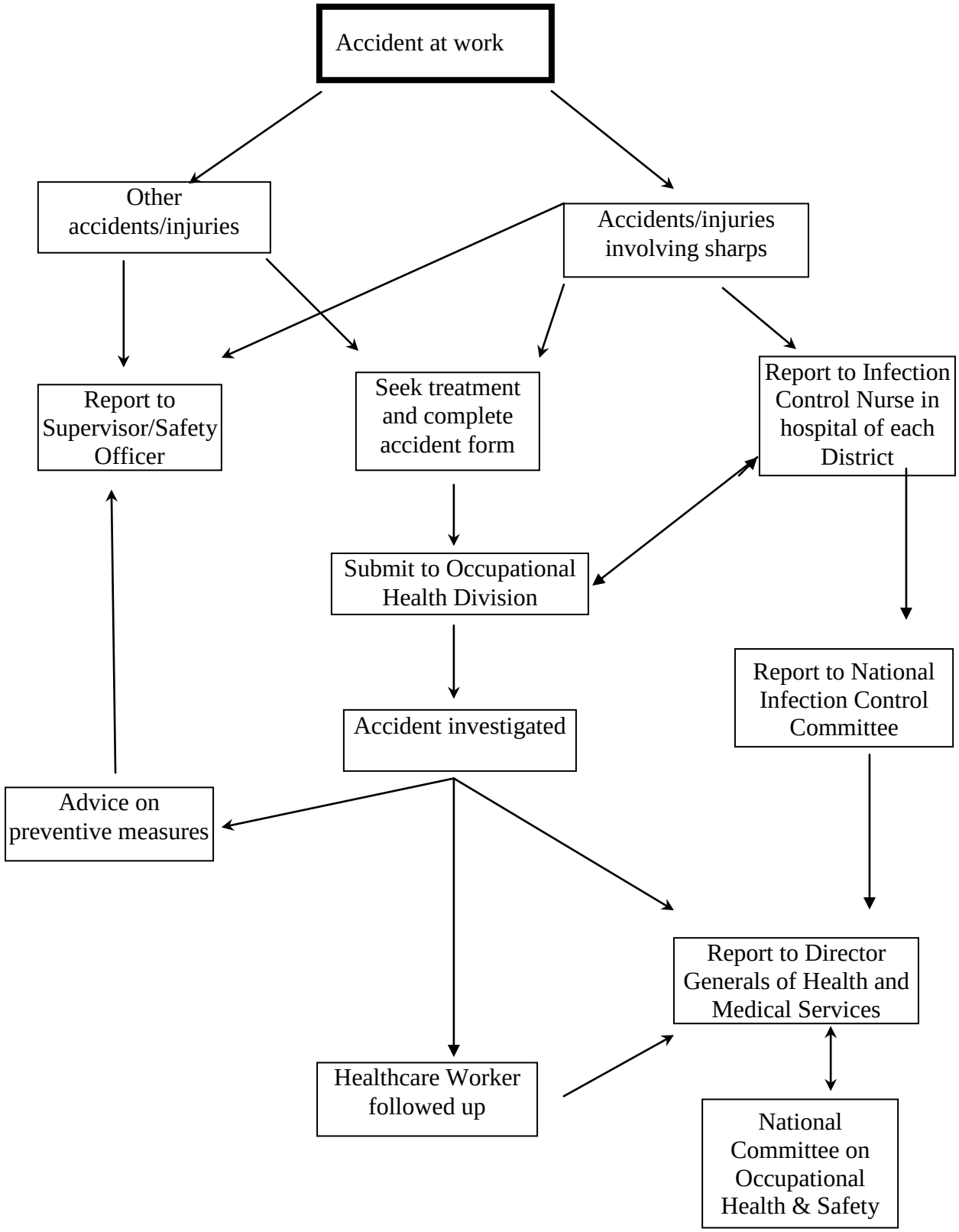
g) Recommendations / Comments:

Signature:

Name of investigator: Date investigated:

Annex 5

Flowchart for Accident at Work Reporting for Healthcare Workers



Annex 6

Flowchart for management of exposure to Hepatitis B

Annex 7

Flowchart for management of exposure to HIV