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COMMUNICABLE DISEASES STANDARDS POLICING STANDARDS MANUAL

By: Province of Ontario
Ministry of the Solicitor General
and Correctional Services

TECHNICAL MEMORANDUM

Submitted by
Canadian Police Research Centre

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NOTE: Further information about this report can be obtained by calling the CPRC information number (613) 998-6343

EXECUTIVE SUMMARY

The Province of Ontario Ministry of the Solicitor General and Correctional Service has produced a Policing Standards Manual containing a section relating to Communicable Diseases Standards.

The Standards refer to a publication prepared by the Ontario Ministry of Health, with the assistance of the Designated Officers Manual Working Group; Preventing and Assessina Occupational Exposures to Selected Communicable Diseases - An Information Manual for Desianated Officers.

The Canadian Police Research Centre (CPRC) has received permission to reproduce both of these publications for the information of the Canadian police community. It is hoped that this information may lead to a greater awareness of the risks of communicable diseases and the steps in preventing and assessing exposure to same.

CPRC wishes to thank the Province of Ontario, the Ministry of the Solicitor General and Correctional Service, the Ministry of Health and the Designated Officers Manual Working Group for permission to publish this material.

SOMMAIRE

Le ministere du Solliciteur general de l'Ontario et le Service correctionnel ont rédigé un manuel de normes policieres dont une par-tie porte sur les normes en matière de maladies transmissible-s.

Dans cette partie, on mentionne une publication que le ministere de la Sante de l'Ontario a préparée en collaboration avec le Groupe de travail sur le *Designated Officers Manual,* laquelle s'intitule *Preventing and Assessing Occupational Exposures to Selected Communicable Diseases -An Information Manual for Designated Officers.*

Le Centre canadien de recherches policieres (CCRP) a obtenu la permission de reproduire ces deux publications afin de renseigner la collectivité policiere canadienne. On espère que celles-ci sensibiliseront davantage les services de police canadiens aux risques relies aux maladies transmissibles et aux mesures à prendre afin de prevenir et d'évaluer l'exposition a ces risques.

Le CCRP tient à remercier la province de l'Ontario, le ministere du Solliciteur general, le Service correctionnel, le ministere de la Sante et le Groupe de travail sur le *Designated Officers Manual* 'avoir autorisé la publication de cette documentation.

RATIONALE

Police services have a legal and moral responsibility to ensure that their employees are able to perform their duties in a safe and effective manner. Communicable diseases pose known risks to the health and safety of police service employees. The purpose of this policy is to set out standard, reasonable precautions designed to minimize the potential risks associated with occupational exposure to communicable diseases.

PRESCRIBED STANDARDS

Not developed

GUIDELINES

1. Every governing authority shall ensure that its police service maintains a comprehensive strategy to prevent, minimize and manage occupational exposure to communicable diseases for its employees.

2. The strategy shall include a statement of principle, policy and procedures, standard equipment and staff training.

3. The governing authority shall include the following statement of principles in its policy:

   a) Police service employees are at risk for exposure to communicable diseases in the workplace, and the level of risk is related to the individuals role and responsibilities within the police service.

   b) Both uniformed and civilian employees may be affected.

   c) The employer is committed to addressing this critical health and safety issue in a responsible and humane way to enhance the safety of police service employees.

   d) The employer and the employees share responsibility for following established policy, procedures and protocols to safeguard themselves and others against occupational exposure to communicable diseases.

   e) Monitoring and evaluation of the strategy will be conducted on an ongoing basis in order to ensure its effectiveness.

4. The governing authority shall ensure that the police services policy includes detailed procedures to:

a) provide basic and continuing staff training on the prevention of communicable diseases;

b) provide all employees with the necessary personal safety equipment and workplace procedures to minimize the risk of occupational exposure;

c) offer a voluntary Hepatitis B vaccination program for all police officers and selected civilian employees who may be exposed to blood/body fluids in the workplace, at no cost to the employee; and

d) in partnership with the local Medical Officer of Health, activate a post-exposure plan that addresses roles and responsibilities, reporting protocol, medical evaluation, intervention, confidentiality, access to the best available treatment and follow up support for all employees who have suffered a potential high risk occupational exposure to a communicable disease.

5. The Chief of Police shall ensure that police officer training focuses on the following diseases that are believed to pose the greatest threat to officer safety: tuberculosis (TB), meningitis, Hepatitis B (HBV), Hepatitis C (HCV) and HIV/AIDS.

6. The application of universal precautions and infection control principles shall form the foundation of employee training. The training approach shall be to provide the employee with the skills and knowledge necessary to assess the risks presented by any situation and to make informed decisions about how to proceed.

7. The following components shall be included in staff training:

a) Blood borne diseases - HBV, HCV and HIV

- overview, incidence and prevalence of disease in the population;
- sero-conversion rates for HBV, HCV and HIV.
- modes of transmission and incubation period;
- risk of infection when exposed to infected blood/body fluids;
- assessing and reducing the risks;
- identification and symptoms; and
- post-exposure management.

b)Airborne Infections

- overview, incidence and prevalence of disease in the population;
- modes of transmission and incubation period;
- risk of acquiring the disease, and differentiation between what is TB infection versus the disease;
- assessing and reducing the risks;

- identification and symptoms; and
- post-exposure management.

c)Evaluation

- there is a mechanism to evaluate the effectiveness of staff training.

d) Continuing access to current information and emerging trends

- in cooperation with the local Medical Officer of Health, there is a mechanism to share information on a regular basis and to ensure that staff training being provided is current, accurate and sufficient.

8. The Chief of Police shall ensure that the police service follows the policy and procedures outlined in “Preventing and Assessing Occupational Exposures to Selected Communicable Diseases - An Information Manual for Designated Officers.”

9. The Chief of Police shall select and train a designated officer or officers and assign roles and responsibilities to that individual or individuals in accordance with the guidelines listed in “Preventing and Assessing Occupational Exposures to Selected Communicable Diseases - An Information Manual for Designated Officers.”

10. The Chief of Police shall ensure that post-exposure management includes the following components:

a) potential exposures are managed promptly, in collaboration with the local Medical Officer of Health;

b) appropriate first aid measures are delivered immediately;

c) the role of supervisors in managing exposure incidents is clearly defined and communicated to all employees;

d) the role of the designated officer or officers is clearly defined and communicated to all employees;

e) the established protocol for assessing and reporting a possible exposure is followed;

f) follow up planning is undertaken for each individual who has experienced a potential exposure, based on a reasonable assessment of their needs.

g) record keeping procedures are established for the following purposes: training, maintaining confidential medical records for affected employees and problem identification, resolution and

evaluation.

11. The Chief of Police shall ensure that each police officer has access to a sufficient supply of the following standard, personal protective equipment:

a) Personal issue that includes disposable anti-microbial gloves, waterless antiseptic hand wipes, a disposable one-way air valve for cardio-pulmonary resuscitation and a device to secure these items to the officers person;

b) Mobile kits that include goggles, moisture-resistant cone masks, heavy gauge gloves, moisture-resistant disposable protective clothing, biohazardous waste disposal products, spatulas, evidence tubes, biohazard labels, biohazard bags, antiseptic hand wipes and waterless antiseptic hand cleaner, in a carrier designed to hold these items; and

c) Stationary kits that include disposable anti-microbial gloves, biohazard waste disposal products, heavy gauge gloves, moisture-resistant disposable protective clothing, spatulas, biohazard bags, germicidal cleaner, sharps containers and waterless antiseptic hand cleaner.

12. The Chief of Police shall ensure that there are policies and procedures to address the following workplace controls:

a) handling and storage of contaminated forensic exhibits;

b) prisoner/vehicle searches;

c) custody and transportation of prisoners;

d) holding facilities for prisoners with known or suspected communicable diseases;

e) handling of sharps, including syringes; and

f) practices around blood/body fluid spills.

13. The Chief of Police shall ensure that there are policies and procedures to address general infection control, which shall include the following:

a) cleaning unprotected skin;

b) hand washing procedures;

c) removal and disposal of anti-microbial gloves;

d) handling contaminated work clothing;

e) disinfection of surfaces and police vehicles, both interior and exterior;

f) disinfection of holding facilities;

g) handling and disinfection of non-disposable equipment; and

h) handling and disposal of biological waste and non-reusable equipment.

14. The Chief of Police shall encourage employees at risk of occupational exposure to communicable diseases to become inoculated against Hepatitis B. The police service shall pay for the Hepatitis B vaccine to be administered to all police officers who choose to be inoculated. Based on an assessment of the potential risk of occupational exposure, the police service shall also pay the cost of the vaccine for selected civilian employees.

15. The Chief of Police shall establish and monitor a mechanism to measure and evaluate results of the communicable diseases strategy, so that necessary changes and improvements can be introduced to improve officer safety on a continuous basis.

16. This standard will take effect May 1, 1998.

Preventing and Assessing Occupational Exposures to Selected Communicable Diseases

An Information Manual for Designated Officers

Ministry of Health
Ontario

November 1994
Prepared by the Ontario Ministry of Health
with the assistance of the Designated Officers Manual Working Group

TABLE OF CONTENTS

INTRODUCTION

Emergency service workers - ambulance attendants, paramedics, firefighters and police officers - may in the course of their duties be exposed to communicable diseases, including:

- bloodborne diseases, such as hepatitis B and acquired immune deficiency syndrome (AIDS)
- diseases spread through the respiratory system, such as meningococcal disease and infectious tuberculosis
- viral haemorrhagic fevers, such as Lassa fever, Marburg virus haemorrhagic fever, Ebola virus haemorrhagic fever, Crimean-Congo haemorrhagic fever, and Venezuelan haemorrhagic fever.

The risk of spread of all these diseases can be reduced through the use of health and safety programs designed to protect workers from exposure. Such programs should be in place in all hazardous workplaces.

Some emergency service workers, such as ambulance attendants and paramedics, are trained to recognize and deal with the risks of exposure to communicable diseases. Firefighters and police officers, who are not considered health care workers, may not have received the same training. However, they are often called upon to react and provide the first level of care in working environments that are often uncontrolled and in situations where they may risk their own safety to protect others. Wiihin this working environment, it is possible for emergency service workers to be exposed to a communicable disease and to be unaware they have been exposed. It is also possible for private citizens or off-duty emergency service workers to act as "good Samaritans" in an emergency situation and be exposed to these communicable diseases.

This manual is part of a Ministry of Health initiative to:

- educate emergency service workers about the risk of occupational exposure to the communicable diseases specified above
- encourage emergency service workers to adopt practices and procedures to protect themselves
- establish a protocol for dealing with any exposure.

BACKGROUND

In November 1987, the Centers for Disease Control (CDC) in the United States developed and published the *Recommendations for Prevention of HIV Transmission in Health Care Settings,* which the Federal Centre for AIDS and the Laboratory Centre for Disease Control (LCDC) **in Canada endorsed.**

In 1988, the CDC issued its *"Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus and Other Bloodborne Pathogens in Health Care Settings".* This document dealt in more detail with the use of protective barriers, gloves and waste management. LCDC again endorsed the CDC's recommendations.

In November 1991, **a** Ministry of Health Task Force recommended that:

> **"to reduce the risk of occupational exposure... universal precautions be adopted and used in all health care settings and with all procedures where there is risk of exposure"**

Universal precautions is a process of assessing the risk in a given activity or situation, and then taking steps to reduce the risk. In some cases, that may mean using protective equipment, such as gloves or masks, or changing procedures, such as the way workers handle sharp objects. Universal precautions focuses on giving workers the information, skills, procedures and equipment they need to identify risks and how to take steps to protect themselves and prevent exposure.

When a worker is in a work situation where he/she might have been exposed - for example, having a patient's blood splashed in his/her face - the worker should report the incident so the employer can ensure the worker receives proper care and counselling.

Over the last few years, hospitals and other controlled health care settings have adopted systems of universal precautions designed specifically to prevent the transmission of bloodborne diseases in those settings. They also use other prescribed systems of infection control to prevent the transmission of other diseases.

However, universal precautions can also be used by emergency service workers to protect themselves in emergency situations and thus reduce the risk of exposure to all the communicable diseases listed on the first page. The universal precautions described in this manual may differ somewhat from those used in hospital settings because they are designed for use in emergency settings.

To help prevent exposure to and transmission of communicable diseases in emergency settings, the Ministry of Health is encouraging all emergency services to adopt the universal precautions described in this manual.

GUIDING PRINCIPLES FOR UNIVERSAL PRECAUTIONS IN EMERGENCY SITUATIONS

1. All workplaces are expected to have in place standard occupational health and safety programs and practices.

2. A system of universal precautions complements existing occupational health and safety practices.

3. Universal precautions is designed to be used "universally" and routinely in all emergency situations where there is risk of exposure to the specified communicable diseases (bloodborne diseases, diseases spread through the respiratory system and viral haemorrhagic fever).

4. The employer is responsible for assessing the potential risk of occupational exposure to the specified communicable diseases in the workplace and for providing appropriate engineering controls, standards of practice, equipment and education to reduce the risk.

5. Universal precautions gives the worker the knowledge and skills to assess personal risk in emergency situations and to take precautions to protect himself/herself. The employer is responsible for providing the education and training that will give employees the skills to apply universal precautions appropriately in all situations. The employee will then be able to use his/her skills to reduce the risk and prevent exposure.

6. Immunization is a key strategy in preventing transmission of certain communicable diseases. All emergency service workers should be immunized according to the National Advisory Committee on Immunizations' (NACI) guidelines published in the Canadian Immunization Guide (Health Canada) 1993.

7. An emergency service worker who has had an occupational exposure to one of the specified communicable diseases has the right to know she/he has been exposed, and will be informed.

8. Emergency service workers who have had a possible occupational exposure to any of the specified communicable diseases should follow the protocols described in this manual. The protocols respect the provisions for confidentiality in the Health Protection and Promotion Act (HPPA) Section 39.

PROTOCOLS FOR NOTIFICATION OF EMERGENCY SERVICE WORKERS

When emergency service. workers are exposed to a communicable disease, they should be notified so they can receive care and, if infected, take steps to prevent spreading the disease to others. However, in an emergency situation, neither the employer nor the employee will necessarily know if the employee has been exposed to a communicable disease.

In any health care situation, a patient has a right to confidentiality. Hospital staff cannot breach the confidentiality of a person brought in by emergency workers by telling the workers anything about the patient's health or giving them any details of the person's diagnosis.

To ensure that emergency service workers are notified of a possible exposure without breaching the patients right to confidentiality, the Ministry of Health has worked with the emergency services to:

- develop a mandatory public health guideline and protocols for notifying any emergency worker who has been exposed to a communicable disease
- encourage each emergency service to establish a designated officer who will be trained to assess significant occupational exposures to the specified communicable diseases and who will work with public health to notify workers
- develop a manual the designated officer can use to fulfil his/her duties.

Purpose

The purpose of the mandatory public health guidelines and protocols is to ensure that emergency service workers are notified of specific serious communicable disease exposures so that appropriate action may be taken.

Roles and Responsibilities

The Emergency Service

Within a jurisdiction, each emergency service (police, firefighters, ambulance) will be responsible for:

- assessing the possible risk of occupational exposure and then setting standards of practice, providing equipment and training employees to prevent possible exposures
- appointing no more than one designated officer and an alternate who will assess exposure reports and notify employees of a possible exposure. Whenever possible, this appointment will be made in consultation with the Joint Health and Safety Committee. Emergency services employing small numbers of people may band together to appoint and ensure the training of a designated officer
- completing the Workers' Compensation Board forms (Employers Report of Injury/Disease Form 7) required to document an exposure (See Appendix 1).

The Emergency Service Worker

The emergency service worker plays a key role in preventing exposures and in ensuring any possible exposure is followed up on immediately by:

- being aware of the risks of occupational exposure to the specified communicable diseases
- taking steps in fulfilling his/her duties to prevent or reduce the risk of exposure by using universal precautions and appropriate procedures and equipment routinely
- complying with the Occupational Health and Safety Act and any other established workplace health and safety policies.

If a situation occurs where an emergency service worker may have been exposed to a communicable disease, he/she is responsible for:

- complying with the recommended protocol and promptly reporting the possible exposure, using the same Workers' Compensation Board forms (Workers Report of Injury Form 6) that would be used with any other occupational injury (See Appendix 1)
- providing any other information the designated officer may need to assess the incident.

The Designated Officer

The designated officer will:

- receive detailed reports from emergency service workers who believe they may have been exposed to one of the specified diseases (The reports will describe the situation and circumstances clearly.)
- assess, given the situation and circumstances, whether an exposure could have occurred
- if an exposure could have occurred, contact the medical officer of health in the health unit where the emergency service is located and provide all details of the incident
- inform any worker who has had contact with someone with one of the specified communicable diseases of the possible risk and advise them to seek medical care.

In the event that there is a disagreement or dispute between the designated officer and the medical officer of health about a possible exposure, the designated officer may refer the matter to the Chief Medical Officer of Health.

The *Medical Officer of Health*

The medical officer of health will play an active role in helping the designated officer assess possible exposures and providing any information the designated officer may need to inform a worker about any specific actions he/she should take. The medical officer of health will:

- contact the emergency services in his/her region to identify their designated officers
- review detailed information on any incidents provided by the designated officers
- contact a specified hospital contact person (infection control practitioner) for information on the case if she/he agrees that the worker may have been exposed and, if it is necessary
- inform the designated officer as soon as possible (not later than two working days after receiving the request) of any specific action that should be taken
- follow-up to ensure proper procedures were used.

In addition, the medical officer of health will continue to play a proactive role in disease surveillance. There are established policies and procedures for reporting cases of designated reportable communicable diseases and notifying contacts.

- Physicians and others designated under the Health Protection and Promotion Act (BPPA) are required to report cases of designated communicable diseases (OR 558/91, OR 559191).
- When the medical officer of health receives such a report he/she or his/her designate will immediately take steps to inform people who may have had contact with the person and been exposed - including emergency service workers - and advise them to see a doctor.
- The medical officer of health will actively seek out possible contacts - even if no report has been filed by an emergency service worker or designated officer. This is routine with illnesses spread by the respiratory route such as meningococcal meningitis. People exposed to a case are then given antibiotics to prevent infection.

- The medical officer of health will also contact anyone' exposed to someone with active tuberculosis, determine whether she/he has been infected, and ensure she/he receives appropriate treatment.

- Under the contingency plan for viral haemorrhagic fevers, the medical officers of health, with the provincial response coordinator, are responsible for responding to any reported case of one of these fevers. They will identii, notify and manage everyone who may have had contact with someone with such a disease. They will assess emergency service workers in accordance with the contingency plan.

- Under the Health Protection and Promotion Act, the medical officer of health also has the authority to order anyone who has a communicable disease to:

  - submit to an examination by a physician
  - if the disease is considered "virulent", place himself/herself under the care and treatment of a physician
  - conduct himself/herself in such a manner as not to expose another person to infection
  - isolate himself/herself and remain in isolation from other people.

SELECTING/TRAINING A DESIGNATED OFFICER

To fulfil the role described above, the designated officer must have the following knowledge and skills:

Knowledge

The most important part of the job is to understand how the specified diseases are spread. The designated officer must be familiar with:

- ***The*** including:

  - the agents (e.g., virus) that cause them
  - where the agents are commonly found (e.g., blood)
  - objects or surfaces in the environment that can play a role in the spread of the specified diseases
  - how the agents can be spread in an emergency situation
  - how long it takes to develop signs or symptoms of the disease (incubation period)
  - when people are most likely to be infectious (i.e., when the disease is communicable or the stage in the disease when it is most easily spread)
  - whether the worker is susceptible (likely to get the disease) or has a natural or acquired resistance to the disease.

- ***Vaccines*** and ***immunizing agents*** that can prevent the spread of the specified diseases.

- ***Precautions and barriers*** that workers can use to reduce the risk of being exposed to the specified diseases.

Skills

In addition to knowledge about the diseases, how they are spread and how to prevent them, the designated officer will need the following skills to use that knowledge effectively:

- Assess& Ski/k?. The designated officer must be able to:

  - review reports and ensure they have all the facts needed for analysis
  - talk to/interview the emergency service worker to ensure that critical information in the written report is correct.

- Analytic&t/ Skills. The designated officer must be able to:

  - evaluate both the written reports and his/her conversations with a worker to assess whether the worker has been exposed to one of the specified communicable diseases
  - act quickly and properly (based on the information he/she has)
  - use other resource materials
  - ask for other advice (when needed).

- Interpersonal Skills. The designated officer must be able to:

  - talk easily with w-workers
  - explain the results of his/her assessment in a reassuring way
  - relieve any unnecessary anxiety that workers may be feeling
  - give some emotional support to a co-worker who may have been exposed to one of the specified communicable diseases.

- First Aid Skills The designated officer must have:

  - training and experience in giving first aid (if a firefighter or police officer)
  - some health care training (if an emergency medical attendant).

- ***Accountability.*** The designated officer will be accountable for ensuring the protocol is followed and, in his/her role, must be willing to:

  - take responsibility for contacting the medical officer of health
  - take responsibility for telling workers and superiors of his/her findings.

In selecting people to act as designated officers, the emergency services should consider those who have already demonstrated these types of skills in other work situations. The emergency service should also consider the training the designated officer may need to develop the information and skills he/she will need to do the job. The following section provides the basic information the designated officer will need.

INFORMATION FOR THE DESIGNATED OFFICER

1 THE DISEASES AND HOW THEY ARE SPREAD

Blood borne Diseases

Bloodborne diseases, such as AIDS and hepatitis B, are caused by viruses that are carried in the bloodstream and in other body fluids, including semen, vaginal secretions and saliva. People carrying these viruses may show no signs of illness. For example, hepatitis B carriers are people who are infected and have not developed an immunity to the disease. They will carry small amounts of hepatitis B virus in their bloodstream and other body fluids, perhaps for the rest of their lives and thus be able to pass the virus to others. The same is true of people with HIV (human immunodeficiency virus) infection, the virus that causes AIDS.

It is often difficult, in an emergency situation, to determine whether a body fluid contains blood - or even what type of fluid it is. For this reason all body fluids, whether blood is visible or not, should be treated as potentially infectious. There is greater risk of transmission with certain bloodborne diseases. For example, hepatitis B virus is significantly more infectious than HIV.

Transmission. In an emergency situation, all workers are at risk of exposure to bloodborne diseases through:

- a needlestick injury or puncture wound - if an emergency worker is pierced or stabbed with a needle or sharp instrument that has someone's blood on it, there is a risk that he/she could be exposed to a bloodborne disease
- broken skin - if an emergency worker has a cut or wound or his/her skin is chapped, abraded, weeping or covered with a rash or eruption and the cut or skin comes in contact with blood or bloody body fluid, there is a risk that she/he could be exposed to a bloodborne disease
- the mucous membranes of the eye, nose or mouth - if blood or bloody body fluids are splattered in an emergency service workers eyes, nose or mouth, there is a risk that she/he could be exposed to a bloodborne disease
- surfaces contaminated with blood -there is some risk of exposure from infected blood spilled or splattered on floors or other surfaces. However, the HIV/hepatitis B virus in a blood spill can be easily and quickly killed by wiping or disinfecting the area with a mixture of household bleach and water (1: 10)
- saliva - if saliva from an infected person gets on broken skin or in an emergency workers eyes or mouth, there is some risk of exposure to hepatitis B virus. To date, there has been no documented case 'of any health care or other worker getting HIV through contact with saliva.

The risk will vary depending on the situation, the type of care being provided and the type of contact. For example, the risk of a virus being passed from one person to another is much greater with a needlestick injury than with contact with broken skin or mucous membrane.

Specifically, ambulance attendants who administer hypodermic injections are at risk of exposure to bloodborne diseases through needlestick injury, Police officers risk skin injury and possible exposure to bloodborne diseases when they search prisoners or people who have been arrested. Hypodermic needles or other sharp objects contaminated with blood may be hidden in pockets, purses, waistbands or garment linings. Police officers also risk exposure to hepatitis B if they are bitten by someone carrying the hepatitis B virus.

There is no risk of emergency workers being exposed to bloodborne diseases in faeces urine or vomit - unless they contain blood. Bloodborne diseases are not spread by casual contact on the job, in the swimming pool or on the subway There is no risk of becoming infected by sharing a locker or toilet facilities, or by being in a car with someone with a bloodborne illness.

Symptoms. People infected with a bloodborne disease will not necessarily develop symptoms of illness for some time. In the case of hepatitis B, about half the adults who become infected never feel sick and recover completely. The other half get a flu-like illness and their skin and eyes turn yellow. Of those infected with hepatitis B, about six to 10 per cent will go on to become chronic carriers of the disease.

In the case of HIV, people infected may develop a flu-like illness and recover and remain well for many years. Physicians use an antibody test to find out whether someone exposed to HIV has become infected - but it can take from three to six months to develop antibody to HIV Because of the time it takes for people to develop antibody, emergency service workers who may have had a possible exposure may have to wait several months to-know whether or not they are infected.

Immunkation. Three doses of hepatitis B vaccine administered over a six month period, following the NACI guidelines, is the best available protection against the hepatitis B virus. It is effective in over 95 per cent of cases. This means the vast majority of workers who have been vaccinated against hepatitis B are immune and will not get hepatitis B when exposed to the virus.

There is no vaccine against HIV infection.

Diseases Spread by the Respiratory Route

Tuberculosis (TB) is caused by bacteria called *Mycobacteriun tuberculosis.* The bacteria are carried in the respiratory system of infected people and can be spread in respiratory droplets from the person coughing, sneezing or even talking. The droplets can survive suspended in the air for several minutes.

Transmission. TB is not a highly infectious disease. To be infected, people usually have to be exposed frequently over a long period of time to someone with TB in the lungs who is not receiving treatment, whose sputum contains TB bacteria, and who is coughing. Infection occurs when the person inhales the airborne bacteria and the bacteria take hold and grow in the person's lungs. The bacteria are not spread through sharing dishes, drinking glasses or other objects.

In an emergency situation, emergency service workers are at greatest risk of exposure to TB through:

- giving mouth-to-mouth resuscitation
- close and prolonged contact with someone who is coughing uncontrollably - particularly in a confined or closed space, such as a car or ambulance, where there is poor air circulation
- contact with fellow workers who may unknowingly be infected with TB. When the infected worker coughs, sneezes and speaks at close range with a co-worker - particularly in a car or an office with poor ventilation -there is risk of exposure to the bacteria.

Symptoms. Symptoms of active TB in the lungs include cough, fever, sweating and weight loss. It takes approximately four to 12 weeks after a worker is exposed to TB for a skin test or chest X-ray to show signs of infection.

Prevention/Treatment Emergency services workers who are exposed to people known or suspected to have TB can prevent transmission by using appropriate precautions as advised by infection control officers. For example, when transporting someone with active TB in their lungs, the emergency service workers should ask the person to cover his/her mouth with a tissue when coughing and to put used tissues into a covered container.

Physicians use a combination of drugs over a period of six to nine months to treat active tuberculosis. This treatment is effective and will cure TB in most cases. Most patients become noninfectious within three weeks of beginning treatment. If a worker suspects that he/she has been infected with tuberculosis, he/she should have a skin test and be examined by a physician. Anyone who reacts to the skin test (i.e., is infected) and who has not developed active TB can be given medication that will prevent TB from developing.

Meningococcal disease is caused by bacteria called ***Neisseria meningitidis*** Two serious forms of meningococcal disease are meningitis and meningococcaemia. Meningococcal meningitis occurs when the bacteria infects the membrane that surrounds the brain and spinal cord and causes inflammation. Meningococcaemia occurs when the bacteria gets into the bloodstream.

Transmission. About five per cent of the population - or one of every 20 people - carry the bacteria that causes meningococcal disease in their nose and throat without becoming ill. The disease is usually transmitted by people who are carriers, not people who are ill, and it is spread through direct contact with the discharges from the nose and throat of a carrier. The bacteria can be spread through kissing or by sharing a drinking cup, a cigarette, food or lipstick. There is no risk from sitting next to someone who carries the bacteria. The disease occurs most often in winter and spring. It is not known why some people become ill and others do not.

Meningococcal disease occurs at all ages. About one-third of cases are in adults, and the spread of the disease is more common among adults living in crowded conditions, such as prisons and military barracks. However, most adults have acquired a natural immunity to the disease. In most people, the chance of becoming infected is low and it usually decreases with age. Emergency services workers are rarely at risk even when caring for people who have meningitis.

In an emergency situation, emergency service workers may be exposed to the bacteria through mouth-to-mouth resuscitation without a mouthpiece, but there is no known case of an emergency worker being infected in this way.

Symptoms. Once infected with meningococcal bacteria, it takes between one and 10 days usually less than four days -to develop symptoms, which include fever, intense headache, nausea, vomiting, stiff neck and often a rash. The person may become delirious or lapse into a coma.

Treatment/Immunization. Emergency service workers who have had close contact with a case of meningococcal disease (i.e., given the person mouth-to-mouth resuscitation without a mouthpiece) are given a two-day course of antibiotic. This will prevent them from developing the disease.

There is a vaccine for meningococcal disease, but it is usually given only to travellers going to parts of the world where the disease is common. In Canada, it has been used only when there is an outbreak.

Viral Haemorrhagic Fevers

The diseases that cause viral haemorrhagic fevers, such as Lassa fever, Marburg virus haemorrhagic fever, Ebola virus haemorrhagic fever, Crimean-Congo haemorrhagic fever, and Venezuelan haemorrhagic fever are spread by direct contact with someone who is infected.

Although these diseases are very rare, they are serious and require the involvement of both provincial and federal health authorities. When a case of viral haemorrhagic fever is identified, everyone who may have been exposed to the case will be contacted by provincial or local health authorities. The local medical officer of health will initiate actions as outlined in the Contingency Plan for Viral Haemorrhagic Fevers (Ontario 1994).

2 PRECAUTIONS TO REDUCE THE RISK OF TRANSMISSION

Emergency service workers can prevent or reduce the risk of occupational exposure to the specified communicable diseases by having up to date immunizations, by following safe work procedures and by using barrier devices and other equipment.

Immunization

The following are guidelines for immunization against communicable diseases. When appropriate, employers should ask emergency service workers to show their record of immunization, and encourage anyone who has not been appropriately immunized to get the necessary vaccines. Except for the hepatitis B vaccine, all are available free from family physicians or public health departments.

Tetanus-Diphtheria. Like all adults, emergency service workers should be immunized against tetanus-diphtheria once every 10 years. If, in the course of his/her duties, an emergency service worker receives either a puncture wound or a wound other than a clean minor one and it is five years or more since his/her last inoculation, she/he should have a booster dose of vaccine.

Polio. Routine immunization against polio is not considered necessary for adults living in Canada. Most adults are already immune and have a very low risk of exposure to wild polio viruses in North America. However, immunization is recommended for health care workers in close contact with people who may be excreting wild or vaccine strains of polioviruses, and some employing agencies may require polio vaccinations. Emergency service workers who need to be immunized and who have not received a primary course of oral poliomyelitis vaccine (OPV) and/or inactivated poliomyelitis vaccine (IPV) should be given a primary course with IPV.

Rubella (German measles). Female emergency service workers who have no documented history of vaccination with rubella vaccine or who test negative for rubella antibody should receive rubella vaccine. Female workers should be advised to avoid pregnancy for three months after vaccination.

Measles. People born after 1956 and who have no documented record of measles immunization or who are, known to be seronegative should receive measles vaccine (given as MMR).

Hepatiis B. A safe vaccine to prevent hepatitis B has been available since 1982, and provides over 95 per cent protection against hepatitis B for seven or more years. Emergency service workers who, in the course of their duties, are exposed to blood or at risk of sharps injury should receive a primary course of hepatitis B vaccine (one series of three inoculations) in accordance with the NACI recommendations. (See Appendix Il.)

Safe Work Procedures Barriers and Equipment

Emergency service workers who are trained and knowledgeable about universal precautions should routinely use the following safe work procedures:

Handwashing. Hands should be washed after any contact with a client, even if gloves have been worn, using the following procedures: wet hands first, dispense soap from container, wash hands with warm water and lots of friction - lather and scrub for approximately 10 to 15 seconds - rinse well under running water, keeping hands down, dry hands with a clean paper towel and use the towel to turn off the faucets.

In many emergency situations, there will be no handwashing facilities and it will not be possible for emergency service workers to wash immediately In those cases, emergency service workers should use waterless antiseptic hand cleanser and follow the manufacturers' instructions. They should then wash their hands again with soap and water as soon as possible.

Gloves Disposable medical gloves should be worn whenever there is risk of exposure to blood, other body fluids (vomit, diarrhea) or rashes (open sores, wounds). Change gloves as soon as they become torn or soiled. Change gloves between handling different people at the emergency scene if possible. After use and before leaving the scene, put them back in their original packaging and return them to the office/centre for proper disposal. Avoid touching personal items, such as combs, when wearing gloves. Wash hands as soon as possible after removing gloves.

Masks and Protective Eyewear Masks and protective eyewear should be worn when there is a risk that the emergency service worker may be splashed with blood or body fluids.

Handling Sharps. Avoid contact with any sharp object or instrument, induding needles. Handle them only when using the appropriate type of heavy glove. Any sharp objects should be carefully disposed of in properly designed puncture-resistant containers. Puncture wounds pose a particular hazard for emergency service workers in uncontrolled settings.

Resuscitation Procedures. Use proper resuscitation equipment - big-valve masks, oxygen demand valve resuscitators, pocket mouth-to-mouth resuscitation masks -when someone in an emergency situation requires resuscitation.

Cleaning sterilizing and disinfecting Any clothing splattered with blood or other body fluids should be handled as little as possible and washed in a normal laundry cycle, using laundry detergent. Station and work uniforms should be washed and dried according to instructions on the labels.

Any equipment used, such as resuscitation masks, should be cleaned and disinfected as instructed by the manufacturer. Any blood or other body fluid spills on equipment or vehicles should be cleaned with cleaners or disinfectants intended for environmental use.

When cleaning blood or body fluid spills on floors or other surfaces, emergency service workers should wear disposable gloves, wipe up the fluid using disposable towels, then decontaminate the area with an appropriate germicide or 1:10 solution of bleach and water. Let the area air dry Wash hands after removing gloves.

3 REPORTING AND ASSESSING A POSSIBLE EXPOSURE

Reporting a Possible Exposure

Any emergency service worker who believes that **she/he** may have been exposed to one of the specified diseases should report the incident promptly to the designated officer using the prescribed form (see Appendix III). The worker should provide detailed information on the emergency situation, the precautions and equipment used, any failure in the equipment and any other information the designated officer may need to assess the situation.

Assessing a Possible Exposure

When a worker reports a possible occupational exposure, the designated officer is then responsible for assessing the situation and determining whether an exposure may have occurred.

To determine whether an exposure has occurred, the designated officer will assess:

- the nature of the exposure
- the worker's immune status
- the precautions used during the incident
- the body fluids the worker was exposed to
- the length or duration of the contact or exposure
- any other available information

The designated officer will answer the following questions:

How dii the exposure occur?

- needlestick/punctured by sharp object
- splashed in the eye by (type of body fluid)
- laceration of the skin
- splashed in the mouth by (type of body fluid)
- non-intact skin exposed to (type of body fluid)
- close contact with someone with a cough, possibly TB
- close contact with someone suspected of having meningococcal disease
- confined in an enclosed area (e.g., vehicle, aircraft) with someone who was coughing
- giving mouth-to-mouth resuscitation to someone without using a mouthpiece
- human, animal or insect bite
- shared drinking glasses and other utensils
- other (describe in detail)

What **is the worker's immune status7**

Are his/her immunizations up-to-date for:

- tetanus and diphtheria
- polio
- rubella
- measles

Has she/he received a full course of hepatitis B vaccine?

- When did she/he receive the last dose of hepatitis B vaccine?
- Was serology testing done to determine that she/he responded to the vaccine?
- When was the last testing done for antibody?

What barrier precautions did the worker wear or use during the incident?

- goggles
- gloves
- apron or protective clothing
- mask
- others (describe in detail)

Are the barriers intact? (e.g., Were the gloves torn? Did any body fluids soak through the apron?)
If worker did not use barrier precautions, why not?

What body fluids was the worker exposed to?

- blood
- wound drainage
- vomitus
- saliva
- faeces
- urine

How long was the contact/exposure?

(e.g., the worker was in the same aircraft or vehicle for hours; the worker was soaked with [type of body fluid] for at least [length of time] before washing it off)

What other information is available that will help assess exposure?

(e.g., suspected diagnosis of the contact; location of the exposure, such as a crack house, shooting gallery, homeless shelter, centre for the developmentally challenged, animal shelter or place with pets, school for children, rock concert hall)

4 WORKING WITH THE MEDICAL OFFICER OF HEALTH

When the designated officer believes an emergency service worker may have been exposed to one of the specified communicable diseases, he/she will call the medical officer of health and discuss the specifics of the case. If the medical officer of health agrees that an exposure is possible, he/she will gather other information pertinent to the incident. This may involve contacting the infection control practitioner in a local hospital.

As soon as practicable - no later than two working days after receiving the request of the designated officer - the medical officer of health will inform the designated officer of any specific action that should be taken. The medical officer of health will not give the designated officer any personal information, such as the parent's name or diagnosis. He/she will simply tell the designated officer that, based on the information he/she has been able to gather, the recommended course of action that the emergency service worker should follow.

5 NOTIFYING EMERGENCY SERVICE WORKERS OF A POSSIBLE EXPOSURE

It is then the designated officer's responsibility to notify the emergency service worker/s of the possible exposure, advise them about the steps they should take, answer any questions they may have and encourage them to seek proper medical care and counselling.

If the emergency service worker has been exposed to HIV, the designated officer should inform him/her about the National Surveillance of Occupational Exposure to the Human Immunodeficiency Virus (HIV) and provide the appropriate forms. (See Appendix 4.) The surveillance program is designed to monitor the occurrence of occupational exposures and determine the risk of acquiring HIV infection in an occupational setting. To register in the program, an emergency service worker who has had a possible exposure to HIV must be tested for antibody to HIV within one week of the incident, and then monitored over the next 12 months. As of July 1, 1993, a total of 522 Canadian health care workers had registered with the program and none has gone on to develop HIV infection. (For more information, contact the Laboratory Centre for Disease Control at (613) 957-0172.)

Workers who do not want to participate in the national surveillance program should be monitored by their physicians.

6 THE ASSESSMENT PROCEDURE AND PROTOCOL IN ACTION

The hazard or risk of exposure to these specified communicable diseases depends on:

- the job or service the emergency worker is providing
- the type and length of contact he/she has with an infected person
- whether or not the worker has been immunized and used safe practices and appropriate equipment.

Here are two scenarios that illustrate how the designated officer would assess a situation,

I. A Car Accident

A police officer is dispatched late at night to a motor vehicle collision. When she arrives, she finds an overturned vehicle in the ditch with a seriously injured and unconscious female trapped inside and an injured male several metres away The officer immediately calls for an ambulance and the volunteer fire department with the "jaws of life."

The officer checks the woman's condition and finds she is breathing but has obvious compound fractures in one arm and one leg. The man has serious head injuries and is bleeding profusely. In checking the man, the officer gets blood on her hands. She is not wearing disposable medical gloves but as soon as she is able to - within an hour of the incident - she washes her hands thoroughly using soap and water.

The ambulance arrives and the attendants provide care to the accident victims. While looking for some identification, an ambulance attendant is stuck by a needle that was in the man's pocket, and then notices needle tracks on the man's arms.

The volunteer fire department arrives and firefighters work to get the woman out of the car. In the process, one of them cuts his hand and needs medical treatment.

In this situation, who is at risk and to what degree?

Assessment When the emergency service workers returned to their agencies, they completed the Worker's Report of Injury Form 6, providing information about the incident. The designated officer, using the prescribed assessment form, reviewed the incident reports and interviewed the workers to gather any other necessary information about the accident and the practices used. Based on that information, the designated officer made the following risk assessments:

- The police officer did get blood on her hands and she was not wearing gloves. However, the skin on her hands was intact, she washed her hands thoroughly after the incident, and she had been vaccinated against hepatitis B.

- The volunteer firefighter was cut and, given there was blood at the scene, was at some slight risk of exposure to hepatitis B. Unfortunately, he had not taken advantage of the free hepatitis B immunization program offered by the fire department.

- The ambulance attendant received a needlestick injury - and is at greatest risk of the three to an exposure to a bloodborne disease. The attendant was immunized against hepatitis B within the last two years and was known to have responded to the vaccine. However, he may have been exposed to HIV.

In the case of the police officer, the designated officer determined there was no exposure, but encouraged the police service to provide its officers with disposable medical gloves and appropriate training.

Action. With the firefighter, the risk of exposure in this incident was relatively low. The designated officer contacted the medical officer of health to discuss the incident. They agreed that the volunteer firefighter should be counselled about the possible risk of exposure to hepatitis B in his work, as well as the importance of immunization. The designated officer met with the worker and recommended that he immediately seek medical care and consider inoculation with hepatitis B immune globulin (HBIG) and, at the same time, begin a regular series of hepatitis B vaccine.

Although the ambulance attendant was protected against hepatitis B, he was at risk of exposure to HIV The designated officer contacted the medical officer of health to report and discuss the exposure. The medical officer of health contacted the infection control practitioner at the hospital for information on the patient's health status. The hospital confirmed that the patient does have HIV The medical officer of health then contacted the designated officer with that information. During the conversation, the medical officer of health did not reveal any personal or identifying information about the patient.

The designated officer then met with the ambulance attendant. Without revealing any personal information about the person at the scene of the accident, he informed the attendant about the exposure and the risks associated with it. He was able to tell the ambulance attendant that there was a risk but that, in the national surveillance program, no health care worker exposed to HIV from a needlestick injury has developed the disease. He then recommended that the worker seek medical care and counselling that will help him deal with the stress and also ensure that he does not inadvertently pass the virus to others during the time he is waiting to see if he is infected. He also encouraged the worker to register in the national surveillance program.

The designated officer then ensured that the employer completed all relevant Workers' Compensation Forms (e.g., the Treatment Memorandum Form, the Employer's Report of Accidental Injury or Industrial Disease and the Employer's Subsequent Statement Form).

In the few days following the incident, the designated worker followed up with the firefighter and ambulance attendant to ensure they were following the prescribed procedures. During that same period, the medical officer of health also contacted the designated officer to ensure that the appropriate steps had been taken.

II. Student Collapses

Ambulance attendants respond to a call from a local high school. A 19-year-old boy collapsed suddenly after a football game. The attendants find him unconscious, cold and clammy to the touch with a non-palpable pulse. One attendant gives the boy mouth-to-mouth resuscitation without using a mouthpiece. The team then hooks the boy up to a ventilator in the ambulance and transports him to the hospital. The trip takes about five minutes.

The following afternoon, the hospital isolates Neisseria meningitidis in the boy's blood, confirms a diagnosis of meningowccal infection Type C, and notifies the local medical officer of health. The medical officer of health then proceeds to contact people who could possibly have been exposed. She calls the designated officer for the ambulance service to discuss the case.

In this situation, what is the risk?

Assessment. The designated officer contacted the ambulance attendants and asked them to complete the incident report forms and provide information on the situation. Using the prescribed assessment form, she reviewed their reports and then interviewed them for specific details on the incident.

She learned that the attendant who gave mouth-to-mouth resuscitation did not use a mouthpiece. Based on this evidence, she determined that the ambulance attendant was exposed to meningowccal bacteria through contact with saliva during the mouth-to-mouth resuscitation.

Action. She contacted the medical officer of health to report her findings. He corroborated her assessment and recommended that the ambulance attendant be referred to a physician for treatment with antibiotics (e.g., Rifampin). The designated officer then met with the attendant to tell him of the exposure, explain the value of the two-day antibiotic treatment, and discuss signs, symptoms and usual incubation period for meningitis so the attendant can react quickly if he becomes ill. With the ambulance attendant's permission, the designated officer then contacts, by phone or in writing, the worker's physician to provide details of the incident and ensure the physician understands the steps required.

A few days later, the designated officer checks with the ambulance attendant to ensure he has taken the appropriate steps.

Conclusion

With this manual and the protocol, emergency service agencies have an opportunity to reduce the risk of exposure to communicable diseases in emergency situations and to ensure workers are informed of possible exposures so they can take steps to safeguard their health.

The Ministry of Health strongly encourages all emergency service agencies to appoint a designated officer, to use the protocol and recommended procedures and forms, and develop an effective working partnership with their local medical officer of health. This, combined with the use of universal precautions, will make the working environment safer and healthier.

APPENDIX 1
Workers' Compensation Board Report Forms

Workers' Compensation Board
Commission des accidents du travail
2 Bloor Street East Toronto. Ontario M4W **3C3**

Worker's Report of Injury/Disease Form 6

Claim No,	Desk No.	Alloc. No.
Injury		
Date	Date of Injury	
Employer's Name and Address		
To Enquire Contact ( ) For toll free number. check local directory		

Ca formulaire est disponible en français sur demande

MESSAGE TO WORKER:

Please use dark ink. When you have filled out this report, immediately return it to the WCB. If you do not return this report to the WCB you will delay compensation payments, your right to rehabilitation services, and other benefits.

Personal information relating to you will be collected throughout your claim under the authority of the Workers' Compensation Act. and will be used to administer your claim and program? of the Board. Medical and non-medical information is collected from health care providers, vocational agencies, ● mployrnrs and witnesses. Information may be disclosed to the accident ● mployor. ● xtomsl medical, rehabilitation, safety agencies and other as authorized by the Workers' Compensation Act and the Freedom of Information and Protection of Privacy Act. For information about the collection, and availability of this form to your employer contact the :ision maker responsible for your tile.

Worker Information

Your Name. Home Address with Postal Code if missing or different from a b v e Name	Date of Birth day / month / year	Social insurance Number
Address	Your Preferred Language of Service ☐ English ☐ French	
City/Town / Province / Postal code	Other language if you speak neither English/French	
Job at time of injury/onset of disease	Date started work with employer day / month / year	

Are you:

☐ Full Time ☐ Part Time ☐ Casual ☐ Seasonal ☐ Apprentice ☐ Student ☐ Learner ☐ Other _____

Health Care

Where were you first treated for your Injury/disease? (tint aid at work. clinic, hospital, emergency, family doctor. chiropractor)	Date of First Treatment day / month / year
Name and address of parson treating you now.	Most Recent Appointment day / month / year
if YOU nave been referred to any health care specialist (physiotherapist, chiropractor surgeon). give name(s).	Date of Appointment day / month / year

Earnings Information

Your employer reported your earnings to the WCB on the Form 7. Please review the information in section F of your copy of the Employer's Report of Injury/Disease, Form 7. If you disagree with the earnings information provided by your employer, or if you wish to add more information, please provide details. Attach a letter of explanation and/or a pay stub to this form, if applicable.

Employment Benefits

(Note: Under certain conditions your employer must continue to make contributions to your employment benefits throughout 1 year following your injury)

Check off the employment benefits provided or contributed to on your behalf by your employer:	☐ ;:;;th	☐ Life Insurance	☐ Pension	Do you contribute to your employment benefits'	☐ yes	☐ "0

0006A (11/93)

Please read and complete the back of this form

Worker's Name	Social Insurance Number	WCB Claim Number

Details of Injury/Disease

Date and Hour of Injury/ Awareness of Disease day month year	a.m. p.m.
Date and Hour Reported to Employer day month year	a.m. p.m.
Who did you report the injury/disease to?	

1. What happened to cause your injury/disease? If known. describe injury part of body involved and specify left Or right side.

2. If you did not report your injury/disease immediately, why did you delay in reporting your injury/disease?

3. Describe your activities at the time of the injury/disease Include details of equipment or materials you used and the size and weights of objects you handled.

4. Where were you when the injury/disease occurred' If your injury/disease occurred outside Ontario, specify province, state or country.

5. Did anyone else witness Of know about your injury/onset of disease? If so. provide details below.
   Name(s) Work address(es) and phone number(s) if available

have you ever had a similar injury/disease ☐ no ☐ yes If yes. provide details in the space below. If the previous injury was work-related. include prior WCB claim number. if known. If additional space is needed. attach a letter.

Date of Injury	Typo of Injury	Name & Address of your employor at the time of previous Injury. if applicable	Claim Number

Have you returned to any work, with or without pay, since your injury/disease? ☐ no ☐ yes If yes. give name of employer and dares worked.

Are you a member of a trade union? ☐ no ☐ yes

If yes. do you authorize the trade union to represent you in matters before the Workers' Compensation Board? ☐ no ☐ yes

If yes. give the name end telephone number of union.

It is an offence to deliberately make false statements to the WCB.

I consent to the collection of all information relating to this claim by the WCB. I declare all of the Information in this report is t and t claim benefits under the Workers' Componsatlon Act.

Signature	Date	Area Code	telephone

In accordance with the Freedom of Informatlon and Protection of Privacy Act, your employer can obtain a copy of this form from the WCB.

APPENDIX 2
Hepatitis B Vaccine

Excerpted from the Canadian Immunization Guide, 4th Edition (1993) prepared by the National Advisory Committee on Immunization (NACI). Published by the authority of the Minister of Health and Welfare Canada.

Preparations Used for Immunization

Hepatitis B Vaccines contain purified HB sAg and induce anti-HB s production, which confers immunity to hepatitis B. Hepatitis B vaccines are licensed in Canada for preexposure and post-` exposure prophylaxis. Antigenic subtypes of HBV exist but immunization confers immunity to all subtypes because of the presence of a common antigen. Two types of vaccine have been licensed in Canada.

Two Recombinant DNA Hepatitis B Vaccines are licensed in Canada, one prepared by Merck Sharp and Dohme (Recombivax HB) and the other by SmithKline Beecham (Engerix-B). Both vaccines are produced from a genetically engineered yeast strain. Recombivax contains 10 µg/ml and Engerix 20 µg/mL of purified hepatitis B surface antigen. A special preparation of Recombivax HB containing 40 µg/mL is available for use in hemodialysis patients. The vaccines are absorbed onto aluminum hydroxide with thimerosal as preservative. Contaminating yeast antigens are present in the vaccines in small amounts but no increase in yeast antibody titres has been observed following administration of either vaccine. The vaccines are well tolerated and reactions are usually mild.

Plasma-Derived Hepatitis B Vaccine consists of purified formalin-inactivated, alum absorbed HBsAg prepared from the plasma of human carriers. The plasma derived vaccine is not currently available in Canada.

Schedule and Dosages

The recommended schedule for hepatitis B vaccine is three doses given at 0, 1 and 6 months. An alternative four-dose schedule for the use of Engerix-B at 0, 1,2 and 12 months may result in a more rapid antibody response but has not been shown to confer better protection against disease. Other schedules are also being investigated.

The dose of vaccine administered varies with age, product used and in some medical conditions.

Interruption of the immunization schedule does not require that any dose be repeated. If any dose has not been given on schedule, it should be given at the first opportunity, with the proviso that the third dose is given a minimum of 3 to 5 months after the second dose to ensure a good immune response. Vaccines produced by different manufacturers can be used interchangeably.

Hepatitis B Immune Globulin (HBIG) is prepared from pooled human plasma from selected donors with a high level of antibody to hepatitis B surface antigen (anti-HBs) and seronegative for HIV The manufacturing process inactivates HIV. HBIG provides effective short-term passive immunity. HBIG administered concurrently with vaccine, but at a different site, does not interfere with the antibody response.

Route of Vaccine Administration

All hepatitis B vaccine should be injected into the deltoid muscle of children and adults, and into the anterolateral thigh muscle of infants. Gluteal administration should not be used because of an impaired immune response, possibly the result of inadvertent deposition into fatty tissue. Use of vaccine that has been frozen or inadequately mixed has also led to poor antibody responses.

Immune responses following intradermal injection have been variable and this route of vaccine administration is not recommended.

Response Rate to Immunization

Use of the recommended schedule and routes of immunization results in seroconversion rates of 90% to 95% in immunocompetent individuals. The antibody response rate is lower in immunocompromised patients, such as those infected with IUV (50% to 70%), in renal failure (60% to 70%), with diabetes mellitus (70% to 80%), and those with chronic liver disease (60% to 70%). Vaccination of smokers produces lower antibody titres compared to nonsmokers. Antibody response is age related. Children between age 2 and 19 years have the highest response rate (99%), while children **<2** years of age have a 95% response rate. The response rate decreases in individuals **>19** years: 20 to 29 - 95% 30 to 39 - 90 40 to 49 - 86%, 50 to 59 - 71% and 60 and over 50% to 70%.

Recommended Usage

Hepatitis B prevention should include programs for universal immunization of children, pre-exposure vaccination of high risk groups, universal screening of all pregnant women for HBsAg, and post-exposure intervention for those exposed to disease, particularly infants born to HBV-carrier mothers.

High-Risk Prophylaxis

Pre-exposure prophylaxis with hepatitis B vaccine is recommended for those persons who are at increased risk of infection, namely, those exposed frequently to blood, blood products and body fluids that may contain the virus. Since the risk of exposure varies in different settings, it is recommended that institutions or jurisdictions review their own situation in order to develop their own priorities for immunization.

The following persons are considered to be at increased risk and should be vaccinated.

1. Persons with occupational risk, including health care workers and embalmers who are exposed to blood or blood products or at increased risk of sharps injury. Students in these occupations should complete their vaccine series before possible occupational exposure to blood or sharps injuries.

   Hospital employees who have no contact with blood or blood products are at no greater risk than the general population.

2. Residents and staff of institutions for the developmentally challenged.

3. Sexually active homosexual or bisexual males.

4. Heterosexual males or females with multiple sexual partners or with a recent history of a sexually transmitted disease.

5. Injection drug users.

6. Haemophiliacs and others receiving repeated infusions of blood or blood products.

7. Hemodialysis patients.

8. Inmates of long-term correctional facilities.

9. Household and sexual contacts of HBV carriers.

10. Populations or communities where HBV is highly endemic (e.g., some native populations in Labrador and the Northwest Territories).

11. Children <7 years of age whose families have immigrated to Canada from areas where there is a high prevalence of hepatitis B, and who may be exposed to BBV carriers through their extended families.

12. International travellers to hepatitis B endemic areas who will reside in the area longer than 6 months, or shorter term travellers who are likely to have contact with blood from, or sexual contact with, residents in areas with high levels of endemic disease.

Non-household contacts, including children in child-care settings, need not be considered for vaccination. However, if a HBV-infected child is placed in a child-care setting and has behaviour problems such as biting and scratching, or if special medical conditions exist, such as severe weeping skin disease, vaccination of contacts should be discussed with public health officials.

Post-Exposure Prophylaxis

Percutaneous *(needlestick") or Mucosal Exposure:* The table on the next page outlines management of vaccinated or unvaccinated individuals after potential exposure to hepatitis B. Following percutaneous, ocular or mucous membrane exposure to blood or body fluids, it is necessary to determine, if possible, if the source of the contaminated material is HBsAg positive. It is also important to ascertain whether the exposed individual has received a full and properly administered course of hepatitis B vaccine and/or whether the anti-HBs antibody level has been previously determined. Unless testing has demonstrated the presence of adequate levels of anti-HBs within the past 24 months, a serum sample should be obtained before any immunobiologics are administered. An adequate level of antibody is considered to be >10 international units per litre (IU/L) of anti-HBs.

If a partially immunized individual is exposed to an HBsAg-positive source, one dose of HBJG should be administered if anti-HBs levels are inadequate or cannot be measured within 48 hours. The vaccination series should be completed.

If the source of the contaminated material is unknown or cannot be tested, management should be based on a risk assessment in consultation with a physician or public health authority and the course of action outlined in the table. Even if the source of the contaminated materials is hepatitis B negative, vaccination should be initiated if the exposed person is at continuing risk of hepatitis B infection.

Sexual and Household Contacts of Hepatitis B: Sexual partners of an acute case of hepatitis B should begin a hepatitis B vaccine series. If prophylaxis can be started within 14 days of the last sexual contact with the HBV infected person, a single dose of HBIG (0.06 ml/kg) should also be given.

HBIG and vaccination are not indicated for non-sexual household contacts of an acute HBV case except for infants <12 months of age when the mother or primary caregiver has acute infection or for persons with identifiable exposure to the case's blood, such as occurs with shared toothbrushes or razors.

All sexual and household contacts of chronic carriers should be vaccinated.

Sexual` Assult Victims: The assessment of a sexual assault victim should include determining the anti-HBs status of the victim and, if possible, the HBsAg status of the alleged assailant. Subsequent management should then follow the table. Administration of HBIG should prevent the development of HBV infection if the alleged assailant is HBsAg positive. However, if HBIG is not administered, the victim should also be tested for HBsAg and repeat tests should be performed at 6 to 12 weeks to determine if hepatitis B infection develops.

Evaluation must also include assessment for other sexually transmitted diseases, psychologic effects of the assault and pregnancy.

Course of Action following percutaneous (needlestick:) or mucosal exposure to hepatitis B virus				
Exposed Person		Source*		
Vaccination Status	Anti -HBs Level	HBsAg Positive	Unknown Status	
			High Risk	Low Risk
accinated	≥ 10 IU/L documented within the previous 2 years	no action necessary	no action necessary	no action necessary
	≥ 10 IU/L documented more than 2 years	assess anti-HBs level; if ≥ 10 IU/L no action; if < 10 IU/L give single booster	assess anti-HBs level; if ≥ 10 IU/L no action; if < 10 IU/L give single booster	no action necessary
	known non-responder (anti -HBs level < 10 IU/L after vaccination)	HBIG#+	HBIG #+	no action necessary +
	level unknown and unable to be determined within 48 hours	HBIG# + single booster	single booster ± HBIG#	no action necessary
Jnvaccinated	≥ 10 IU/L	no action necessary	no action necessary	no action necessary
	level unknown at 48 hours or < 10 IU/L	HBIG# + full vaccine course	full vaccine course ± HBIG#	full vaccine course

*If source is known to be HBsAg negative, no action is required unless exposed person requires intiation of vaccination series.

*Hepatitis B immune globulin 0.06 mL/kg preferably given within 48 hours of exposure. Efficacy decreases with time and is unknown after 7 days.

+If exposed person has received only three vaccine doses, an additional three - dose series may be administered.

Booster Doses of Vaccine

Routine booster vaccinations in immunocompetent persons are not recommended based on current evidence which shows continuing protection. However, the studies of protective efficacy are ongoing and will determine if booster doses of vaccine might become necessary in the future.

Immunocompromised persons often respond suboptimally to the vaccine. Subsequent HBV exposures in these individuals can result in disease or the carrier state. Therefore, boosters may be necessary in this population. The optimal timing of booster doses for immunocompromised individuals who are at continuing risk of HBV exposure is not known and should be based on the severity of the compromised state and annual monitoring for the presence of anti-HBs.

Serologic Testing for Hepatitis B Antigens and Anti body

Pre-vaccination Serologic Screening for Antibody: Routine pre-vaccination serologic testing for antibody, either for anti-HBs or anti-HBc, is not recommended. There is no medical indication for these tests and they would only be cost effective for populations in which a substantial proportion of persons have anti-HBs and consequently do not need vaccine.

Post-vaccine Serologic Tests: Post-vaccination tests for anti-HBs in healthy persons are not normally recommended provided the vaccine was administered properly. The seroconversion rate with hepatitis B vaccines in such people is usually 90% or more.

There are, however, a few exceptions. Post-vaccination.testing is recommended for steady sexual partners of HBV carriers and may be considered for immunocompromised patients and persons who by reason of age or disease status, may be expected to have a lower seroconvetsion rate.

Post-vaccination testing for anti-HBs may also be considered for persons at high risk of occupational exposure to hepatitis B since knowledge of initial antibody response (i.e., responder or non-responder) helps determine appropriate post-exposure prophylaxis. In considering post-vaccination testing for persons at high risk, a careful assessment of the degree of occupational risk must be made which reflects the population served, work activities and the likelihood of needlestick injury.

Post-vaccination testing, when indicated, should be performed 1 to 6 months after completion of the vaccine series.

Revaccination of Non-Responders

For non-responders to three doses of vaccine, an additional three-dose series will produce a response in 50% to 70%. Individuals who fail to respond after the second three-dose immunization series are unlikely to benefit from further immunization.

Adverse Reactions and Contraindications

Side effects reported among vaccine recipients to date have usually been mild, transient and generally limited to soreness and redness at the injection site. There is no epidemiologic evidence to associate the chronic fatigue syndrome with hepatitis B immunization.

Pregnancy should not be considered a contraindication to use of vaccine for persons in whom immunization is otherwise recommended. Furthermore, acute hepatitis B in a pregnant woman may result in severe disease for the mother and chronic infection of the infant. Data are not available on the safety of these vaccines for the fetus. However, the risk is expected to be negligible since the vaccines consist of non-infectious subunits.

Adverse reactions have not been observed when hepatitis B vaccines have been given to persons who are immune to hepatitis B or who are hepatitis B carriers.

APPENDIX 3
Designated Officer - Incident Assessment Form

1. How did the exposure occur?

- ❑ needlestick/punctured by sharp object
- ❑ splashed in the eye by _____ (type of body fluid)
- ❑ laceration of the skin splashed in the mouth by _____ (type of body fluid)
- ❑ non-intact skin exposed to _____ (type of body fluid)
- ❑ close contact with someone with a cough, possibly TB
- ❑ close contact with someone suspected of having meningococcal disease
- ❑ confined in an enclosed area (e.g., vehicle, aircraft) with someone who was coughing
- ❑ giving mouth-to-mouth resuscitation to someone without using a mouthpiece
- ❑ human, animal or insect bite
- ❑ shared drinking glasses and other utensils other (describe in detail):

2. What is the worker's immune status? Are his/her immunizations up-to-date for:

- ❑ tetanus and diphtheria
- ❑ rubella
- ❑ polio
- ❑ measles

Has she/he received a full course of hepatitis B vaccine? ❑ Yes ❑ No

When did she/he receive the last dose of hepatitis B vaccine? _____

Was serology testing done to determine and she/he responded to the vaccine? ❑ Yes ❑ No

When was the last testing done for antibody? _____

3 What barrier precautions did the worker wear or use during the incident?

- ❑ goggles
- ❑ mask
- ❑ gloves
- ❑ apron or protective clothing
- ❑ others (describe in detail):

Are the barriers intact? (e.g., were the gloves torn? did any body fluids soak through the apron?) _____

_____

_____

_____

_____

If worker did not use barrier precautions, why not? _____

_____

_____

_____

_____

What body fluids was the worker exposed to?

- ❑ blood
- ❑ saliva
- ❑ wound drainage
- ❑ faeces
- ❑ vomitus
- ❑ urine

How long was the contact/exposure? (e.g., the worker was in the same aircraft or vehicle for # hours; the worker was soaked with [type of body fluid] for at least [length of time] before washing it off)

_____
_____
_____
_____

What other information is available that will help assess exposure? (e.g., suspected diagnosis of the contact; location of the exposure, such as a crack house, shooting gallery, homeless shelter, centre for the developmentally challenged, animal shelter or place with pets, school for children, rock concert hall)

_____
_____
_____
_____

APPENDIX 4

National Surveillance of Occupational Exposure to HIV Incident Report

To follow