COMMUNICABLE DISEASE MANUAL

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Northwest Territories Health and Social Services
1999

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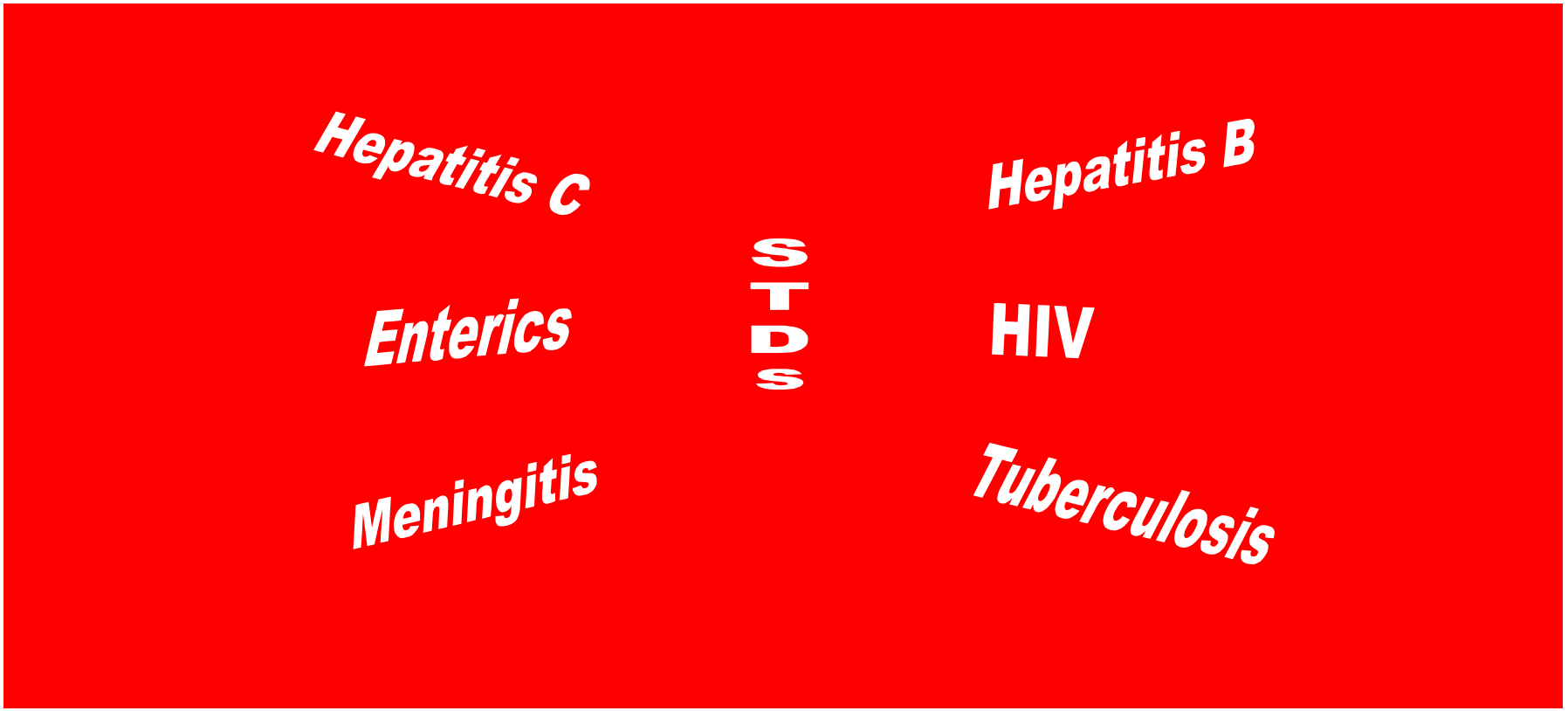

Hepatitis C
Hepatitis B
Enterics
STDs
HIV
Meningitis
Tuberculosis

NWT/NUNAVUT COMMUNICABLE DISEASE MANUAL

Table of contents

---

1. Cryptosporidiosis
2. Giardiasis
3. Trichinosis

8. **HEPATITIS**
    1. Investigation and Management of a Clinical Case
    2. Hepatitis A
    3. Hepatitis B
    4. Serologic Profile for Hepatitis B
    5. Hepatitis C
        1. Hepatitis Case Investigation Form
9. **HIV/AIDS**
10. **MALARIA**
11. **MEASLES**
    1. Measles Case Investigation Form
12. **MENINGITIS**
    1. Haemophilus Influenzae Type B
    2. Meningococcal Meningitis
    3. Pneumococcal Meningitis
    4. Viral Meningitis
        1. Meningitis Case Investigation Form
13. **MUMPS**
14. **PERTUSSIS**
    1. Routine Case Management Protocol
    2. Routine Contact Management Protocol
        1. Pertussis Case Investigation Form
15. **POLIOMYELITIS**
16. **RABIES**
    1. Rabies Case Investigation Form
17. **RESPIRATORY SYNCYTIAL VIRUS (RSV)**
    1. Synagis® Standing Order Form
18. **RUBELLA**
19. **SEXUALLY TRANSMITTED DISEASES**
    1. Chlamydia

2. Gonorrhea
3. Genital Herpes
4. Syphilis
5. Trichomonas
6. Comparing Sexually Transmitted Diseases
    1. Sexually Transmitted Diseases Treatment Guidelines (Youth & Adults)
    2. NWT Sexually Transmitted Diseases Report

20. **TETANUS**
21. **TUBERCULOSIS**
    1. TB Assessment Form
    2. TB Case Converter Completion Form
22. VARICELLA (Chickenpox)
    1. Chickenpox Cases Investigation Form

PREFACE

This newly developed Communicable Disease Manual has been a joint effort of the Health and Social Services Boards and Departments of Health and Social Services of the Governments of the Northwest Territories and Nunavut. It will be distributed to all health care professionals in the NWT and Nunavut.

SPECIAL THANKS TO EVERYONE WHO PARTICIPATED IN THE DEVELOPMENT OF THE MANUAL

This manual has been produced in loose-leaf format to facilitate updating, as new information on communicable diseases becomes available. The date at the bottom left corner indicates when the page was revised. From time to time registered manual owners will receive revisions to the manual. When this occurs, the applicable outdated pages should be replaced by the new revised versions.

For more copies of this document, reporting forms, or for any other additional information related to the contents of this document, please contact:

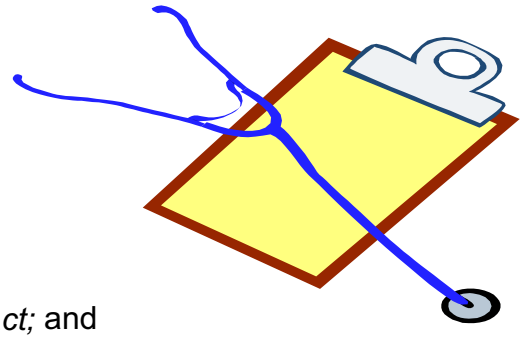
Health Protection Unit
Population Health
Department of Health
and Social Services
Government of the Northwest Territories
PO Box 1320
Yellowknife, NT, X1A 2L9
Phone: (867) 920-8646
Fax: (867) 873-0442
Web Site: **www.hlthss.gov.nt.ca**

Department of Health
and Social Services
Government of Nunavut
PO Box 800
Iqaluit, NT, X0A 0H0
Phone: (867) 975-5700
Fax: (867) 975-5705

INTRODUCTION

The continued high incidence of tuberculosis and sexually transmitted diseases and the occurrence of other disease seldom encountered elsewhere in Canada (such as botulism, trichinosis), warrants a Communicable Disease Control Manual which is specific to the Northwest Territories (NWT) and Nunavut.

The focus of this manual is on those diseases that are reportable under the Communicable Disease Regulations. It provides general information on each disease with more specific emphasis on:



- public health considerations;
- reporting and follow-up; and
- case investigation.

Also included are:

- copy of the *1990 Public Health Act;* and
- Guidelines for the *1996 Immunizations and Outbreak Control*.

To assist with the prevention and control of communicable diseases, it is important for health care professionals in the NWT and Nunavut to:

- report the designated diseases within the time frame recommended in the Communicable Disease Regulations. This may be done by notifying the Chief Medical Health Officer or designate by telephone or fax. Complete the notification form as required;

- complete the investigation of the disease, which includes diagnosis and treatment of the index case, contact tracing and chemoprophylaxis where indicated and/or requesting support from public health personnel where required; and

- further references on communicable diseases can be obtained from the:
  - 1997 Red Book – "*Report of the Committee on Infectious Diseases* 24th Edition".
  - *Control of Communicable Disease Manual* – Abram S. Benenson, Editor – 1995.

OUTBREAK MANAGEMENT

ESSENTIAL FIRST STEPS

It is important that when the reader suspects or recognizes an outbreak (i.e. when there is an abnormal number or presentation of a disease) that the following steps are taken:

1. REPORT outbreak to Medical Health Officer (MHO) and supervisor.
2. REVIEW the illness. Signs and symptoms should be reviewed and assessed.
3. Once notified, the Chief Medical Health Officer (CMHO) or designate may:
   a) Decide to implement disease outbreak control plan.
   b) Form an outbreak management team.
   c) Appoint an outbreak co-ordinator who will ensure that the team's decisions and control measures are implemented promptly, provide communication with the media, issue press statements and other issues.
   d) When appropriate, decide that the outbreak has ended.
4. ESTABLISH clear reporting and communication procedures.
5. TAKE rapid action to institute control measures.
6. NOTIFY hospital of any expected influx of persons requiring hospitalization.

PHONE NUMBERS:

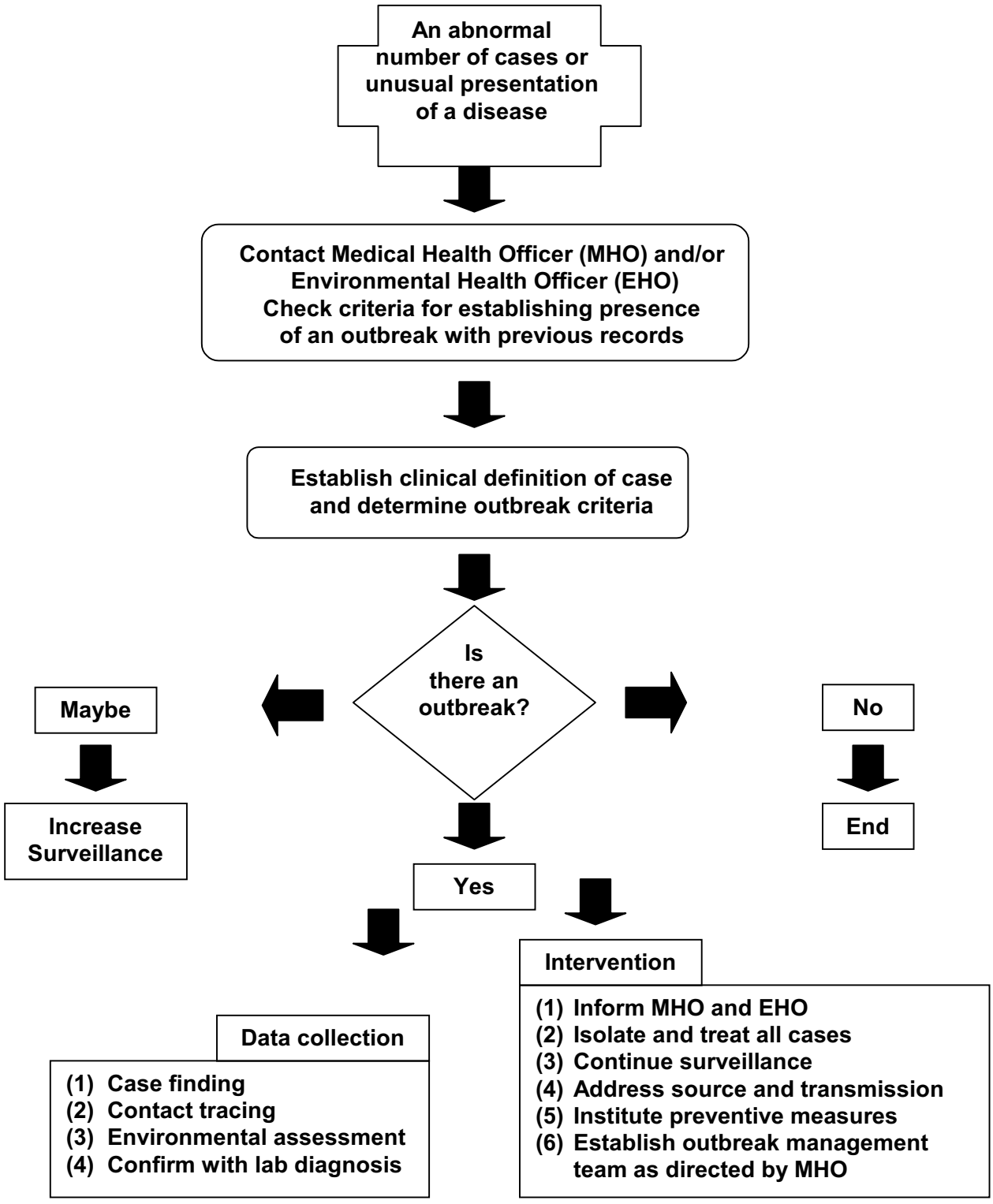
Chief Medical Health Officers (CMHO)

NWT ..... (867) 920-8867 or 669-1756 (cellular)
Nunavut ..... (867) 975-5700 or 975-1266 (cellular)

Regional Medical Health Officers (MHO) - NWT

Fort Smith Region..... (867) 669-8979
Inuvik Region ..... (867) 777-2955

Health Protection Unit
Population Health
Department of Health and Social Services
Government of the Northwest Territories
(867) 920-8646


An abnormal number of cases or unusual presentation of a disease
Contact Medical Health Officer (MHO) and/or Environmental Health Officer (EHO)
Check criteria for establishing presence of an outbreak with previous records
Establish clinical definition of case and determine outbreak criteria
Is there an outbreak?
Maybe
Increase Surveillance
No
End
Yes
Data collection
(1) Case finding
(2) Contact tracing
(3) Environmental assessment
(4) Confirm with lab diagnosis
Intervention
(1) Inform MHO and EHO
(2) Isolate and treat all cases
(3) Continue surveillance
(4) Address source and transmission
(5) Institute preventive measures
(6) Establish outbreak management team as directed by MHO

ESTABLISHING AN OUTBREAK MANAGEMENT TEAM

The team may be drawn from a variety of personnel depending on the setting and type of disease, and in consultation with the Chief Medical Health Officer (CMHO).

An Outbreak Management Team may include:

Regional/Community Health & Social Services Board

- Chief Executive Officer (CEO)
- Nursing Manager
- Regional Medical Health Officer (RMHO)
- Nurse in Charge or Health Center Nurse
- Community Health Representative (CHR)
- Community Physician
- Environmental Health Officer (EHO)

Department of Health & Social Services

- Communicable Disease Consultant
- Chief Medical Health Officer
- Epidemiologist
- Environmental Health Consultant
- Communications Specialist

Objectives of the Outbreak Management Team:

- CMHO appoints team co-ordinator.
- Identify a control centre.
- Appoint a spokesperson.
- Establish clear reporting relationships and processes.
- Institute control measures.
- Notify hospital and lab of expected influx.
- Define each team members' roles and responsibilities.
- Establish work priorities.
- Ensure training in data and specimen collection.
- Ensure communications are clear and comprehensive.

Outbreak Control Co-ordinator's Responsibilities:

- Establish a control centre, with appropriate telephone, fax lines, etc.
- Set up meetings, arrange for accurate minute taking and distributions of agendas, minutes etc.
- Run the meetings:
  - Keep the group on track.
  - Set time limits, making sure all necessary expertise is drawn in.
  - Obtain reasonable agreement on the content and process, including a clear determination and recording of who will carry out each decision/task.
  - Ensure an understanding by members of the decisions made.
  - Ensure tasks are completed.
- Communicate progress and decisions to others.
- Evaluation.

CHECKLIST FOR OUTBREAK MANAGEMENT TEAM'S FIRST MEETING

Items for discussion include:

1. Define the role and area of responsibility of each member.
   - Designate one individual to assume overall responsibility for co-ordination and ensure that all decisions of the outbreak management team are carried out. This individual must have or be delegated authority to carry out this role.
   - Allocate specific tasks within the control plan to specific individuals or groups.
2. Compare baseline information and review present situation, noting the differences.
3. Establish case definitions according to recognized standards and use these definitions consistently throughout the outbreak.
4. Review number of cases, dates of onset and case profiles.
5. Review laboratory results if available.
6. Determine type of infection and define its characteristics.
7. Establish overall principles of control.
8. Define control group in unaffected population.
9. Institute measures to halt transmission of infection.
10. Ensure that a spokesperson has been designated:
    - It is essential that only one person communicate with the media to avoid confusion.
    - ALL public information related to the outbreak should be channelled through this person.
    - It may be advisable to schedule one daily press conference or prepare a daily press release to avoid multiple reporting of incomplete information.
11. Establish which lab is to be used; use the same lab throughout.
    - Notify the laboratory, where appropriate, that an investigation has begun and what is suspected.
12. Record minutes of meeting and establish date, time and place of next meeting.
    - In general, daily meetings are advisable during initial outbreak.
13. Establish external and internal communication strategies.
14. Establish work priorities.
15. Determine what human and financial resources are required and the source of these.

Laboratory:

1. The outbreak management team will determine which laboratory or laboratories are to be used for specimen processing.
2. The outbreak co-ordinator will notify laboratory personnel of the outbreak and consult with them regarding type(s) of specimen(s) to be collected as well as specimen collection transfer and processing procedures.
3. A designated member of the team will be appointed to co-ordinate specimen collection, transportation and **reporting of results** (see appendix, Transportation of Dangerous Goods Guidelines).
    - This person will ensure that those collecting specimens receive adequate training in collection, transportation techniques and completion of data sheets.
    - This person will also ensure collection of follow-up specimens.

Collection of Data:

1. There must be training for staff in data collection and provision made for a standardized checklist.
2. Training should be provided to ALL staff assigned to collect data as part of the investigation. NEVER assume that staff are familiar with data collection procedures. Training should include:
    - Review of methods for data collection;
    - Variables to be included in the investigation;
    - Data collection forms and their use;
    - Interviewing techniques; and
    - Sufficient practice in data collection methods to assure that ALL data will be collected in the same manner.

All suspected cases should be interviewed or available records reviewed to ascertain basic information. The core characteristics to be noted on all cases should be established at the outset of the investigation as per list below:

CORE CHARACTERISTICS

1. **Age**
2. **Gender**
3. **Other demographic characteristics thought to be important (e.g. ethnicity)**
4. **Illness symptoms**
5. **Date and time of onset of symptoms**
6. **Possible relationships between cases (e.g. household, sexual, etc.)**
7. **Location or residence**
8. **Treatment administered**
9. **Samples taken for testing: type, time of sampling, where sent for analysis**
10. **Other specific information according to the disease**

The purpose of collecting detailed data on cases is to assist in the provision of appropriate control measures. It may provide clues as to the possible common experience, leading to detection of the probable source of the outbreak and may help to formulate strategies and plans to prevent an outbreak in the future.

Use This Form for the Following Reportable Diseases

(as per the 1990 *Public Health Act* amended Jan. 6, 2000)

SCHEDULE A - Item I

Reportable to Chief Medical Health Officer by telephone as soon as suspected and followed within 24 hours by a written report.

1. Amoebiasis
2. Anthrax
3. Botulism
4. Campylobacteriosis
5. Cholera
6. Diphtheria
7. Escherichia coli (verotoxigenic)
8. Food Poisoning (including communicable enteric infections)
9. Gastroenteritis, epidemic (including institutional outbreaks)
10. Hantaviral disease (including Hantavirus Pulmonary Syndrome)
11. Hemorrhagic Fevers
12. Hepatitis (all forms)
13. Influenza
14. Invasive Group A Streptococcal infections (including Toxic Shock Syndrome, Necrotizing Fasciitis, Myositis and Pneumonitis)
15. Invasive Haemophilus influenzae type B (Hib) infections
16. Invasive Neisseria meningitidis infections
17. Legionellosis
18. Malaria
19. Measles
20. Meningitis/Encephalitis
21. Neonatal Group B Streptococcal infections
22. Pertussis (whooping cough)
23. Plague
24. Poliomyelitis
25. Rabies (or exposure to rabies)
26. Rubella and congenital rubella syndrome
27. Salmonellosis
28. Shigellosis
29. Syphilis
30. Tetanus
31. Tuberculosis
32. Typhoid and paratyphoid fevers
33. Yellow fever
34. Epidemic forms of other diseases
35. Unusual clinical manifestations of disease

SCHEDULE A - Item II

Reportable to Office of the Chief Medical Health Officer (OCMHO) in writing within 7 days.

1. Acquired Immunodeficiency Syndrome (AIDS) and any Human Immunodeficiency Virus (HIV) Infection
2. Brucellosis
3. Chancroid
4. Chicken Pox (Varicella)
5. Chlamydial Infections
6. Congenital Cytomegalovirus infection
7. Congenital or Neonatal Herpes simplex infections
8. Creutzfeldt-Jacob Disease
9. Cryptosporidiosis
10. Cyclospora
11. Giardiasis (symptomatic cases only)
12. Gonococcal infections
13. Hemolytic Uremic Syndrome
14. Human T-cell Lymphotropic Virus infections
15. Leprosy
16. Listeriosis
17. Lyme Disease
18. Methicillin-Resistant Staphylococcus Aureus (MRSA)
19. Mumps
20. Psittacosis/Ornithosis
21. Q fever
22. Respiratory Syncytial Virus (RSV)
23. Tapeworm infestations (including Echinococcal disease)
24. Trichinosis
25. Toxoplasmosis (symptomatic only)
26. Tularemia
27. Vancomycin-Resistant Enterococci (VRE)

Office of the Chief Medical Health Officer
Population Health
Department of Health and Social Services
Box 1320, Yellowknife NT X1A 2L9
Phone: 867-920-8646
Fax: 867-873-0442

NWT COMMUNICABLE DISEASE REPORT

Complete this form for all Reportable Diseases listed on the back of this form.

For STDs, please use the Sexually Transmitted disease Report form provided in the section on Sexually Transmitted Diseases.

1. **Name of Reportable Disease**: _____

2. **Patient's Name:** _____

3. **Date of Birth:** ____/____/____ (year/month/day) **HCP#:** _____

4. **Gender:** Male: ☐ Female**:** ☐

5. **Home Community:** _____

6. **Has Laboratory Confirmation Been Sought?** Yes: ☐ No**:** ☐

7. **Date of Illness Onset:** _____ (year/month/day)

8. **Date of Diagnosis:** _____ (year/month/day)

Notes:
(for use by Health Protection Unit staff)

_____

_____

_____

_____

_____

_____

Reported by: _____ (please print)

Signature: _____

Report Date: _____

Community: _____

Clinic Name: _____ (health centre, hospital, etc.)

Phone Number: _____

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REVISED Feb./00

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8. Creutzfeldt-Jacob Disease
9. Cryptosporidiosis
10. Cyclospora
11. Giardiasis (symptomatic cases only)
12. Gonococcal infections
13. Hemolytic Uremic Syndrome
14. Human T-cell Lymphotropic Virus infections
15. Leprosy
16. Listeriosis
17. Lyme Disease
18. Methicillin-Resistant Staphylococcus Aureus (MRSA)
19. Mumps
20. Psittacosis/Ornithosis
21. Q fever
22. Respiratory Syncytial Virus (RSV)
23. Tapeworm infestations (including Echinococcal disease)
24. Trichinosis
25. Toxoplasmosis (symptomatic only)
26. Tularemia
27. Vancomycin-Resistant Enterococci (VRE)

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ANTHRAX

Clinical Description:

- A bacterial disease affecting all warm-blooded animals, also classified according to the site of infection and associated symptoms.

TYPE OF ANTHRAX:	SYMPTOMS:
Cutaneous	♦ Painless lesion (papule to vesicle to necrotic eschar) untreated infections can spread to lymph nodes and to the bloodstream, leading to overwhelming septicemia (5-20% case fatality rate).
Inhalation	♦ Mild upper respiratory tract infection => severe dyspnea, cyanosis, tachycardia, tachypnea, diaphoresis, fever, rales and, often, death in 2-5 days. ♦ Extremely rare; identified in persons who are exposed to dead animals and animal products (e.g. wool or hair).
Gastrointestinal	♦ Abdominal pain and distention, vomiting, bloody diarrhea, and frequently, toxemia and shock. ♦ Rare; due to ingestion of infected, undercooked meat.

Source of Infection and Transmission:

- Is caused by *Bacillus anthracis*, which is found on hides, carcasses, hair, wool, bone meal, and other by-products of domesticated and wild animals (e.g. bison, moose and black bears).
- Anthrax spores can exist in contaminated soil for many years, as they are resistant to adverse environmental conditions. Direct contact with infected soil is usually how animals get anthrax.
- Person-to-person transmission has not been documented.

Incubation Period:

- Usually within seven days after exposure.

Major Complications:

- Secondary infections: septicemia, hemorrhagic meningitis.
- If untreated, the disease can be fatal.

Public Health:

- Endemic to rural areas, including developed countries.
- There have been periodic anthrax outbreaks from 1962 to1993 in the Slave River lowlands and adjacent Wood Buffalo National Park that have resulted in the deaths of bison.
- No human cases of anthrax in the NWT/Nunavut.
- In the NWT/Nunavut, the anthrax vaccine is recommended for individuals working directly with animals that may be infected with anthrax (e.g. Wildlife Officer, Field Biologist), and anyone working with destroyed anthrax-infected carcasses.
- Contact your MHO for utilization of the anthrax vaccine.

Diagnosis and Treatment:

- Diagnosis by culturing swabs from lesions, pustular fluid from skin lesion, sputum or 8-10 mL of blood for blood culture.
- Drugs of choice: penicillin, erythromycin, tetracycline, chloramphenicol or ciproflaxin. To be effective, treatment should be initiated early.
- Supportive treatment for respiratory and GI symptoms.

Education:

- Precautions when handling animals and animal products.
- Ensure food is properly prepared and cooked.

Reporting and Follow-up:

- All suspect or confirmed cases must be reported to MHO/EHO, Health Protection Unit within 24 hours.
- Complete Communicable Disease Report and Investigation form.
- Environmental assessment done by the EHO. Local RWED officers are to be contacted immediately.
- Regardless of the presence or absence of signs and symptoms of disease, sick or dead animals SHOULD NOT BE TOUCHED.
- DO NOT handle bones or horns (as they may be the remains of an animal that has died from anthrax) in or around the following areas,
    - Fort Providence
    - Slave River lowlands
    - Wood Buffalo National Park

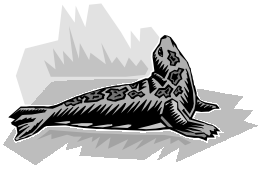
BOTULISM

Clinical Description:

- A severe poisoning caused by toxins produced by *Clostridium botulinum.*

Type of Botulism:	Symptoms:
Food-borne/Wound	• Symmetric, descending, flaccid paralysis; blurred or double vision, dry mouth, general weakness and poor reflexes.
Infant	• Preceded by constipation and accompanied by lethargy, poor feeding, weak cry, diminished gag reflex, subtle ocular palsies, and generalized weakness and hypotonia (e.g. "floppy infant").

Source of Infection and Transmission:



- Food-borne botulism can occur after the ingestion of improperly prepared or cooked food containing the toxin, canned goods, home preserved foods, smoked fish and seal meat.
- Foods commonly found contaminated with botulism toxin in the North are: walrus, seal or whale (muk tuk) aged in tightly sealed containers, fermented fish eggs/heads.
- Infant botulism may occur after an infant ingests spores, found sometimes in unpasteurized honey.
- Wound botulism may occur when *C. botulinum* grows in traumatized tissue and produces its toxin.
- Excreted in feces but person-to-person transmission does not occur.

Incubation Period:

- Onset of symptoms may occur abruptly within a few hours or evolve gradually during several days.
- Food-borne botulism: usually 12-36 hours, but ranges from 6 hours to 8 days.
- Wound botulism: occurs 4 to 14 days after the injury.
- Infant botulism: 3 to 30 days from exposure (most documented source of this infection is unpasturized honey).

Major Complications:

- Death, due to respiratory failure, can result without proper treatment.

Public Health:

- Investigation of contacts and source of toxin.
- Testing of suspect food.
- Seizure of suspect food.
- Botulism antitoxin is given to all who have eaten the contaminated source and are exhibiting signs and symptoms of botulism.
- Suspect foods should be destroyed to prevent further exposure to humans or animals.

Diagnosis and Treatment:

- Diagnosis is made by toxin detection and culturing *C. botulinum* from serum, stool and suspect foods.
- A supply of botulism antitoxin is required to be available (for food-borne and wound botulism) in Yellowknife, Inuvik and Iqaluit hospitals and in all coastal community health centres.
- A consultation with an internal medical specialist and/or the CMHO is required prior to administration.
- Botulism antitoxin should be administered as soon as possible to symptomatic persons, ensure specimen for diagnosis is collected prior to treatment.
- Elimination of ingested toxin by induced vomiting and/or gastric lavage and high enemas.
- Recovery may take months.

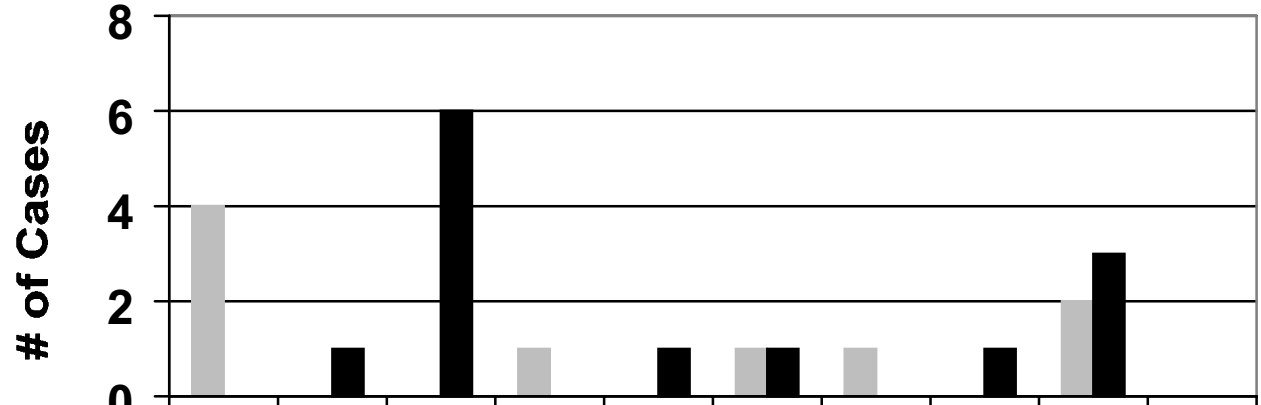
Education:

- Educate on improving home-canning methods and the importance of refrigeration.
- Make sure the food is heated to temperatures which kill the botulism spore while it is sealed in a container, i.e. pressure-cooking.
- Make sure the sealed containers of food are stored in cold enough temperatures to prevent the botulism spore from growing.
- Walrus, seal or whale should be aged in a very cool place (below 4^0 C).
    - They should be aged in <u>containers that allow air in</u>, such as a bowl or bucket covered with a clean cloth rather than a plastic bag or a plastic lid.
    - If they are aged in oil, it should be kept in a cool place and stirred frequently to let the meat be in contact with air.
- Please note: *C. botulinum* is an anaerobic bacterium (grows without oxygen). Thus, aerating by stirring, not using airtight containers and storing at 4^0C or lower will prevent growth of this bacterium.
- Boiling/heat will inactivate the toxin.

Reporting and Follow-up:

- All suspect cases of botulism are to be reported to the Regional EHO immediately and to CMHO or designate within 24 hours.
- Food and Waterborne Illness Investigation form is to be completed.

NWT/NUNAVUT
Cases of Botulism by Year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	4	0	0	1	0	1	1	0	2	0
NUNAVUT	0	1	6	0	1	1	0	1	3	0

BRUCELLOSIS

Clinical Description:

- A bacterial disease caused by *Brucella* species.
- The most common species in the NWT are *Brucella suis* and *Brucella abortus*.
- Brucellosis is characterized by:
  - Acute or insidious onset.
  - Fever, headache and weakness.
  - Profuse sweating, chills, arthralgia and generalized aching.
  - Weight loss and/or abdominal pain.

Source of Infection and Transmission:

- Direct contact with (e.g. wound) or by breathing in airborne particles from urine, feces, or tissues of infected animals (e.g. caribou).
- Direct contact with the bacteria can also occur when butchering an infected animal, such as caribou. This allows the bacteria to infect people through cuts in their hands.
- People can also become infected if they eat under-cooked meat, bone marrow, or milk from an animal infected with Brucellosis.
- Person-to-person transmission is extremely rare.

Incubation Period:

- Varies from <1 week to several months, but most become ill within 3-4 weeks of exposure.

Major Complications:

- Meningitis, endocarditis and osteomyelytis.

Public Health:

- Affects both wild and domestic animals, humans are accidental hosts. In the NWT, infections occur mainly as a result of butchering infected caribou and/or eating under-cooked meat.
- Investigation of contacts and identification of the source of infection.

Treatment:

- Diagnosis is made by culture for *Brucella* species or antibodies to *Brucella* species from blood samples.
- Oral antibiotics (tetracycline) given for prolonged periods to prevent relapse (several months if complications occur).

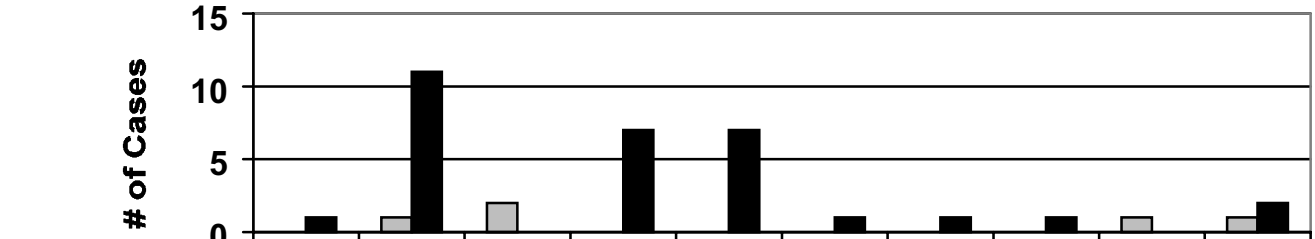
Education:

- Hunter safety.
- Signs to look for in infected caribou include swollen joints, limping or lameness, swollen glands or pus-filled swelling under the skin, swollen testicles, swollen womb, abortion or early birth of weak or dead calves.
- Wear gloves while butchering an animal.
- Do not butcher or touch any parts of the carcass that look diseased.
- Wash hands with soap and water after butchering is completed.
- Boil knife after butchering is completed.
- Completely cook caribou meat.
- Avoid unpasteurized milk.

Reporting and Follow-up:

- Report to local EHO.
- Report (within 7 days) to the Health Protection Unit on a Communicable Disease Report form.
- Confirmation by serology testing:
  - Serum is collected at the acute phase and in two weeks at the convalescent phase.
  - Confirmation using serology is when there is a 4-fold or greater rise in titre between the acute and convalescent samples.
  - Ensure “suspect Brucellosis” is labeled on the sample requisition form.

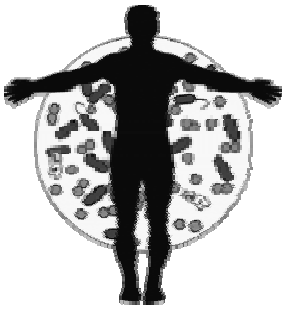
NWT/NUNAVUT
Cases of Brucellosis by Year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	0	1	2	0	0	0	0	0	1	1
NUNAVUT	1	11	0	7	7	1	1	1		2

DIPHTHERIA

Clinical Description:



- An acute bacterial infection (*Corynebacterium diptheriae*) that usually infects the tonsils, throat, nose or skin.
- Symptoms include sore throat, yellow discharge covering throat (may turn grey and thick), low-grade fever, enlarged lymph nodes in the neck and/or painful, swollen and reddened skin lesions.

Major Complications:

- Paralysis, heart failure and blood disorders may occur, 5-10% of cases result in death.

Source of Infection and Transmission:

- Humans are the only known reservoir.
- Person-to-person contact with discharge from an infected person's nose, throat, skin, eyes and lesions.
- Untreated people who are infected with diphtheria can be contagious for up to 2 weeks.

NOTE

- *Diphtheria is relatively unknown in the Western world since the introduction of the diptheria vaccine in 1930.*
- *It is a huge public health concern when public health programs no longer exist, such as in the former Soviet Union.*
- *Anyone traveling in such countries, is at increased risk of contracting the disease particularly if their immunization for diptheria is not complete or up-to-date.*

Incubation Period:

- Usually 2 to 5 days but occasionally longer.

Public Health:

- Incidence is greatest in the fall and winter months among non-immunized groups.
- Isolation of infected individuals should occur and contact tracing initiated.
- Immunization with Diptheria toxoid (i.e. DPT and Td vaccines) as per *Canadian Immunization Guidelines.*
- Diphtheria disease does not confer immunity, despite disease history everyone should be immunized and documented.

Diagnosis and Treatment:

- Diagnosis is made by culturing nasopharyngeal swab.
- Antitoxin is available.
- Antibiotic therapy: Erythromycin or Penicillin G.

There has not been a case of diptheria in the NWT or Nunavut since the mid-1970s.

Education:

- Educate the public on the importance of immunization for diptheria.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to MHO within 24 hours.
- Complete Communicable Disease Investigation form (appendix 3).

Reference: *Canada Communicable Disease Report (1998) – Guidelines for the Control of Diphtheria in Canada.*

ENTERIC DISEASES (General)

Clinical Description:

Inflammation of the intestine, more particularly of the mucous and submucous tissues with symptoms that include; abdominal cramps, watery or bloody stools, fever and vomiting. Common causative agents of Enteritis are:

- **Bacterial** (Campylobacteriosis, Escherichia Coli 0157:H7; Salmonellosis, and Shigellosis);
- **Parasitic** (Cryptosporidiosis, Giardiasis and Trichinosis); and
- **Viral** (rotovirus, adenovirus, echovirus).

Special Risk Groups:

- **Food Handlers** - whose work involves touching foods during preparation and cooking, or touching unwrapped foods to be consumed raw or without further cooking. Contact an EHO when a food handler is diagnosed with an enteric disease.

- **Health Care Workers** - who have direct contact with susceptible patients for whom an intestinal infection would have serious consequences (immunosuppressed, post-operative, elderly and infants).

- **Children under 5 years of age** - attending daycare, play groups, or other similar groups.

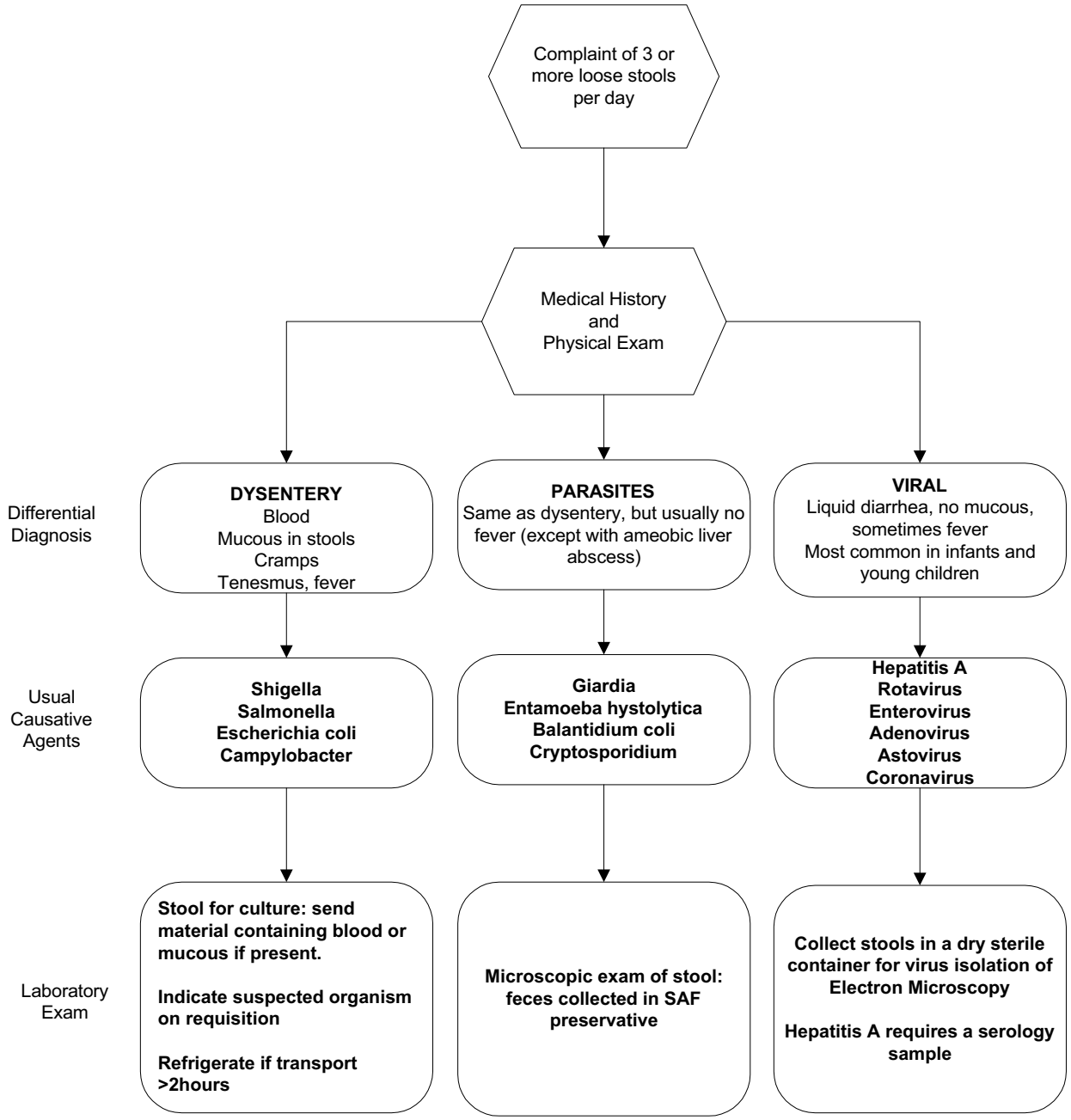
- **Older children or adults with poor standards of hygiene** - such as those residing in institutions, handicapped, or confined elderly.

- **Case contacts who are in special risk groups** - any household or close contact who is in one of the above risk groups.

Public Health:

When an enteric disease is confirmed by laboratory or is highly suspicious following history and exam, the following public health actions are recommended:

- Notify Environmental Health Officer (EHO) complete the Food & Waterborne Illness Investigation form for each case and include:
  - Disease information,
  - General assessment information,
  - Contact list, and
  - Food history.
- Exclude from work or school: food handlers, daycare (clients and workers), health care workers, school (student) while symptomatic or 14 days from onset (7 days from jaundice), or may require 2 negative stools collected not less than 24 hours apart.
- Handwashing is a critical prevention measure and should be stressed at every opportunity.


Complaint of 3 or more loose stools per day
Medical History and Physical Exam
Differential Diagnosis
DYSENTERY
Blood
Mucous in stools
Cramps
Tenesmus, fever
PARASITES
Same as dysentery, but usually no fever (except with ameobic liver abscess)
VIRAL
Liquid diarrhea, no mucous, sometimes fever
Most common in infants and young children
Usual Causative Agents
Shigella
Salmonella
Escherichia coli
Campylobacter
Giardia
Entamoeba hystolytica
Balantidium coli
Cryptosporidium
Hepatitis A
Rotavirus
Enterovirus
Adenovirus
Astovirus
Coronavirus
Laboratory Exam
Stool for culture: send material containing blood or mucous if present.
Indicate suspected organism on requisition
Refrigerate if transport >2hours
Microscopic exam of stool: feces collected in SAF preservative
Collect stools in a dry sterile container for virus isolation of Electron Microscopy
Hepatitis A requires a serology sample

Oral Rehydration Therapy and Early Re-feeding in the Management of Childhood Gastroenteritis

From: EpiNorth, Summer 1999. P. 4-5.

Dr. Nicole Chatel
Paediatrician
Stanton Regional Hospital

Acute gastroenteritis is one of the most common illnesses affecting infants and children in Canada and the world. The average child under age 5 experiences 2.2 diarrheal episodes each year. Prolonged diarrhea and malnutrition are a primary cause of morbidity and mortality in our aboriginal populations. Deaths from this cause continue to occur yearly in the North.

Oral rehydration therapy (ORT), using a simple, inexpensive glucose and electrolyte solution, has reduced the number of deaths from dehydration due to diarrhea by about a million per year around the world. In spite of its efficacy, ORT has not been used extensively in developed countries. Recent research suggests that the use of oral rehydration solution (ORS) have many advantages over conventional therapy.

Oral rehydration and maintenance solutions presently in use, although effective in rehydration, do not decrease stool volume because of the relatively high osmolality of the glucose that they contain. Along with improved oral rehydration solutions have come advances in the field of early re-feeding. Fasting has been shown to prolong diarrhea. This may be due to under-nutrition of the bowel mucosa which delays the replacement of mucosal cells destroyed by the infection. Although there is general agreement that breast-feeding should continue in spite of diarrhea, early re-feeding with a lactose-containing formula is usually well tolerated. Early re-feeding should commence 6-12 hours into therapy.

Vomiting is not a contraindication to ORT. ORS should be given slowly but steadily to minimize vomiting. Fluids may be administered by nasogastric tube if required. The child's clinical condition should be frequently assessed. A child should never be kept on ORS fluid alone for more than 24 hours. Early re-feeding should begin within 6 hours. A full diet should be reinstituted within 24 to 48 hours, if possible.

There are certain contraindications to the use of ORT:
a) Protracted vomiting despite small, frequent feedings
b) Worsening diarrhea and an inability to keep up with losses
c) Stupor or coma
d) Intestinal ileus

As ORS can be administered easily by a properly instructed parent, and because dehydration can be corrected quickly, it lends itself well for use in an outpatient department or health centre. At the end of 4 hours, the child can either be sent home on maintenance therapy or, if dehydration persists, be observed for further therapy.

Any over the counter ORSs are fine. *Gastrolyte* [R] comes as a powder and would be better for communities or for parents going out in the bush. *Pedialyte* [R] comes ready mixed in a bottle, as does lytren. *Pedialyte* [R] also comes as freezer pops that older children may like better.

The following principles should be followed in treating diarrheal disease:

1. Fluid therapy should include the following three elements:

rehydration, replacement of ongoing losses, and maintenance.

2. Fluid therapy is based on an assessment of the degree of dehydration present. Principles are as follows:

Degree of Dehydration	Clinical Assessment	Treatment Principles
No Dehydration	♦ **Diarrhea is present** ♦ **Normal urinary output**	♦ **Normal diet and breast-feeding may continue at home with fluid intake dictated by thirst.** ♦ **High osmolality fluids such as undiluted juices should be avoided.** ♦ **Maintenance oral electrolyte solution offered ad libitum.**
Mild (<5%)	♦ **Watery diarrhea** ♦ **Decreased urine output** ♦ **Increased thirst** ♦ **Slightly dry mucous membranes**	♦ **Assessment and treatment under close supervision are indicated.** ♦ **Rehydration consists of ORS or maintenance solution 10 mL/kg/hr with reassessment q4h.** ♦ **Breast-feeding continues.**
Moderate (5-10%)	♦ **Abnormal skin turgor (tenting of abdominal skin lasting < 2 sec).** ♦ **Sunken eyes** ♦ **Very dry mucous membranes** ♦ **Depressed anterior fontanel**	♦ **Rehydration consisting of ORS 15-20 mL/kg/hr with direct observation and reassessment q4h is indicated.** ♦ **If dehydration is corrected, therapy for ongoing losses and maintenance are continued as outline above.** ♦ **If not, treatment is repeated as indicated by clinical signs or symptoms.**
Severe (>10%)	**Signs of moderate dehydration plus any of the following:** ♦ **Abnormal skin turgor (tenting of abdominal skin lasting >2 sec).** ♦ **Rapid weak pulse/ hypotension** ♦ **Rapid breathing** ♦ **Cold extremities** ♦ **Oligo-anuria** ♦ **Lethargy, shock, coma**	♦ **Blood pressure should be measured.** ♦ **Prompt intravenous therapy is indicated with rapid infusion of saline, plasma or colloid sufficient to replete blood volume (20 mL/kg boluses given by push).** ♦ **Intraosseous infusion should be used if an intravenous line cannot be inserted within 90 seconds.**

SIMPLIFIED ORAL REHYDRATION THERAPY PROTOCOL IN MILD TO MODERATE REHYDRATION

At the Start of Vomiting or Diarrhea

If breast-feeding:

- Continue to breastfeed on demand and offer oral rehydration solution (ORS). Any over the counter ORSs are fine.
- Gastrolyte comes as a powder and would be better for communities or for parents going out

THIS PROTOCOL CAN BE DISCUSSED WITH AND HANDED OUT TO PARENTS.

RECOMMENDATIONS

1. Dehydration accompanying infantile gastroenteritis should be treated with early oral rehydration and early re-feeding strategies.

2. Infants with gastroenteritis should be offered maintenance solution to prevent dehydration. Parents and daycare centres should keep maintenance solution on hand in anticipation of episodes of infectious diarrhea.

3. Homemade oral rehydration solutions are discouraged since serious errors in formulation can occur.

4. Antidiarrheal drugs, antibiotics and anti-emetic therapy are rarely indicated in gastroenteritis in childhood and should be discouraged.

5. Infants with mild to moderate dehydration should be treated under medical supervision with ORT in preference to intravenous rehydration.

6. Infants with severe dehydration should initially be treated with intravenous or intraosseous rehydration.

7. Breast-fed infants with dehydration should be given ORT in conjunction with continued breastfeeding.

8. Early re-feeding should commence as soon as vomiting has resolved, approximately 6-12 hours.

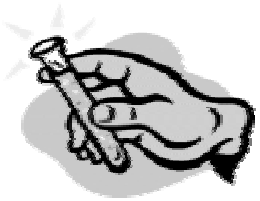
9. Non-lactose containing formulae or milks may be used if diarrhea and abdominal cramps persist beyond expected 5 to 7day course suggesting clinical lactose intolerance.

References:

1. Oral rehydration therapy and early re-feeding in the management of childhood gastroenteritis ***- CPS*** *Statement. 94-03.*
2. What to do when your child is vomiting and has diarrhea. CPS pamphlet.

SPECIMEN COLLECTION

General Guidelines



- Collect specimens before administering medication when possible.
- Collect specimen with as little contamination as possible.
- Ensure sample is representative of the infected site.
- Utilize appropriate collection devices.
- Use aseptic technique to collect specimens.
- Clearly label the specimen container with name, date and time of collection.
- Collect an adequate amount of specimen.
- Identify specimen source.

Rectal Cultures

- Pass tip of sterile swab approximately 2 cm beyond the anal sphincter.
- Carefully rotate the swab to sample anal crypts, and withdraw the swab.
- Note: stool specimen is preferred if enteric pathogens are suspected.

Stool Specimens for Culture

- Use a sterile container.
- Do not use laxatives, antacids, or antidiarrheal medication prior to collection.
- First pass urine into the toilet.
- Collect the stool specimen in a wide-mouthed container.
- The stool specimen must not come in contact with water or urine.
- Using applicator stick, fill the sterile container to the fill line with stool, especially from any areas which appear bloody, mucousy or watery.
- Mix thoroughly with preservative if applicable.
- Do not include any foreign materials, such as toilet paper.
- Close the screw cap tightly and apply parafilm to prevent leakage.
- Wash your hands with soap and water.

Stool Collection for Ova and Parasites (O&P)

- It is essential that clinical and/or travel information be included on the requisition.
- Multiple specimens will not be processed unless specific rationale is provided.
- Use a sterile container.
- Do not use laxatives, antacids, or antidiarrheal medication prior to collection.
- First pass urine into the toilet.
- Collect the stool specimen in a wide-mouthed container.
- The stool specimen must not come in contact with water or urine.
- Using the fork/spoon which is attached to the SAF vial, place scoopfuls of stool especially from bloody, mucousy, or watery areas, into vial containing SAF preservative.
- Add only enough liquid stool to bring it to the fill line.
- Mix thoroughly.
- Do not include any foreign materials, such as toilet paper.
- Close the screw cap tightly.

- Wash your hands with soap or water.

Acute, Watery Diarrhea

Initially **only 1** stool sample (not 3) should be ordered for culture or for ova and parasite.

- If sample is negative for bacterial or parasite, and the patient is still symptomatic, or diarrhea is bloody, take an additional stool sample.
- Clostridium difficile toxin assay should be ordered if patient has been recently hospitalized or has taken antibiotics.
- Cryptosporidium and Isospora examination should be specifically requested if daycare exposure is suspected or if patient is immunocompromised especially those who are HIV positive.
- Transmission from farm animals to humans may occur.

Chronic, Persistent, Relapsing Diarrhea

- 3 sequential stool samples, collected on alternate days, within a 10 day period for ova and parasite are indicated (many cysts or ova are excreted irregularly and multiple infestations are common). Specific reasons for ordering more samples must be indicated.

Approximate Onset Time to Symptoms	Predominant Symptoms	Associated Organism or Toxin
1-6 h, mean 2-4 h	Nausea, vomiting, retching, diarrhea, abdominal pain, prostration.	*Staphylococcus aureus* and its enterotoxins
8-16 h (2-4 h emesis possible)	Vomiting, abdominal cramps, diarrhea, nausea	*Bacillus cereus*
12-72 h	Sore throat, fever, nausea, vomiting, rhinorrhea, sometimes a rash.	*Streptococcus pyogenes*
2-36 h, mean 6-12 h	Abdominal cramps, diarrhea, putrefactive diarrhea associated with *C. perfringens*, sometimes nausea and vomiting.	*Clostridium perfringens, Bacillus cereus, Streptococcus faecalis, S. faecium*
12-74 h, mean 18-36 h	Abdominal cramps, diarrhea, vomiting, fever, chills, malaise, nausea, headache,are possible. Sometimes bloody or mucoid diarrhea, cutaneous lesions associated with V. vulnificus. Yersinia enterocolitica mimics flu and acute appendicitis.	*Salmonella, Shigella*, *Escherichia coli,* other *Enterobacteriacae, Pseudomonas aeruginosa, Vibrio Cholerae*
3-5 days	Diarrhea, fever, vomiting, abdominal pain, respiratory symptoms.	Enteric viruses
2-10 days	Watery diarrhea, stomach cramps, an upset stomach, or a slight fever.	*Cryptosporidiosis* – parasitic disease/food & waterborne
1-6 weeks	Mucoid diarrhea (fatty stools), abdominal pain, weight loss.	*Giardia lamblia* - parasitic disease/food & waterborne
2 h to 6 days, usually 12-36 h	Vertigo, double or blurred vision, loss of reflex to light, difficulty in swallowing, speaking, and breathing, dry mouth, weakness, respiratory paralysis.	*Clostridium botulinum* and its neurotoxins
4-28 days, mean 9 days	Gastroenteritis, fever, edema around eyes, perspiration, muscular pain, chills, prostration, labored breathing.	*Trichinella spiralis*
7-28 days, mean 14 days	Malaise, headache, fever, cough, nausea, vomiting, constipation, abdominal pain, chills, rose spots, bloody stools.	*Salmonellatyphi*

FOOD AND WATERBORNE ILLNESS INVESTIGATION FORM

Case #:

Surname	First Name	DOB(y/m/d)	Male ☐ Female ☐	Phone #: (H) (W)
Home Address/Community	Daycare/School/Institution/Workplace:			Occupation:
Guardian (if child):	Patient's Physician/ phone number:	Person Reporting:		Diagnosis date (y/m/d) _____ / _____ / _____ Clinical_____Lab_____
		Onset date (y/m/d):		
Health Care #	Hospitalized? Yes ☐ No ☐	Name of Hospital	Admission date (y/m/d)	Discharge date (y/m/d/)

DISEASE INFORMATION

SALMONELLA ☐ SHIGELLA ☐ CAMPYLOBACTER ☐ E.COLI (verotoxigenic) ☐ GIARDIA ☐ CRYPTOSPORIDIUM ☐ BOTULISM ☐ TRICHINOSIS ☐ FOOD POISONING ☐ TAPE WORM ☐ AMOEBIASIS ☐ OTHER:	Symptoms: VOMITING DIARRHOEA BLOOD IN STOOL MALAISE CRAMPS FEVER CHILLS HEADACHE BLURRED VISION DIZZINESS DIFFICULTY SWALLOWING CONVULSIONS WEIGHT LOSS OTHER:	Duration: ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____	Specimens (stool/vomitus/blood) Collected (y/m/d & time): Treatment Prescribed:	

GENERAL ASSESSMENT INFORMATION:

1. Contact of a <u>previously</u> diagnosed case?	Yes ☐ No ☐	Name: Address:
2. Travel (including foreign travel & farm visits)?	Yes ☐ No ☐	Location: Departed (y/m/d): Returned (y/m/d):
3. Common Events/Feasts/Gatherings?	Yes ☐ No ☐	List:
4. Contact with untreated water/milk? (Specify source)	Yes ☐ No ☐	List:
5. Animals at home? (Note health of animals)	Yes ☐ No ☐	List:
6. Hobbies and recreation (list): (eg. hunting, fishing, camping)		
7. Other medical conditions (list):		

FOOD HISTORY **(Foods consumed during incubation period which were undercooked, unusual or suspect)**

SUSPECT FOOD	DATE EATEN (Y/M/D)	GIVE DETAILS OF PROBLEMS

NAME ALL CONTACTS: **(During incubation period of communicability and complete Investigation Form on all symptomatic contacts)**

NAME (last, first)	ADDRESS (IF DIFFERENT) & PHONE	AGE	RELATIONSHIP TO CASE	ILL? Y/N	COMMENTS/FOLLOW-UP (Note if High Risk)

****Use additional paper if required to list all contacts**

HEALTH EDUCATION: **(where applicable)**

1. Disease
2. Handwashing/Personal Hygiene
3. Home Food preparation
4. Radio Announcements/Community Education/Meetings
5. Avoid raw/cracked eggs
6. Protect cooked foods
7. Cook all meat
8. Raw/unpasteurized milk
9. Sanitary disposal of human wastes
10. Drinking untreated water (boil, treat)
11. Shellfish from approved source

Comments:

Date: _____ **Submitter**
Signature:_____

This completed form to be forwarded to :

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories

Box 1320 CST-7
Yellowknife NT X1A 2L9
Phone: (403) 920-8646
Fax: (403) 873-0442

Northwest Territories Health and Social Services

CRITERIA FOR EXCLUSION:

Giardia/other enteric - while symptomatic for day care, school, health care, and food handlers.

Shigella, Salmonella typhi, Salmonella paratyphi - exclusion from high risk locations until 2 consecutive stools negative after cessation of antibiotics for 24 hours.

Hepatitis A - Exclude from day care, school, high risk locations for 14 days from onset (7 days from jaundice).

ENTERICS (Bacterial)

CAMPYLOBACTERIOSIS

Clinical Description:

- A bacterial infection (*Campylobacter jejuni*) that affects the intestinal tract, and rarely, the bloodstream.
- It is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting, and bloody stools.

Source of Infection and Transmission:

- Ingestion of the organism in under-cooked chicken and pork, contaminated food and water, raw milk, and contact with infected pets.
- Person-to-person transmission appears to be uncommon.
- People are most commonly infected from cutting boards contaminated with raw poultry.

Incubation Period:

- Incubation period 2-5 days, with a range of 1-10 days depending on dose ingested.

Major Complications:

- A typhoid-like syndrome or reactive arthritis may occur. Rarely, febrile convulsions, Guillain-Barre syndrome, and meningitis may occur.

Public Health:

- Causes 5-14% of diarrhea worldwide. An important cause of travellers diarrhea.
- Investigation of contacts and source of infection.
- Exclusion while symptomatic, if questionable hygienic practices exclude until stools are negative.

Diagnosis and Treatment:

- Diagnosis is made by stool or blood culture.
- Generally, a self-limiting disease.
- Correct fluid and electrolyte imbalances.
- Antibiotics are occasionally used (as ordered by physician) to treat severe cases, or shorten the carrier phase, which may be important for food handlers, children in daycare, and health care workers. Antibiotics may be used to prevent relapses.
- Drug of choice: Erythromycin or Ciprofloxin.

Education:

- Health education about treatment of raw poultry, refrigeration of foods and cleaning of cutting boards.
- Avoid eating raw eggs or unpasteurized milk.

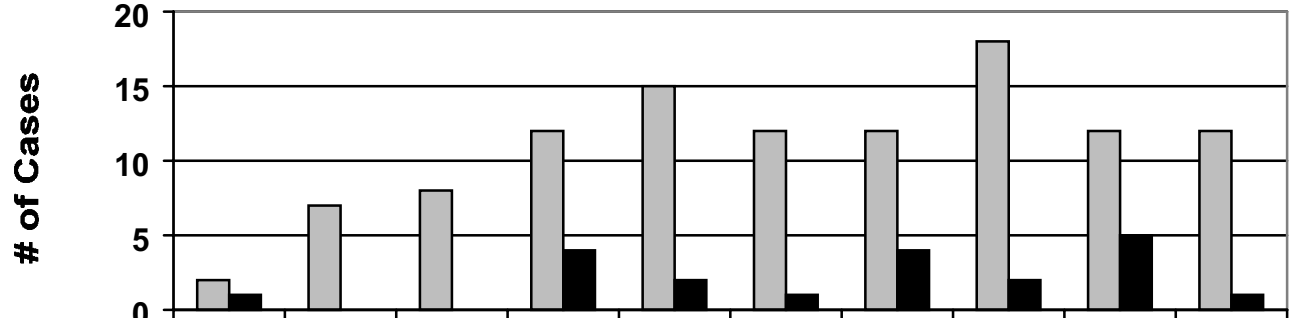
- Ensure proper handwashing and precautions for diapered and/or incontinent children and adults for the duration of the illness.
- Awareness of potential for infection from pets.

Reporting and Follow-Up:

- Local MHO (Medical Health Officer)/EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 24 hours.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

NWT/NUNAVUT

Cases of Campylobacteriosis by Year and Territory



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	2	7	8	12	15	12	12	18	12	12
NUNAVUT	1	0	0	4	2	1	4	2	5	1

CAMPYLOBACTER CASES
By Year and Region

YEAR	FT SMITH	INUVIK	BAFFIN	KEEWATIN	KITIKMEOT	TOTAL
1989	2	-	1	-	-	3
1990	7	-	-	-	-	7
1991	8	-	-	-	-	8
1992	12	-	-	2	2	16
1993	15	-	-	2	-	17
1994	12	-	-	-	1	13
1995	12	-	-	2	2	16
1996	18	-	1	1	-	20
1997	11	1	-	2	3	17
1998	11	1	-	-	1	13

ESCHERICHIA COLI 0157:H7

Clinical Description:

- An acute bacterial disease of the GI tract, characterized by watery diarrhea (often bloody), abdominal cramps, vomiting, and a mild fever.

Source of Infection and Transmission:

- Transmission occurs by ingestion of contaminated foods (e.g. apple cider, raw vegetables, salami, and yogurt), most often inadequately cooked beef and raw milk.
- Person-to-person contact occurs within families, daycares, and institutions (fecal-oral route).
- Waterborne transmission can also occur (contaminated lake or water supply).

Incubation Period:

- Incubation period is typically 10 hours to 6 days, but may range from 3 to 8 days.
- The pathogen is usually excreted for a week or less in adults, but 3 weeks in children.
- Prolonged carriage is uncommon.

Major Complications:

- Hemolytic uremic syndrome (as defined by the triad of microangiopathic hemolytic anemia, thrombocytopenia and acute renal dysfunction).
- About 8% of persons with Hemolytic Uremic Syndrome develop lifelong complications, such as high blood pressure, seizures, blindness and paralysis.
- Life-threatening dehydration.

Public Health:

- Widespread; somewhat common in North America. Nunavut experienced a large outbreak in 1991, with 182 confirmed cases of E. coli 0157:H7. Only sporadic cases have occurred since then.
- Investigation of contacts and source required.
- Contact precautions are indicated for patients with all types of *E. coli* diarrhea for the duration of illness.
- Exclusion while symptomatic.

Diagnosis and Treatment:

- Stool culture required.
- Most persons recover without antibiotics or other specific treatment in 5-10 days.
- Correct fluid and electrolyte imbalances.
- Observe for signs of Hemolytic Uremic Syndrome, particularly in children.

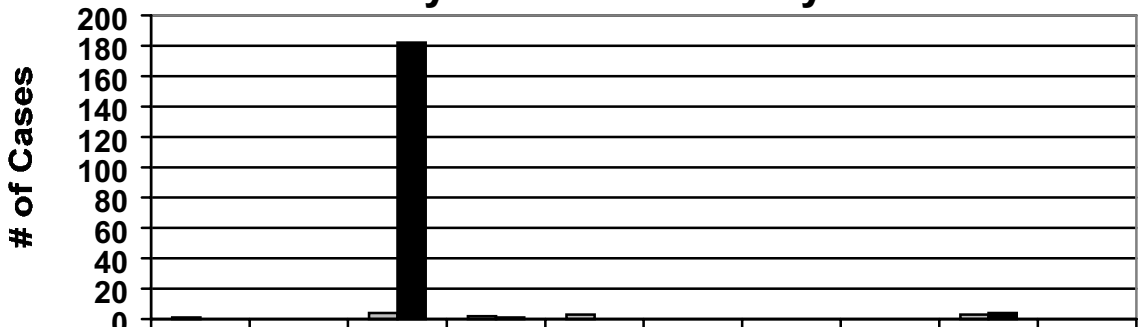
Education:

- Safe food storage and preparation.
- Instructing on the importance of proper handwashing and hygiene.

Reporting and Follow-Up:

- Local MHO (Medical Health Officer) /EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 24 hours.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

NWT/NUNAVUT
Cases of E.coli 0157
by Year and Territory



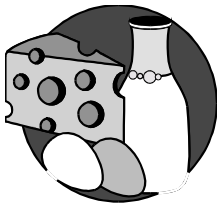
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	1	0	4	2	3	0	0	0	3	
NUNAVUT	0	0	182	1	0	0	0	0	4	0

SALMONELLOSIS

Clinical Description:

- A bacterial disease (*Salmonella* species) manifested by acute enterocolitis with sudden onset of headache, abdominal pain, diarrhea, fever, nausea and sometimes vomiting.

Source of Infection and Transmission:



- Predominantly transmitted by ingestion of food derived from infected food or animals or contaminated by feces of an infected animal (e.g. seals, poultry, red meats, eggs, unpasteurized milk, fruits, vegetables and rice).
- Other modes of transmission include ingestion of contaminated water or direct person-to-person (fecal-oral route).
- Chronic carriers are rare in humans, but prevalent in animals and birds.

Incubation Period:

- From 6 to 72 hours, usually about 12 to 36 hours.

Major Complications:

- Dehydration may occur, especially among infants or the elderly.
- May develop into septicemia, focal infection and arthropathy.
- Occasionally, the infectious agent may localize in body tissue, producing abscesses, septic arthritis, cholecystitis, endocarditis, meningitis, pericarditis, pneumonia, pyoderma, or pyelonephritis.

Public Health:

- Higher in infants and young children.
- Investigate for contacts and source of infection. Stool cultures for household contacts that are at high risk for transmitting disease.
- Require 2 consecutive negative stool samples to be considered non-infective.
- Exclusion while symptomatic, if questionable hygiene practices, exclude until stools are negative.

Diagnosis and Treatment:

- Culture of stool, blood and urine.
- Correct fluid and electrolyte imbalances.
- Antibiotic treatment is only used for invasive disease. Antibiotics are known to increase the risk of carriage.
- Treat patients at increased risk: persons with malignancies, hemoglobinopathies, HIV, children, elderly, immunosuppressed and chronic GI disease.
- Drugs of choice: Ampicillin, Amoxil or Septra.
- For invasive Salmonella, treat with Chloramphenicol, Ampicillin or Amoxil.
- Avoid aspirin and heparin. Corticosteroids may be useful.

Education:

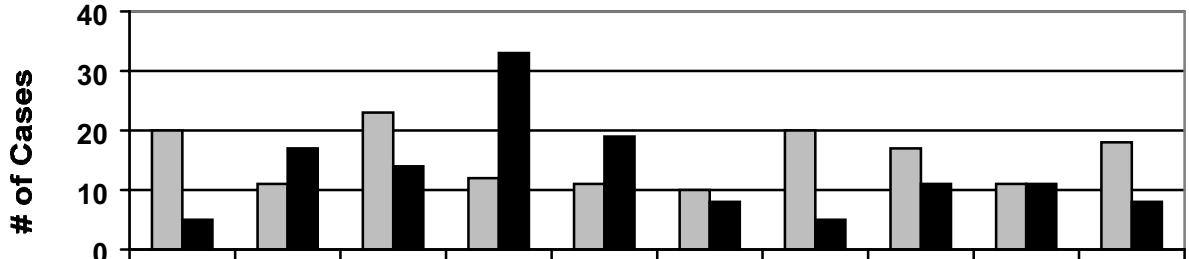
- Importance of personal hygiene, i.e. handwashing.
- Safe food handling and refrigeration of food products.
- Avoid eating raw eggs.
- Recognize the risk of Salmonella infections in pets.

Reporting and Follow-Up:

- Local MHO (Medical Health Officer)/EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 24 hours.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

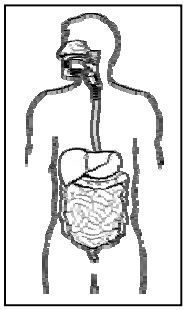
NWT/NUNAVUT

Cases of Salmonellosis by Year and Territory



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	20	11	23	12	11	10	20	17	11	18
NUNAVUT	5	17	14	33	19	8	5	11	11	8

SHIGELLOSIS



Clinical Description:

- A bacterial infection of the gastrointestinal tract characterized by abrupt onset of headache, bloody or mucous diarrhea, fever, nausea, vomiting, cramps and tenesmus (ineffectual and painful straining to pass stool).

Source of Infection and Transmission:

- Feces of infected humans are the source of infection.
- Transmission direct or indirect fecal-oral route (i.e.- inadequate handwashing, sexual contact, or contaminated milk).
- Infection is most common in children 1 to 4 years of age (daycare centers).
- Predisposing factors: crowded living conditions, low hygienic standards, travel to countries with low standards of food sanitation.
- Shedding of bacteria usually ends within 4 weeks.

Incubation Period:

- Varies from 1 to 7 days but is usually 2 to 4 days.

Major Complications:

- Convulsions may be an important complication in young children.
- *Shigella dysenteriae 1* is often associated with toxic megacolon and Hemolytic Uremic Syndrome (case-fatality rates have been as high as 20% among hospitalized cases).
- Some strains can cause reactive arthropathy (Reiter syndrome) in genetically predisposed persons.

Public Health:

- ~600,000 deaths per year worldwide. Two thirds of cases occur in children under 10 years of age.
- All cases and symptomatic contacts should be excluded from food handling and the care of children or patients until diarrhea ceases, and 2 negative stool cultures not less than 24 hours apart are obtained.
- Investigation of all contacts and source of infection should be done.

Diagnosis and Treatment:

- Diagnosis is made by stool culture.
- Correct fluid and electrolyte imbalances.
- Mild**:** Often self-limiting, lasting 48-72 hours. Focus on preventing spread of organism.
- Moderate: Drug of choice Ampicillin for susceptible strains and Septra for resistant strains, as directed by physician. **Anti-diarrheals are contraindicated**.
- Antibiotics may shorten the carrier phase. Carrier state may persist for months or longer.

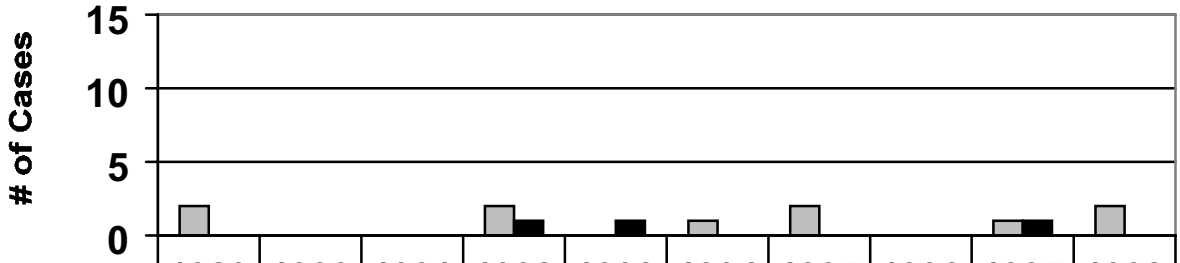
Education:

- Educate public in personal hygiene, such as handwashing.
- Education regarding pasteurization of dairy products and refrigeration of food.

Reporting and Follow-Up:

- Local MHO (Medical Health Officer)/EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or Designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 24 hours.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

NWT/NUNAVUT
Cases of Shigellosis
by Year and Territory



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	2	0	0	2	0	1	2	0	1	2
NUNAVUT	0	0	0	1	1	0	0	0	1	0

ENTERIC (Parasitic)

CRYPTOSPORIDIOSIS

Clinical Description:

- A parasitic infection of the gastrointestinal, biliary, and respiratory tract, caused by the *protozoa, C. Pariveau*.
- May be asymptomatic. Symptoms include profuse watery diarrhea, abdominal cramps, malaise, fever, anorexia, and vomiting.

Source of Infection and Transmission:

- Parasite reservoir in humans.
- Person-to-person or animal-to-person contact (fecal-oral route).
- Food-borne transmission.
- Oocytes continue to be excreted in the stool for several weeks after symptoms resolve. Outside the body, they remain infective for 2 to 6 months in a moist environment.
- Only filters capable of removing particles 0.1 to 1.0 mm in diameter are adequate for removing Cryptosporidia.

Incubation Period:

- 2 to 14 days but on average, 7 days.

Major Complications:

- Chronic, severe diarrhea with malnutrition, dehydration, and death in immunocompromised individuals.
- Pulmonary, biliary tract, or disseminated infection has occurred in immunocompromised persons.

Public Health:

- Prevalence in North America: from 1% to 4.5% of people surveyed.
- Stool examination of household contacts and other suspected contacts.
- Report on a Food and Waterborne Illness form.
- Remove infected children from daycare until diarrhea stops.
- Remove infected persons from jobs that require food handling.
- Boil drinking water for 1 minute, if water supply is suspected to be affected.
- Water sampling if waterborne transmission suspected. Organism is resistant to chlorine and disinfectants.

Diagnosis and Treatment:

- Stool collection for Ova and Parasites (O&P) x 1. Parasite may be difficult to identify.
- Rehydration therapy if indicated.
- Correct electrolyte imbalances.

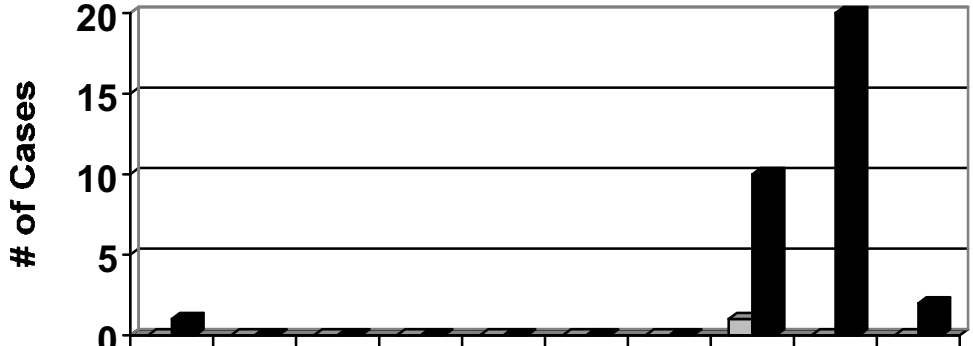
Education:

- Educate public in personal hygiene, such as careful handwashing and disposal of feces in a sanitary manner (municipal sewage disposal system).

Reporting and Follow-Up:

- Local MHO (Medical Health Officer)/EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 7 days.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

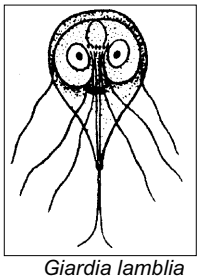
NWT/NUNAVUT
Cases of Cryptosporidiosis by Year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	0	0	0	0	0	0	0	1	0	0
NUNAVUT	1	0	0	0	0	0	0	10	20	2

GIARDIASIS

Clinical Description:


Giardia lamblia

- A protozoan infection (*Giardia lamblia*) of the small intestine.
- May be asymptomatic or accompanied by diarrhea, steatorrhea (excessive fat in the feces), abdominal cramps, bloating, fatigue, weight loss.
- Also called “Beaver Fever”.
- Diarrhea may be intermittent.

Source of Infection and Transmission:

- Humans are the principal reservoir, but Giardia also infects animals (e.g. dogs, cats and beavers).
- Transmitted by person-to-person contact (fecal-oral route).
- Associated with water contaminated with feces of infected animals.
- Asymptomatic carrier rate is high.

Incubation Period:

- Usually 1 to 4 weeks.

Major Complications:

- Malabsorption of fats or fat-soluble vitamins may occur.
- Reactive arthritis may occur in severe cases.
- Damage to duodenal and jejunal mucosal cells may occur.
- Prolonged illness may occur in immunocompromised individuals.

Public Health:

- Prevalence is higher in areas of poor sanitation and in institutions where children are not toilet-trained, including daycare centres.
- Concentrations of chlorine used in routine water treatments does not kill Giardia cysts.
- Asymptomatic carrier rate is high.
- Lab examination of feces of household contacts or other suspected contacts is necessary, especially those who are symptomatic.
- Contact precautions for the duration of illness are recommended for diapered and/or incontinent children.
- Fill out the Food and Waterborne Illness form.
- Exclusion of children from daycare.
- Boil water before drinking from untreated water supplies.

Diagnosis and Treatment:

- Diagnosis is made via stool collection for Ova and Parasites x 3.
- Often difficult to detect in the stool analysis. In the presence of good symptom complex may be treated on speculation, especially in young children.
- Rehydration therapy if indicated.
- Is usually a self-limiting disease, but may be treated with Metronidazole (Flagyl) for more severe cases, and especially be beneficial to infants with chronic diarrhea from Giardiasis.

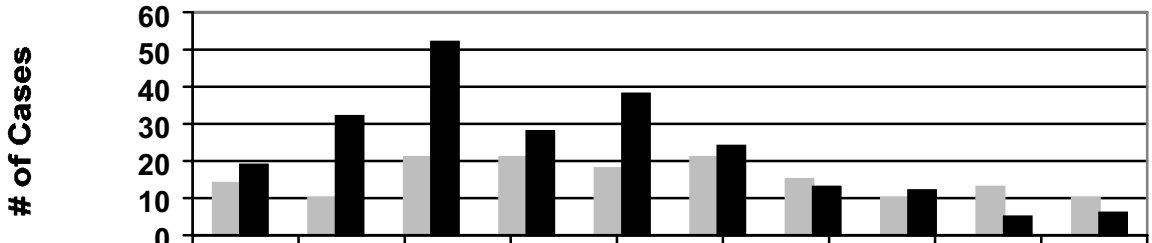
Health Education:

- Educate families, personnel of institutions, adult personnel of daycares on good personal hygiene habits and the need for handwashing before handling food, eating, and after toilet use.

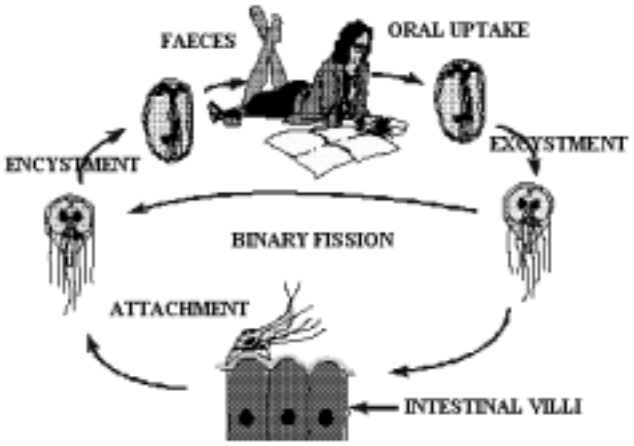
Reporting and Follow-Up:

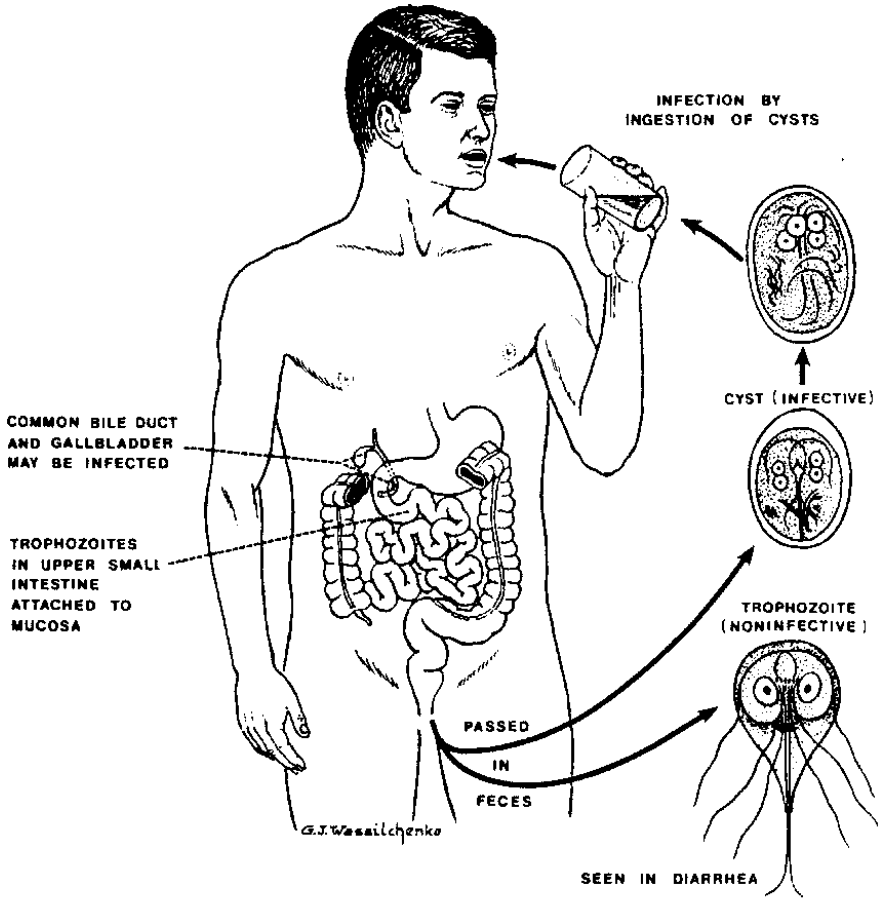
- Local MHO (Medical Health Officer)/EHO (Environmental Health Officer) or designate is to be notified of all suspect and confirmed cases. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) within 7 days.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

NWT/NUNAVUT
Cases of Giardiasis
by Year and Territory



	1989	1990	1991	1992	1993	1995	1996	1997	1998
NWT	14	10	21	21	18	15	10	13	10
NUNAVUT	19	32	52	28	38	13	12	5	6





Life cycle of *Giardia lamblia*.

TRICHINOSIS

Clinical Description:

- A parasitic infection caused by roundworm (Nematode), *Trichinella spiralis variant nativa*. The severity of the disease is proportional to the infective dose. This strain is known to be cold resistant.

Confirmed Case: Clinically compatible symptoms with a Trichinella positive muscle biopsy or positive serology for trichinosis.

Clinical Case: Clinically compatible symptoms and an epidemiological link to a confirmed case or to meat known to contain Trichinella larvae.

Phases of Clinical Disease:	Symptoms:
Intestinal	♦ Symptoms may develop within the first 24 hours include: diarrhea, nausea, abdominal cramps, and general malaise. Diarrhea may last as long as 14 weeks.
Muscle penetration and larvae encapsulation	♦ During muscle invasion, there may be fever, facial (particularly periorbital) edema and muscle pain, swelling and weakness. ♦ Peripheral eosinophilia of at least 20%, often over 50%, and possibly up to 90% is present during the muscle invasion phase of the infection.

Source of Infection and Transmission:

- Infection that occurs as a result of ingesting raw or insufficiently cooked meat containing encysted larvae of T. spiralis. Animals that can be infected are polar bear, bear, fox, marine animals (such as walrus, seal and whale), pigs, dogs, horses and cats. Source of infection in Nunavut has been primarily from walrus and polar bear.
- The disease is not transmitted person to person.

Incubation Period:

- Is usually 1 to 2 weeks.

Major Complications:

- In severe infection myocardial failure, neurological involvement, and pneumonitis can follow in 1 or 2 months.

Public Health:

- The infection is found world-wide in many carnivores, especially scavengers.
- There have been 49 cases of Trichinella reported for Nunavut Territory in the last nine years.
- No reported cases in the NWT in that period.
- Investigation of contacts and source of infection are done by local Environment Health Officer (EHO) or Community Health Nurse.

- Confiscate any remaining suspected food, and send sample to the National Centre for Parisitology at McGill University, consult EHO for direction for packaging and transporting specimen.

Diagnosis and Treatment:

- Serologic Testing: Serum (two mls) of serum is sent to referral lab and routed to the National Reference Centre for Parasitology in Montreal. Titres by EIA of 1:128 are considered positive. Convalescent titres are also required to confirm acute diagnosis.
- Muscle Biopsy: Conclusive evidence of Trichinella is best when biopsy is done 10 days after onset of infection.
- Eosinophil Count: Eosinophilia plus other symptoms of Trichinella assists with clinical diagnosis.
- Treatment: Mebendazole or Pyrantel is effective in the early stages of the disease. There is lack of evidence to support treatment in long term sequelae of Trichinosis and does not warrant repeat therapy but rather symptomatic therapy. Corticosteroids are indicated only in severe cases to alleviate symptoms of inflammatory response when the central nervous system or heart is involved.

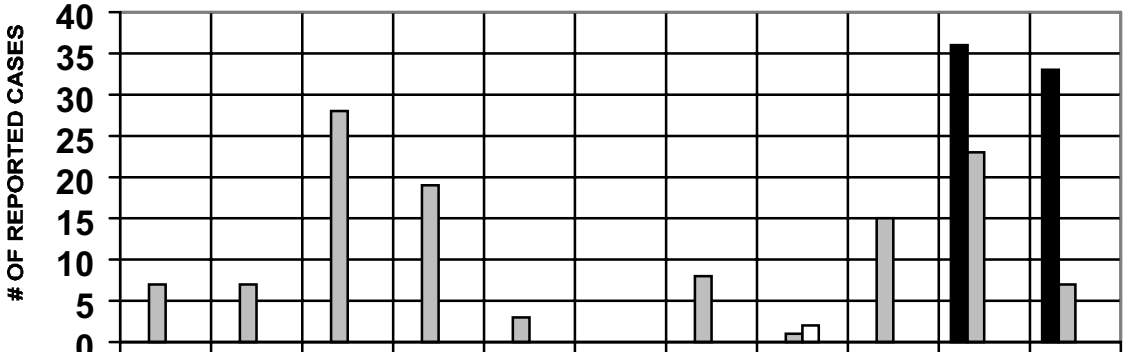
Education:

- Precautions when handling animals and animal products.
- Ensure food is properly prepared and cooked.

Reporting and Follow-up:

- All suspect or confirmed cases must be reported to MHO, Health Protection Unit and EHO within 7days.
- Complete Communicable Disease Investigation form.

TRICHINOSIS



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
BAFFIN										36	33
KEEWATIN	7	7	28	19	3		8	1	15	23	7
KITIKMEOT								2			
NWT	0	0	0	0	0	0	0	0	0	0	0

Present treatment: (type, list drugs, date): _____

_____

_____

Hospitalized: Yes ☐ No ☐ Name of Hospital: _____

Contacts: (If more space needed use contact list)

Name	***1.***	***2.***	***3.***	***4.***
Date of Birth				
HCP#				
Sex				
Relation to Patient				
Type of Contact				
Dates of Contact				
Symptomatic Yes ☐ No ☐ Specify:				
Treated Specify:				

Complications/sequelae (of illness)

Person Reporting: _____ Date: _____

Title: _____ Place: _____

Please return this completed form to:

Health Protection Unit
Department of Health and Social Services
7th Floor - Centre Square Tower
P.O. Box 1320
YELLOWKNIFE NT X1A 2L9

Revised May/97

Present treatment: (type, list drugs, date): _____

_____

_____

Hospitalized: Yes ☐ No ☐ Name of Hospital: _____

Contacts: (If more space needed use contact list)

Name	***1.***	***2.***	***3.***	***4.***
Date of Birth				
HCP#				
Sex				
Relation to Patient				
Type of Contact				
Dates of Contact				
Symptomatic Yes ☐ No ☐ Specify:				
Treated Specify:				

Complications/sequelae (of illness)

Person Reporting: _____ Date: _____

Title: _____ Place: _____

Please return this completed form to:

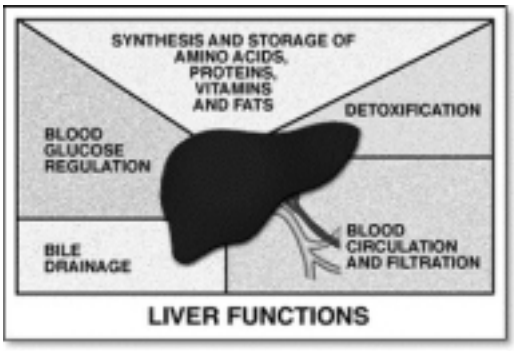
Health Protection Unit
Department of Health and Social Services
7th Floor - Centre Square Tower
P.O. Box 1320
YELLOWKNIFE NT X1A 2L9

Revised May/97

HEPATITIS

VIRAL HEPATITIS (General)

Definition:



- Hepatitis is an inflammation of the liver caused most commonly by:
  - Hepatitis A, B and C viruses.
  - Cytomegalovirus (CMV).
  - Epstein-Barr virus (EBV).
  - HIV (during the seroconversion illness).
- Acute viral Hepatitis infection is often asymptomatic or non-specific in presentation.
- Hepatitis B and C viruses may last for decades and cause chronic infection, chronic Hepatitis, cirrhosis, and hepatocellular carcinoma.

Impact of Viral Hepatitis on the Patient:

- Having established the diagnosis, the first point to make with the patient is that they are not alone. In the case of HBV, there are at least 100,000 Canadians who also have chronic HBV infections. In the case of HCV, the figure is perhaps as high as 300,000!
- Many patients' principal concern is whether the disease will negatively impact on their daily activities, including job performance.

Fatigue:

- Although fatigue is common in viral Hepatitis, it is difficult to correlate with disease activity (especially with Hepatitis C). Cirrhotic patients may feel fine while less severe degrees of HCV may be associated with severe fatigue.
- Neither prolonged bed rest nor strenuous exercise programs will affect the natural history of the disease and therefore, patients should be actively encouraged to maintain their normal level of activity.

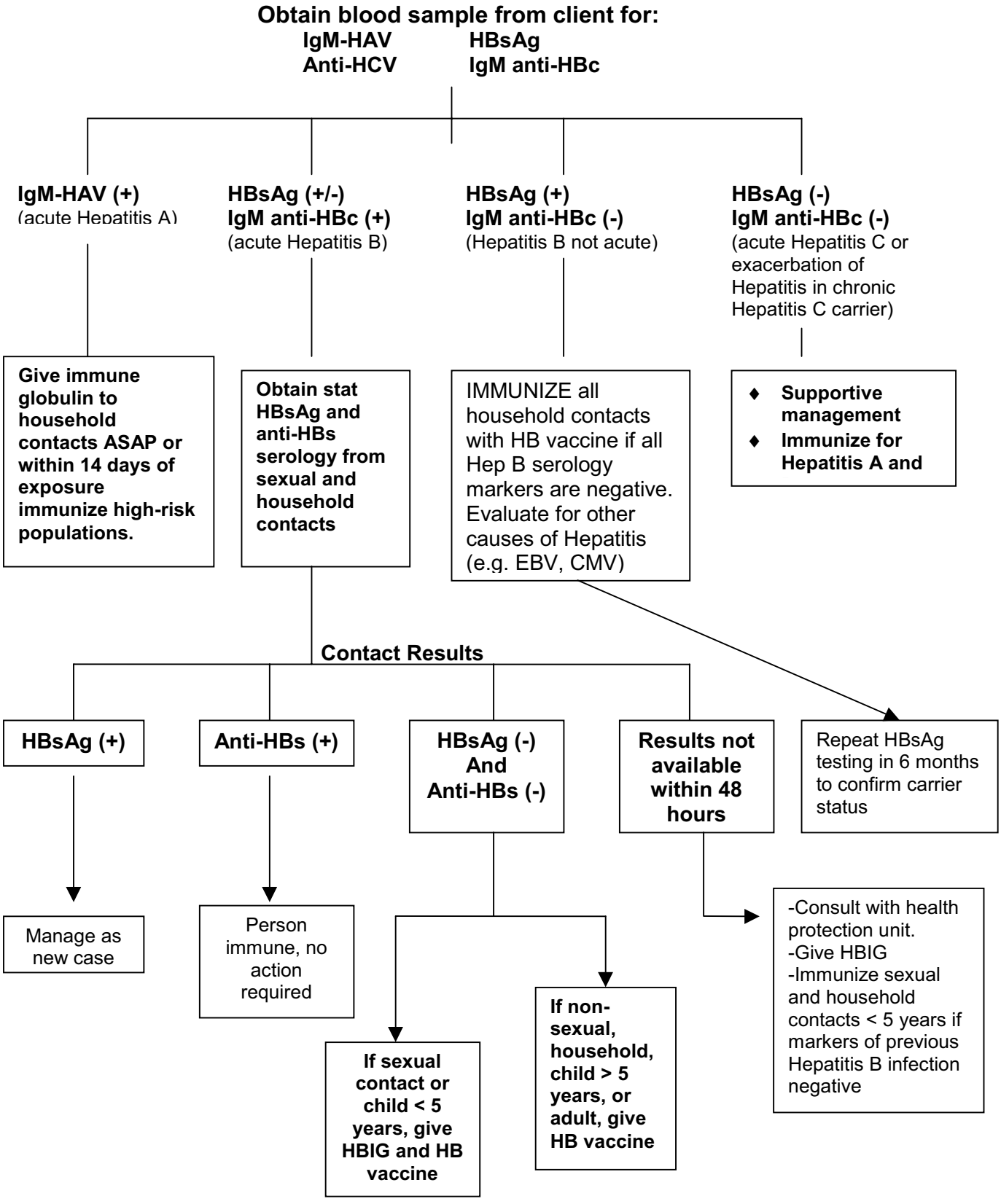
Diet:

- No foods exacerbate or improve Hepatitis and therefore, regular, well-balanced meals are recommended.
- Alcoholics and patients with cirrhosis should be told to abstain completely from alcohol consumption.

	Hepatitis A Virus	Hepatitis B Virus	Hepatitis C Virus	Hepatitis D Virus	Hepatitis E Virus	Hepatitis G Virus
Virus Class	Picorne	Hepadna	Flaviviridae	Satellite	Calici-like	Flaviviridae
Transmission	Enteric	Parenteral	Parenteral	Parenteral	Enteric	Parenteral
Incubation	15-45 days	40-120 days	15-90 days	25-75 days	20-80 days	?
Chronicity	No	Yes (>10%)	Yes (>80%)	Yes (<70%)	No	Yes

Investigation and Management of a Clinical Case of Hepatitis

From: Health Canada. *Canadian STD Guidelines* (1998 Edition). P. 119.



HEPATITIS A

Clinical Description:

- An acute viral disease characterized by abrupt onset of:
  - Fever/chills, jaundice (yellow skin/eyes).
  - Nausea, vomiting and/or abdominal cramps.
  - Pain in the liver area.
  - Dark orange urine, light-colored stools.
- Severity varies from mild (1-2 weeks) to severely disabling (1-6 months).
- Many cases are asymptomatic.
- Caused by the Hepatitis A Virus (HAV).
- Does not cause chronic Hepatitis.

Source of Infection and Transmission:

- Person-to-person transmission via fecal-oral route.
- Viral shedding and the contagious period usually last 1 to 3 weeks.
- Common-sources outbreaks have been related to:
  - Contaminated water.
  - Food contaminated by infected food handlers (e.g. sandwiches and salads).
  - Raw/undercooked shellfish harvested from contaminated waters.
  - Contaminated produce (e.g. lettuce and strawberries).
- Transmission by blood transfusion or from mother to newborn infant is now rare.
- Children less than five years of age rarely show clinical signs of the illness. This means that parents and childcare workers providing childcare and handling soiled diapers can catch or transmit the disease without knowing they have been exposed.

Incubation Period:

- Usually 15 to 50 days, with an average of 25 to 30 days.

Major Complications:

- The reported case-fatality rate in the general population is low (1/1000).
- Patients with chronic liver disease - especially chronic Hepatitis C - may be at an increased risk for fulminant Hepatitis or death. It is recommended to offer HAV vaccination to those individuals who are not already immune.

Public Health:

- Most common among school-aged children and young adults. Large cyclic outbreaks have occurred in Nunavut, with sporadic cases primarily related to travel outside the north.
- Sewage and water truck drivers.
- Contact precautions are recommended for diapered and/or incontinent patients for 1 week after the onset of symptoms.
- Investigation of contacts and source of infection should be done and contacts immunized as soon as possible.
- Exclusion of infected food handlers, daycare workers, daycare children, health care workers, and school children from their respected public places for 14 days from onset (7 days from jaundice).

- Consider doing Hepatitis A vaccinations. Potential indications are :
    - Occupational exposure: daycare, custodial, hospital staff and food handlers.
    - Patients with hemophilia or chronic liver disease.
    - Injection drug users.
    - Those with Hepatitis C virus.
- Hepatitis A vaccine has been used effectively to curtail outbreaks (see Canadian Immunization Guide, 1998).
- As well, for high-risk contacts, Immune Globulin (IG) is 80-90% effective in preventing symptomatic infection if given with 2 weeks after HAV exposure.
- Provide supportive care.

Diagnosis and Treatment:

- Diagnosis is established by demonstration of IgM antibodies against Hepatitis A virus (IgM anti-HAV) in the serum of acutely or recently ill patients.
- When there has been a known or presumed HAV exposure, or an individual is at risk of exposure before protective antibody is likely, Hepatitis A vaccine may be administered concomitantly with pooled immunoglobulin. Separate syringes and different sites must be used.

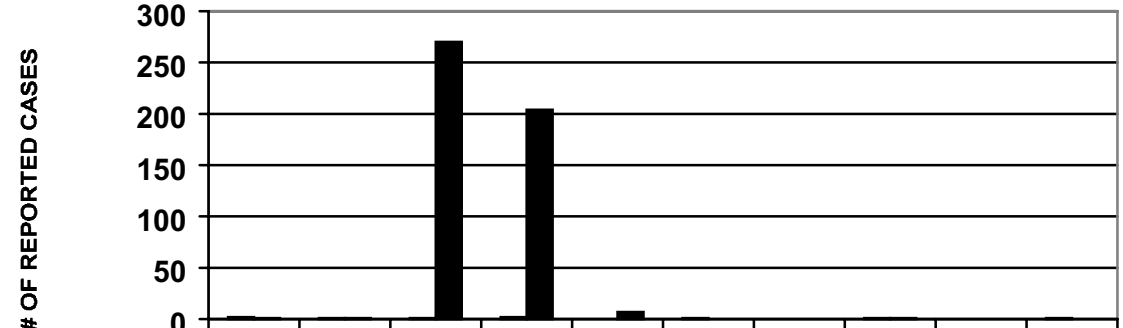
Health Education:

- Educate the public (including daycare centres) about good sanitation and personal hygiene (e.g. proper handwashing, etc.).

Reporting and Follow Up:

- Local MHO/EHO is to be notified of all suspect and confirmed cases of Hepatitis A. Food and Waterborne Investigation form is to be completed by EHO or designate.
- All suspect or confirmed cases are to be reported to the CMHO (Chief Medical Health Officer) or designate within 24 hours.
- If outbreak occurs then Outbreak Control Protocol is to be implemented.

HEPATITIS A
by Year and Territory



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	2	1	1	2	0	1	0	1	0	1
NUNAVUT	1	1	270	204	7	0	0	1	0	0

HEPATITIS B

Clinical Description:

- A viral infection that can cause a wide spectrum of manifestations:
  - Asymptomatic seroconversion.
  - Subacute illness with non-specific symptoms (e.g. anorexia, nausea or malaise) or extrahepatic symptoms.
  - Clinical Hepatitis with jaundice.
  - Fulminant fatal Hepatitis (acute hepatic necrosis).
- Caused by the Hepatitis B Virus (HBV).

Source of Infection and Transmission:

- Person-to-person transmission occurs through blood or body fluids (e.g. wound exudates, semen, vaginal secretions, saliva, occupational exposure and sharing or reusing non-sterilized needles).
- In the NWT/Nunavut, transmission is primarily through sexual activity.
- All persons who are HBsAg-positive are potentially infectious.

Incubation Period:

- Usually 45-189 days, averaging 60-90 days.

Major Complications:

- Following acute HBV infection, the risk of developing chronic infection varies inversely with age (90% of infants infected at birth, 25-50% of children infected at 1-5 years of age and 1-10% of persons infected as older children and adults).
- Increase risk of cirrohosis and hepatocellular carcinoma.

Public Health:

- Occurs primarily in adolescents and adults through sexual activity.
- Investigation of contacts and source of infection should be done and **post-exposure prophylaxis** offered (Hepatitis B Immune Globulin and/or Hepatitis B vaccine).
- See Hepatitis B Post-Exposure Algorithm on page 12.
- See Canadian Immunization Guide, 1998.
- **Pre-exposure immunization** of persons at risk (e.g. health care workers, dental workers, persons with bleeding disorders and travelers) with the Hepatitis B vaccine is the most effective means of preventing HBV transmission.
- **Prenatal HBsAg screening** of all pregnant women. Vaccination and HBIG administered to infants born to HBsAg-positive mothers decreases risk of transmission by 95%.
- **Needle exchange programs.**

Consider doing Hepatitis B vaccinations for high-risk groups:

- Occupational exposure: health care workers especially those exposed to blood.
- Patients with hemophilia, chronic liver disease and others receiving repeated blood transfusions or on hemodialysis.
- Injection drug users.
- Those with multiple sexual partners.
- Inmates of long-term correctional facilities.
- Those with history of multiple STDs such as gonorrhea, chlamydia, syphilis, herpes and HIV.
- Those infected with Hepatitis C.

Diagnosis and Treatment:

- Diagnosis is confirmed via demonstration of specific antigens (HBsAg or HBcAg) and/or antibodies (anti-HBc).
- No specific therapy for acute HBV is available.

Education:

- Breastfeeding by a HBsAg-positive mother poses no additional risk for transmission of HBV to the infant.

Reporting and Follow-Up:

- All suspect or confirmed cases of HBV must be reported to CMHO within 24 hours.
- Hepatitis Investigation form is to be completed.

HEPATITIS B - SEROLOGIC TESTING

Serological Test			Interpretation
HB surface Ag	Anti-HBc	anti-HBs	
-	-	-	Susceptible to infection; never had Hepatitis B.
+	-	-	Incubation stage of Hepatitis B. Should be considered infectious.
+	+	-	Currently infected with Hepatitis B virus. May be acute case or chronic carrier. Should be considered infectious.
-	+	-	Transient state during convalescence from Hepatitis B ("core window"); or long term persistence in the absence of anti-HBs. Probably not infectious.
-	+	+	Immune; previous infection with Hepatitis B.
-	-	+	Immunization-like response against Hepatitis B; not infectious.

SUMMARY OF DIAGNOSTIC TESTS FOR HBV

From: EpiNorth. *Health Protection Mailbox*. Sep/Oct 1997. P. 12
and Canadian Liver Foundation. *Hepatitis B: Information for the Medical Profession*. May 1994.

MARKER	HBV ANTIGEN OR ANTIBODY	CHARACTERISITICS
HBsAg	♦ Surface antigen	♦ First serologic marker to appear ♦ Disappears with clinical improvement ♦ Indicative of acute infection if present with IgM anti-HBc ♦ Persistence beyond 6 months indicates chronic infection
Anti-HBs	♦ Antibody to surface antigen (HBsAg)	♦ Marker of recovery and immunity ♦ Detectable after HbsAg disappears ♦ Indicates immunity after HBV vaccination
HbeAg	♦ E antigen	♦ Marker of infectivity ♦ Detectable in early phase of acute and chronic HBV infection ♦ Indicates high infectivity and a high likelihood of active Hepatitis ♦ Persistence beyond 10 weeks indicates likely chronic liver disease
Anti-HBe	♦ Antibody to HBe	♦ Develops in early convalescence after an acute infection and in the middle/late phases of chronic Hepatitis B infection
IgM Anti-HBc	♦ IgM antibody to core antigen	♦ Indicates current or previous infection ♦ Not associated with recovery or immunity

HEPATITIS B CARRIERS

CASE DEFINITION: HBV CARRIER

HbsAg-positive for 6 months

OR

IgM anti-HBc-negative and HBsAg-positive.

Clinical Symptoms:

- Are usually absent but may include:
  - Malaise.
  - Signs of cirrhosis (abdominal distension, edema or abnormal bleeding).
  - The likelihood of becoming a carrier varies inversely with the age at which infection occurs.
  - For infants infected by a carrier mother, the rate can be as high as 90%.
  - HBV carriers may have abnormal liver function tests and biopsy findings.

Source of Infection and Transmission:

- Person-to-person transmission occurs through blood or body fluids (e.g. wound exudates, semen, vaginal secretions, saliva, occupational exposure and sharing or reusing non-sterilized needles).
- In the NWT, transmission is primarily through sexual activity.
- All persons who are HBsAg-positive are potentially infectious.

Major Complications:

- Chronically infected patients are at increased risk for developing chronic liver disease (e.g. cirrhosis) or primary hepatocellular carcinoma in later life.

Public Health:

- Ongoing assessment of household and sexual contacts to assess need for Hepatitis B Vaccine.

Diagnosis and Treatment:

- Positive for HBsAg for a period equal to or greater than 6 months will confirm carrier status.
- All blood samples from a confirmed Hepatitis B carrier must be transported as a dangerous good.

Education:

- Should include the following:
  - Safer sexual practices to prevent transmission.
  - Not donating blood.
  - Avoiding alcohol, tobacco, drugs and other substances toxic to the liver.
  - Importance of balanced diet and regular exercise.
  - No sharing of razor, toothbrushes, needles, etc.

Initial Follow-up:

On initial diagnosis Hepatitis B carriers should be investigated for evidence of chronic liver disease, this should include:

- Complete history with particular attention to:
  - Past history of Hepatitis (with or without jaundice).
  - Alcohol consumption.
  - Significant use of drugs or other medications which may affect liver function (e.g. Isoniazid or INH).
  - History of Hepatitis in household or other intimate contacts (including sexual contacts).

- Complete a physical examination, this should include:
  - Documentation of presence or absence of: jaundice, spider nevi, ascites and liver tenderness.
  - Assessment of liver function tests: Alanine aminotransferase (ALT).

Routine Follow-up:

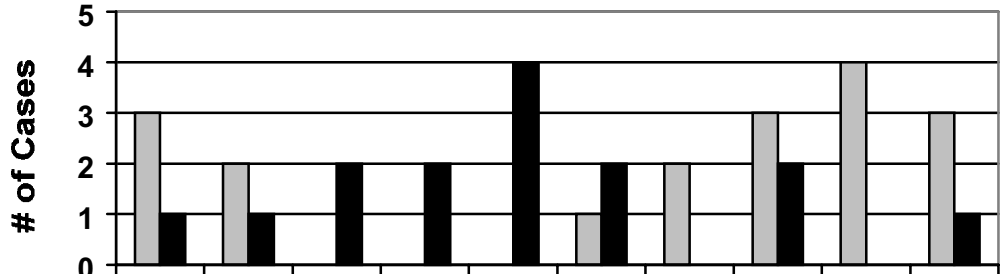
- Liver Enzyme Assay once a year. If abnormal then repeat. If continues to be abnormal, refer to Internist for further assessment.
- Routine screening for HBsAg is not necessary due to low rates of conversion to sero-negative status once carrier status occurs.

Reporting and Follow-Up:

- All suspect or confirmed cases of HBV must be reported to CMHO within 24 hours.
- Hepatitis Investigation form is to be completed.

NWT/NUNAVUT

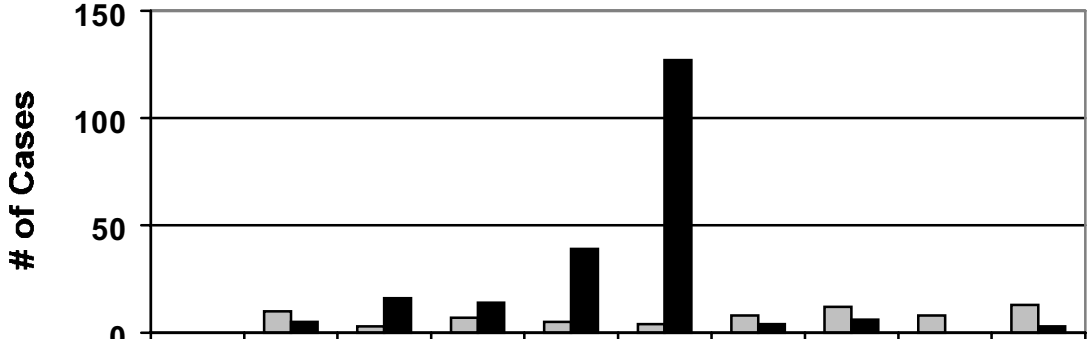
New Cases of Hepatitis B by Year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	3	2	0	0	0	1	2	3	4	3
NUNAVUT	1	1	2	2	4	2	0	2	0	1

NWT/NUNAVUT

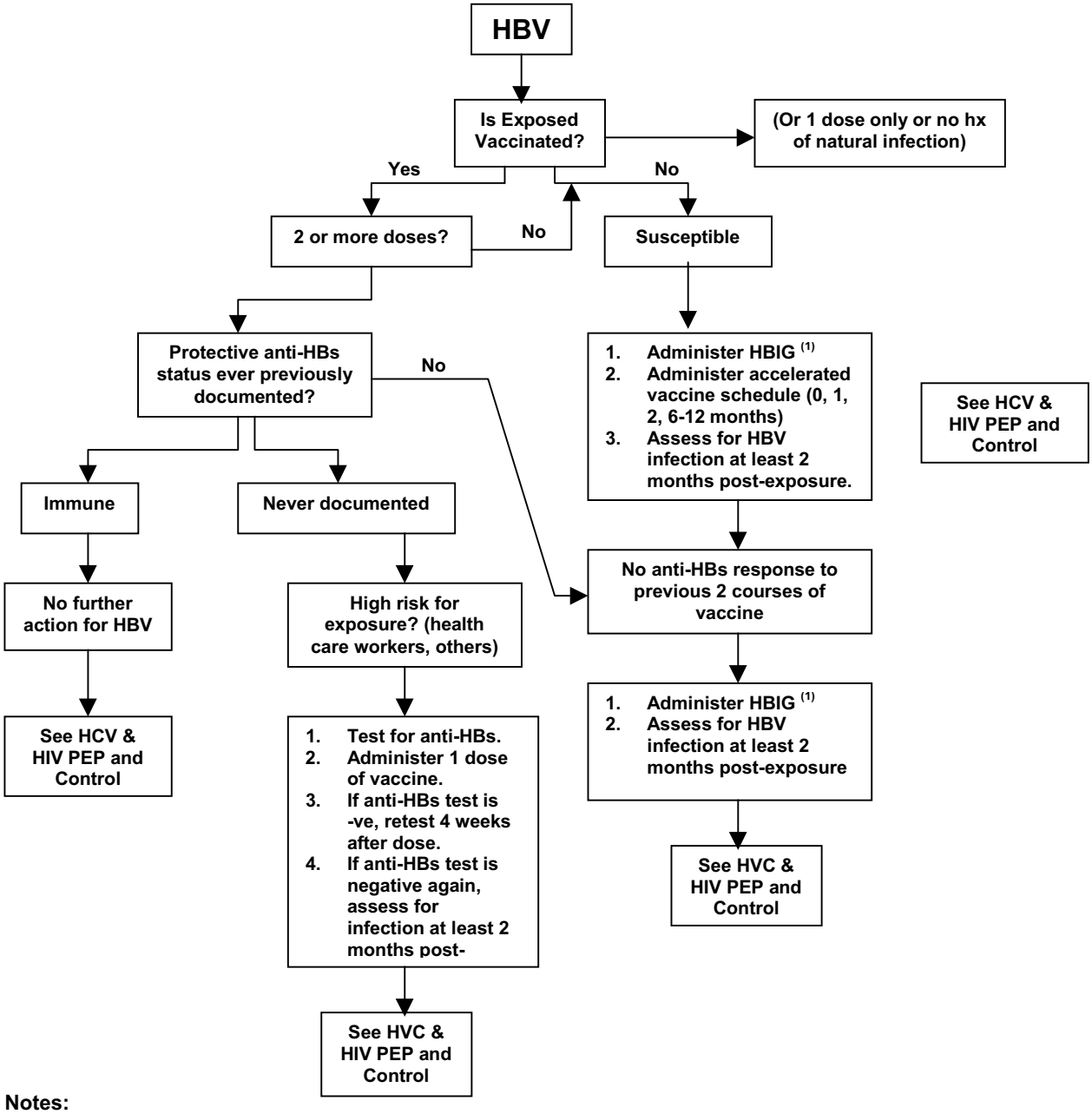
Cases of Chronic Hepatitis B Carriers by Year of Identification



		1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT		10	3	7	5	4	8	12	8	13
NUNAVUT		5	16	14	39	127	4	6	0	3

NOTE: In 1994 a survey was completed by health centres in what is now Nunavut. This accounts for the large number of Hepatitis B carriers identified in 1994.

HEPATITIS B
POST-EXPOSURE CONTROL



Notes:

1. **If test result on the Source are available within 48h and show that the Source is not infected, the use of HBIG as above may be precluded.**
2. **If the Source is known NOT to be infected or at negligible risk for HBV, the only required action is to ensure the Exposed receives HBV vaccine series and anti-HBs testing if not already completed.**
3. **Baseline testing of the healthcare workers for HBsAg and anti-HBs is recommended. Testing for anti-HBc is recommended in the injured healthcare worker is susceptible, a non-responder, or has an unknown anti-HBs status at the time of injury. If tests are negative, retesting after 6 months is recommended.**
4. **The HBIG dose is 0.06 mg/kg, IM.**

HEPATITIS C

Clinical Description:

- A viral infection symptomatically indistinguishable from Hepatitis A or B infection.
- Acute disease tends to be mild and insidious in onset. 75% of newly discovered cases will not recall any acute clinical illness suggestive of Hepatitis.
- People at risk include:
    - Those who received blood transfusions or blood products before May 1990.
    - Those who received an organ or tissue transplant before May 1990.
    - Injection drug users.

Source of Infection and Transmission:

- Transmission occurs primarily by parenteral exposure to blood and blood products from HCV-infected person.
- Injection drug use accounts for approximately 70% of HCV infections in Canada.
- In the NWT, 43% of the reported Hepatitis C infections in the NWT have a documented history of injection drug use (IDU), while 38% have no known cause.
- Sexual transmission is not firmly documented.
- Vertical transmission (mother to child) occurs in about 5% of cases, with the risk being higher when the mother is co-infected with HIV.
- All individuals with HCV antibody and/or HCV-RNA in their blood are considered to be infectious.

Incubation Period:

- Average 6 to 7 weeks with a range of 2 weeks to 6 months.

Major Complications:

- Jaundice occurs in 25% of patients.
- Cirrhosis develops in >10% of patients.
- Chronic Hepatitis C develops in about 80%.
    - Is characterized by fluctuating ALT (Alanine Aminotransferase) levels.
    - Liver biopsy represents the only means, currently available, of assessing disease progression.
- Primary hepatocellular carcinoma can also occur.

Public Health:

- HCV infection in Canada is estimated to be ~1/100, and of these, only 30% are aware of their infection.
- Routine testing should be offered to the following:
    - Injection drug users.
    - Hemodialysis patients.
    - Recipients of blood, blood components or transplants before May 1990.

People with Hepatitis C often experience no symptoms and may feel quite healthy. Others may develop fatigue, jaundice and nausea.

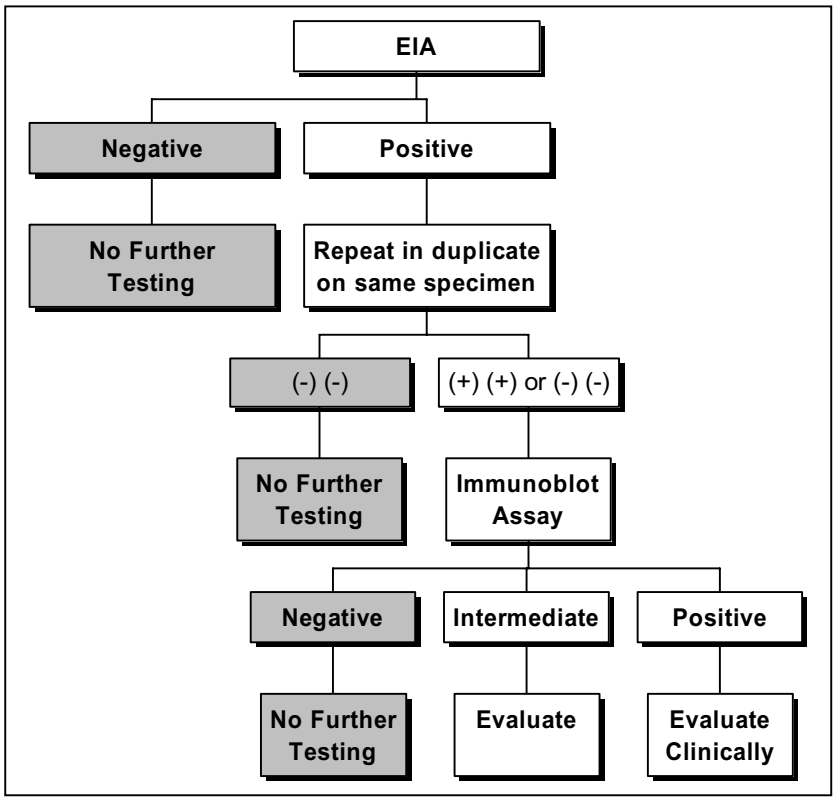
- People with significant exposure to the blood of HCV infected individuals.
- Infants of HCV infected mothers.

- Offer immunization for Hepatitis A and B to HCV infected individuals.
- Needle exchange program.

Diagnosis and Treatment:

- Diagnosis is made by anti-HCV ELISA testing followed by confirmation testing which includes RIBA (Recombinant Immunoblot assays), synthetic peptide assays (Inno-Lia) and PCR (Polymerase Chain Reaction).
- Alpha-interferon in combination with ribavirin has shown to reduce viral load significantly in up to 50% of patients infected with HCV.
- There is no vaccine available for Hepatitis C and immune globulin is not recommended for post-exposure prophylaxis.
- Liver transplant remains the only option for those with end-stage cirrhosis.
- All blood samples from a confirmed Hepatitis C infected person must be transported as a dangerous good.

Hepatitis C
Testing Algorithm



From: Health Canada. *Prevention and Control of Hepatitis C: Guidelines and Recommendations* (Supplement). Canada Communicable Disease Report. July 1995.

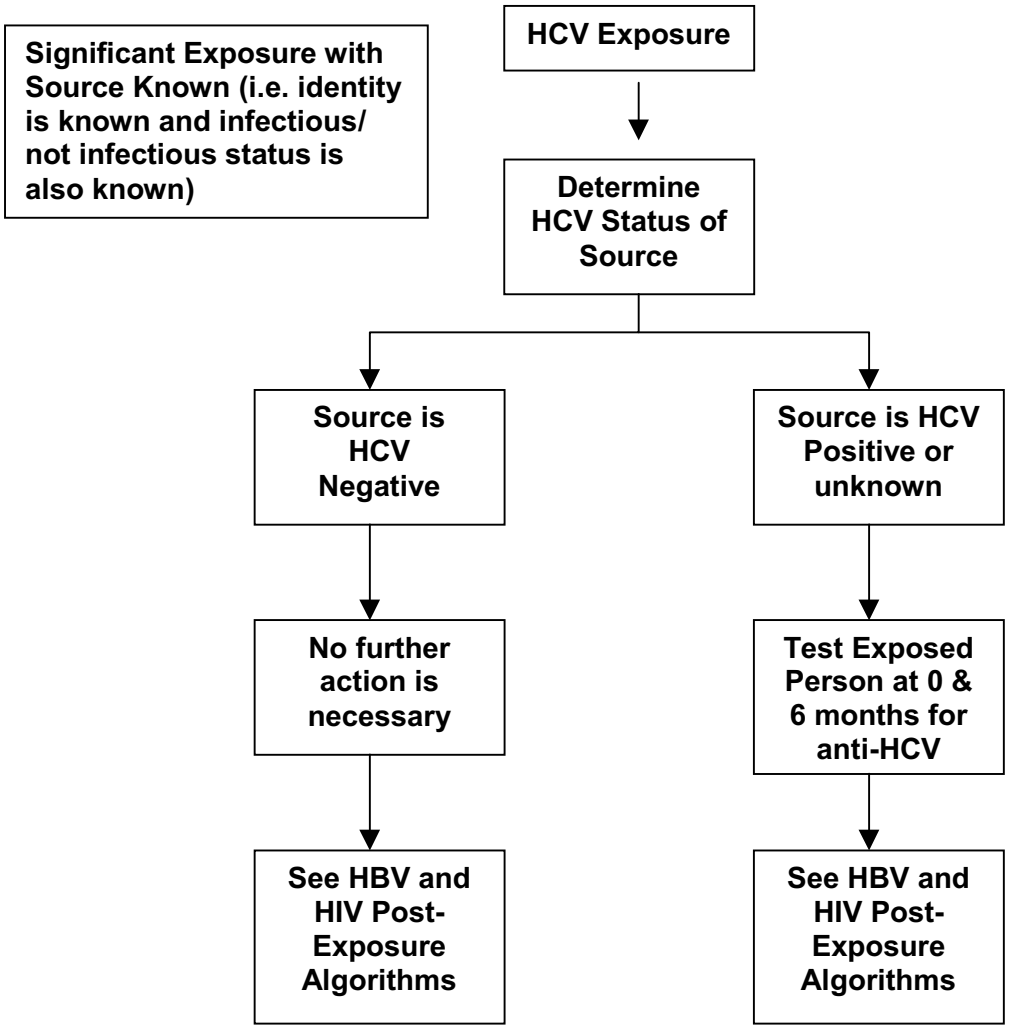
Education:

- Prevention of HCV infection should focus on universal precautions in the occupational setting, personal hygiene and on the importance of not sharing/reusing needles.
- In February 1995, in the interim report of the Commission of Inquiry on the Blood System in Canada, Justice Krever recommended, that hospitals review their records in an effort to identify patients who received blood since 1978 to 1990 to permit counselling and testing for HIV and Hepatitis C, with the consent of the patient. Since then more and more people have been tested for and diagnosed with Hepatitis C.

Reporting and Follow-Up:

- All suspect or confirmed cases of HBV must be reported to CMHO (Chief Medical Health Officer) within 7 days.
- Hepatitis Investigation form is to be completed by the primary health care provider.

HEPATITIS C
POST-EXPOSURE CONTROL



Guidelines for the Follow-up of Identified HCV-Infected Clients

From: Health Canada. *Prevention and Control of Hepatitis C: Guidelines and Recommendations* (Supplement). Canada Communicable Disease Report. July 1995.

Presentation	Recommendations
All individuals infected with HCV.	♦ Offer Hepatitis A and B immunization for those at high risk.
Liver aminotransferases are persistently normal (i.e. on 3-4 serial tests within 1 year).	♦ Follow-up with yearly ALT tests.
Liver aminotransferases are elevated and treatment is not currently indicated.	♦ Follow-up with 6 monthly bilirubin, albumin, INR and ALT tests.
Cirrhosis present with risk of liver failure.	♦ Specialist follow-up required due to complications such as ascites, variceal bleeding and hepatic encephalopathy.

Positive HCV Result:

- Explain the meaning of a positive result:
  - Course of infection.
  - Preventing the spread of HCV to others.
- Discuss treatment and follow-up options:
  - Liver function testing (liver enzymes leak into the blood when the liver is damaged so blood testing will show an increase in levels of these enzymes).
  - Liver biopsy.
  - Treatment:
    - Must see liver specialist in order to become a candidate for drug therapy.
    - Given subcutaneously.
    - Monitored by blood tests before and after treatment.
- Discuss support systems.

Counselling Guidelines for HCV-Infected Clients:

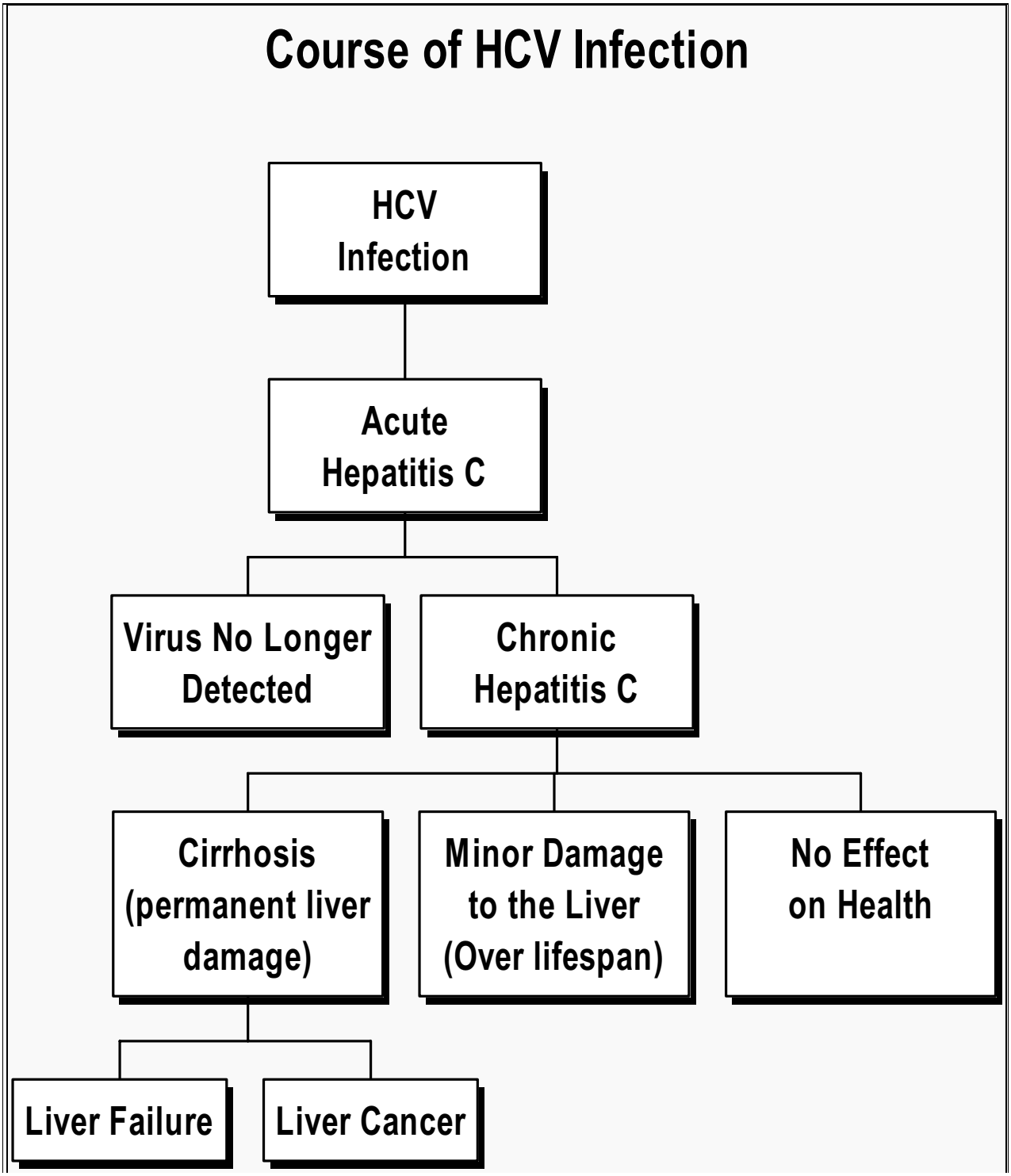
- The following common-sense precautions should be discussed with clients:
  - Do not give blood or donate organs.
  - Do not share razors or toothbrushes.
  - If using drugs, do not share needles or other equipment.
  - Although sexual transmission is rare, it is important to inform sexual partner(s) of Hepatitis C positive status.
  - Eating well and getting regular exercise.
- Avoid alcohol, tobacco and any other substance that may be toxic to the liver.

Acute Hepatitis C:

- Symptoms may include fatigue, nausea, vomiting, muscle and joint aches, abdominal pain and weight loss.

Managing Chronic Hepatitis C:

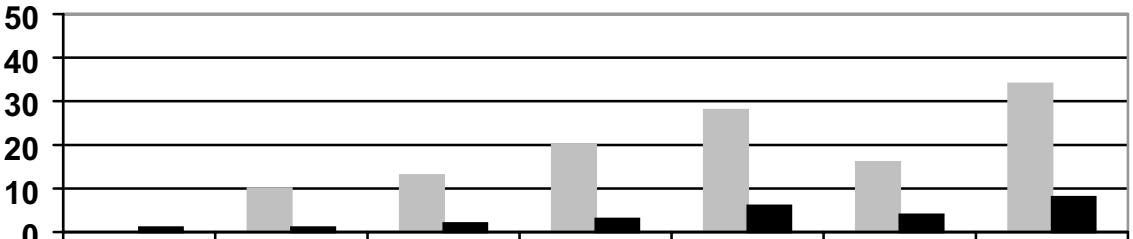
- Schedule follow-up appointments with physician and liver specialists.
- Liver function testing, monitoring for liver cancer.



Cirrhosis and Liver damage:

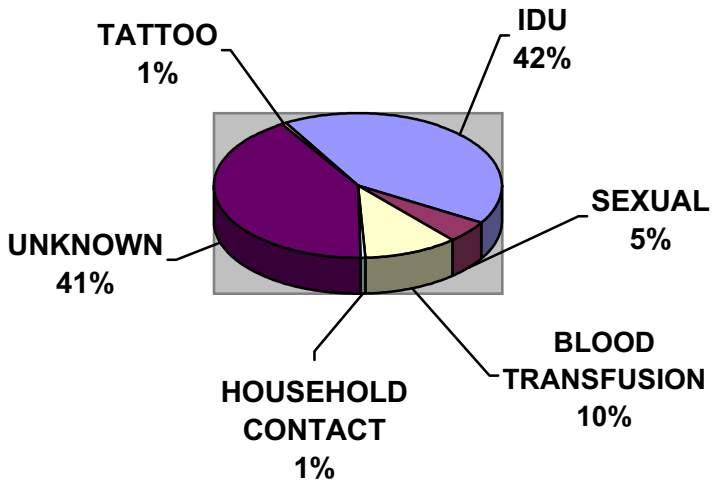
- Symptoms may include the following:
  - Swelling of the abdomen, legs or ankles.
  - Bleeding caused by the rupture of varicose veins in the esophagus or stomach.
  - Mental confusion due to toxins in the blood that the liver cannot remove.
  - Jaundice (yellow skin and eyes).
  - Tiredness.

Cases of Hepatitis C
NWT/NUNAVUT (1992-98)



	1992	1993	1994	1995	1996	1997	1998
NWT	0	10	13	20	28	16	34
Nunavut	1	1	2	3	6	4	8

Hepatitis C in the NWT and Nunavut
by Source of Infection (1992-1998)



REFERENCES FOR HEPATITIS C:

BC Ministry of Health. *From the Health Files: Hepatitis C*. April 1997.

Canadian Hemophilia Society. *Hepatitis C: an information booklet for people infected with the Hepatitis C Virus, and their families*. 1990?

Health Canada. Canadian Immunization Guide (5th ed.). 1998.

Canadian Liver Foundation. *Hepatitis C: Facts about a disease affecting tens of thousands of Canadians.* October 1996

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GNWT. *Hepatitis C in the NWT: A Retrospective Review*. EpiNorth 1997. 8(4): 2-3.

Health Canada. LCDC. *Prevention and Control of Hepatitis C: Guidelines and Recommendations* (Supplement). Canada Communicable Disease Report. July 1995.

Health Canada. LCDC. *Prevention and Control of Hepatitis C: A Public Health Consensus.* (Supplement). Canada Communicable Disease Report. June 1999 (25S2).

Health Canada. LCDC. *Hepatitis C Prevention and Control: A Public Health Consensus*. Canada Communicable Disease Report, 1999. 25S2: 1-27

www.hepnet.com- The Hepatitis Information Network (Canadian).

Hepatitis B and C
Case Investigation

Northwest Territories Health and Social Services

Health Care Provider: _____ Date: _____

A positive ☐ **Hepatitis B** or ☐ **Hepatitis C** report has been received from the Public Health Laboratory on your patient.

Name: _____

Age or DOB: _____ M/F: _____ HCP#: _____

Address: _____

Please provide the following information on this patient.

Reason for testing: _____

Have contacts been followed (see page #2 for list of contacts): _____

Has this person donated blood, if yes where and when was the last donation: _____

_____

POSSIBLE RISK BEHAVIOUR	YES	NO	COMMENTS
Men who have sex with men			
Heterosexual sex with injection drug user			
Heterosexual sex with confirmed or suspected hepatitis case			
Injected non-prescription drugs (at any time in the past, including steroids)			
Received pooled concentrates for treatment of hemophilia or coagulation disorder*			
Received transfusion of whole blood or blood components*			
Occupational exposure to hepatitis contaminated blood or body fluids or concentrated virus			
Perinatal transmission			
Contact with a person who lived in an area where these diseases are prevalent			
Household contact with confirmed or suspected case of hepatitis			
Body piercing or tattoo			
Acupuncture, dialysis, EEG, dental, other (specify)			

*If yes to these questions, please note the institution where this was given and the year:

_____

_____

Present treatment: (type, list drugs, date): _____

_____

_____

Hospitalized: Yes ☐ No ☐ Name of Hospital: _____

Contacts: (If more space needed use contact list)

Name	***1.***	***2.***	***3.***	***4.***
Date of Birth				
HCP#				
Sex				
Relation to Patient				
Type of Contact				
Dates of Contact				
Symptomatic Yes ☐ No ☐ Specify:				
Treated Specify:				

Complications/sequelae (of illness)

Person Reporting: _____ Date: _____

Title: _____ Place: _____

Please return this completed form to:

Health Protection Unit
Department of Health and Social Services
7th Floor - Centre Square Tower
P.O. Box 1320
YELLOWKNIFE NT X1A 2L9

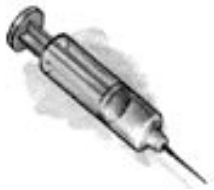
Revised May/97

For More Detailed Information on Counselling, Testing and Management of HIV/AIDS, Please Consult the 1999 Revised Edition of the *HIV/AIDS Manual for the NWT*

Clinical Description:

- A viral infection caused by the Human Immunodeficiency Virus (HIV) that is characterized by several stages. on Page 3.
- AIDS (Acquired Immunodeficiency Syndrome) is the final stage of HIV infection.

Source of Infection and Transmission:



- HIV is passed from person-to-person through:
  - Unprotected sex (without a condom).
  - Sharing needles (rigs).
  - Any activity that increases risk for exchange of body fluids, ie. Tattooing and body piercing.
  - During birth and breastfeeding (extremely rare since 1985).
  - Blood products and organ transplants.

Incubation Period:

- HIV antibodies will appear, generally 1 to 6 months after infection, 90% will be positive at 14 weeks.
- 1 month to 10 years after being diagnosed with HIV, full blown AIDS may occur. Very dependent on factors such as medical treatment and self care.

There is no evidence that HIV is spread through:

- *sweat, tears, urine, feces or insect bites*
- *sharing food utensils, towels and bedding*
- *swimming pools, telephones or toilet seats.*

Major Complications:

See “Progression Of HIV Disease In Youths/Adults”, on page 3.

Public Health:

- Increasing numbers of younger people are being infected with HIV. As of the end of 1998, a total of 31 cases of HIV have been reported since 1987. 21 reported in the NWT and 10 reported in Nunavut.

Diagnosis and Treatment:

- Diagnosis is made based on the algorithm shown on page 2.
- Treatment includes a rigorous regime of 3 - 4 drugs as well as preventive chemoprophylaxis, which dramatically decrease the rate of progression of HIV to AIDS.
- All blood samples from a HIV infected person must be transported as a dangerous good (see appendix).

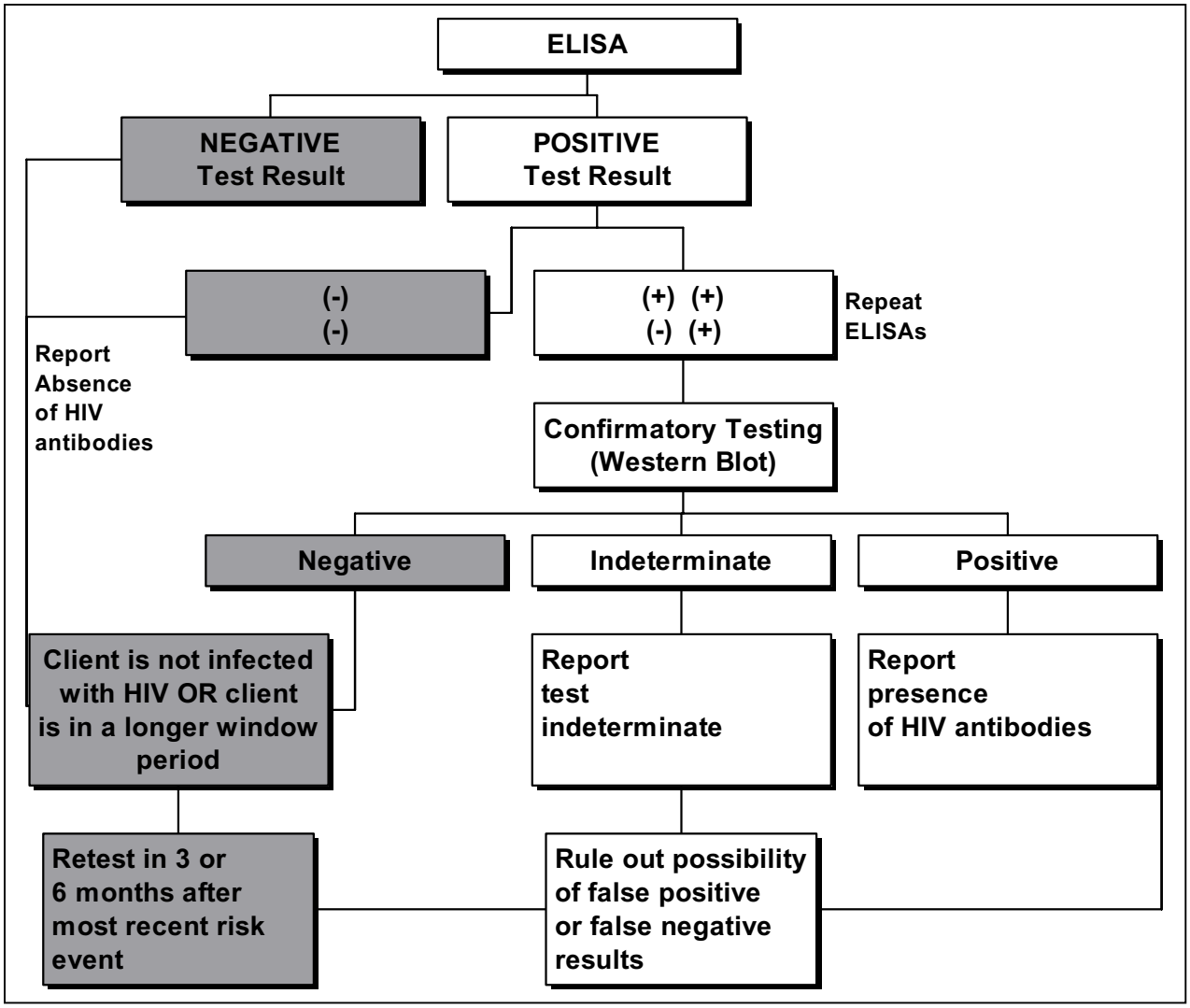
Health Education:

- Public and school health education must stress the facts that having multiple sexual partners and sharing drug equipment increases the risk of infection with HIV. Educators must provide students with the skills needed to avoid or reduce risky behaviors.
- Regardless of HIV status people should be educated on safer sexual practices.
- Discuss further risk-reduction strategies with HIV positive persons.

Reporting and Follow-up:
Refer to: *HIV Infection and Aids: Information for Health Professionals Manual.*

HIV TESTING

From: Counselling Guidelines for HIV Testing
Canadian Medical Association

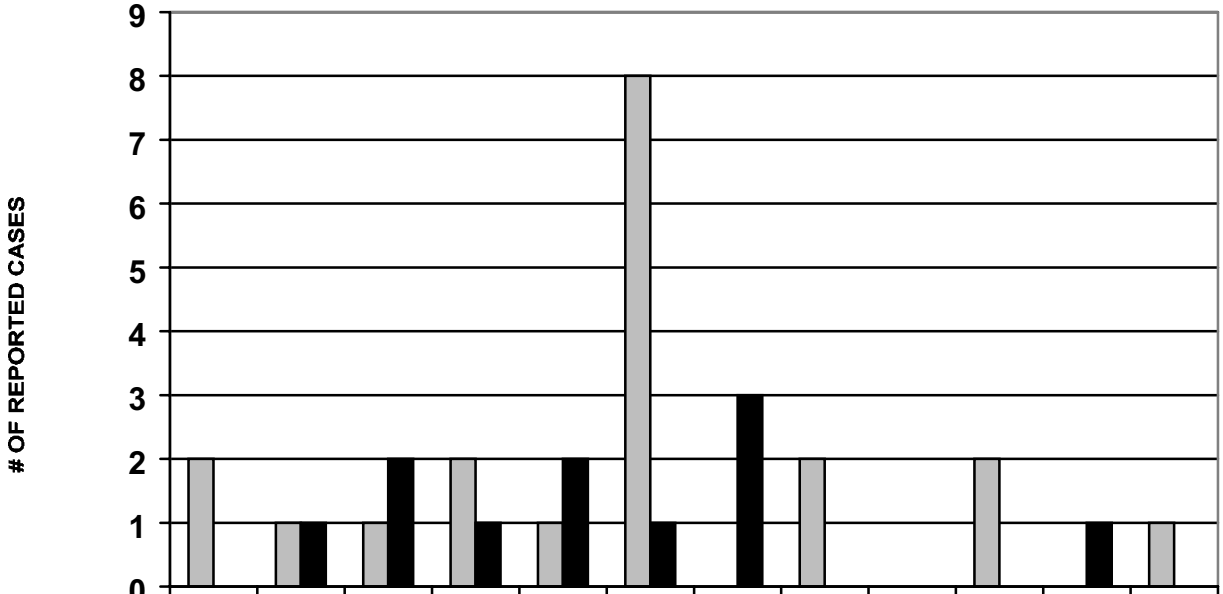


PROGRESSION OF HIV DISEASE IN YOUTHS/ADULTS

From: Canadian STD Guidelines (1997), Health Canada
*and National AIDS Treatment Information Project (*http://hivinsite.ucsf.edu/medical/fact_sheets/2098.31c0.html)

	General Notes	Symptomatology
Primary HIV Syndrome	♦ Non-specific or asymptomatic. ♦ Often interpreted as mononucleosis, cold or "the flu". ♦ HIV test is often negative in this stage but becomes positive following 3-6 months. ♦ Diagnosis is made with viral load titer assay.	♦ Early symptoms: fever, rash, muscle and joint aches, sore throat, lethargy, anorexia, mucosal lacerations, meningoencephalitis and lymphadenopathy. ♦ More serious symptoms: seizures, hepatitis and diarrhea.
Asymptomatic Infection (clinical latency period)	♦ Many clients fall into this category. ♦ HIV continues to replicate if antiretroviral therapy is not started. ♦ CD4 counts gradually decline from normal counts (500-1200/L).	♦ Generalized lymphadenopathy is frequently present. ♦ Thrombocytopenia may be present.
Progressive Infection (conditions indicative of immuno-suppression)	♦ CD4 counts continue to drop.	♦ Oral candidiasis. ♦ Unexplained fever > 2 weeks. ♦ Chronic diarrhea > 3 weeks. ♦ Unexplained weight loss > 10% body weight. ♦ Unexplained anemia "of chronic disease". ♦ Fatigue and lethargy. ♦ Recurrent or chronic vaginal candidiasis. ♦ Cervical dysplasia.
AIDS-defining opportunistic conditions	♦ CD4 count drops below 200.	♦ **Viral infections**: CMV, HSV, colitis/retinitis, multidermatomal zoster, and progressive multifocal leukoencephalopathy. ♦ **Fungal infections**: candidiasis, aspergillosis, cryptococcosis, recurrent pneumonia, salmonellosis. ♦ **Bacterial**: M. tuberculosis, M. avium complex. ♦ **Parasitic**: P. carinii pneumonia, GI infection. ♦ **Neoplasia**: Kaposi's sarcoma, non-Hodgkin's lymphoma. ♦ **Other**: HIV encephalopathy.

HIV INFECTIONS REPORTED BY YEAR AND TERRITORY



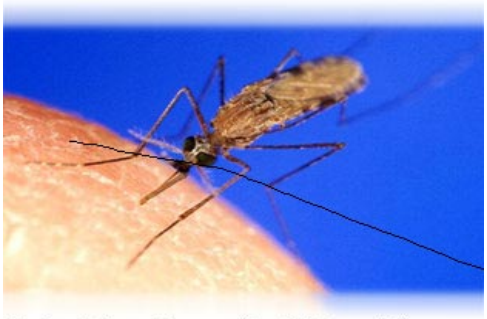
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	2	1	1	2	1	8	0	2	0	2	0	1
NUNAVUT	0	1	2	1	2	1	3	0	0	0	1	0

Etiology:

Malaria in humans is transmitted by the bite of a female Anopheles mosquito that is infected with 1 of 4 Plasmodium species: P. falciparum, P. malariae, P.ovale, or P.vivax. Upon entering the body, the parasite is carried by the blood stream to the liver where it divides, matures, and eventually ruptures the liver cell in which it has grown, releasing organisms that go on invading red blood cells. Multiplication in the blood cells again ends with rupture and this cycle is repeated over and over again. Symptoms of chills, high fever, and headache occur each time a new batch of parasites is released from rupturing red blood cells. The time interval between these cycles varies depending on the type of malaria that has been contracted.

Clinical Description:

The disease is characterized by **FEVER** and "flu-like" symptoms such as myalgias, headache, abdominal pain, and malaise. Rigors and chills often occur. The classically described alternate-day fevers or other periodic fevers are often not present. Severe malaria due to *P. falciparum* may cause seizures, coma, and renal and respiratory failure, and may lead to death. Malaria deaths are frequently the result of delays in the diagnosis and treatment of the infection.



The *Anopheles gambiae* mosquito, which transmits the malaria parasite (CDC).

Suspect Case:

Fever occurring in a traveler within 3 months of departure from a malaria- endemic area should always be considered a potential medical emergency and investigated urgently by means of thick and thin blood films. These films should be repeated twice at 12 to 24 hour intervals while the patient remains symptomatic. The symptoms of malaria are non-specific, and diagnosis is not possible without a blood film. It is important for health care providers to consider the diagnosis of malaria even when the patient reports having taken prophylaxis.

Confirmed Case:

Laboratory diagnosis of malaria can be made through microscopic examination of thick and thin blood smears. A negative blood smear makes the diagnosis of malaria unlikely but does NOT rule out malaria. If the initial film is negative and the traveler remains symptomatic, blood smears should be repeated every 12-24 hours for a total of 48 hours.

Source of Infection and Transmission:

Malaria is transmitted among humans by female mosquitoes of the genus *Anopheles.* Female mosquitoes take blood meals to carry out egg production, and such blood meals are the link between the human and the mosquito hosts in the parasite life cycle.

Incubation Period:

P. falciparum malaria usually presents within 3 months of last exposure; however, it may be delayed in patients who have taken chemoprophylaxis. In addition, other types of malaria, especially that caused by *P. vivax*, may occur months and occasionally up to 5 years after travel in endemic areas. The majority of imported *P. falciparum* cases continue to be acquired in sub-Saharan Africa, and the majority of *P. vivax* cases are acquired in the Indian subcontinent. There appears to be minimal risk of malaria in urban centers of Southeast Asia, and Central and South America. Malaria transmission falls at altitudes exceeding 2000 m (6500 feet) and is virtually non-existent over 3000 m (10 000 feet).

Criteria for severe *falciparum* malaria

Either

History of recent possible exposure and no other recognized pathology

OR

Asexual forms of *P. falciparum on blood* ***smear***

AND

And one or more of the following 11 features:

1. Impaired consciousness or coma.
2. Severe normocytic anemia.
3. Renal Failure.
4. Pulmonary edema or adult respiratory distress. syndrome (ARDS)
5. Hypoglycemia.
6. Circulatory collapse, shock.
7. Spontaneous bleeding/disseminated intravascular coagulation
8. Repeated generalized convulsions
9. Acidemia/acidosis
10. Hemoglobinuria
11. Parasitemia of >5% (>250 000/microlitre) in non-immune individuals

Adapted from Management of Severe Malaria: A Practical Handbook. 2nd ed. Geneva: World Health Organization, 2000

Major Complications:

Progression from asymptomatic infection to severe and complicated malaria can be extremely rapid, with death occurring within 36 to 48 hours. The fatality rate of severe malaria is > 20% even when the disease is managed in modern intensive care units. The most important factors that determine patient survival are early diagnosis and appropriate therapy. Factors contributing to all of these severe and fatal cases were noncompliance with or failure to use appropriate chemoprophylactic agents, delay in diagnosis and treatment, and incorrect therapy once a diagnosis had been made.

Public Health:

Investigate and contact any fellow travellers. Ensure all travellers review malaria risk prior to travel and recommend appropriate anti-malarial treatment as per CATMATS protocol.

http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/04vol30/30s1/index.html

Diagnosis and Treatment:

Treatment depends on identification of species of parasite. Consult with Internal Medicine at Stanton Hospital, and/or with an Infectious Disease Specialist at the University of Alberta Hospital (e.g.: Dr. Stan Houston – (780) 407-7501). Treat according to CCDR Guidelines. See attached table in appendix 1. Review treatment protocol with hospital pharmacist with respect to drug interactions, dosages, and appropriateness of treatment

Education and Prevention:

The first defence against malaria is to reduce the risk of mosquito bites. Travellers should be advised to avoid exposure to mosquito bites at night when female *Anopheles* mosquitoes feed.

Any measure that reduces exposure to dusk-to-dawn biting mosquitoes during their feeding will also reduce the risk of acquiring malaria. These measures include:

- Wear clothing that reduces the amount of exposed skin.
- Wear light-coloured, long-sleeved shirts, long pants, socks and shoes when outdoors between dusk and dawn (note: dark colours attract mosquitoes).
- Apply DEET-containing insect repellent to exposed skin when outdoors between dusk and dawn.

- Impregnate all clothing screen and bed nets with 0.5% permethrin to make them repellant.
- Remain and sleep inside screened areas, under a mosquito net or in an air-conditioned room.
- Use bed nets that are rectangular in size, impregnated with permethrin every six months and tucked tightly under the mattress before dusk (note: treated bed nets are available in Canada).

Canadian Disease Incidence:

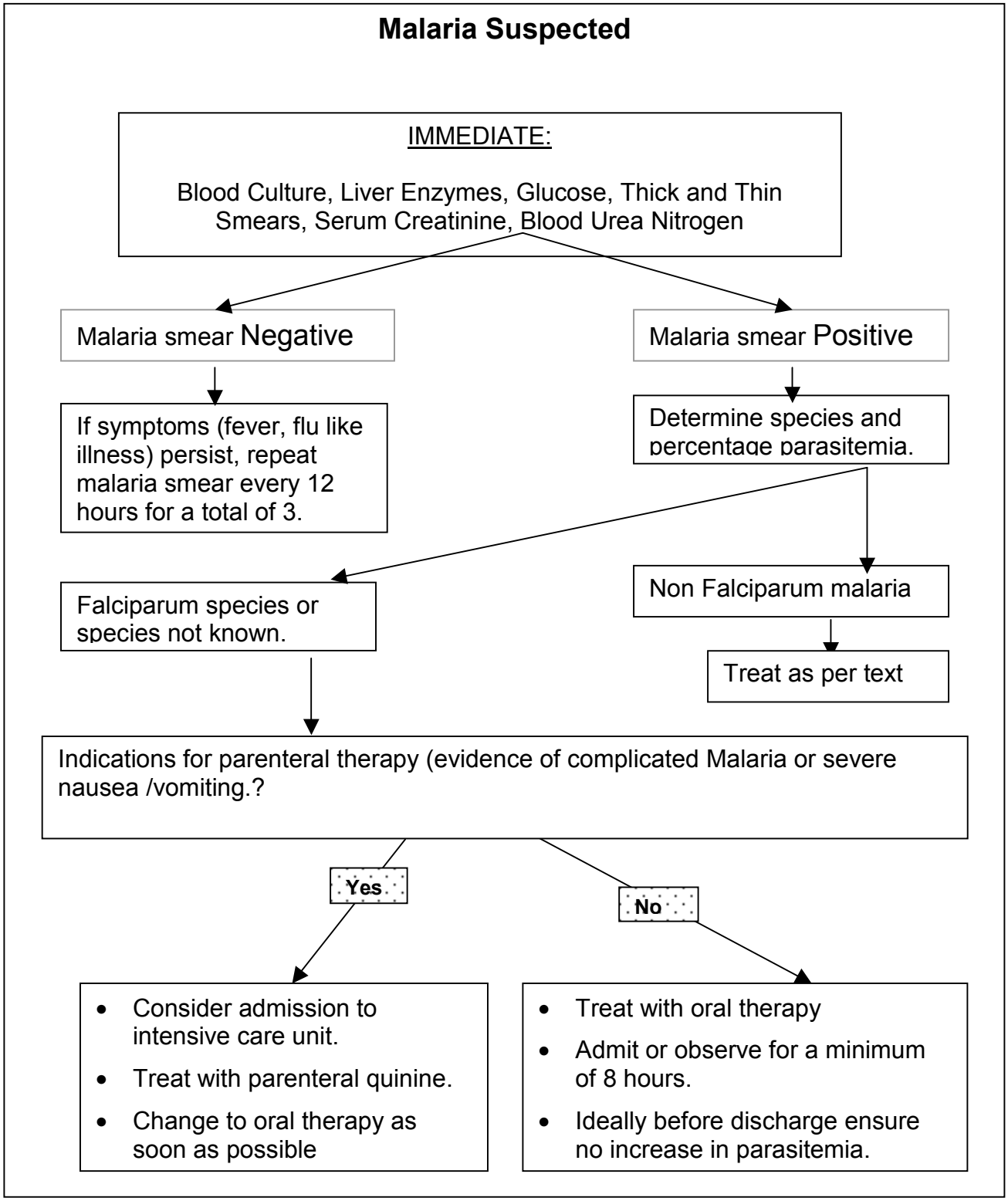
The increased number of Canadian malaria cases has been associated with severe and fatal cases. There have been 11 malaria deaths reported since 1997, all due to *P. falciparum*. As well, since June 2001 there have been 25 cases of malaria requiring parenteral quinine for treatment of severe or complicated disease. The overall case-fatality rate of imported *P. falciparum* malaria varies from approximately 1% to 5% and increases to 30% for those > 70 years of age.

Reporting and Follow-up:

- All suspect or confirmed cases must be reported to the Office of the Chief Medical Health Officer within 24 hours.
- Complete Communicable Disease Investigation form.

Appendix A

Algorithm for the Management of Malaria



Reference: Canadian Recommendations for the Prevention and Treatment of Malaria Among International Travellers. CCDR Supplement June 2004. Volume 30S1 and Treatment of Malaria (Guidelines for Clinicians) National Center for Infectious Diseases, Division of Parasitic Diseases, July 23, 2004.

APPENDIX B

Drugs For The Treatment And Prevention Of Malaria

Drug, generic (trade) name	Indication	Adult dosage	Pediatric dosage	Advantage	Disadvantage	Adverse effects
ATOVAQUONE / PROGUANIL (ATQ/PG) (Malarone®)	Prevention and treatment of *P. falciparum*	**Adult tablet:** 250 mg atovaquone plus 100 mg proguanil **Prevention:** 1 tablet daily **Treatment:** 1000 mg atovaquone AND 400 mg proguanil (4 tab- lets) once daily x 3 days	**Adult tablets** Prevention: 11-20 kg: ¼ tablet daily 21-30 kg: ½ tablet daily 31-40 kg: ¾ tablet daily > 40 kg: 1 tablet daily **Treatment:** 20 mg/kg atovaquone AND 8mg/kg proguanil once daily x 3 days 11-20 kg: 1 tablet daily 21-30 kg: 2 tablets daily 31-40 kg: 3 tablets daily > 41 kg: 4 tablets daily	Causal prophylaxis - only have to continue for 7 days after exposure	Daily dosing for prophylaxis	**Frequent:** Nausea, vomiting, abdominal pain, diarrhea, increased transaminases **Rare:** Seizures, rash, mouth ulcers
CHLOROQUINE (Aralen®) Tablet: 150 mg base	Prevention and treatment in chloroquine sensitive *P. falciparum* areas Treatment of *P. vivax, P. ovale*, *P. malariae*	**Prevention**: 300 mg base once weekly **Treatment:** 1.5 g base over 3 days	**Prevention:** 5mg/kg base weekly; maximum 300 mg **Treatment:** 25 mg base/kg total over 3 days	Long-term safety data for prophylaxis	Most areas now report chloroquine resistance	**Frequent:** Pruritis in black-skinned individuals, nausea, headache **Occasional:** Skin eruptions, reversible corneal opacity **Rare:** Nail and mucous membrane discoloration, partial alopecia, photophobia, nerve deafness, myopathy, retinopathy with daily use, blood dyscrasias, psychosis and seizures
CLINDAMYCIN (Dalacin C®)	Alternative treatment for *P. falciparum* with a second drug if standard therapy contraindicated	**Prevention:** no indication **Treatment oral:** 300 mg base every 6 hr for 5 days **Treatment IV:** 10 mg/kg (loading dose) intravenously, followed by 5mg/kg every 8 hours until blood is cleared of asexual parasites or oral therapy is tolerated. NOTE: Should only use if patient is unable to take doxycycline or ATQ/PG	**Prevention:** no indication Treatment oral: 5mg/kg three times per day for 5 days **Treatment IV:** 10 mg/kg (loading dose) intravenously, followed by 5 mg/kg every 8 hours until blood is cleared of asexual parasites or oral therapy is tolerated. NOTE: Should only use if patient is unable to take doxycycline or ATVPG	Safe in pregnancy and young children	Lower efficacy than atovaquone/proguanil alone or combination of doxycycline plus quinine	**Frequent:** Diarrhea, rash **Occasional:** Pseudomembranous colitis **Rare:** Hepatotoxicity, blood dyscrasias

Drug, generic (trade) name	Indication	Adult dosage	Pediatric dosage	Advantage	Disadvantage	Adverse effects
DOXYCYCLINE (Vibra-TabsTM)	Prevention and treatment of chloroquine-resistant *P. falciparum*	**Prevention:** 100 mg once daily **Treatment:** 100 mg twice daily for 7 days	**Prevention:** 1.5mg base/kg once daily (max 100 mg) < 25 kg or < 8 yr: contraindicated 25-35 kg or 8-10 yr: 50mg 36-50 kg or 11-13 yr: 75mg > 50 kg or > 14 yr: 100 mg **Treatment:** 1.5mg base/kg twice daily (max. 200 mg daily) < 25 kg or < 8 yr: contraindicated 25-35 kg or 8-10 yr: 50mg twice daily 36-50 kg or 11-13 yr: 75mg twice daily > 51 kg or > 14 yr: 100 mg twice daily	Protection against leptospirosis	Daily dosing required for chemoprophylaxis	**Frequent:** Gastrointestinal upset, vaginal candidiasis, photosensitivity **Occasional:** Azotemia in renal diseases **Rare:** Allergic reactions, blood dyscrasias, esophageal ulceration
MEFLOQUINE (Lariam®)	Prevention of *P. falciparum*	**Prevention:** 250 mg base once weekly **Treatment:** not routinely recommended, see text	**Prevention:** 5mg/kg weekly < 5 kg: no data 5-9 kg:ctablet 10-19 kg: ¼ tablet 20-29 kg: ½ tablet 30-45 kg: ¾ tablet > 46 kg: 1 tablet **Treatment:** not routinely recommended, see text	Weekly dosing Long-term safety data	There have been occasional publicized cases of severe intolerance to mefloquine, which may result in increased concern. If mefloquine is the best choice but concern is expressed, consider either a loading dose or start 3 weeks before departure to test for tolerability.	**Frequent:** Dizziness, headache, sleep disorders, nightmares, nausea, vomiting, diarrhea **Occasional:** Sensory and motor neuropathies, seizures, abnormal coordination, confusion, hallucinations, forgetfulness, emotional problems including anxiety, aggression, agitation, depression, mood changes, panic attacks, psychotic or paranoid reactions, restlessness **Rare:** Suicidal ideation and suicide (relation to drug administration not established)
PRIMAQUINE	Prevention of chloroquine-resistant *P. falciparum* Terminal prophylaxis *P. vivax* and *P. ovale* Radical cure for P.vivax and *P. ovale* infections	**Prevention:** **Primary prophylaxis** 30 mg base daily, see text **Terminal prophylaxis or radical cure:** 30 mg base/day for 14 days	**Prevention:** Primary prophylaxis 0.5 mg base/kg daily, see text **Terminal prophylaxis or radical cure:** 0.5mg base/kg daily for 14 days	Causal prophylaxis – only have to continue for 7 days after exposure	Daily dosing Require G6PD* testing, see text	**Occasional:** GI upset, hemolysis in G6PD deficiency, methemoglobinemia

*Glucose-6-phosphate dehydrogenase
**Suggested mixing instructions: to make 120 mL solution of concentration 8.3 mg base/mL combine 60 mL Orasweet and 60mL Oraplus with 6 x 200 mg tablets of crushed quinidine sulfate.

MEASLES (Rubeola, Red Measles)

Case Definition:

- An acute, highly contagious viral disease characterized by two symptomatic stages:
  - **Stage one:** runny nose, cough, photosensitivity, and progressively worsening fever.
  - **Stage two:** high-grade fever, red blotchy rash (face and then body) lasting four to seven days and Koplik spots (little white spots) on the gums and inside of the cheeks.

Source of Infection and Transmission:

- Spread by direct contact with nasal or throat secretions of infected people, less frequently by airborne transmission.
- Measles can be transmitted 5 days prior to and after rash onset.

Incubation Period:

- Symptoms usually appear in 10-12 days.

Major Complications:

- Pneumonia occurs in 6% of cases (60% mortality).
- Middle ear infections, bronchopneumonia, croup, and diarrhea occur more commonly in young children.
- Other: acute encephalitis resulting in permanent brain damage; death.

Public Health:

- Since the implementation of the 2 dose measles vaccination program, the number of cyclic outbreaks of measles has been abruptly halted.
- One case of measles is considered an outbreak.
- The goal of Public Health is to eliminate measles in the Americas.

Diagnosis and Treatment:

- Diagnosis is based on serological detection of measles-specific IgM antibodies as well as virus isolation using EIA.
- Immune globulin can be given to prevent or modify measles in a susceptible person within 6 days of exposure.
- No specific treatment is available.

Health Education:

- Children with measles should be kept out of school for at least 5 days after the appearance of the rash.

Recommendation of NWT-IAC:

2 dose MMR program across the north
2nd dose to be given at 18 months
Program started January 1, 1996

Mass catch-up campaign
School age (up to grade XII)
19 months to pre-school
Program started April 1, 1996

Reporting and Follow-up:

- Report any suspect or confirmed cases of Measles to the Chief Medical Health Officer (CMHO) or designate immediately.
- Complete Communicable Disease Investigation form.
- Investigation of contacts and source of infection to be done ASAP.
- Ensure all contacts are up-to-date with Measles vaccine.
- Implementation of Outbreak Control Vaccine Program to be decided with MHO.
- IG (Immune Globulin) may be used within 6 days of exposure:
    - On susceptible household or other contacts for whom the risk of complications is very high (particularly contacts under 1 year of age, pregnant women or immune-compromised persons),
    - or for whom the measles vaccine is contraindicated (see Canadian Immunization Guide, 1998).
- Immunization of contacts: live-virus vaccine may provide protection if given within 72 hours of exposure.

Laboratory Corner:

From: EpiNorth. July/August, 1997 (p. 8-9)

As a result of the recent mass measles vaccine campaign, measles surveillance will be stepped up across Canada and in the NWT. The documentation of elimination of measles will be a nation-wide goal.

Many health care providers have never seen measles and as a result of increased control measures (a two-dose measles schedule), we will expect to see even less.

Diagnosis of measles virus infection can be technically and clinically difficult even to the most astute clinicians. The red rash that signifies measles can be confused with parvovirus or rubella.

While the differential diagnosis is not limited to these 2 viral illnesses identified for the rash screen, for public health purposes they are the most important to rule out.

The symptoms of measles are not always flagrantly obvious, so one must depend on laboratory confirmation.

Measles virus can be diagnosed by viral isolation in tissue culture from nasopharyngeal secretions, conjunctiva, blood and urine during the febrile phase of the illness. Shedding is predominant in the upper respiratory tract in the early phase of the disease.

Many measles cases can be diagnosed by comparing the antibody concentrations in acute sera obtained shortly after appearance of the rash with that in convalescent sera collected 2 to 4 weeks later.

Recommendations for "Red Rash Screen" test:

- Testing for diagnosis of measles, parvovirus or rubella can be done by serology or culture.
- Disease specific IgM serology is the test of choice for rapid diagnosis.
- Venipuncture blood sample with 3 mL of whole blood should be collected (in a red top tube) 3 to 28 days after onset of symptoms, preferably by 7 days.
- A second sample for IgG should be collected 10-14 days after the first sample.
- In addition to the blood sample, a urine sample and/or throat swab should be obtained for virus isolation. If rash evident between 0-7 days – collect urine.
- Sterile swabs can be used to wipe nose and throat approximately 4 days after the onset of rash. Place both swabs in a tube containing 2-3 ml of (pink) VTM (viral transport media).
- The virus is extremely cell-associated, so attempt to swab the throat and nasal passages to collect epithelial cells.
- 50 to 100 cc of sterile urine should be collected within 7 days after the onset of rash.
- Both of the above specimens should be transported as soon as possible on ice. Keep at least to 4 degrees C. Specimens should be processed by lab within 48 hours after collection.

Rash Differentiation:

Parvovirus B19:	Rubella:
♦ Erythema infectiosum (EI) ♦ Mild systemic symptoms ♦ Distinctive rash on the face (intensely red with a “slapped cheek” appearance) ♦ Circumolar pallor ♦ Symmetric maculopapular, lace-like rash on arms, moving caudally to involve trunk, buttocks and thighs	♦ Mild, febrile viral disease ♦ Diffuse pinpoint and maculopapular rash, sometimes resembling that of scarlet fever or measles ♦ Most characteristic feature: postauricular, occipital & posterior cervicle lymphadeno-pathy, which precedes rash by 5-10 days

Definitions:

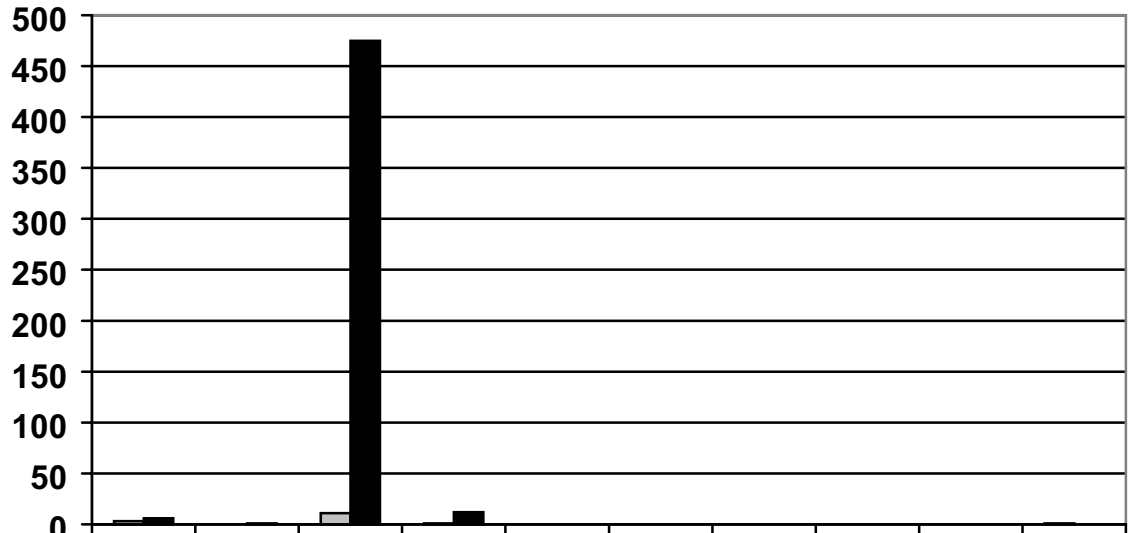
- IgM antibody is always indicative of recent infection - either from wild virus or from immunization.
- Measles IgM can be detected as early as the day of the rash onset and will persist for at least 28 days after rash onset.
- In the first 72 hours after rash onset, up to 20% may be negative for IgM - these tests should be repeated in 7 days if there are clinical indications of disease. (IgM antibody detection may be delayed up to 7 days after rash onset).
- Following immunization, IgM can be detected in the blood as early as 10 days, and most certainly between 3 and 4 weeks following immunization.
- IgG antibody is an indicator of immunity.
- IgG response is an indicator of the immune system=s development of protective antibodies against measles and can usually be detected in the blood sample as early as 7 to 10 days following infection, peaking around 3 to 4 weeks. IgG antibodies can usually be detected for years following the development of an immune response, and may persist for life.
- Following revaccination or exposure to natural infection in an individual who has immunity, the IgG antibody response is detectable within 5 to 6 days and peaks around 12 days. This "booster" effect produces faster and often higher antibody levels than the initial exposure to vaccine or disease and almost always does not have an IgM component.
- IgM and IgG positive results can reflect current infection and/or a history of immunization where the vaccine did not provide protective levels.

Interpretation of Measles Enzyme Immunoassay Results:

IgM Result	IgG Result	Interpretation Guidelines and Action
+	- or +	♦ Has recently had measles immunization or had measles disease. ♦ The IgG response depends on timing of specimen collection and immunization history. ♦ *Detailed clinical history including full immunization history essential in interpreting results.*
-	+	♦ Previously vaccinated/had disease. ♦ *Not considered a case. However, if individual meets clinical or suspect case definition, repeat test in 7 days, and ask lab to run acute and convalescent specimen in parallel.*
Indeterminate	-	♦ False positive due to non-specific reaction. If history of immunization, probably primary vaccine failure. ♦ *Specimen collection taken too early in infection process - repeat test 7 days later if individual meets clinical or suspect case definition.*
+	Indeterminate	♦ Recent infection from either vaccine or disease with beginning detection of the IgG response. ♦ *Detailed clinical history including full immunization history essential in interpreting results.*
Indeterminate	+	♦ Indicates previous vaccination and/or disease along with possible recent infection through either disease or vaccine. ♦ *The following information is critical for interpretation and determining further action: symptoms/clinical picture and history; hx of known exposure to confirmed case; immunization history; disease history.*
Indeterminate	Indeterminate	♦ False positive due to non-specific reaction. ♦ *Ensure full clinical and immunization history is obtained; repeat test in 7 days.*
-	-	♦ No exposure to measles or development of immune response if there is a hx of immunization with no immune response, i.e. primary vaccine failure. ♦ *Immunization should be provided.*
Low positive	-	♦ Specimen collection may have been collected too early. ♦ *If individual meets clinical or suspect case of definition and/or there is a direct link with a confirmed case, this would be a confirmed case and there is no need to repeat test. If no clinical symptoms, question if recently immunized.*

If you suspect measles notify the Regional Medical Health Officer (RMHO), Chief Medical Health Officer (CMHO) or the Health Protection Unit immediately. One case of measles is considered an outbreak and outbreak measures will be instituted if confirmation of a measles case occurs.

NWT/NUNAVUT
MEASLES 1989-1998



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	3	0	11	1	0	0	0	0	0	1
NUNVUT	6	1	475	12	0	0	0	0	0	0

MEASLES INVESTIGATION FORM

NAME:	**DOB:** Y:___M:___D:___	**HCP:**
COMMUNITY:	**PHYSICIAN:**	
GENDER: Male:___Female:___	**ETHNICITY:** Dene: □ Inuit: □ Metis: □ Other: □	

History or Illness (Onset Date; Duration; Concurrent Illness; etc.):

Underlying Illness:

Immunization History (Date; Product; Lot #; Dosage - including Immune Globulin):

If No Immunization (Specify Reason):

Hospitalized: Yes:__No:__ **Name of Hospital:**

Laboratory Investigation:

Type:	Date:	Result:	Serology: IgM:___ IgG:___
Culture: Yes:__No:__			• If rash is **less** than 7 days do throat swab - if **more** than 7 days do urine (viral culture). • Convalescent recommended 10-14 days after 1st sample.

***Please Refer to Page 3 *"Red Rash Screen"* for more information about diagnostic testing.**

Recent Activities (Travel Locations; Dates; Group Meetings):

Daycare: Yes:___No:___ **School:** Yes:___No:___

If Yes, Specify:

Housing/Social Situation: Number of People Living in House:____Number of Rooms:___

Complications/Sequelae of Illness:

Contacts (Please Use Separate Sheet):

Person Reporting: **Title:**

Date: **Place:**

Health Protection Unit Recommended Follow-up:

Forward Completed Form To:

Northwest Territories Health and Social Services

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories
Box 1320, CST-6, Yellowknife NT X1A 2L9
Phone: (867) 920-8646 - Fax: (867) 873-0442

Forward Completed Form To:

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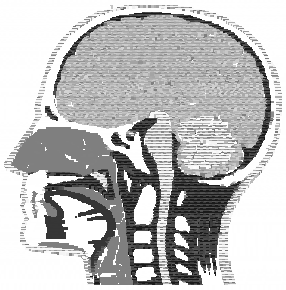
MENINGITIS

GENERAL

Overview:

- Meningitis is usually associated with the feature of meningeal irritation (i.e. headache, photophobia and spasm of the spinal muscles, producing neck rigidity).
- Clinical signs of meningococcal, pneumococcal and HIB meningitis are indistinguishable.
- Before the use of a vaccine, Haemophilus influenza type B was the most common bacterial meningitis in children under 5 years of age.



Organisms that cause acute meningitis:

Common:

- Meningococcus (*Neisseria meningitidis*)
- Pneumococcus (*Streptococcus pneumoniae*)
- Haemophilus influenzae type b
- Enteroviruses
- Mumps virus

Less Common:

- *Mycobacterium tuberculosis*
- *Listeria monocytogenes*
- Gram-negative bacilli
- Staphylococci
- Leptospira
- *Borrelia burgdorferi* (Lyme disease)
- HIV and other viruses
- Amoebae
- *Cryptococcus neoformans*

In the newborn:

- Group B streptococci
- *Escherichia coli*
- *Listeria monocytogenes*
- *Staphylococcus aureus*
- Other gram-negative bacilli

From: Wood, Martin J. Meningitis and encephalitis: an update. MEDICINE North America, 1993 (Feb): 141-147

MENINGITIS

HAEMOPHILUS INFLUENZAE TYPE B

Clinical Description:

- A bacterial infection that often presents as epiglottitis, arthritis, cellulitis, septicemia, pneumonia and more seriously as meningitis.
- Symptoms include fever, lethargy, vomiting and stiff neck.

Source of Infection and Transmission:

- Source of the organism is the upper respiratory tract of humans.
- Person-to-person transmission by direct contact or through inhalation of droplets of respiratory tract secretions containing the organism.
- Exact period of communicability is unknown but may be for as long as the organism is present in the upper respiratory tract.

Incubation Period:

- Unknown but usually less than 10 days.

Major Complications:

- May progress to stupor, coma or death.
- Those who recover may suffer long-lasting neurologic problems.

Public Health:

- In 1987, a HIB vaccine was introduced in the NWT for children over the age of 2 years. By 1992, another conjugate vaccine was produced that could be given to children at 2 months of age. Result: a dramatic reduction of cases has been noted.
- Investigate contacts and source of infection. Protective prophylaxis (e.g. Rifampin) may be indicated for all household contacts.
- Immunization is important.
- The most effective chemoprophylaxis is Rifampin 20 mg/kg to a maximum of 600 mg, once a day for 4 days. In those households with at least one contact younger than 48 months whose immunization status against HIB is incomplete, rifampin prophylaxis is recommended for all household contacts, irrespective of age. Based on the high efficacy of HIB vaccination, prophylaxis is not indicated when all household contacts younger than 48 months have completed their immunization series.

Diagnosis and Treatment:

- Diagnosis is made by isolation of organisms from blood or CSF.
- Treatment as per direction of Paediatrician.

Education:

- Educate the public on the need to reduce direct contact and exposure to droplet infection.

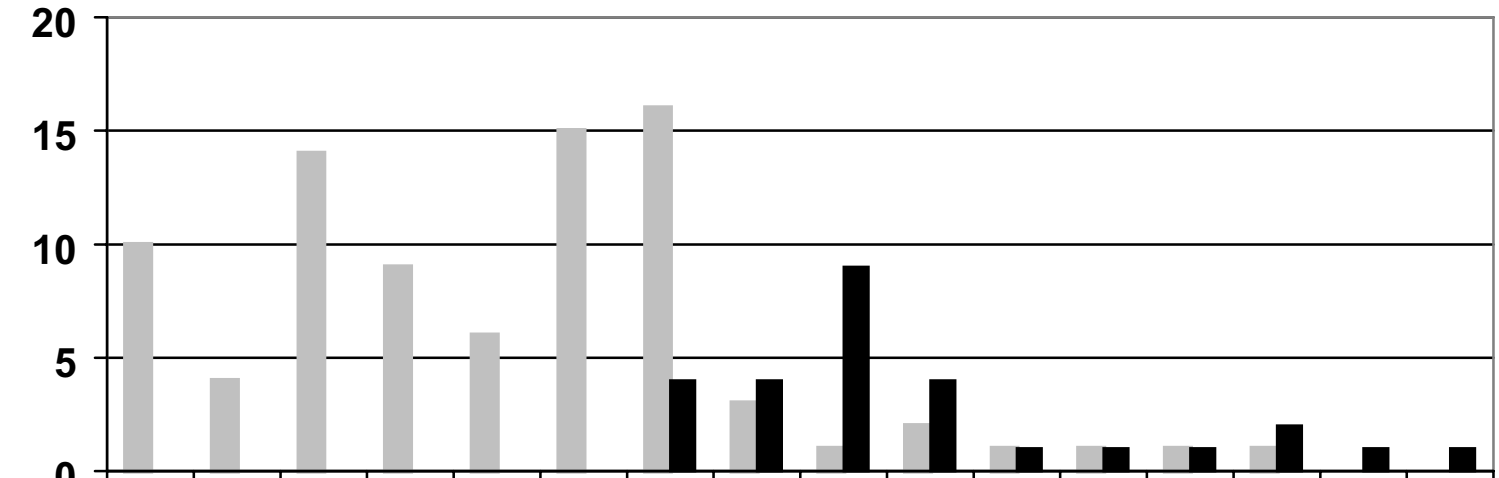
Reporting and Follow-up:

- Report to MHO (Medical Health Officer) immediately.
- Complete Meningitis Investigation form.

Na = n

NWT/NUNAVUT

HIB Meningitis (1983-98)



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
-	10	4	14	9	6	15	16	3	1	2	1	1	1	1	0	0
AVUT	na	na	na	na	na	na	4	4	9	4	1	1	1	2	1	1

MENINGOCOCCAL MENINGITIS

Clinical Description:

- An acute bacterial disease (*Neisseria meningitidis*) characterized by sudden onset with fever, intense headache, nausea and often vomiting, stiff neck and frequently, a petechial rash with pink macules (rarely vesicles).
- Most persons exposed to *N. meningitidis* do not become seriously ill.

Source of Infection and Transmission:

- Person-to-person transmission occurs through droplets of respiratory tract secretions.

Incubation Period:

- From 1 to 10 days but usually within 4 days.

Major Complications:

- Invasive meningococcal infections can be complicated by arthritis, myocarditis, pericarditis or pneumonia.
- Occasional fulminating cases exhibit sudden prostration, ecchymosis, shock, coma and death.
- With early diagnosis, modern therapy and supportive measures, the case-fatality rate is 5-15%.

Public Health:

- Occurs most often in children under 5 years of age, in daycares and in school during the winter and spring.
- Prevention of secondary cases of meningococcal disease includes aggressive contact tracing to identify persons at risk for disease, and the subsequent prophylactic administration of antimicrobial agents to these persons.
- In cluster outbreaks, the use of vaccine will be considered in consultation with Medical Health Officer.

Diagnosis and Treatment:

- Diagnosis is made through cultures of blood and CSF.
- Respiratory isolation should occur for 24 hours after the start of drug therapy.
- Drug of choice for prophylaxis is Rifampin 10 mg/kg to a maximum of 600 mg every 12 hours for a total of 4 doses in 2 days or Ceftriaxone 125 mg. Intramuscular for one dose for individuals older than one month of age.
  - Recommended for household contacts or if direct exposure to nasopharyngeal secretions.
  - Rifampin is contraindicated in pregnancy.
  - Ciprofloxacin 500 mg once orally may be used for nonpregnant individuals 18 years of age or older.

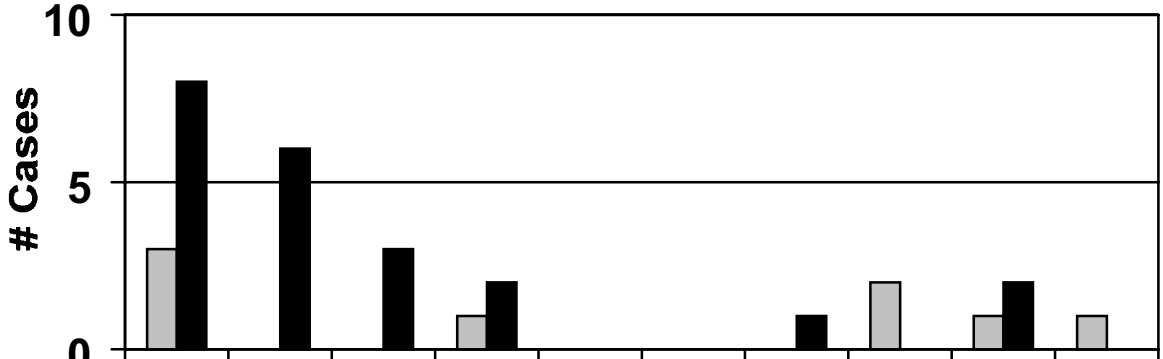
Education:

- Educate the public on the need to reduce direct contact and exposure to droplet infection.

Reporting and Follow-up:

- Report to CMHO immediately.
- Complete Meningitis Investigation form.

NWT/NUNAVUT
Meningococcal Meningitis
Cases (1989-98)



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	3	0	0	1	0	0	0	2	1	1
Nunavut	8	6	3	2	0	0	1	0	2	0

PNEUMOCOCCAL MENINGITIS

Clinical Description:

- An acute bacterial infection (*Streptococcus pneumoniae*) with symptoms indistinguishable from other types of meningitis.
- Onset is usually sudden with high fever, lethargy or coma, and signs of meningeal irritation.

Source of Infection and Transmission:

- Pneumococci are ubiquitous. It colonizes in the lungs, paranasal sinuses and middle ear and may become invasive causing infections. Spread of disease to the central nervous system is potentiated by underlying diseases (HIV) or structural damage (cerebral/spinal) that allows the bacteria to cross the blood brain barrier.
- Person-to-person transmission by droplet inhalation.

Incubation Period:

- Varies with type of infection and can be as short as 1-3 days.

Major Complications:

- Coma and seizures can occur early in the disease process.
- Permanent effects such as hemiplegia, hydrocephalus, deafness and epilepsy are common.

Public Health:

- Occurs in the elderly, alcoholics and people with splenic dysfunction and is the most common cause of meningitis following closed head trauma.
- Invasive pneumococcal infections are not considered highly infectious, therefore, contact prophylaxis is not recommended. Vaccination is recommended for contacts in higher risk groups (see below).
- Indications for pneumoccal vaccine*:
    - Adults 65 years of age or older.
    - Adults with chronic conditions: cardiac, respiratory, renal disease, alcoholism, diabetes mellitus, chronic cerebrospinal leak, asplenia, and other conditions associated with immunosuppression.
    - Children 2 years of age and older with asplenia, splenic dysfunction, nephrotic syndrome, chronic CSF leak, and other conditions associated with immunosuppression (HIV).

*From *Health Protection Unit Recommendations for the Administration of Seasonal Immunizations (Influenza & Pneumococcal Vaccines)*. Dept. of H&SS, GNWT. 1996.

Diagnosis and Treatment:

- Diagnosis is made via blood or CSF culture.
- Drugs of choice: penicillin, vancomycin, cefotaxime or ceftriaxone.

Health Education:

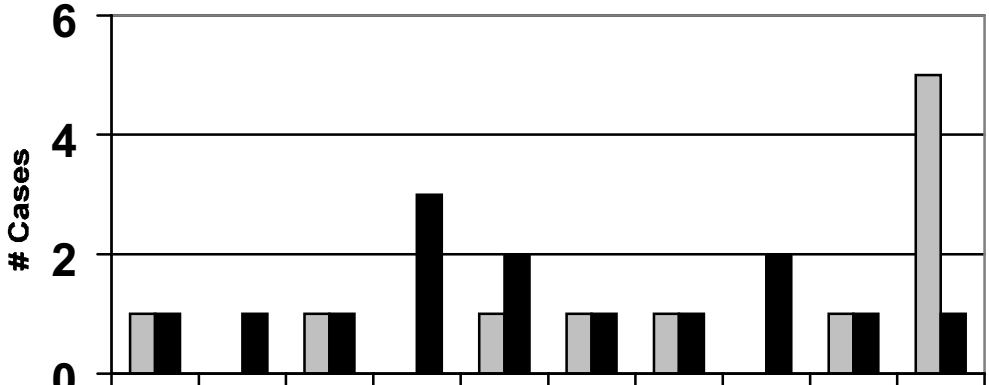
- Educate the public on the need to reduce direct contact and exposure to droplet infection.

Reporting and Follow-up:

- Report to MHO as soon as possible (within 24 hours).
- Complete Meningitis Investigation form.

NWT/NUNAVUT

Pneumococcal Meningitis Cases (1989-98)



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	1	0	1	0	1	1	1	0	1	5
NUNAVUT	1	1	1	3	2	1	1	2	1	1

VIRAL MENINGITIS

Clinical Description:

- A relatively common but rarely serious viral infection characterized by sudden onset of fever with signs of meningeal involvement (headache and stiff neck), fatigue, rash and transient paresis.

Source of Infection and Transmission:

- Causative agents include Coxsackie virus, Echovirus, Mumps, Poliovirus and Varicella.
- Transmission occurs via fecal-oral or respiratory routes.

Incubation Period:

- Varies with the causative organism involved.

Major Complications:

- Residual signs lasting a year or more include weakness, muscle spasm, insomnia and personality changes.

Public Health:

- Typically higher incidence in young children.
- In outbreak situations, EHO/MHO will assist with investigation and education of public.

Treatment:

- Definitive diagnosis is made by laboratory study usually after infection has resolved.
- There are no specific medicines or antibiotics indicated for treatment.

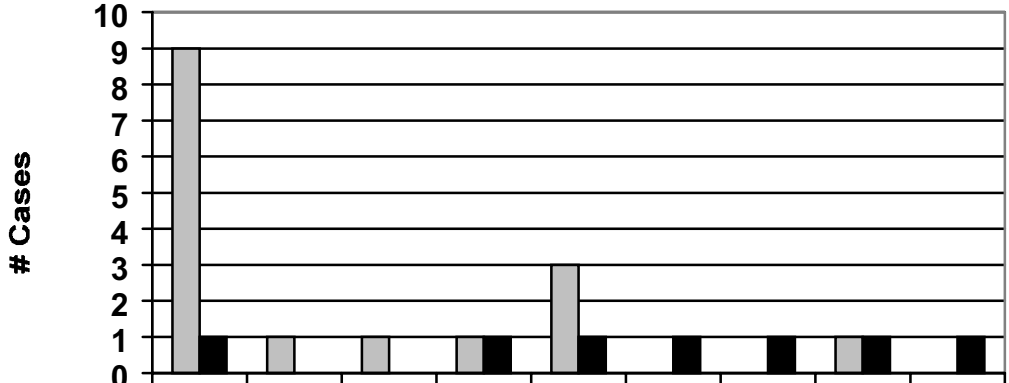
Education:

- Educate the public on the need to reduce direct contact and exposure to droplet infection (e.g. thorough handwashing).

Reporting and Follow-up:

- Report to MHO (Medical Health Officer) as soon as possible (within 24 hours).
- Complete Meningitis Investigation form.

NWT/NUNAVUT
Viral Meningitis Cases
(1990-98)



	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	9	1	1	1	3	0	0	1	0
NUNAVUT	1	0	0	1	1	1	1	1	1

REFERENCES:

1997 Red Book: Report of the Committee on Infectious Diseases (24th ed.). Peter, Georges (Ed.). Elk Grove Village, IL : American Academy of Pediatrics, 1997.

Control of Communicable Disease Manual. Benenson, Abram S. (Ed.). Washington D.C. : American Public Health Association. 1995.

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Health and Welfare Canada. *Guidelines for Control of Meningococcal Disease*. In Canada Communicable Disease Report. February 1994 (20-3): 17-27.

Wood, Martin J. *Meningitis and encephalitis: an update*. MEDICINE North America. 1993 (Feb): 141-147.

MENINGITIS INVESTIGATION FORM

NAME:	**DOB:** Y:___M:___D:___	**HCP:**
COMMUNITY:	**PHYSICIAN:**	
GENDER: Male:___Female:___ **ETHNICITY:** Dene: □ Inuit: □ Metis: □ Other: □	**EMPLOYER:**	

History or Illness: (Onset date; Duration; Concurrent illness; etc.)

TYPE OF MENINGITIS:
Meningococcal: (Neisseria meningitidis) ___
Haemophilus Influenzae:____
Pneumoccoccal: (Streptococcus pneumonia):___
Other bacterial: (Specify):___
Viral: (Specify):___
Unspecified: ie: Meets case definitions but no laboratory confirmation:____

Underlying Illness:

Present Treatment (Type and Date):

Hospitilized: Yes:___No:___ If yes list drugs, length and date of treatment and name of hospital:

Laboratory/Radiological Investigation (Type, Date, Result):

Immunization History: Hib:___ Date:_____Product (eg: Prohib/Pedvax) -_____Lot.#_____

Meningococcal:___ Date:_____Product (eg: Prohib/Pedvax) _____ Lot. #_____

CONTACTS - PLEASE LIST ON SEPARATE SHEET

Recent Activities (Travel Locations, Dates, Group Meetings):

Daycare: Yes___ No:___ School:___No:___If yes specify:

Complications/Sequelae (of illness):

Comments and Action Taken:

Follow-up Recommended:

Person Reporting: **Date:** Y:____M:____D:_____

Northwest Territories Health and Social Services
Forward Completed Form To :

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories
Box 1320 CST-6
Yellowknife NT X1A 2L9
Phone: (867) 920-8646
Fax: (867) 873-0442

MUMPS (Infectious Parotitis)

MUMPS (General)

Clinical Description:

- An acute viral disease characterized by fever, swelling and tenderness of one or more salivary glands, usually the parotid gland (located just below the front of the ear).

Source of Infection and Transmission:

- Transmitted by direct contact with saliva and discharge from the nose of infected individuals.
- Infected person is contagious 7 days prior to and 9 days after the onset of symptoms.

Incubation Period:

- 16 to 18 days, although it may vary from 14 to 25 days.

Major Complications:

- 15 to 25% of males get swelling of the testicles.
- Encephalitis and meningitis can occur.
- Others: arthritis, kidney involvement, deafness and inflammation of the thyroid gland and breasts (occurs more in infected adults).

Public Health:

- Most common during childhood. Only 2 to 3 suspect cases are reported in the NWT yearly.
- Investigation of contacts and source of infection.
- Immunization against mumps.
- Children should be excluded for 9 days from the onset of parotid gland swelling or exclude susecptible children from school or daycares (those children who have not been immunized as per NWT/Nunavut schedule).

There has been no serological confirmation of Mumps in the past 5 years.

Diagnosis and Treatment:

- Diagnosis of acute infections is made via serological testing for IgM.
- There is no chemoprophylaxis specified.
- Supportive care and isolation to prevent spread of infection.

Education:

- The importance of immunizing against mumps and other vaccine-preventable diseases.
- Mumps virus can cross the placenta but has not been linked to congenital malformations.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to Medical Health Officer (MHO) within 7 days.
- Complete Communicable Disease Investigation form.

PERTUSSIS

PERTUSSIS (General)

Clinical Description:

- A highly contagious bacterial infection (*Bordetella pertussis*) that is characterized by:
  - Initially: a mild upper respiratory tract infection.
  - Progressing to: a severe cough (rapid coughs followed by a crowing or high-pitched whoop) with a thick clear mucous discharge.
  - Episodes may recur for 1 or 2 months and are more frequent at night.
  - Older children and adults may have atypical manifestations with persistent cough and no whoop.

Source of Infection and Transmission:

- Pertussis is spread by direct contact with discharges from the nose and throat of infected individuals.
- A person can transmit infection from 7 days following exposure to 3 weeks after the onset of coughing episodes if untreated.

Incubation Period:

- 6 to 20 days, usually 7 to 10 days.

Major Complications:

- Pneumonia, middle ear infection, loss of appetite, dehydration, seizures, encephalopathy (disorders of the brain), apnic episodes (brief cessation of breathing) and death.

Public Health:

- Across Canada, cluster outbreaks have occurred periodically mainly in ages 5 to 9 and in adults (who have never been immunized or whose immunity has waned).
- Three deaths have occurred in the NWT in the last 5 years in premature infants that were not up-to-date with their immunizations. Prematurity is not a contraindication for immunzation.
- Investigation of contacts and source of infection should be completed. Contacts should be offered preventive prophylaxis (see attached protocol in this section).
- Ensure immunization has been initiated and/or completed (see Immunization section).
- All treated cases must be excluded from schools, daycares and public gathering for 5 days post commencement of treatment.
- The NWT is considering an adolescent and adult Pertussis Immunization Program, to prevent the increase morbidity seen in those age groups.

Diagnosis and Treatment:

- Diagnosis is made via culture of nasopharyngeal swab, use pertussis collection kit supplied by reference laboratory.
- Antibiotic treatment: usually erythromycin.

Education:

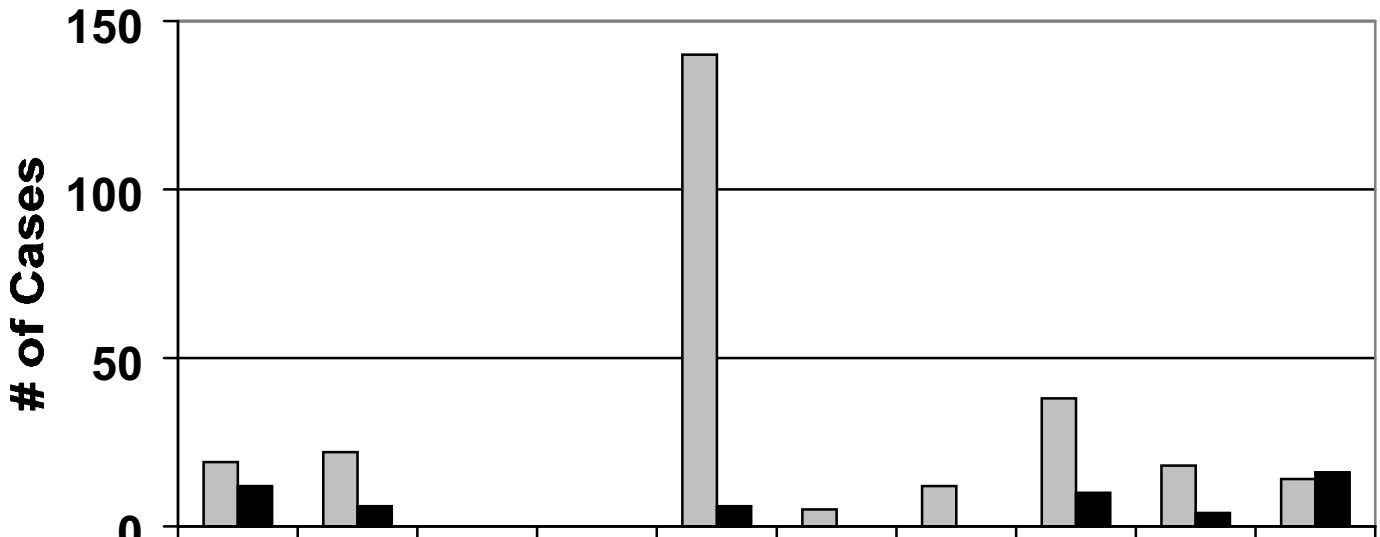
- Educate the public on the importance of childhood immunizations, proper hygiene and handwashing.
- Complete immunizations are the most effective means of preventing pertussis.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to Medical Health Officer (MHO) within 24 hours.
- Complete Pertussis Investigation form.

NWT/NUNAVUT

Cases of Pertussis by Year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	19	22	0	0	140	5	12	38	18	14
NUNAVUT	12	6	0	0	6	0	0	10	4	16

PERTUSSIS: ROUTINE CASE MANAGEMENT PROTOCOL

Type of Case	Lab Findings[1]	Contact History	Symptoms	Ma
1. Confirmed Case (lab)	♦ Confirmation of *Bordetella pertussis*	♦ Not applicable	♦ Not applicable	♦ ♦
2. Confirmed Case (clinical)	♦ Pending	♦ Contact of a lab confirmed case	♦ Paroxysmal cough or cough with vomiting or gagging of any duration with no other known cause; OR ♦ Cough associated with apnea with no other known cause; OR ♦ Cough with inspiratory whoop with no other known cause.	♦ ♦ ♦
3. Clinical Case	♦ Pending	♦ Not a known contact of a confirmed case	♦ Paroxysmal cough or cough with vomiting or gagging of > or = to 7 days with no other known cause; OR ♦ Cough associated with apnea with no other known cause; OR ♦ Cough with inspiratory whoop with no other known cause.	♦ ♦ ♦

1: Culture of B. pertussis should be done as early as possible in the illness as it may be negative if taken 21 days after ons
posterior nasopharynx may be swabbed using a flexible swab through the nares. Please ensure that the swab is placed in
medium for culture.

2: Case treatment consists of erythromycin 40-50 mg/kg/day, maximum 1 g/day for 10 days in divided doses. Trimethoprir
may be used if erythromycin is not tolerated. Cases should be excluded from daycare, schools or similar settings with susc
weeks from the onset of paroxysmal cough OR until they have received 5 days of the 10-day course of erythromycin (whic

PERTUSSIS: ROUTINE CONTACT MANAGEMENT PROTOCOL

Setting	Chemoprphylaxis[3] (within 14 days of first contact with case	Exclusions
1. Household and home daycare contacts	♦ Offered to ALL family members regardless of age and immunization status ♦ Offered to ALL attendees and caregivers in home daycares regardless of age and immunization status.	♦ Exclude from day on antibiotics for ♦ Cohort with other
2. Daycare contacts	♦ Offered to daycare attendees < one year of age ♦ Offered to daycare attendees older than one year of age if pertussis immunizations not up to date	♦ Not applicable
3. School contacts	♦ Not generally applicable	♦ Not applicable
4. Community contacts	♦ Offered to contacts < one year of age ♦ Offered to pregnant women > or = 36 weeks gestation	♦ Not applicable

3: Chemoprophylaxis consists of erythromycin 40-50 mg/kg/day for 10 days in divided doses. It should be given as soon as
than 14 days after first contact with a primary case during the infectious period (in high risk household exposure settings, c
be considered for up to 21 days). CCDR 1994; 20 (22): 198.

PERTUSSIS INVESTIGATION FORM

NAME:	**DOB:** Y:___M:___D:___	**HCP:**
COMMUNITY:	**PHYSICIAN:**	
GENDER: Male:___Female:___ **ETHNICITY:** Dene: □ Inuit: □ Metis: □ Other: □	**EMPLOYER:**	

History or Illness (Onset date; Duration; Concurrent illness; etc.):

Symptoms:	Cough: Yes:__ No:__	**Describe cough:**
	Whoop: Yes:__ No:__	
	Vomiting: Yes:__ No:__	
	Cyanosis: Yes:__ No:__	
	URI: Yes: No:	
	Other: Yes: No:	
If yes specify:		

Underlying Illness:

Present Treatment (Type and Date):

Hospitilized: Yes:___No:___ If yes, list drugs, length and date of treatment and name of hospital:

Laboratory/Radiological Investigation (Type, Date, Result, include Nagopharyngeal Swab):

Immunization History: If none, please explain why - Please attach Immunization Record

Contacts: Please List on Separate Sheet

Recent Activities (Travel Locations, Dates, Group Meetings):

Daycare: Yes:__ No:__ **School:** Yes:__ No:__ If yes specify:

Complications/Sequelae(Of Illness):

Comments and Action Taken:

Follow-up Recommended:

Person Reporting: **Date:** Y:___M:___D:___

Northwest Territories Health and Social Services

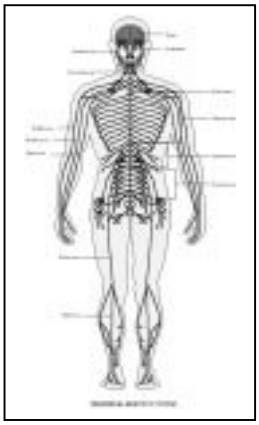
Forward Completed Form To:

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories
Box 1320, CST-6, Yellowknife NT X1A 2L9
Phone: (867) 920-8646 - Fax: (867) 873-0442

POLIOMYELITIS

POLIOMYELITIS (General)

Clinical Description:



- A viral disease caused by polioviruses.
- 90-95% of cases are asymptomatic.
- 1-10% of cases will have one or more of the following symptoms:
  - Low-grade fever and sore throat;
  - Aseptic meningitis; and
  - Rapid onset of asymmetric acute flaccid paralysis with areflexia of the involved limb.

Source of Infection and Transmission:

- Polio is spread by fecal-oral and respiratory routes.
- Perinatal transmission from mother to newborn infant can occur.

Incubation Period:

- Usually 4 to 21 days.

Major Complications:

- 1/250 cases will have residual paralytic disease.
- Adults who contracted paralytic poliomyelitis in childhood may develop 30 to 40 years later the post-polio syndrome (muscle pain, exacerbation of weakness, and/or new paralysis or weakness).

Public Health:

- Widespread use of the polio vaccine has virtually eliminated poliomyelitis from the general population but importation from other countries remains a threat.
- Immunization of contacts is recommended but may not contribute to immediate control.

There have been no reported cases of polio in the NWT or Nunavut in the last decade.

There have been no indigenous cases of polio in Canada since 1977.

Diagnosis and Treatment:

- Poliovirus can be recovered from the feces, pharynx, and urine by isolation in cell culture.
- No specific treatment is specified.

Education:

- Educate the public on the advantages of immunization in early childhood.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to Medical Health Officer (MHO) immediately.
- Complete Communicable Disease Report form.

RABIES (General)

Clinical Description:

- A viral disease affecting the central nervous system, transmitted from infected animals to humans and is characterized by a sense of apprehension, malaise, headache and fever.

Source of Infection and Transmission:

- Almost always contracted by exposure to a rabid animal, usually by saliva contact with broken skin, a bite or scratch.
- In the North, the main source of infection is from dogs that have been in contact with infected foxes. Recently, travelers to countries with rabies infected bats are an increasing concern.
- Person-to-person transmission is extremely rare (universal precautions apply to all blood and body fluids).

Incubation Period:

- Ranges 5 days to 1 year.
- The closer the proximity to the central nervous system the shorter the incubation period (e.g. a bite on the face will progress faster than a bite on the leg).

Major Complications:

- Untreated cases will invariably result in death.
- The disease eventually progresses to paralysis, spasms of the throat muscles, convulsions, delirium and death.

Public Health:

- Most cases of rabies exposure in the NWT and Nunavut involved dogs (e.g. sled dogs).
- Individuals at risk, (e.g. those working with or around animals especially hunters working with foxes), should receive pre-exposure immunization against rabies.

Diagnosis and Treatment:

- Prompt cleansing of the bite site.
- Repeated flushing with water of the wound area.
- Apply antiseptic or alcohol to the area.
- Wounds should be left open, (i.e. not sutured or bandaged).
- Assess tetanus status.
- Administer rabies immune globulin and start HDCV (Human Diploid Cell Vaccine). Refer to page 153 of the *1998 Canadian Immunization Guide* (5th edition).

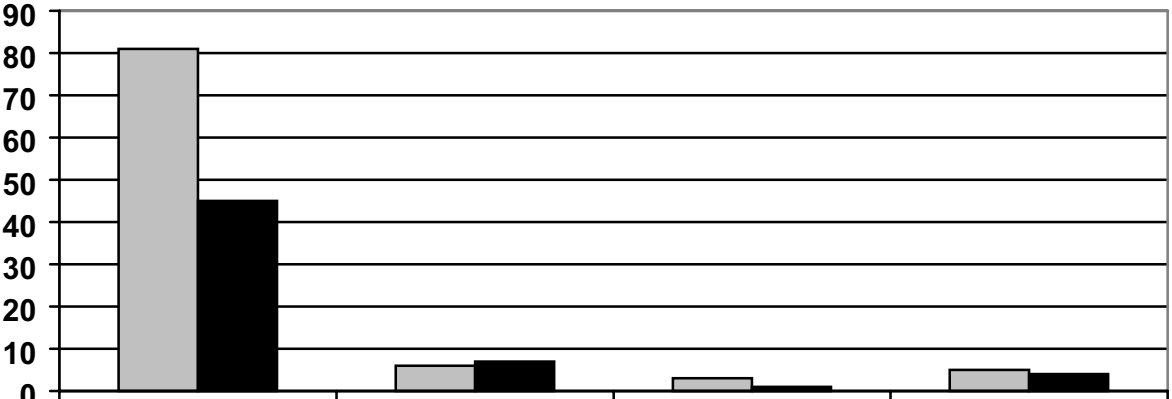
Education:

- Educate the public on the importance of immunizing pets, and safety around pets/wild animals.

Reporting and Follow-up:

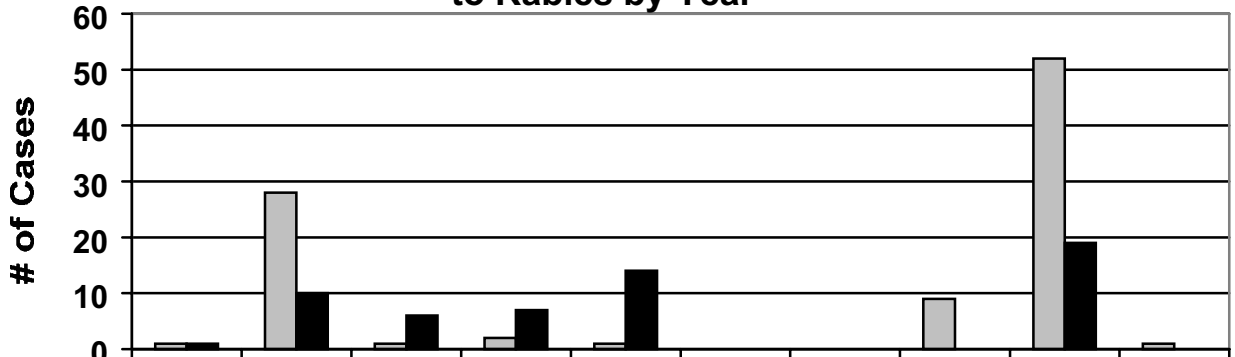
- Medical Health Officer (MHO) should be notified immediately of any suspected exposure.
- Local EHO will follow-up with containment of dog or animal involved.
- EHO will complete investigation of exposure and advise about isolation of dog and/or shipment of animal head for diagnosis.
- Complete Rabies Investigation form.

NWT/NUNAVUT
Source of Rabies
1990-1999



	Dog	Fox	Wolf	Unknown
NWT	81	6	3	5
NUNAVUT	45	7	1	4

NWT/NUNAVUT
Cases of Human Exposure to Rabies by Year



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
NWT	1	28	1	2	1	0	0	9	52	1
NUNAVUT	1	10	6	7	14	0	0	0	19	

RABIES INVESTIGATION FORM		
NAME:	**DOB:** Y:_____M:_____D:_____	**HCP:**
COMMUNITY:	**PHYSICIAN:**	
GENDER: Male:___Female:___	**ETHNICITY:** Dene:__ Inuit:__ Metis:__ Other:__	
GENERAL INFORMATION		
Location of Incident: Date: Y:_____M:_____D:_____ Biting Provoked: Yes:___No:___		
Location and severity of wound and treatment given:		
Circumstances of incident:		
IMMUNIZATION HISTORY		
History of Pre-exposure vaccination: Yes:__No:__ Details:		
Rabies Immune Globulin given: Yes:__ No:__ If yes: Amount -		
Post Exposure Vaccine given: Yes:__ No:__		
ANIMAL INFORMATION		
Owner's Name:	Community:	Telephone:
Location of Animal:		
Description of Animal:		
Animal Vaccinated: Yes:__ No:__ Date of Vaccination: Y:_____M:_____D:_____ Type:		
REPORT		
Attending Physician/Nurse:	Telephone:	
Reported to Environmental Health Officer by:	Telephone:	
Communicable Disease Report Filed: Yes:___ No:___		
This Form is to be Faxed to EHO or MHO Immediately after Initial Treatment		
Action Taken:	Date:	
Follow up:	Date:	
Did rabies exposure occur? Yes:___No:___ Was Treatment recommended? Yes:___ No:___		
Comment:		
Environmental Health Officer:	Date: Y:_____M:_____D:_____	

Northwest Territories Health and Social Services

Forward Completed Form To:

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RESPIRATORY SYNCYTIAL VIRUS (RSV)

Clinical Description:

Lower respiratory tract viral infection that causes acute respiratory illness in patients of all ages. In infants and young children it is the most common cause of bronchiolitis and pneumonia. Major signs may include: lethargy, irritability, and poor feeding sometimes accompanied by apnea episodes. Reinfection throughout life is common.

Clinically Confirmed Cases:

- Symptoms of brochiolitis and nasopharyngeal washing that isolate RSV.

Clinical Case:

- Clinical symptoms of RSV and epidemiological link to confirm case in the community.

Source of Infection and Transmission:

Humans are the only source of infection. Transmission is usually by direct or close contact with contaminated secretions, which may be droplets or fomites. The virus can stay on environmental surfaces for many hours. RSV *usually* occurs in annual epidemics during the winter and early spring, however, the NWT and Nunavut has seen activity in all seasons in the last 2 years. RSV essentially infects all children during their first year of life.

Incubation Period:

- Ranges from 2 to 8 days; 4 to 6 days is most common.

Major Complications:

- Exacerbation of pre-existing conditions such as asthma or other chronic lung conditions.
- Although respiratory failure and death from a RSV outbreak is extremely rare in southern Canada. It is a dreaded event in the North, as incidence of respiratory failure and death due to RSV occurs annually.

Public Health:

- Seasonal in nature – usually late winter or spring. Epidemiology of RSV has changed in the NWT and Nunavut with activity noted year round for the last 2 years, (see RSV stats on page 3).
- Reducing exposure to infected population is essential to control outbreak activity.
- Preventative measures should include limiting exposure where feasible in contagious settings. Children with bronchiolitis should avoid attending community feasts, social activities, daycare and visiting homes with small children to prevent further spread of RSV. When bronchiolitis has been identified in the community, babies and children should be encouraged to stay at home.

- Handwashing should be emphasized in **all** settings and thorough cleaning in daycares should be done during a RSV epidemic.
- A no-smoking rule should be established around infants to minimize respiratory illness associated with smoking. This will also enable children to recuperate without the added chronic respiratory irritation that a smoke filled environment provides.

- Respigam: Respiratory Syncytial Virus Immune Globulin Intravenous (Human) and Synagis (Palinizumab) is a human monoclonal antibody administered intramuscularly. They are both available for preventative treatment of RSV and are currently available through Canadian Blood Services. These products are to be used under strict criteria and on the advice of a pediatrician.

Diagnosis and Treatment:

- Nasopharnygeal secretions are transported in viral transport media (VTM). Two tests are utilized: DFA is available for direct detection of viral antigen and viral culture. Viral cultures are done at provincial public health laboratories and DFA testing is done at regional reference laboratories.
- Treatment protocol for RSV is included in the back of this section. Pediatricians at Stanton Regional Hospital review this protocol yearly.

Education:

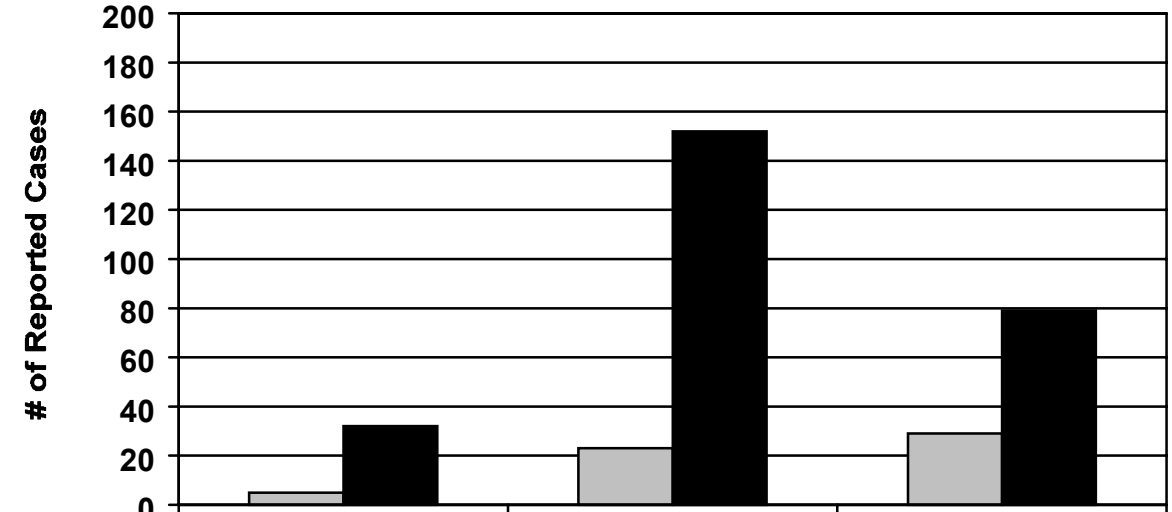
- Special emphasis should be put on proper handwashing and personal hygiene to prevent the spread of disease.
- Emphasize the need for smoke free homes.

Reporting and Follow-Up:

- Report within 24 hours to CMHO, EHO can assist with investigation and community intervention.
- Complete Communicable Disease Report form.

NWT/NUNAVUT

Cases of RSV: 1997 -1999



	1997	1998	1999
NWT	5	23	29
Nunavut	32	152	79

RSV PROPHYLAXIS PROTOCOL
for the NORTHWEST TERRITORIES

Respiratory syncytial virus (RSV) is a respiratory virus that causes infection in all ages in all areas of the world[1]. In colder climates the infection occurs in 2 to 5 month outbreaks, usually between November and April though often later in the North. Spread of the virus occurs through large droplets (coughing or sneezing) and secretions, usually by direct contact with the patient. The virus in secretions remains viable for several hours on surfaces[1], making the disease easily transmitted in the home or health care setting.

In a number of prospective population studies, it has been shown that 50-70% of infants will acquire the infection during the first year of life, with almost all having been infected by age two[1]. Repeat infections are common with up to 80% being re-infected each year[1]. In this way older siblings serve as a source of infection to young infants, the group most severely affected by the virus.

The most significant manifestation of RSV infection in infants is a clinical syndrome called bronchiolitis. After an incubation period of two to five days, the infant will develop nasal congestion and a low grade fever, followed by cough, respiratory difficulty and poor feeding. Pathology studies have found necrosis of airway epithelial cells and increased mucous production, resulting in blockage of the smaller airways of the lung[1]. Clinically this results in over-inflation of the lung with decreased efficiency and increased effort or work of breathing. Often the result is rapid respirations, wheezing and cough, decreased oxygen levels, and poor feeding with resultant dehydration. In more severely affected infants, apnea or respiratory failure necessitate intensive care management. Other viruses such as influenza, parainfluenza and adenovirus can also cause bronchiolitis, though RSV is the predominant pathogen in most outbreaks[2]. Infants born prematurely have been identified as being at increased risk of severe illness due to RSV infection.[3]

Palivizumab (Synagis^{R}) is a manufactured, humanized monoclonal antibody against RSV which provides passive immunization to those receiving it. Studies have shown that it offers some protection against RSV with decreased hospital admission (4.8% vs. 10.6% in placebo group) in high-risk premature infants, mainly those of less than 33 weeks gestation or with chronic lung disease of prematurity.[3] Recent studies demonstrated benefit from the use of palivizumab prophylaxis in certain infants and children with hemodynamically significant cardiac disease.[4] Experts in the field also recommend that infants living in remote communities born between 33 and 35 weeks gestation be considered for prophylaxis.[3]

Palivizumab is given as a monthly intramuscular injection at a dose of 15mg/kg during the RSV season, which is usually five or six doses.[3] The cost of each 100mg vial is approximately $1500.00 for a total cost of $7000.00 to $9000.00 per infant receiving prophylaxis.[7] There is extensive Canadian experience with Synagis which has found that prophylaxis is safe and well tolerated.[5,6]
The Canadian Pediatric Society has identified a target group of infants considered as high priority for prophylaxis with palivizumab:[3]

1. Premature infants <32[6] weeks who are less than 6 months of age at the start of the RSV season.
2. Children 24 months or younger with bronchopulmonary dysplasia (BPD) or chronic lung disease due to prematurity who required oxygen within six months of the RSV season.

Other groups considered at risk by the Canadian Pediatric Society and eligible or considered for prophylaxis with palivizumab include:

1. Infants born between 33 and 35 weeks gestational age living in remote communities. [3]
2. Infants with hemodynamically significant cardiac disease. [4]

Northwest Territories Practice As of December 2002 the University of Alberta policy on RSV prophylaxis was to *consider RSV immuno-prophylaxis for eligible premature infants living in isolated communities*.[8] Their recommendations and practice guidelines have recently changed to provide prophylaxis with palivizumab to all high risk infants and children in their referral area.[9] This includes all communities in the Northwest Territories and Kitikmeot region of Nunavut. The first dose of palivizumab is often given in NICU prior to discharge. This policy is consistent with current recommendations from the Canadian Pediatric Society as well as practice in other northern clinical programmes in Canada.[10]

RSV Prophylaxis Protocol

Identification of Eligible Babies: Infants and children who may be eligible for prophylaxis will need to be reported to the local public health unit or health centre. Babies should be reported from the nursery, whether the baby is born or treated in Edmonton or Yellowknife. Initial notification will be the responsibility of the referring or attending physician and/or the health centre. The health centre must communicate this information to the attending physician or pediatrician.

RSV Season: Since 1999 RSV is a reportable disease in the Northwest Territories with the incidence monitored by the Health Protection Unit of public health. In Canada the RSV season generally lasts five months, though the timing varies in any given year. [3] Prophylaxis with palivizumab should be initiated at the start of the RSV season and continued monthly until the end of the season. [3] With the available records since 1997 it appears that the peak incidence of RSV in the Northwest Territories occurs between January and April, though cases may occur throughout the year. [11] There is no clear evidence on the point at which to define the beginning of the local RSV season. Perhaps a reasonable definition would be the occurrence of at least two documented cases of RSV in a community or region in a single week. The end of the season could be defined as one week with no hospitalized RSV positive cases, or no new positive swabs in a particular community. As RSV can spread rapidly in a household or

community, a balance needs to be struck between offering prophylaxis on time versus unnecessary
prophylaxis. The definition may need modification as experience is gained with RSV prophylaxis in this region.

Supply of Palivizumab: Currently palivizumab (Synagis^{R}) is supplied by the Canadian Blood Service, though it is not a blood product. In the Northwest Territories and the Kitikmeot region of Nunavut it would seem most efficient for prophylaxis to be distributed by the Stanton hospital pharmacy, as the number of cases is likely to be low.

Decision to Administer Prophylaxis: Once the infants are identified as eligible for prophylaxis, the decision to provide palivizumab should be made by the attending physician and approved by one of Stanton Territorial Hospital's pediatricians. Consent from the parent or guardian must be obtained. The recommended dose is 15mg/kg as an intramuscular injection monthly during the RSV season.

Administration of Prophylaxis: Once a decision for the administration of prophylaxis is made, palivizumab can be given by the health center staff or public health as part of the infant's immunizations. There is no need to delay or modify routine immunizations including live virus vaccines when palivizumab prophylaxis is used.[3]

Record Keeping: Records will be maintained as part of the infants immunization records through the health center and/or public health. Monitoring of the overall programme can be done through the Health Protection Unit of the Northwest Territories or the regional authority from the Kitikmeot.

Education of Parents and Providers: Education materials have been developed for parents and providers in this region. There are materials available through other programmes that can be used temporarily and can be adapted if appropriate. Other means of RSV prevention (breast feeding, hand washing, non-smoking environments) should be included in any education programme.

Programme Modifications: As the provision of RSV prophylaxis is a new programme, ongoing modifications and improvements will likely occur. Input from parents and providers are welcome.

For information or questions contact:

Dr. Michael Young
Stanton Medical Clinic
550 Byrne Rd.
Yellowknife, NT X1A 2N1
Phone: 867-669-4122
Fax: 867-669-4139
Michael_Young@gov.nt.ca

References:

[1]Hall, C.B. "Respiratory Syncytial Virus", *Textbook of Pediatric Infectious Diseases*. 4th Edition, eds. Feigin, R.D. and Cherry, J.D., Philadelphia: W.B. Saunders Company, 1998.

[2]Orenstein, D.M. "Bronchiolitis", *Nelson Textbook of Pediatrics.* 16th Edition, eds. Behrman, R.E., et.al., Philadelphia: W.B. Saunders Company, 2000.

[3]Infectious Diseases and Immunization Committee of the Canadian Pediatric Society. Palivizumab and respiratory syncytial virus immune globulin intravenous for the prophylaxis of respiratory syncytial virus infection in high risk infants. *Paediatrics and Child Health* Vol. 4, No. 7 (1999): pp. 474-80.

[4]Infectious Diseases and Immunization Committee of the Canadian Pediatric Society. Use of palivizumab in children with congenital heart disease. *Paediatrics & Child Health* 2003; 8(10): pp632-633.

[5]Oh, P., et.al. Palivizumab prophylaxis for respiratory syncytial virus in Canada: utilization and outcomes. *Pediatric Infectious Diseases Journal* Vol. 21, No. 6 (2002): pp. 512-8.

[6]Allen, U. Update on the use of palivizumab for RSV prophylaxis in infants and children. The Hospital for Sick Children, Toronto, 2002.

[7]Sze, L.L., et.al. Net cost of palivizumab for respiratory syncytial virus prophylaxis during the 1998/99 season in northern Alberta. *Pediatrics and Child Health* Vol. 6, No. 8 (2001): pp. 525-32.

[8]Letter from Royal Alexandra Hospital, Neonatal Research Office, Edmonton (Dec. 2002)

[9]Personal communication Pediatric Infectious Disease, University of Alberta, Oct. 2004.

[10]Personal communication with Dr. Gary Pekeles, Module du Nord, Montreal Children's Hospital (Nunavik), Dr. M. Moffatt , University of Manitoba, Northern Medical Unit (Kivalliq), Dr. Mark Blayney, Children's Hospital of Eastern Ontario (Baffin), 2003.

[11]Health Protection Unit, Public Health, Northwest Territories data, 2003.

Education:

- Education on the modes of rubella transmission and the need for immunization.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to Medical Health Officer (MHO) within 7 days.
- Complete Communicable Disease Investigation form.

Synagis® Standing Order Form

For the prevention of serious lower Respiratory Syncytial Virus (RSV) disease in high-risk pediatric patients.

Patients at highest risk for RSV are diagnosed with bronchopulmonary dysplasia (BPD) and /or a history of prematurity (<32 weeks gestational age).

Dosage And Administration**:** The recommended dose of Synagis® is 15 mg/kg of body weight. Patients, including those who develop an RSV infection, should continue to receive monthly doses throughout the RSV season. The first dose should be administered prior to commencement of the RSV season.
Please refer to your **November 2004** NWT RSV guidelines for complete information.

Administration of Prophylaxis: Once a decision for the administration of prophylaxis is made, palivizumab can be given by a community/public health nurse who has completed the NWT Immunization Certification Program. There is no need to delay or modify routine immunizations including live virus vaccines when palivizumab prophylaxis is used.

Indication for prophylaxis:	**Gestational Age <32 weeks** ☐	**Bronchopulmonary Dysplasia (<2 yrs. of age)** ☐	***Gestational Age 33–35 weeks &/or**Cardiac Disease** ☐

Last Name:			First Name:		
HCP:			DOB:		
Gestational Age:	Birth Wt.:		Parent:		
Address:			Phone:		
Other Medical Concerns:					
Family Physician/Nurse:			Referral Physician:		
		Weight	Dosage 15mg/kg	Administered by:	Date: Y/M/D
Rx for Synagis	Initial dose/amount				
	Second dose/amount				
	Third dose/amount				
	Fourth dose/amount				
	Fifth dose/amount				
Notes:					
Signed:			Date:		

*Not routine for infants 33 – 35 week gestation but may be considered.

**Infants with hemodynamically significant cardiac disease

Original: Pt. chart.
Copy: Fax to: Office of the Chief Medical Health Officer
Fax (867) 873-0442

November, 2004

SEXUALLY TRANSMITTED DISEASES

GENERAL

Background:

- Health care providers should be aware of the following:
  - The high prevalence of Sexually Transmitted Diseases (STDs), (many times the national average) particularly in children, adolescents and young adults.
  - The myriad presentations and microbiologic courses of STDs.
  - Methods for diagnosis and prevention of STDs.
  - Potential seriousness of complications, particularly for adolescents and infants.
  - Implications related to sexual abuse when a child is diagnosed with a STD.

Risk Groups:

- Identify those at high risk for STDs and note that both females and males may be asymptomatic:
  - Sexual contact with person(s) with known STD.
  - Youth <25 years of age with multiple partners.
  - Street involvement (e.g. homelessness).
  - Intercourse with new partner in last 2 months.
  - >2 sexual partners in the last 12 months.
  - No contraception or non-barrier methods used.
  - Injection drug use (also at a higher risk of HIV, Hepatitis B and C).
  - Persons immigrating from or having sex in countries where certain STDs are currently epidemic, and their sexual partners.
  - Men who have sex with men.
  - Commercial sex workers.

Complications:

- The major complications of STDs in adolescents and adults include urethritis, cervicitis, epididymitis, chronic hepatitis, salpingitis, ectopic pregnancy, infertility, and carcinoma of the cervix.
- STDs also cause fetal and neonatal infections and those risks are increased in adolescent pregnancies.

Prevention:

- Educate the public on safer sex practices (e.g. use of condoms, dental dams, and female condoms).
- Needle Exchange program.
- Confidential screening programs.

Partner Notification:

- Partner notification, treatment and counselling are indicated for any infection or syndrome that is predominantly transmitted sexually.
- **Patient referral**: Patients inform their own partners without the direct involvement of health care providers or public health authorities.
- **Provider referral**: Health care providers and/or public health authorities notify partners of the patient.

How Far Back in Time Should You Go?

From: Health Canada. Canadian STD Guidelines (1998 Edition). P. 47

Gonococcal infections **Chlamydial infections** **Cervicitis, Urethritis, PID**	♦ 60 days. ♦ If no partner in the last 60 days then to the last partner.
Syphilis	♦ 3 to 12 months prior the development of symptoms, depending on the stage of the disease.
HIV	♦ Start with recent contacts. ♦ Outer limit is the onset of risk behavior.
Hepatitis B carrier or acute infection	♦ All sexual and syringe-sharing contacts.

Further Follow-up:

- When one STD is identified, testing should be done for all other STDs and the need for Hepatitis B vaccine should be assessed.

Confidentiality:

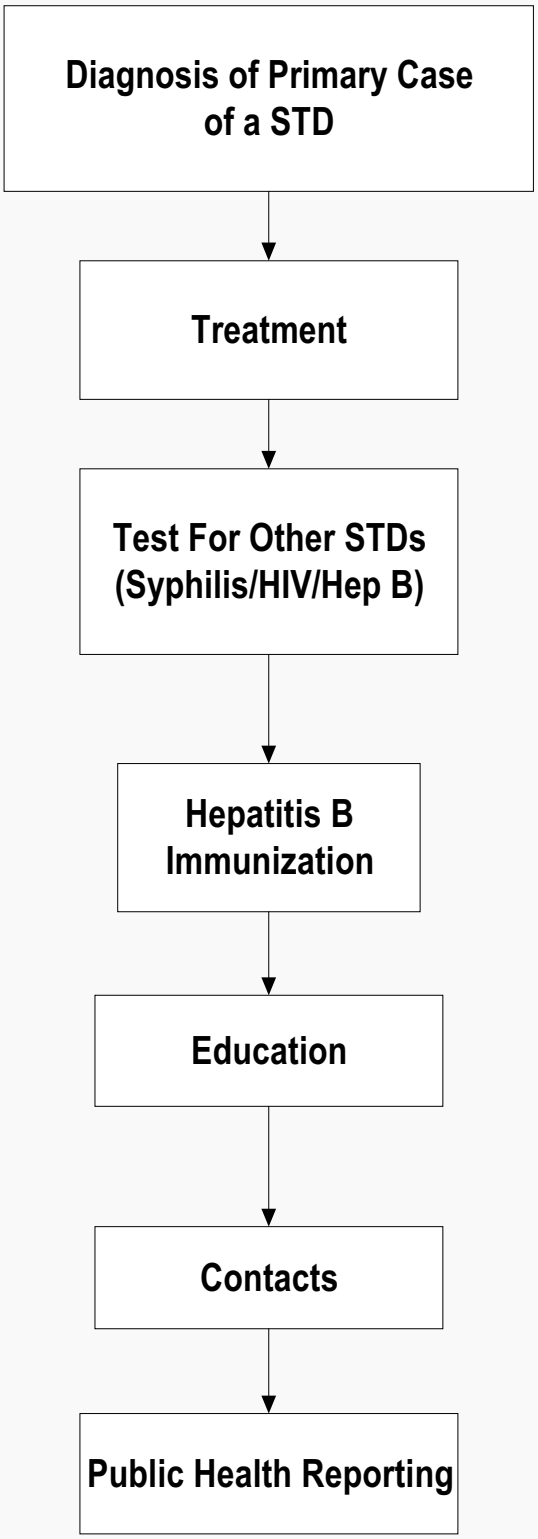
- There are ethical, legal and professional obligations to maintain confidentiality at all times, within the bounds of other obligations such as:
  - Reporting STD to local public health authorities (e.g. Health Protection Unit).
  - Where required by law (e.g. Criminal Code).
  - Reporting of sexual abuse to child protection agencies, (children less than 14 years old).
  - Concerns about confidentiality must not impede the partner notification process.

Neonatal Consequences of Certain Maternal Sexually Transmitted Pathogens

From: 1997 Red Book: Report of the Committee on Infectious Diseases (24th Ed.). Elk Grove Village, IL: American Academy of Pediatrics. P. 110.

Maternal Infection	Infant Consequences	Prevention
Candida albicans	Thrush, dermatitis	None.
Chlamydia	Conjunctivitis, pneumonia	Screen and treat mother and sexual partner(s).
Cytomegalovirus	Congenital infection	None.
Hepatitis B virus	Development of chronic hepatitis	Screen mother for HbsAg If positive given baby HBV post-exposure prophylaxis.
Herpes simplex virus	CNS disease, disseminated infection, spontaneous abortion, prematurity	C-section.
HIV	AIDS	Screen mother If negative counsel regarding prevention. If positive, consider abortion or AZT treatment.
Gonorrhea	Conjunctivitis, arthritis, sepsis, meningitis, premature delivery	Screen and treat mother and sexual partner(s); ocular prophylaxis for infant.
Treponema pallidum	Stillbirth, low birth weight, prematurity, congenital infection	Screen and treat mother and sexual partner(s).

INVESTIGATION OF A SEXUALLY TRANSMITTED DISEASE



CHLAMYDIA

Clinical Description:

- A bacterial infection (*Chlamydia trachomatis*) characterized by unusual discharge from the penis or vagina, urethral itching and painful or burning feeling during urination.
- Approximately 70% of woman with chlamydia are asymptomatic.
- Approximately 50% of men with chlamydia are asymptomatic.

Source of Infection and Transmission:

- Spread through sexual contact with an infected person.

Incubation Period:

- 7 to14 days or longer.

Major Complications:

- Females: pelvic inflammatory disease, cervicitis, urethritis and perihepatitis.
- Males: problems with prostate gland and testicles.
- Babies born to mothers with untreated chlamydial infections are at risk for developing conjunctivitis and pneumonia problems.

Public Health:

- Occurs most frequently between ages 15 and 29, and is the most common bacterial STD in Canada and the NWT (see attached statistics).
- Prenatal screening in the first and third trimesters is imperative in preventing perinatal transmission.
- Contact tracing should be done on sexual contacts up to 60 days prior to symptomatic period of the index case.

Diagnosis and Treatment:

- Diagnosis is made by clinical symptoms and DFA smear/or PCR/LCR testing on urine or cervical/uretheral swab specimen. Please consult local laboratory about specific collection methodology.
- Treatment should be initiated if symptoms are consistent with diagnosis, without waiting for results of the test for chlamydia and laboratory confirmation.
- Azithromycin 1gm po in a single dose (direct observed) is the preferred treatment.
- Also, Doxycycline (Vibramycin) 100 mg po for 7 days.
- See *1998 Edition of the Canadian STD Guidelines* for specific treatment for pregnant women and children.

Health Education:

- Educate on safer sexual practices.

Reporting:

- *C. trachomatis* infection must be reported, on the STD Report form, to the Health Protection Unit, GNWT, within 7 days of diagnosis or lab confirmation.
- All partners who had sexual contact with the index case at least 60 days prior to diagnosis must be located, evaluated and tested.

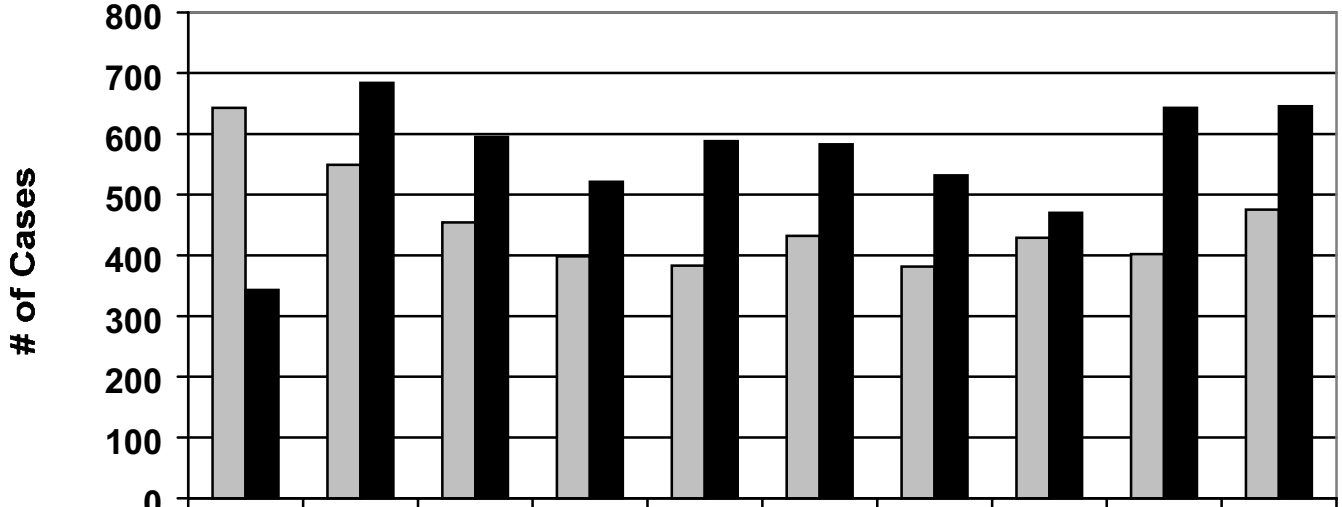
Staff at the Health Protection Unit will assist with partner notification, especially if notification outside the NWT is required.

Follow-up:

- Repeat diagnostic testing for *C. trachomatis* is NOT routinely indicated if a recommended treatment is given and taken, AND signs and symptoms have disappeared , AND there is no re-exposure to an infected partner.
- Repeat testing is recommended if compliance is questionable, symptoms do not disappear and if the patient is a child or pregnant woman.

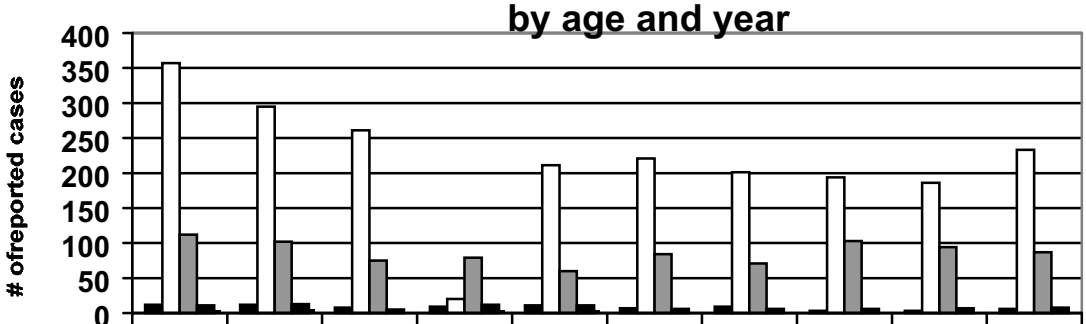
NWT/NUNAVUT

Cases of Chlamydia by Year



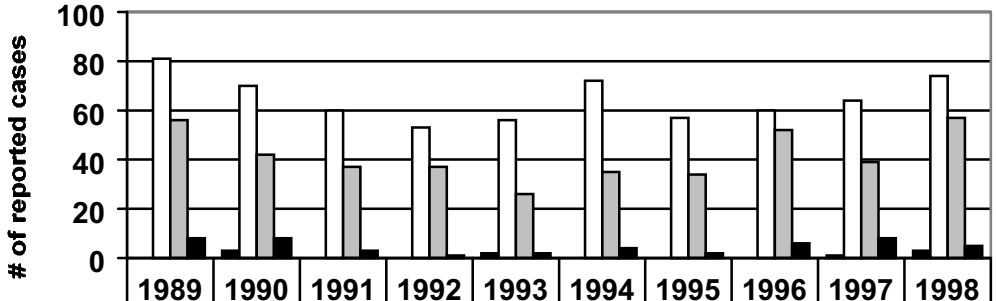
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	643	549	454	398	383	432	381	429	402	475
NUNAVUT	343	684	595	521	588	583	532	470	643	646

Cases of Chlamydia in Females in the NWT by age and year



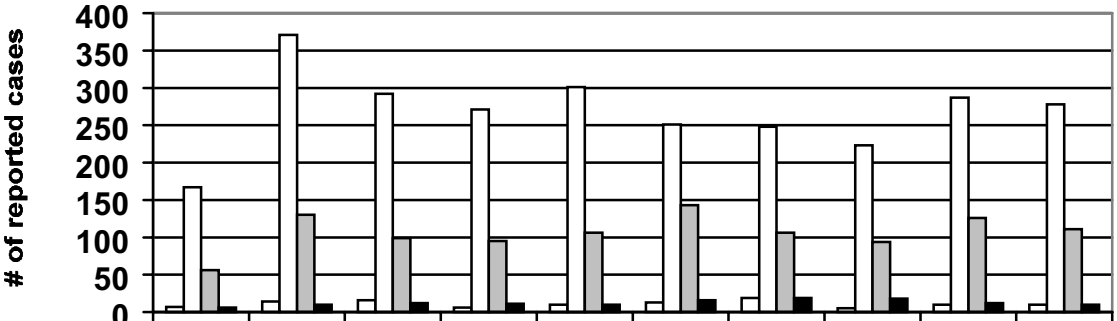
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	12	12	8	9	11	7	9	3	3	6
15-24	357	295	261	20	211	221	201	194	186	233
25-39	112	102	75	79	60	84	71	103	94	87
40-59	11	13	5	12	11	6	6	6	7	8

Cases of Chlamydia in Males in the NWT by age and year



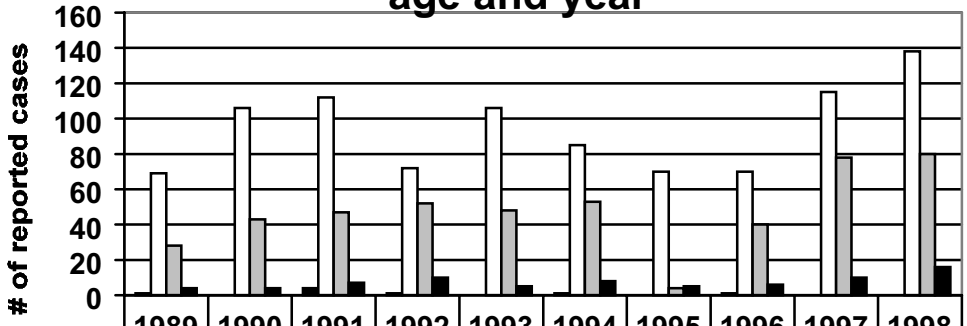
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	0	3	0	0	2	0	0	0	1	3
15-24	81	70	60	53	56	72	57	60	64	74
25-39	56	42	37	37	26	35	34	52	39	57
40-59	8	8	3	1	2	4	2	6	8	5

Cases of Chlamydia in Females in Nunavut by age and year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	7	14	16	6	10	13	19	5	10	10
15-24	167	371	292	271	301	251	248	223	287	278
25-39	56	130	99	95	106	143	106	94	126	111
40-59	6	10	12	11	10	16	19	18	12	10

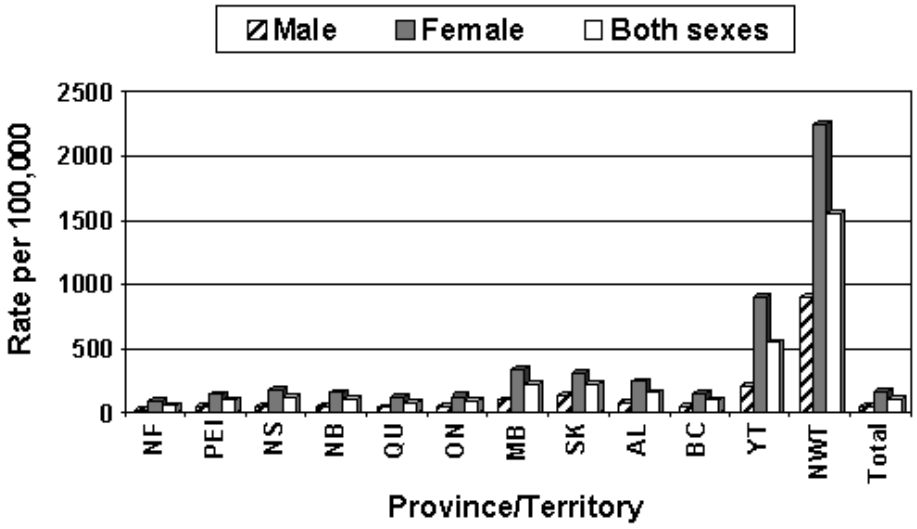
Cases of Chlamydia in Males in Nunavut by age and year



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	1	0	4	1	0	1	0	1	0	0
15-24	69	106	112	72	106	85	70	70	115	138
25-39	28	43	47	52	48	53	4	40	78	80
40-59	4	4	7	10	5	8	5	6	10	16

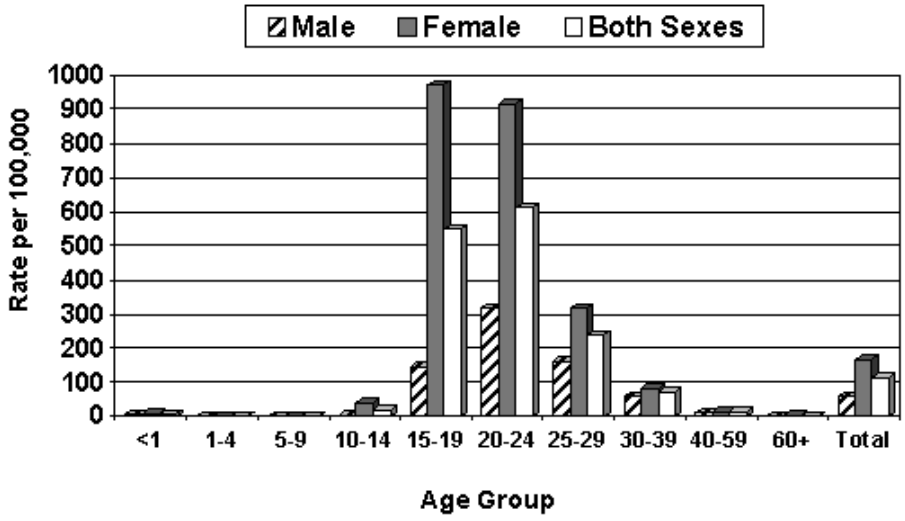
Reported Genital Chlamydia Rates in Canada by Province/Territory and Sex, 1997

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999



Reported Genital Chlamydia Rates in Canada by Age Group and Sex, 1997

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999



GONORRHEA

Clinical Description:

- A bacterial infection (*Neisseria gonorrhoea*) characterized by discharge from the penis or vagina, itching, burning during urination, sore throat or difficulty swallowing.

Source of Infection and Transmission:

- Spread through sexual contact with an infected person.

Incubation Period:

- Symptoms usually appear 2-7 days after infection.
- Approximately 50% of infected males and females are asymptomatic.

Major Complications:

- Females: pelvic inflammatory disease, internal scarring and blockage of fallopian tubes can cause sterility, tubal pregnancies, chronic pelvic pain and menstrual irregularities.
- Males: pain and swelling of testicles resulting in sterility.
- Babies born to untreated infected mothers may develop related eye infections.

Public Health:

- Occurs predominantly between ages 15 and 29. Contact tracing should be done on sexual contacts during, and about 30 days prior to, symptomatic period of index case.

The rates for the NWT are 15 times the national average and the highest rates in Canada

Diagnosis and Treatment:

- Diagnosis is made via culture of exudate or PCR (polymerase chain reaction) of urine.
- Cefixime (Suprax) 400 mg po in a single dose is the preferred treatment
- Ciprofloxacin (Cipro) 500 mg po in single dose or Ofloxacin (Floxin) 400 mg po in single dose are alternative treatment choices.
- Canadian STD Guidelines (1998) recommend that all patients treated for gonorrhea also be treated for chlamydia.

Health Education:

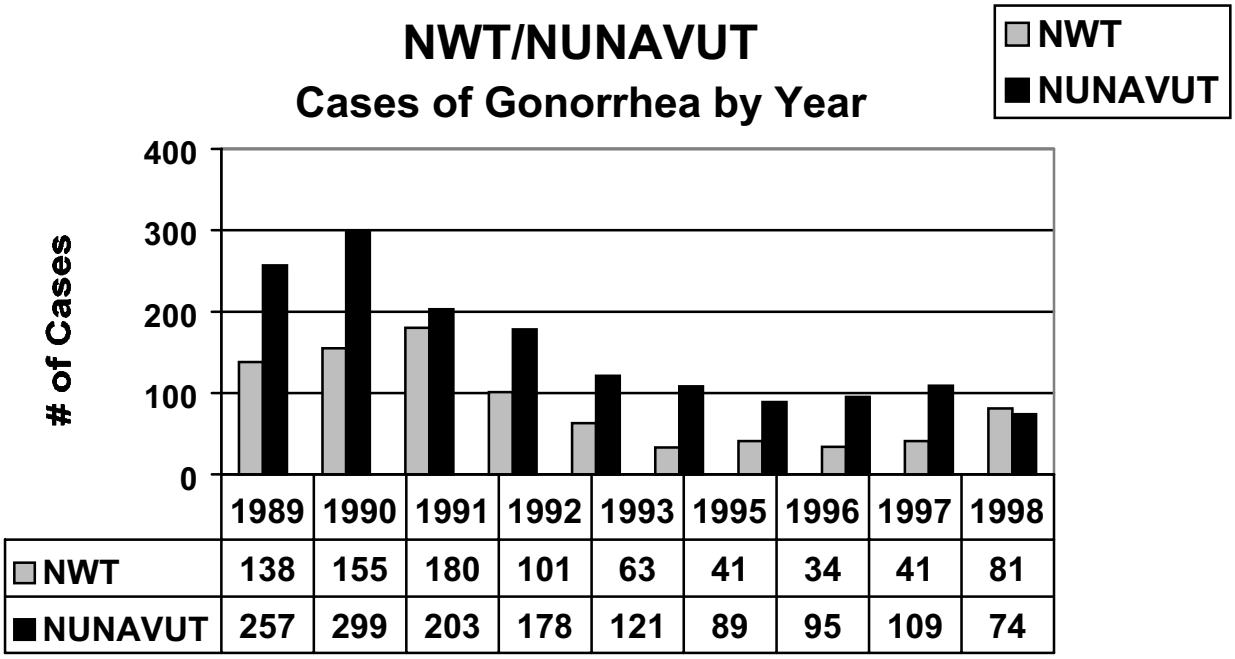
- Educate on safer sexual practices.

Reporting:

- *N. gonorrhoea* must be reported, on the STD Report form, to the Health Protection Unit, GNWT, within 7 days of diagnosis or lab confirmation.
- All partners who had sexual contact with the index case at least 60 days prior to diagnosis must be located, evaluated and tested.
- Staff at the Health Protection Unit will assist with partner notification, outside the NWT

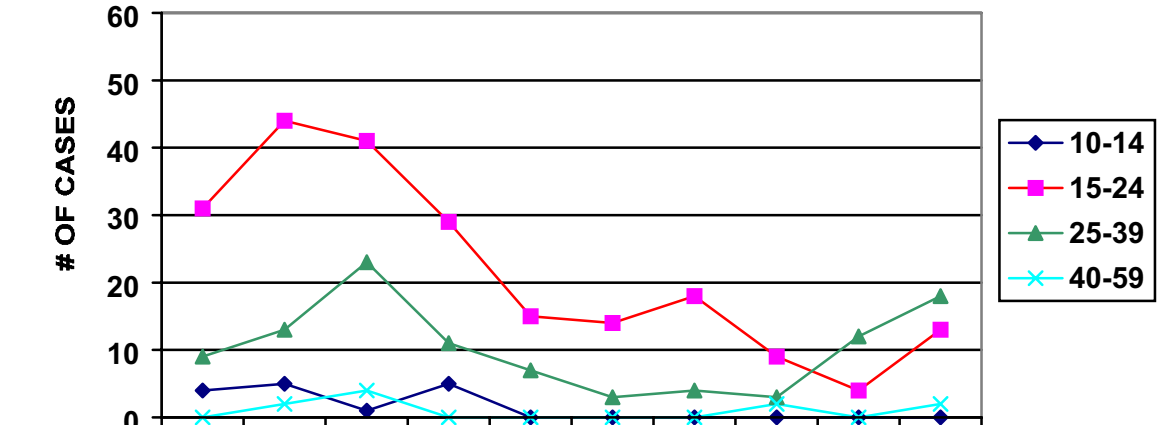
Follow-up:

- Repeat diagnostic testing for *N. gonorrhoea* is NOT routinely indicated if a recommended treatment is given and taken, AND signs and symptoms have disappeared, AND there is no re-exposure to an infected partner.
- Test of cure is recommended if compliance is questionable, symptoms do not disappear and if the patient is a child or pregnant woman.



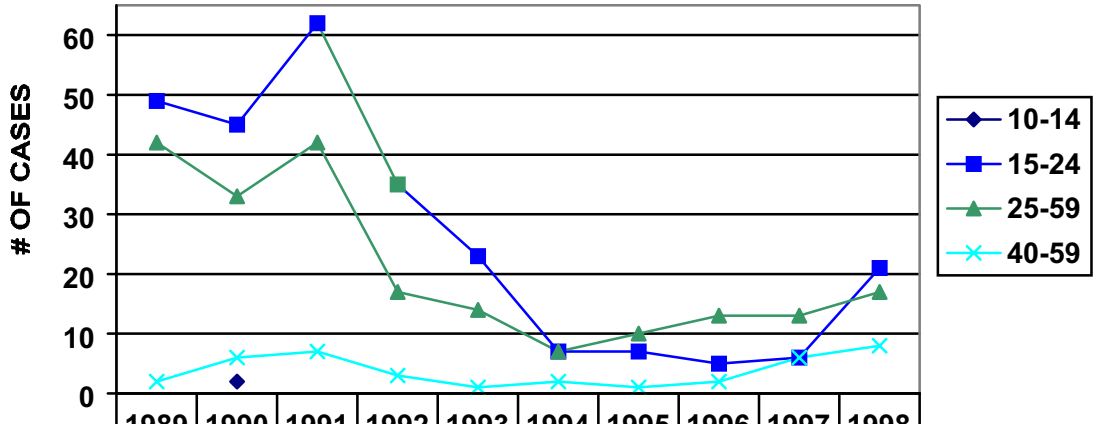
	1989	1990	1991	1992	1993	1995	1996	1997	1998
NWT	138	155	180	101	63	41	34	41	81
NUNAVUT	257	299	203	178	121	89	95	109	74

CASES OF GONORRHEA IN FEMALES
NORTHWEST TERRITORIES



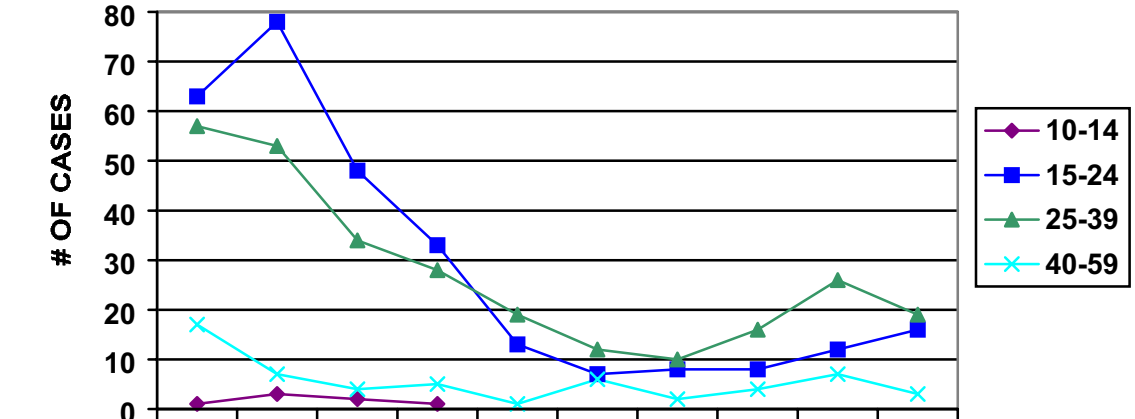
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	4	5	1	5	0	0	0	0	0	0
15-24	31	44	41	29	15	14	18	9	4	13
25-39	9	13	23	11	7	3	4	3	12	18
40-59	0	2	4	0	0	0	0	2	0	2

CASES OF GONORRHEA IN MALES
NORTHWEST TERRITORIES



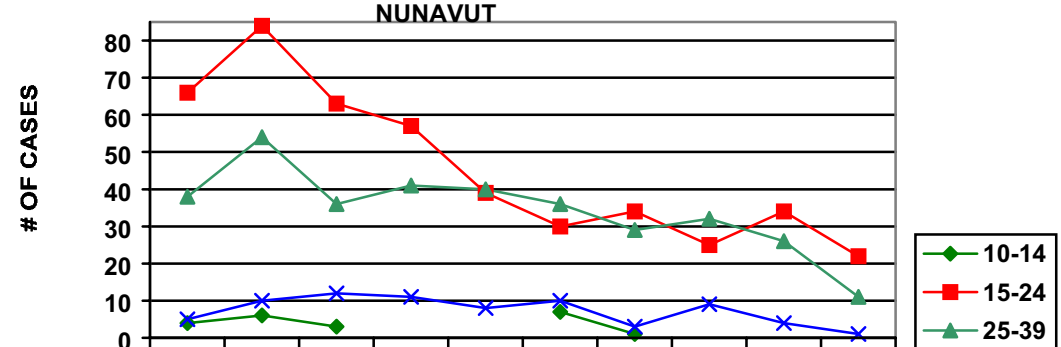
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14		2								
15-24	49	45	62	35	23	7	7	5	6	21
25-59	42	33	42	17	14	7	10	13	13	17
40-59	2	6	7	3	1	2	1	2	6	8

CASES OF GONORRHEA IN MALES
NUNAVUT



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	1	3	2	1						
15-24	63	78	48	33	13	7	8	8	12	16
25-39	57	53	34	28	19	12	10	16	26	19
40-59	17	7	4	5	1	6	2	4	7	3

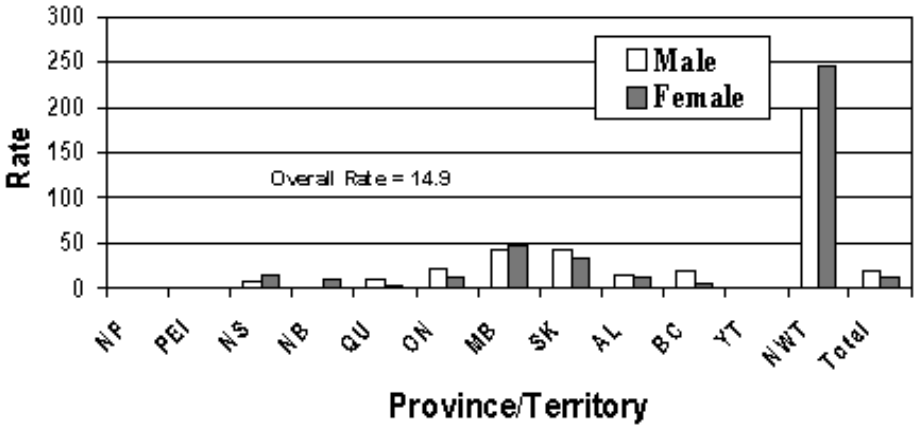
CASES OF GONORRHEA IN FEMALES
NUNAVUT



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
10-14	4	6	3			7	1			
15-24	66	84	63	57	39	30	34	25	34	22
25-39	38	54	36	41	40	36	29	32	26	11
40-59	5	10	12	11	8	10	3	9	4	1

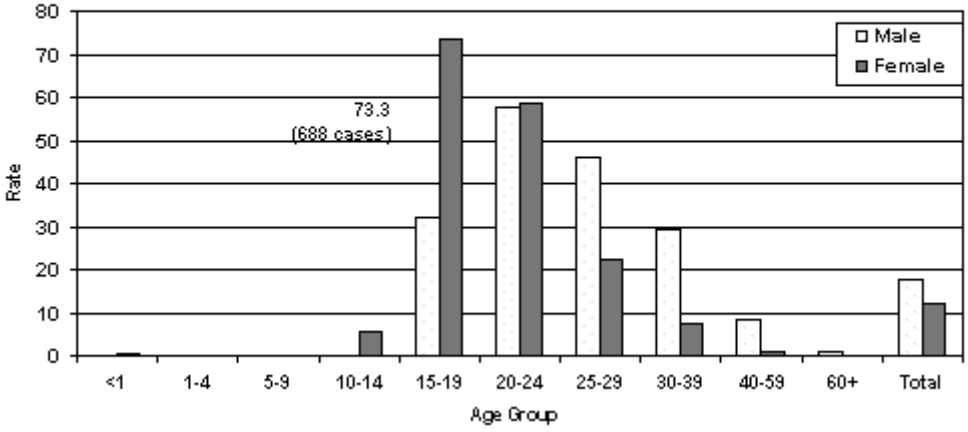
Reported Gonorrhea Rates in Canada by Province/Territory and Sex, 1997

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999



Reported Gonorrhea Rates in Canada By Age Group and Sex, 1997

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999



GENITAL HERPES (HSV)

Clinical Description:

- A viral infection (herpes simplex virus-2) characterized by vesicular and ulcerative lesions of the male and female genital organs and/or perineum.

Source of Infection and Transmission:

- Is transmitted through sexual contact with an infected person.
- Vaginal delivery in pregnant women with primary or active genital infections carries a high risk to the fetus or newborn, causing disseminated visceral infection, encephalitis and death.
- Once infected a person will have HSV in their system for life but will remain predominantly asymptomatic.

Incubation Period:

- Usually 2 to 12 days in youths and adults; at birth or as late as 4 to 6 weeks of age in neonates.

Major Complications:

- Has been associated with aseptic (viral) meningitis.

Public Health:

- Usually begins with sexual activity in young adults and adults.

Diagnosis and Treatment:

- Diagnosis is made by testing culture DFA or PCR. Cultures should be done after initial diagnosis by swabbing lesions and transporting in viral transport media.
- Treatment drug of choice is Acyclovir, (shortens clinical course but does not prevent recurrent infection).
- Once diagnosis of herpes is confirmed consultation with a specialist is recommended.
- More information on HSV is available in the, "*1998 Canadian STD Guidelines 5th Edition".*

Health Education:

- Discuss safer sexual practices and good personal hygiene.
- Advise clients of the difficulties identifying the infective period.
- Genital HSV infections are recurrent and incurable, therefore, counseling is a critical part of management. All patients who have HSV infection and their sexual partner(s) will likely benefit from learning about the chronic aspects of HSV disease after acute illness has subsided.

Reporting:

- **HSV is not reportable in the NWT,** with the exception of congenital or neonatal herpes simplex infections.
- Patients with HSV should be encouraged to inform their regular sexual partner(s) of their diagnosis to make them aware of the risk of infection, if uninfected, and to aid diagnosis in a partner if they do become infected.

Follow-up:

- Follow-up culture is not usually indicated. Follow-up counseling is an important component of managing a patient with genital herpes.

SYPHILIS

Clinical Description:

- A bacterial infection (*Treponema pallidum*) characterized by three symptomatic stages:
- **Primary Syphilis:** painless chancres at the site of contact and lymph node enlargement that will resolve itself within 1 to 5 weeks.
- **Secondary Syphilis:** occurs approximately 6 weeks after first sore appears; non-itchy, painless rash appears with general malaise, fever, sore throat, headache, patchy hair loss and lymph node enlargement which resolve spontaneously after 2 to 6 weeks. This may recur over several years.
- **Tertiary Syphilis:** may occur 2 to 40 years after secondary symptoms have disappeared; major organs (heart, brain) are invaded causing blindness, paralysis, deafness or heart disease.

Source of Infection and Transmission:

- Spread through sexual or blood-borne contact with an infected person.
- Untreated pregnant mothers are at higher risk of transmitting syphilis to the fetus resulting in premature birth, miscarriage, stillbirth or congenital deformities.

Incubation Period:

- Symptoms may appear 10 to 90 days, but typically 3 weeks, after person becomes infected.

Major Complications:

- Destruction of soft tissue and bone, heart failure, dementia and blindness.

Public Health:

- Occurs most frequently in large urban areas.
- Contact tracing should be done on sexual contacts during, and about 90 days prior to, symptomatic periods of index case.
- Screening should be done early in pregnancy.

There have been no reported cases of syphilis in the NWT and Nunavut since 1991.

Diagnosis and Treatment:

- Diagnosis is made via rapid plasma reagin (RPR) card test.
- Penicillin or tetracycline, amount depending on the stage of syphilis the client is in.
- Consultation with an Infection Control Specialist is recommended to assist with diagnosis and treatment.

Education:

- Educate on safer sexual practices.
- Needle Exchange Program.

Reporting and Follow-Up:

- Syphilis must be reported, on the STD Report form, to the Health Protection Unit, GNWT, within 7 days of diagnosis or lab confirmation.

Clinical Description:

- A parasitic infection (*Trichomonas vaginalis*) characterized by the following:
  - In symptomatic postmenarcheal females symptoms include: frothy vaginal discharge (pale yellow to gray-green with a musty odor), mild vaginal itching, dysuria and lower abdominal pain. Symptoms are more severe just before or after menstruation. Vaginal mucosa is erythematous and cervix is friable and diffusely inflamed, sometimes covered with numerous petechiae ("strawberry cervix").
  - In symptomatic males symptoms include: urethritis, epididymitis, or prostatitis.
  - Recurrence or reinfection is common.

Source of Infection and Transmission:

- Primarily sexually transmitted and frequently co-exists with other such infections, such as gonorrhea.
- Presence of disease in a pre-pubertal child should raise strong suspicions of child sexual abuse.
- Frequently those infected are symptom-free carriers for years.

Incubation Period:

- Averages 1 week, but may vary from 4 to 28 days.

Major Complications:

- Pelvic inflammatory disease.

Public Health:

- Highest incidence is among females ages 16 to 35.

Diagnosis and Treatment:

- Diagnosis is made via microscopic examination of discharge or by culture.
- Treatment drug of choice is Metronidazole.

Health Education:

- Discuss safer sexual practices and good personal hygiene.

Reporting and Follow-Up:

- Trichomoniasis is NOT reportable in the NWT.
- All partners who had sexual contact with the index case at least 60 days prior to diagnosis must be located, evaluated and tested.
- Staff at the Health Protection Unit will assist with partner notification, especially if notification outside the NWT is required.

Comparing Sexually Transmitted Diseases

Disease	Symptoms and Outlook	Complications	Diagnosis and Treatment
Chlamydia Bacterial infection--very common, in teens. 50-80% go without symptoms. Spreads via anal, vaginal or oral sex with infected partners. Often occurs together with gonorrhea.	Symptoms (if any) include painful urination, vaginal or penile discharge, abdominal pain, genital itching. But often mild, unnoticed in carriers, can disappear without treatment.	In women, leading cause of pelvic inflammatory disease (PID), ectopic pregnancy, infertility. In men, can produce urinary tract diseases and prostatitis. Babies of infected mothers prone to eye infections, pneumonia.	Diagnosed by culture EIA (enzyme immunoassay) or nucleic acid amplification (PCR, LCR). Antibiotic treatment a reliable cure (if caught early).
Gonorrhea (the "clap") Bacterial infection transmitted by oral, vaginal or anal sex. Prevalent in young women, teens. Untreated, can result in PID and infertility. Up to 50% of women and men have no symptoms.	Symptoms (if any) within 7 days of contact: painful urination, thick vaginal or penile discharge, bleeding between periods, sore throat (if contracted via oral sex), rectal pain or discharge (if contracted through anal sex).	May lead to tubal scarring, PID, ectopic pregnancy (outside womb, dangerous for mother). Can cause permanent sterility in both sexes. Eye infection and possible blindness in infected newborns.	Diagnosed by smear and culture or nucleic acid amplification (PCD, LCR). Antibiotics a reliable cure but some strains now resistant to standard antibiotics (e.g. penicillin) so require *cefixime, ceftriaxone* or other new drugs.
Genital Warts (Condylomata) Caused by human papilloma virus (HPV). Highly contagious, spread by intimate bodily contact, especially sexual activity. Often accompanies other STDs.	Warts--tiny flat growths on and around genitals--usually itchy, pinkish, flat, irregularly surfaced, may increase in size. Often undetectable in woman in vagina or on cervix, except by physician.	Certain HPV strains linked to cervical cancer in women (and possibly penile cancer in men). Infants born to mothers with HPV may develop warts.	Removal advised--chemically, by freezing or with lasers. Women should have regular pap smears to detect HPV infection and early cervical cancer changes.
Hepatitis B Virus passed on via blood, semen, vaginal secretions, saliva, needles, razors and toothbrushes. Can go from mother to infant at birth. Groups most at risk: those practicing anal sex, those with many partners, injection drug users and babies of infected mothers	Usually subclinical with few or no symptoms. Possibly flu-like malaise, fever, fatigue typically lasting 6 weeks, perhaps jaundice/skin and eye-white yellowing. Many linger in body unnoticed.	60-90% of infected children and 10% infected as adults become lifelong carriers, at risk of cirrhosis and liver cancer. Unsuspecting carriers can infect others. Fulminant, rapidly fatal form in 1/ 100 cases.	Detected by blood tests for viral markers. No cure. *Effective* safe universal vaccine program recommended for all at risk--especially healthcare workers and those living with or close to known Hepatitis B carriers.
Herpes Viral infection due to Herpes virus types I or II. Spreads via oral, vaginal or anal sex, kissing. Can spread silently, via asymptomatic people. Most easily transmitted by direct contact with active sores or genital secretions.	Symptoms within 10 days; slight fever, tingling, shooting pains, swollen lymph glands, then painful blisters, anywhere on genitals--mainly penis, vulva or anal areas. Subsides without treatment, but can recur. First outbreak usually worse, but sometimes unnoticed.	Virus remains permanently in nerves, stays dormant for months or years. Newborns may get herpes during birth, resulting in central nervous system damage or death. Caesarian delivery may be advised for babies of infected mothers.	Diagnosis for blisters (scraping or culture). Acyclovir tablets, not a cure, ease symptoms and reduce length of attack and its severity. Herpes support groups helpful in combating psychological problems.
Syphilis (the "pox") Spirochete infection. Curable in early stages. Affects mainly those in their 20s. Transmitted by oral, genital, anal contact. After a decline, case numbers rising again in North America, mainly related to drug use or "exchange of sex for drugs".	Painless sore (chancre) appears 3-6 weeks after infection on genitals, mouth or rectal area, most obvious in men, hardly noticed if vaginal. Heals without scarring. About 4-10 weeks later, 2nd stage: fever, rash, which disappears but may reappear.	If untreated, chronic, occasionally fatal. Third stage appears up to 30 years later with brain and spinal cord damage, blindness and insanity. Untreated can cause miscarriage and birth defects; infants of infected mother may be born with syphilis (congenital).	Even if no symptoms can diagnose by simple blood test; test results usually positive by time chancre (ulcer) appears. Antibiotics, taken as prescribed, a dependable cure in early stages.
Trichomonas Protozoal infection; most frequent in those with many sex partners; often accompanies other STDs.	For symptoms; possibly irritated, tender vulva; burning on urination, perhaps copious, possibly foul-smelling yellowish green, frothy, foamy, discharge.	Frequent "ping-pong" reinfection of sex partners. Both need treatment.	Swab/slide examination may reveal twitchy-tailed organisms. Treatment is oral *metronidazole* (Flagyl)--also for sex partner(s). During pregnancy, use *clotriamazole* instead.

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TREATMENT OF CHLAMYDIA AND GONORRHEA

TREATMENT OF GONOCOCCAL INFECTIONS IN ADOLESCENTS AND ADULTS

(except pregnant women and nursing mothers)

Cefixime (Suprax)
400 mg po in a single dose

OR

Ciprofloxacin (Cipro)
500 mg po in a single dose

OR

Ofloxacin (Floxin)
400mg po in a single dose

PLUS

CONCURRENT TREATMENT FOR CHLAMYDIA IN ADOLESCENTS AND ADULTS

(All patients should also receive empiric treatment for chlamydia and nongonococcal infections)

Azithromycin (Zithromax)
1 g po in a single dose

OR

Doxycycline (Vibramycin)
100 mg po BID x 7 days

OR

Ofloxacin (Floxin)
300 mg po BID x 7 days

TREATMENT OF GONORRHEA AND CHLAMYDIA IN PREGNANT WOMEN AND NURSING MOTHERS

GONORRHEA

Cefixime 400 mg po in a single dose

***ofloxacin and ciprofloxacin are contraindicated in pregnancy.**

CHLAMYDIA

Erythromycin 2 g/day in divided doses for at least 7 days.**

OR, if not tolerated

Erythromycin 1 g/day in divided doses for 14 days.**

****Erythromycin estolate is contra-indicated in pregnancy**

OR

Amoxicillin 500 mg po TID for 7 days

More information regarding identification and treatment of STDs can be found in the blue CCDR publication Canadian STD Guidelines: 1998 Edition. Contact the Health Protection Unit at (867) 920-8646 to request a copy.

Health Canada's web site offers a downloadable .pdf (Acrobat) format at: www.hc-sc.gc.ca/hpb/lcdc/publicat/std98/index

NWT Sexually Transmitted Diseases Report

Complete this form for all Sexually Transmitted Diseases*. (Listed on the back of this form)

*For all other reportable diseases, please use the *NWT Communicable Disease Report* form.

1. Name of reportable disease: _____

2. Patient's name: _____
(First name) (Last name)

3. Date of birth: ____/____/____ HCP# _____
(year/month/day)

4. Sex: ☐ Male ☐ Female

5. Community: _____

6. Type of specimen: _____ Date of specimen: _____

Organism identified: _____ (Attach copy of lab report if available)

7. This person has had relations with: ☐ Male partners ☐ Female partners

8. Reason for testing: ☐ Symptoms ☐ Contact of a previous case
☐ Prenatal check ☐ Other routine check (including pap smear)
☐ Other (please specify)

9. Treatment given:

Drug	Dosage	Duration (days)	Date Started (yy/mm/dd)

Previous STD Treatment?

☐ No

☐ Unknown

☐ Yes Date _____

10. Contact tracing: (use separate sheet if necessary)

1. Name (surname, given name)	Sex	Age	☐ Not done Reason _____
			☐ Referral Sent to _____
Address	Occupation		☐ I will follow-up with sexual partner

2. Name (surname, given name)	Sex	Age	☐ Not done Reason _____
			☐ Referral Sent to _____
Address	Occupation		☐ I will follow-up with sexual partner

3. Name (surname, given name)	Sex	Age	☐ Not done Reason _____
			☐ Referral Sent to _____
Address	Occupation		☐ I will follow-up with sexual partner

Report Submitted By: _____
(please print)

Signature: _____

Report Date: _____

Clinic Name: _____
(Health Centre, Hospital, etc.)

Community: _____

Phone Number: _____

Notes:
(for use of Health Protection Unit staff)

_____

_____

_____

_____

_____

Use this form for the following sexually transmitted diseases:

Chancroid
Chlamydia Trachomatis infections
Congenital or Neonatal Herpes simplex infections
Gonococcal infections (Neisseria Gonorrheae)
Human Immunedeficiency Viruses (HIV)
Syphillis

Department of Health and Social Services
Population Health-Health Protection Unit
Box 1320, Yellowknife NT X1A 2L9
Phone: 867-920-8646
Fax: 867-873-0442

Northwest Territories Health and Social Services

TETANUS

Clinical Description:

- A bacterial disease characterized by stiffness of the jaw (lockjaw), followed by stiffness of the neck, difficulty swallowing, rigidity of the abdominal muscles, spasms, sweating and fever.

Source of Infection and Transmission:

- Caused by *Clostridium tetani,* which is commonly found in soil contaminated with manure.
- Tetanus is contracted through a wound that becomes contaminated with the organism.
- It is not directly transmitted from person-to-person.

Incubation Period:

- 2 days to 2 months, averaging 10 days, and most cases occur within 14 days.

Major Complications:

- The cause-fatality rate ranges from 10 to 90%, being highest among infants and the elderly.

Public Health:

- Ensure childhood and adult immunizations are current.
- Tetanus booster is to be given to clients with dirty wound if not given in the last five years. Only two to seven cases of tetanus are now reported annually in Canada. NWT/Nunavut has not documented any tetanus cases to date.

Diagnosis and Treatment:

- Diagnosis of causative organisms is not usually made by culturing the wound but by excluding other possibilities: hypocalcemic tetany, phenothiazine reaction, strychnine poisoning, and hysteria.
- Tetanus immune globulin (human) is to be used in wound management if documentation of last booster is greater than 5 years.
- All wounds should be properly cleaned and debrided.

Education:

- The importance of complete immunization.
- Personal hygiene and safety practices.

Reporting and Follow-up:

- Suspect or confirmed cases must be reported to Medical Health Officer (MHO) within 24 hours.
- Complete Communicable Disease Investigation form.

TUBERCULOSIS

More Detailed Information is Available in the GNWT Health and Social Services, Tuberculosis Protocol for the Northwest Territories. Revised 1997.

Clinical Description:

- A bacterial infection caused primarily by *Mycobacterium tuberculosis (*tubercle bacillus).
- Infected persons are initially asymptomatic when the mantoux test is found to be positive.
- Early clinical manifestations may include the following:
  - Fever
  - Cough
  - Chills
  - Weight loss
  - Night sweats
- Sites of extrapulmonary Tuberculosis (TB) include middle ear and mastoid, bones, joints, and skin.

Source of Infection and Transmission:

- TB is found primarily in humans and is transmitted via airborne droplets from individuals with pulmonary or laryngeal TB.
- Theoretically a person is considered infectious as long as the tubercle is being discharged in the sputum.
- Tuberculosis is most commonly spread when people are together in small, enclosed spaces with poor ventilation.

Incubation Period:

- It takes about 4 to 12 weeks from time of infection to demonstrable primary lesion or significant mantoux reaction.

Major Complications:

- Disseminated TB, TB meningitis and death.

TB Exposure:

- Contact with a person with suspected or confirmed contagious pulmonary TB.
- Negative mantoux test.
- Normal chest x-ray and physical exam.

TB Infection:

- Positive mantoux test (induration > 10 mm).
- Normal physical exam.
- Chest x-ray is normal or reveals granulomas or calcifications in the lung.

TB Disease:

- Pulmonary TB:
  - Smear positive (highly contagious); and
  - Smear negative, culture positive (less contagious).
- Extrapulmonary TB: rarely contagious.

Public Health:

- TB in the NWT/Nunavut occurs at rates approximately 50-70/100,000, whereas, in the rest of Canada the rate is 6.2/100,000. TB rates are high due to the many adverse social conditions in the north.
- Investigation of source of infection and contact tracing should be complete.
- Contacts should be offered INH (isoniazid) treatment for minimum of 9 months.
- BCG vaccination of infants.
- Screening of health care workers, inmates and residents of long term care facilities.

Diagnosis and Treatment:

- Diagnosis is made by detection of acid-fast bacilli in early morning gastric aspirate and sputum samples.
- Treatment consists of 3 or more antibiotics based on treatment guidelines (see TB Protocol Manual for the NWT).

Health Education:

- Educate the public on facts regarding TB: how it is transmitted, why it is important to detect in early stages and methods of TB control.
- Educate infected persons on how to minimize transmission of TB:
    - Covering mouth (wear a mask if smear-positive for TB); and
    - Handwashing and personal hygiene

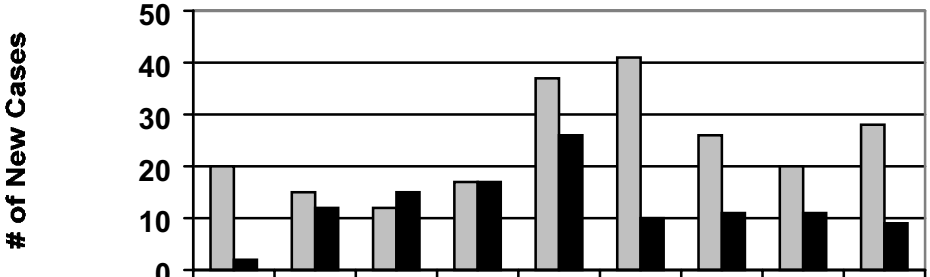
Reporting and Follow-up:

- All suspect cases of TB are to be reported to the Chief Medical Health Officer (CMHO) or designate within 24 hours.
- TB Investigation form is to be completed by primary health care provider.

Interpreting a Mantoux Test:

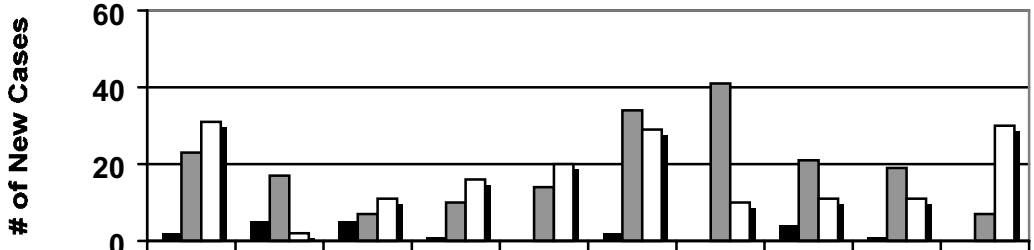
Size of Induration	Interpretation
0-4 mm	**Negative test result**
5-9 mm	**This is usually a negative test result BUT maybe positive for individuals:** ♦ **Who have had close contact with an infectious TB case** ♦ **Who have chest X-rays consistent with old healed TB** ♦ **Known to be immune compromised, such as with HIV infection**
10 mm	**Positive test result**

NWT/NUNAVUT
Cases of Tuberculosis: 1990-98



	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	20	15	12	17	37	41	26	20	28
NUNAVUT	2	12	15	17	26	10	11	11	9

NWT/NUNAVUT Tuberculosis
by Ethnicity: 1989-98



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Other	2	5	5	1	0	2	0	4	1	0
Dene	23	17	7	10	14	34	41	21	19	7
Inuit	31	2	11	16	20	29	10	11	11	30

TUBERCULOSIS ASSESSMENT FORM

Personal Information:

Last Name:	First Name:	Gender: M:___F:____
Date of Birth: Y___M___D___	HCP #:	Community:
Birthplace Outside of Canada:	Country of Birth:	Date Arrived in Canada: Y_____M____D____
Martial Status: Single:____ Married/Common-law:____ Separated:____ Divorced:____ Widowed:____		

Diagnosis (Suspect):

Symptoms (Please Place a Check Mark in the "✓" Column If Applicable):

Symptom	✓	Onset Date/Duration	Symptom	✓	Onset Date/Duration	Symptom	✓	Onset Date/Duration
Fatigue			General Malaise			Chest Pain		
Cough			Night Sweats			Weight Loss		
Hemoptysis			Fever			Other		

Physical Assessment (Please Place a Check Mark in the " ✓" Column If Applicable):

Physical Assessment	✓	Physical Assessment	✓	Physical Assessment	✓	Current Weight
Abnormal Breath Sounds		Red Raised Skin Lesions		Skin Colour (Look for pallor)		
Enlarged Lymph Nodes		Signs of Weight Loss		Other		

Medical History:

Chronic Disease/Steroid Use: Yes___No:___	Condition(s):	Diagnosis date:
Present Medication: ie: Phenytoin/Phenobarbital		

Mantoux History	Date	Size of Induration	BCG (✓)	Date Given	Scar Present	Comment
Current						
Past						

Previous History of TB or Drug Therapy	✓	When	How Long?
Active TB			
INH Prophylaxis			

Present/Past Treatment (Type, Dates):

Drug	Start Date	Stop Date	Dosage	Drug	Start Date	Stop Date	Dosage

Prophylaxis Offered: Yes: __ No:__ Prophylaxis Refused: Yes:__ No:__ Comment:

Signed: **Date: Y:_____M:_____D:_____**

	LAB/RADIOLOGICAL INVESTIGATIONS	DATE Year/Month/Day	RESULT

Please fax completed form to Health Protection Unit - (867) 873-0442

Revised February, 2000

01	Chest X-Ray Recent (Attach copy of CXR report)		
01	Chest X-Ray Previous (Attach copy of CXR report)		
02	Sputum (**Smear/Culture**)		
02	Gastric Washings (**Smear/Culture)**		
12	ESR (Erythrocyte Sedimentation Rate)		
03	CBC Platelets		
06	ALT (Alanine Transferase)		
13	Creatine		
14	BUN		
20	Total Bilirubin		
17	Urine (R&M)		
17	Urine (Culture for AFB) - ONLY IF ABNORMAL URINALYSIS		
18	HIV (For Active TB Cases Only)		
Is this Person a Contact of a Known or Suspect Case? Yes:____No:____		If Yes, Whom?	

Has this Person been Hospitalized?	Name of Hospital:	Admit Date:	Discharge Date:
		Y: M: D:	Y: M: D:

Social Profile:

Occupation:	Employer/School:
Number of People Living in House:	Type of Water Supply:
Ages of People Living in House:	Smoking (Amount and Duration):
Number of Bedrooms in House:	Substance Abuse (Alcohol, Drugs, Inhalants) **Amount and Duration:**
Travel:	

Comments/Follow-up:

FOR CONTACTS, PLEASE USE TB CASE CONTACT RECORD (NWT 3631/0290)

FOR USE BY HEALTH PROTECTION UNIT ONLY

Diagnosis: Pulmonary/Extra Pulmonary	New Active__Reactivated__Contact__Reactor__Converter__
Date Diagnosed:	Date Reported to HPU:
Onset Date:	Method of Detection:
Reviewed by (HPU):	Date: Y: M: D:

Please fax completed form to Health Protection Unit - (867) 873-0442

Revised February, 2000

TB CASE/CONVERTER COMPLETION FORM

NAME: _____

HCP: _____

DOB: _____

DIAGNOSIS: _____

DATE OF DIAGNOSIS: _____

MEDICATIONS:
(Dosage & Route)

1. _____ **x** ____ **doses**

2. _____ **x** ____ **doses**

****Does not include doses given at SRH**

3. _____ **x** ____ **doses**

4. _____ **x** ____ **doses**

5. _____ **x** ____ **doses**

6. _____ **x** ____ **doses**

START DATE: _____

END DATE: _____

LATEST SPUTUM DATE: _____

RESULT: Smear _____ **Culture** _____

LATEST CHEST X-RAY DATE: _____

RESULT: _____

FURTHER FOLLOW-UP:

No ☐
Yes ☐ _____

_____

Person Reporting: _____ **Date:** _____

Place: _____

Northwest Territories Health and Social Services

This completed form to be forwarded to :

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories
Box 1320 CST-6
Yellowknife NT X1A 2L9
Phone: (867) 920-8646
Fax: (867) 873-0442

VARICELLA (CHICKENPOX)

Clinical Description:

- A highly contagious viral infection characterized by a generalized, pruritic, vesicular rash with mild fever and systemic symptoms.
  - Typically 3 successive crops of lesions (~250 to 500 lesions total) appear on the trunk, scalp and face over a 3 day period.
  - Atypical presentations with mild symptomatology may also be seen.
- Varicella zoster virus (VSV) causes 2 clinical cases: varicella (chickenpox) and zoster (shingles).

Source of Infection and Transmission:

- Person-to-person transmission occurs primarily by direct contact with respiratory secretions or vesicular fluid.
- Also occurs as an in utero infection.
- Acquired immunity is usually lifelong.

Incubation Period:

- Usually 14 to 16 days, but ranges from 10 to 21 days.
- Contagious period is estimated to begin 1 to 2 days before the onset of rash and end when all lesions are crusted (~4 to 5 days after onset of rash).

Major Complications:

- Bacterial superinfection, thrombocytopenia, arthritis, hepatitis, encephalitis or meningitis, pneumonia or glomerulonephritis.
- Reyes syndrome.
- Immunocompromised children can develop progressive varicella characterized by:
  - Continuing eruption of lesions
  - High fever into the second week of illness
  - Encephalitis, hepatitis, or pneumonia
- Varicella may persist in a latent form after primary infection, with reactivation resulting in herpes zoster or “shingles”. Grouped vesicular lesions appear in 1 to 3 sensory dermatomes and is sometimes accompanied by localized pain. Shingles occurs more frequently in people over the age of 50.
- Maternal transmission of varicella and the consequent infection of the fetus can result in varicella embryopathy characterized by:
  - Limb atrophy
  - Scarring of skin of extremities (congential varicella syndrome)
  - CNS and eye manifestations

NB: Chickenpox is more serious in adolescents and adults, for whom there are higher morbidity and mortality rates.

Public Health:

- Most often occurs during late winter and early spring in children under the age of 10.
- Increasing incidence in adolescents and adults is of great concern.
- The varicella vaccine is recommended for those at high-risk:
    - Pregnant women who have no previous history of varicella infection, give vaccine post-natally.
    - Healthcare workers who have no previous history of varicella infection.
    - Immunocompromised individuals (e.g. those with leukemia, HIV) who have no previous history of varicella infection.
- No universal program at present but vaccine is also available to the general population by request, on a cost-recovery basis.
- Varicella-zoster immune globulin (VZIG) is effective in modifying or preventing disease in susceptible close contacts of cases if given within 96 hours after exposure. VZIG is available at hospital laboratory.
- Isolation: exclude children from school, medical offices, emergency rooms or public places for at least 5 days after the eruption first appears or until vesicles crust over.

Diagnosis and Treatment:

- Diagnosis can be made clinically by the characteristic rash and by epidemiological features, such as a history of susceptibility and known exposure to a person with varicella or zoster.
- For questionable case history or to establish prior exposure, serological varicella IgG titres are very helpful to know.
- VZV can also be isolated from vesicular lesions using immunofluorescence (IF) or through serological EIA tests.
- Treatment may include acyclovir, especially for immunocompromised patients, but is not recommended for healthier children.
- Post-exposure management of varicella continues to consist of administration of varicella-zoster immune globulin (VZIG) to susceptible persons at increased risk of serious morbidity or mortality.

Education:

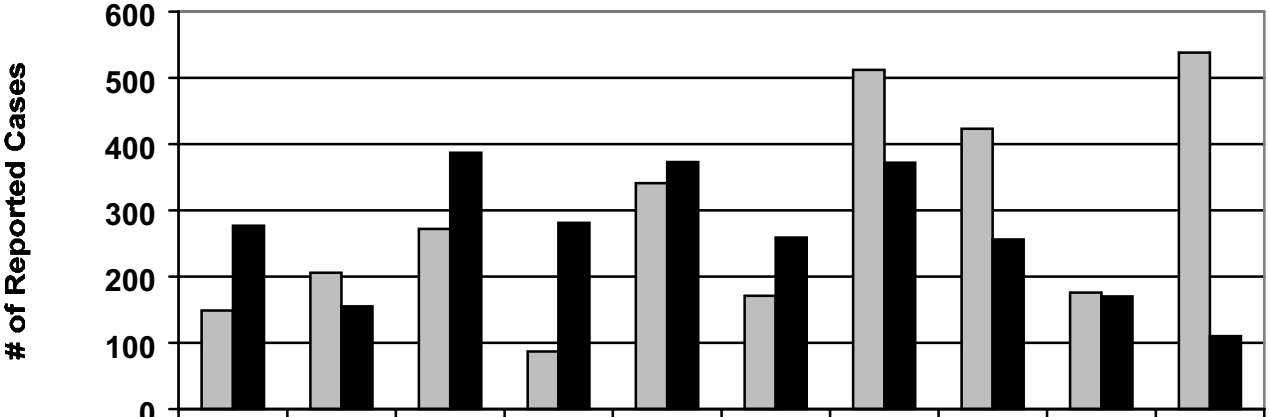
- The importance of handwashing and personal hygiene in preventing the spread of disease.

Reporting and Follow-up:

- Complete the Reported Chickenpox Cases form on a monthly basis as required and return to the Health Protection Unit.

NWT/NUNAVUT

Cases of Chickenpox: 1989-98



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NWT	149	206	272	87	341	171	512	423	176	538
Nunavut	277	155	387	281	373	259	372	256	170	110

REPORTED CHICKENPOX CASES *

Please Complete All Sections

REPORTING UNIT:	MONTH OF REPORT:	DATE OF REPORT: Y:____M:_____D:____

NAME	SEX	D.O.B. Y/M/D	HCP#	DATE OF ONSET S/S Y/M/D	DATE OF DIAGNOSIS Y/M/D	SOURCE OF INFECTION	COMMENTS

* **Please use a new form monthly.**

Reported By:_____Designation:_____

Forward Completed Form To:

Northwest Territories Health and Social Services

Health Protection Unit
Department of Health and Social Services
Government of the Northwest Territories
Box 1320 CST-6
Yellowknife NT X1A 2L9
Phone: (867) 920-8646
Fax: (867) 873-0442