EPI NORTH

The Northwest Territories Epidemiology Newsletter

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EpiNorth Moves Onward

This is the first issue of *EpiNorth* produced after the creation of Nunavut and the *new* Northwest Territories. This is truly a new era which is opening before us, as we also prepare our collective entry into a new millennium of human history.

EpiNorth will now be produced as a joint venture of the departments of Health and Social Services in both Nunavut and the NWT. *EpiNorth* is looking forward to adding Dr. Ann Roberts, Nunavut's new Chief Medical Health Officer, as a member of its editorial board and associate scientific editor. We can also expect to see an increasing number of contributions originating from Nunavut over the coming year or two, so that the northern epidemiological newsletter may continue to reflect the full range of public health issues and concerns that characterize both our northern jurisdictions, communities and people.

Against this background of transition and change, we aim to preserve some degree of continuity and carry forward *EpiNorth's* mandate to provide quality information on disease patterns and trends and health determinants relevant to the people of the NWT and Nunavut. Because the disease registries and other health information systems mostly reside or will continue to be consolidated within the GNWT Department of Health and Social Services, much of the "mining" of these databases will still be done by the Research and Analysis Unit of the NWT department.

The newsletter is also intended to provide an opportunity for all those involved in health promotion, disease prevention and disease control activities to share their experience and exchange information with regard to new initiatives, best practices and program evaluations. For this reason, the editorial board will continue to encourage and enhance its solicitation of contributions **from the field.**

The editorial board is planning to conduct a readership survey in the Fall issue. This will assist us in a strategic planning and mandate review process. We encourage all of you to start thinking about what you value and what you would like changed or enhanced in *EpiNorth*. We will count on your feedback to help us redefine our mission and improve the format and content of the newsletter so that it may better serve the needs and interests of health care providers, program managers and decision makers at all levels. In the meantime, I hope you will enjoy this issue.

Have a nice summer and please be careful; injuries remain our main cause of premature death and disability.

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Northwest Territories Health and Social Services

What Is Hantavirus Pulmonary Syndrome?

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Hantavirus Pulmonary Syndrome (HPS) is a rare but very serious lung disease that is caused by a virus. This unusual disease was first described in the southwestern United States in 1993. It is believed that the virus has been around for a long time, but was only just recently recognized. HPS was first identified in Canada in 1994, when three cases were reported in British Columbia. Since then, only seven other cases have been found in Canada. There have been no reported cases of HPS in the NWT.

How Is It Spread?

The virus is normally found only in rodents, usually deer mice, although rats and other kinds of mice may also be carriers. Deer mice are pale grey with white fur on their stomachs. They live mainly in rural and semi-rural wooded areas. Domestic pets are not believed to be a source of infection.

People can be exposed to HPS in several ways:

- by breathing infected dust from deer mice/rodent droppings or urine (the most common form of exposure);
- being bitten by an infected deer mouse; or
- contact with infected material through broken skin.

The probability of getting HPS is very low. Only rarely do people exposed to the virus become infected.

Person-to-person transmission has not been documented.

What Are The Symptoms Of HPS?

HPS begins as a flu-like illness. In the early stages of the disease, a person may have a fever, chills, headache and muscle pain. As the disease gets worse, fluid builds up in the lungs, making it hard to breathe. About five out of ten people infected with HPS in North America have died.

Symptoms usually start within two weeks, but can begin as early as three days or as late as six weeks after exposure.

Is There A Treatment For HPS?

Early diagnosis helps in the successful treatment of symptoms. Most patients need to go to the hospital and get intensive care. Anti-viral drugs may be used. Research for a vaccine is under way.

Who Is Likely To Catch HPS?

People who live in areas where the virus is present and come into close contact with rodent burrows or are exposed to the saliva, urine or droppings of rodents are at some risk of coming into contact with the virus. Chances of this happening are extremely low, however. People most at risk of catching HPS include anyone who frequently handles or is exposed to rodents, such as wildlife biologists and pest exterminators. Others who might be at higher risk would be people who often find themselves working in attics or crawl spaces, or who are involved in cleaning or major renovations of homes or cottages that have been infested with rodents.

These people should take special precautions during their work by wearing protective clothing and using any one of several respiratory (breathing) protection devices. These range from a simple mist mask (such as National Institute for Occupational Safety and Health approved single-use disposable for dust and mists) to air filtration devices.

The special breathing devices used for high-level protection must be properly fitted, tested, maintained and operated in order to work properly. They may not be suitable for a person with heart and/or lung problems. These items are available at safety supply houses and at some building/hardware stores.

How Can I Protect Myself?

The easiest way to protect yourself is to limit your contact with deer mice and other rodents and their droppings, urine or saliva. Rodents are attracted to areas where they can find food, water and shelter. It's wise to follow these tips anywhere there are large numbers of mice.

Outdoors

- Always store food, water and garbage in metal or heavy plastic containers with tight-fitting lids.
- Do not leave pet food or water out overnight.
- Seal holes around doors, windows and roofs with steel wool or cement.
- Place gravel around the base of the building to discourage digging and nesting.
- Remove any abandoned vehicles, old tires or cast-off furniture from your property.
- Cut back thick bush and keep grass short. Keep woodpiles, hay and trash cans off the ground and away from your home.

Indoors

- Set traps if you have rodents in your home.
- Always wear rubber gloves and follow these guidelines when cleaning up signs of mice:
  - Open windows/doors for a half-hour before and after cleaning to air out the area. Wear a breathing mask if the area is poorly ventilated;
  - Wet floors to minimize dust. Damp-mop and wash floors with soap, water and disinfectant. **Do not vacuum** bare floors before mopping;
  - Wash countertops, drawers and cupboards with disinfectant; and
  - Wash any clothing or bedding contaminated with droppings. Dry them in the sun or in a hot dryer.
- Always use rubber or plastic gloves when handling dead rodents and other materials.
- Put dead rodents into a bucket of household disinfectant or a bleach solution (one part bleach to ten parts water) for 30 minutes. Place them inside a plastic bag. Seal the bag and put it in a sealed container or bury it.
- Disinfect the traps after dead animals have been removed.
- Rinse gloves in disinfectant or diluted bleach before you remove them. Wash gloves and hands in hot soapy water.
- After clean-up, wash hands and face well before eating, drinking or smoking.
- Don't attract mice. Always clean up spilled food and wash dishes right away.

Avoid Rodents When Hiking Or Camping

Try not to disturb rodent burrows. Do not use cabins where there are mouse or rodent droppings lying around. Keep your food in rodent-proof containers. Do not sleep on the bare ground. When camping or hiking, use only bottled or disinfected water.

Always wash your hands after touching any rodents or their droppings.

Even though there have been no reported cases of Hantavirus in the NWT, it is always good to take precautions.

Contact your health and social services board or the department for more information.

Reference:

Ontario Ministry of Health, Hantavirus (Hantavirus Pulmonary Syndrome) Fact Sheet, June 3, 1998

Crib Safety

All cribs sold in Canada must have a label saying when they were made. Cribs made before September 1986 are dangerous. They do not meet government standards. It is illegal to sell or advertise these cribs.

Look for a label so you know when the crib was made. Cribs that were made before September 1986 are not safe for use. If you can't find the label, don't use the crib.

Safety Tips

The crib:

- Check the crib often to make sure the frame is solid. Tighten screws regularly.
- Check the crib to make sure the sides lock into place.

The mattress:

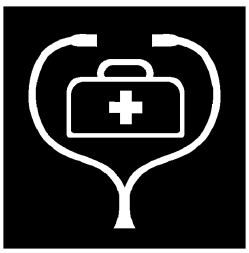
- Make sure the mattress is tight against all four sides of the crib.
- Replace the mattress if it is not firm or if it is worn-out.
- Move the mattress down to its lowest level as soon as the baby can sit up.

Baby safety:

- Lock the sides into place after putting the baby in the crib.
- Never tie the baby in the crib and don't let the baby wear a necklace or a soother on a cord around the neck.
- Place the crib away from windows, curtains, blind cords, lamps, electrical plugs and extension cords.
- Take bumper pads and big toys out of the crib once the baby can sit up.

For more information about Product Safety, call Health Canada at Edmonton, (780) 495-2626.

Health Canada Fact Sheet, March 1998



Oral Rehydration Therapy and Early Refeeding in the Management of Childhood Gastroenteritis

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Clinical Assessment of Degree of Dehydration

Mild (<5%)
Watery diarrhea
Decreased urine output
Increased thirst
Slightly dry mucous membranes

Moderate (5-10%)
Abnormal skin turgor
Sunken eyes
Very dry mucous membranes
Depressed anterior fontanel

Severe (>10%)
Signs of moderate dehydration plus any of the following:
Rapid weak pulse/hypotension
Cold extremities
Oligo-anuria, coma

Acute gastroenteritis is one of the most common illnesses affecting infants and children in Canada and the world. The average child under age five 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 one 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) may 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 which they contain. Advances in the field of early refeeding have occurred with improved oral rehydration solutions. Fasting has been shown to prolong diarrhea. This may be due to undernutrition 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 refeeding with a lactose-containing formula is usually well tolerated. Early refeeding should commence 6-12 hours into therapy.

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:

No dehydration
If diarrhea is present, but urinary output is normal, the 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, and maintenance oral electrolyte solution offered *ad libitum*.

Mild
If symptoms and signs are limited to decreased urinary output and increased thirst, mild dehydration is suspected. Assessment and treatment under close supervision are indicated. Rehydration consists of ORS or maintenance solution 10 mL/kg/hr with reassessment at 4-hour intervals. Breast-feeding continues.

Early refeeding with the child's customary formula at the usual concentration is recommended. Extra ORS or maintenance solution (5-10 mL/kg) may be given after each stool if diarrhea persists.

Moderate
If at least two of the following signs; sunken eyes, loss of skin turgor (tenting of abdominal skin lasting less than 2 seconds) or dry buccal mucous membranes are present, moderate dehydration is diagnosed and rehydration consisting of ORS 15-20 mL/kg/hr with direct observation and reassessment at 4-hour intervals is indicated. If dehydration is corrected, therapy for ongoing losses and maintenance are continued as outlined above. If not, treatment is repeated as indicated by clinical signs or symptoms.

Severe
If, in addition to signs of moderate dehydration, there is rapid breathing, lethargy, coma, a rapid thready pulse or tenting of the skin lasting more than 2 seconds, severe dehydration and shock are present. 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.

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 that 24 hours. Early refeeding 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; and
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® comes as a powder and would be better for communities or for parents going out in the bush. Pedialyte® comes ready mixed in a bottle. It also comes as freezer pops that older children may like better.

Recommendations

1. Dehydration accompanying infantile gastroenteritis should be treated with early oral rehydration and early refeeding 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. Home-made oral rehydration solutions are discouraged since serious errors in formulation can occur.
4. Antidiarrheal drugs, antibiotics and antiemetic 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 intaosseous rehydration.
7. Breast-fed infants with dehydration should be given ORT in conjunction with continued breastfeeding.
8. Early refeeding 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 7-day course suggesting clinical lactose intolerance.

Simplified Oral Rehydration Therapy Protocol in Mild to Moderate Rehydration

At the Start of Vomiting or Diarrhea

If breastfeeding, 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 in the bush. Pedialyte comes ready mixed in a bottle. It also comes as freezer pops that older children may like better.

If not breastfeeding, stop all food and drink and give ORS as follows:

First 6 Hours

- if 6 months or less give 1-3 oz. every hour
- if 6-24 months give 3-4 oz. every hour
- of over 2 years give 4-8 oz. every hour

If infant refuses ORS by cup or bottle, give the solution using a medicine dropper or small spoon. **If child vomits**, continue to give ORS using a spoon. Give 1 tbsp. every 10-15 minutes until vomiting stops, then give regular amount as indicated above. If vomiting does not stop after 4-6 hours, take child to hospital or health centre.

6-24 Hours (Recovery Stage)

- Keep giving ORS until diarrhea is less frequent.
- When vomiting stops, offer usual formula or whole milk or food in small frequent feedings.
- Do not give fruit juices or sweetened desserts until the diarrhea has stopped.
- Stools may increase at first (1-2 more each day). It may take 7-10 days or longer for stools to become completely formed. This is part of healing the bowel.

Sample Menu for Infants and Toddlers

Breakfast	Lunch/dinner
iron-fortified infant cereal	meat
plain toast and margarine	plain potato
formula or whole milk*	plain vegetable
	plain fruit
	formula or whole milk*

*Whole milk is only given after an infant is 12 months of age.

After 24-48 hours, most children can restart their normal diet.

This protocol can be discussed with and handed out to parents.

References

Oral rehydration therapy and early refeeding in the management of childhood gastroenteritis. CPS Statement. 94-03.

What to do when your child is vomiting and has diarrhea. CPS pamphlet.

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Bronchiolitis

What is Bronchiolitis?

Bronchiolitis is a common lower respiratory tract infection of infants under 24 months of age.

Symptoms are a result of an inflammatory obstruction of small airways. A variety of viruses can lead to this inflammatory response. Respiratory syncytial virus (RSV) is responsible for about half the cases. RSV is usually seasonal, with peak activity from January to May in southern Canada and a couple of months later in the North. Other common viral causes of bronchiolitis include parainfluenza, adenovirus and influenza. These usually occur more sporadically. The peak incidence of this infection occurs at 2-6 months of age. Boys are more frequently affected at a ratio of 1.5 to 1.

Risk Factors

Intrinsic risk factors include premature birth, gastroesophageal reflux, congenital anomalies including congenital heart disease and family atopy. Extrinsic risk factors include exposure through siblings and daycares, bottle propping, passive exposure to tobacco smoke (before **and** after birth) and exposure to wood smoke.

Diagnosis

The diagnosis is made on the basis of clinical findings. The infant is usually exposed to a family or community member with a mild upper respiratory illness. Following an incubation of 4 to 6 days, the infant develops a serious nasal discharge, sneezing, fever and poor appetite. Gradually there is development of a paroxysmal wheezy cough, dyspnea, irritability and difficulty feeding. Apneic spells will occur in very small infants. In mild cases, symptoms resolve in 1-3 days but more severe cases can have a protracted course, sometimes lasting weeks.

On physical examination, tachycardia and tachypnea are noted. The chest is hyperinflated with audible wheezing and a variety of adventitia: fine inspiratory rales, harsh rhonchi and high pitched expiratory wheezes associated with prolonged expiration in sicker infants. The abdomen is often distended with a palpable liver and spleen. There may be an associated conjunctivitis, pharyngitis or otitis media. The chest x-ray may reveal hyperinflation, peribronchial thickening and scattered areas of atelectasis.

Treatment

Treatment is supportive. A good oral intake should be maintained, otherwise intravenous fluid supplementation is required. Chest physiotherapy is needed to mobilize secretions and minimize atelectasis. Cold humidified oxygen should be given if the respiratory rate is greater than 60/minute and/or the oxygen saturation falls below 95%. A trial of bronchodilators or racemic epinephrine may be considered, but is of doubtful benefit in most infants. Antibiotics are rarely indicated.

There is no demonstrated benefit in the use of steroids or atrovent. Ribavirin is now rarely used. Secondary bacterial infections are rare. Impending respiratory failure, as indicated by increasing oxygen requirements, decreasing heart rate, slow or irregular breaths, head bobbing, ashen colour and prolonged expiration, will require ventilatory assistance. Mortality is less than 1%.

Recurrent Episodes

In the North, recurrent episodes over the infant's first 2-3 years of life are common. These are likely the result of many infants being exposed to cigarette smoke in utero. It is postulated that this exposure does not allow adequate growth and maturation of the fetuses' airways. Post-natal exposure to viruses, passive smoking and bottle propping then results in recurrent bronchiolitis until age 3 when the airway size increases enough to allow the child to clear the inflammatory obstruction.

1998 was an unusual year for bronchiolitis admissions at Stanton Regional Hospital, in that we continued to have frequent admissions for RSV bronchiolitis throughout the year. Our epidemic was not seasonal as previously seen. Many of these infants had abnormal chest x-rays and admitting physicians often asked what would be my choice of antibiotic in these cases. For these reasons I decided to undertake an audit of all cases of respiratory illnesses admitted to Stanton Regional Hospital between September 1, 1998 and October 31, 1998.

Audit of RSV Bronchiolitis at SRH

In the two months from September 1, 1998 to October 31, 1998, there were a total of 54 bronchiolitis admissions out of 150 admissions to the Pediatric Ward. Nine of those infants were admitted more than once over the two month period. Two of the infants were medivaced to Edmonton and ultimately recovered. These admissions accounted for 245 hospital days, with an average length of stay of 4.7 days. There were 29 males admitted and 25 females. The majority of the infants admitted were Inuit (32/54 or 59%). There were 14 Dene infants admitted from various communities and 8 non-aboriginal children from Yellowknife.

Viral augers were sent for viral isolation and identification on most infants. Twenty (37%) were positive for RSV and 1 for coxsackie virus. Chest x-rays were read as normal in only 13 cases (24%). Abnormal results included 17 upper lobe infiltrate/consolidation, 12 middle lobe infiltrate/consolidation, 14 lower lobe infiltrate/consolidation, 1 hyperinflation, 1 minor bronchiolitis changes and only 1 atelectasis. These x-rays were read by a number of different radiologists rotating through the department.

Treatment was quite varied. Slightly more than half (27) received oxygen. Thirteen infants had an intravenous started, usually to give antibiotics. Ventolin was given in 43 cases (80%), and this on a regular basis in the majority of cases. Vaponeprine was tried in 4 cases. Antibiotics were given in 34 cases (63%). Sixteen infants received steroids and 2 were given atrovent.

Conclusion

Bronchiolitis remains the most frequent reason for pediatric admissions to our hospital. Although the audit covered a short period of two months, the data is similar throughout the year.

The cost to the system as well as to families is huge. The Inuit population is by far the most affected group. As studies have shown, medicine has very little to offer to these infants except for supportive care. The focus, therefore, has to be on education and prevention. With our excessive use of ventolin and more recently vaponephrine, health care providers, both at the community level and in hospital, may be sending the message that medicine will make these infants better. Research has never been able to substantiate this and, more recently, has been showing that this is not so.

Recommendations

1. The huge impact this infant disorder has on families, communities and health care costs should prompt the health boards to ensure that a program aimed at education regarding risk factors and ultimately prevention of this disease entity is in place in every community.
2. Health care providers need to become more judicious in their use of different medications in the treatment of bronchiolitis. If ventolin or vaponephrine are tried, their continued use should only be based on an obvious positive response to the first dose. There is no role for steroids or atrovent in the treatment of bronchiolitis. Antibiotics should rarely be required and should not necessarily be used to treat infiltrate/consolidation on chest x-rays, as these are usually areas of atelectasis.
3. Good hydration, chest physiotherapy and adequate use of oxygen are the mainstay of supportive care in bronchiolitis.
4. Health care providers should reinforce education issues at each encounter.

References:

Hospital Management of RSV infection. CAN J INFECT DIS VOL 4 NO 6,
NOV/DEC 1993

Literature review (1960 to 1985) for paper presented by Nicole Chatel at Allergy Rounds in April 1985 on Treatment of Bronchiolitis.

Soft Vinyl (PVC) Teethers and Soft Vinyl Rattles Alert

Attention! Soft vinyl (PVC) teethers and soft vinyl rattles may be harmful to babies and toddlers between three and twelve months old weighing less than eight kilograms (eighteen pounds).

Some of these soft vinyl products contain DINP, a chemical used to make the vinyl softer and more flexible. Products that contain DINP may be unsafe to babies and toddlers who chew or suck on them for more than three hours a day for many weeks and months.

For the safety of children, stores are removing soft vinyl teethers and rattles from their shelves. Pacifiers and baby bottle nipples are not a danger, because they do not normally contain DINP.

Safety Tips

Please throw out teethers and rattles made of soft vinyl for the safety of babies and toddlers.

Also, watch young children when they are playing with soft vinyl toys that are often placed in cribs or playpens. Take these products away from children right away, if they are sucking or chewing on them for more than three hours a day.

For more information on the safety of teethers, rattles and small toys made of soft vinyl (PVC), please call our toll free number: 1-888-774-111.

Health Canada Fact Sheet, November 1998.

Sunscreens: Are They Safe and Effective?

Exposure to the sun can cause acute and chronic injury to the skin. Sunburn is the visible acute injury, but immunosuppression also occurs. Chronic effects include degenerative changes such as wrinkling and pigment alterations, and DNA damage leading to premalignant actinic keratoses, basal and squamous cell carcinoma, and probably malignant melanoma (DJ Leffell and DE Brash, Sci Am, 275:52, July 1996; BA Gilchrest et al, N Engl J Med, 340:1341, April 29, 1999). Recently, some experts have questioned the use of sunscreens to prevent skin cancer (RL Ferrini et al, Am J Prev Med, 14:83, 1998; CJ McDonald, CA Cancer J Clin, 48:229, 1998).

Ultraviolet (UV) Radiation

Ultraviolet light that injures the skin can be classified by wavelength into UVA I (340-400 nm), UVA II (320-340 nm) and UVB (290-320 nm). UVB wavelengths cause more damage, but ten to 100 times more UVA reaches the earth's surface. Both UVB and UVA cause photoaging. UVB and UVA II are the major cause of sunburn. The FDA permits sunscreen manufacturers to claim UVA protection if their products block at least part of UVA II. UVB causes skin cancer in experimental animals, but UVA in high doses can also be carcinogenic in animals.

Sunscreen Agents

Most topical sunscreens contain combinations of organic chemicals that absorb various wavelengths of ultraviolet light (FP Gasparro et al, Photochem Photobiol, 68:243, 1998). All of these agents except avobenzone (also called Parsol 1789) absorb UVB radiation. Avobenzone is the only agent currently available in the USA that absorbs both the shorter and the longer wavelengths of UVA radiation, but it may be degraded by exposure to light (DI McLean and R Gallagher, Dermatol Clin, 16:219, 1998). Menthyl anthranilate and oxybenzone absorb some shorter UVA wavelengths. Inorganic physical sunblocks such as titanium dioxide or zinc oxide are opaque formulations that scatter light and prevent solar ultraviolet radiation from penetrating the skin.

Sun Protection Factor (SPF)

The sun protection factor (SPF) is the ratio of the time required to produce minimal erythema on skin covered by a sunscreen product to the time required to produce the same degree of erythema without the sunscreen. These scores are determined indoors using artificial light sources and by applying a predetermined amount of sunscreen over a defined area (2 mg/cm^2).

Limitations of Sunscreens

In outdoor use of sunscreens, wind, heat, humidity and altitude can decrease their effectiveness (MF Naylor and K Farmer, Arch Dermatol, 133:1146, 1997). Most people do not apply enough sunscreen to achieve the claimed SPF; many apply only 0.5 to 1 mg/cm^2, which would give a sunscreen with a labeled SPF of 15 a true SPF of 3 to 7. Even though newer sunscreen products are more resistant to removal from the skin and more water-resistant, multiple applications may still be needed to maintain protection during prolonged exposure (MR Odio et al, Photodermatol Photoimmunol Photomed, 10:118, 1994). The SPF does not provide any information on protection against UVA, and long-term UVA damage can occur with repeated suberythemal exposure to the sun (RM Lavker et al, J Am Acad Dermatol, 32:53, 1995).

Effect on Vitamin D

By blocking UVB, sunscreens could decrease cutaneous synthesis of vitamin D, possibly leading to vitamin D deficiency, especially in the elderly. One study, however, in 113 Australians more than 40 years old found that over a single summer sunscreens had no effect on 25-hydroxyvitamin D3 plasma levels (R Marks et al, Arch Dermatol, 131:415, 1995). In another study, patients with xeroderma pigmentosa who used extensive sun-protective measures, including sunscreens, did not develop vitamin D deficiency (RB Sollitto et al, J Am Acad Dermatol, 37:942, 1997).

Sunscreens and Cancer

Regular use of a broad-spectrum sunscreen for six months in a randomized placebo-controlled trial prevented development and increased remission of actinic keratoses, which may be precursors of squamous-cell carcinoma (SC Thompson et al, N Engl J Med, 329:1147, 1993). In a two-year double-blind trial, patients with actinic keratoses or previous non-melanoma skin cancer who used sunscreens regularly developed fewer new actinic keratoses than those who used a placebo (MF Naylor et al, Arch Dermatol, 131:170, 1995). Randomized controlled trials testing the effect ofsunscreens on the incidence of basal cell cancer have not been done.

Some retrospective studies of sunscreen users have found an increased risk of melanoma in adults, and more development of nevi (considered a risk factor for melanoma) in six and seven-year old children. These studies, however, were unable to control completely for the possibility that those who used sunscreens

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had other risk factors such as fair skin, wore less protective clothing or spent more time in the sun (P Autier et al, Melanoma Res, 7:S155, 1997; P Autier et al, J Natl Cancer Inst, 90:1873, 1998).

Conclusion

Sunscreens can prevent sunburn, decrease photoaging, and suppress actinic keratoses. Their effect on the incidence of squamous cell cancer, basal cell cancer and malignant melanoma has not been established, but most Medical Letter consultants believe that they protect against all three, and recommend regular use of a high-SPF sunscreen that includes protection against UVA. It is unlikely that sunscreens themselves increase the risk of any cutaneous malignancy, but some patients who use them may overestimate their effectiveness and unwisely increase their exposure to the sun.

Estimated Smoking Attributable Mortality in Former NWT 1991-1996

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It has been established that smoking is the cause of many adverse health outcomes such as increased mortality from lung cancer, cardiovascular diseases and other chronic conditions. Smoking as a behavior is the single most important preventable cause of illness and death in industrial countries.

Using a software package, SAMMEC 3.0, provided by the US Centers for Disease Control (CDC), we computed the estimated tobacco attributable mortality of NWT residents from 1991 to 1996 (see Table 1). The impact of smoking on the mortality of NWT residents was estimated based on the age-sex-disease-specific mortality from vital statistics, the age-sex-specific prevalence of smoking among NWT residents and the disease-specific population attributable risk of smoking.

Of the total 1,493 deceased from 1991 to 1996, we estimated approximately one-fourth of the deaths were from smoking (385 smoking attributable deaths). Smoking affected a wide range of disease categories (cancers, cardiovascular diseases, respiratory diseases and perinatal conditions). Cancers and cardiovascular diseases accounted for 71% of the smoking attributable deaths (272 of 385); lung cancers made up 28% of the attributable deaths (106 of 385). More males died from smoking than females (240 vs 145).

The estimated smoking attributable mortality in the former NWT may be underestimated. The attributable deaths among NWT residents were assumed to be caused by the same concentrations of smoking hazardous substances as in the south. However, indoor smoking in northern areas could be more prevalent due to the cold climate in winter, thus leading to higher concentrations of polluted substances in the living environment than in southern areas.

The above example only showed the adverse effects of smoking on mortality. It did not take into consideration hospitalizations, community health care services and medical travel due to smoking. Neither did it evaluate the economic impacts of loss of working days (years) due to smoking. The total impact of smoking is considered much larger than its impact on mortality.

The awareness of the magnitude of adverse effects of smoking should be known to NWT residents. Feel free to use Table 1 for any smoking prevention programs in your community.

Table 1 March 4, 1999

Smoking-Attributable Mortality (SAM) by Cause of Death and Sex
Impact of Smoking on Mortality, NWT, 1991-1996
Research & Analysis Unit, Dept. of Health & Social Services

Cause of Death (ICD-9-CM)	Male	Female	Total
Neoplasms			
Lip, Oral Cavity, Pharynx (140-149)	11	4	15
Esophagus (150)	3	2	5
Pancreas (157)	3	3	6
Larynx (161)	2	0	2
Trachea, Lung, Bronchus (162)	70	36	106
Cervix Uteri (180)	n/a	0	0
Urinary Bladder (188)	3	0	3
Kidney, Other Urinary (189)	4	0	4
Total	**96**	**45**	**141**
Cardiovascular Diseases			
Hypertension (401-404)	0	0	0
Ischemic Heart Disease (410-414)	0	0	0
Persons Aged 35-64	14	5	19
Persons Aged 65+	15	4	19
Other Heart Disease (390-398, 415-417, 420-429)	19	13	32
Cerebrovascular Disease (430-438)	0	0	0
Persons Aged 35-64	5	6	11
Persons Aged 65+	8	4	12
Atherosclerosis (440)	18	14	32
Aortic Aneurysm (441)	2	2	4
Other Arterial Disease (442-448)	1	1	2
Total	**82**	**49**	**131**
Respiratory Disease			
Pneumonia, Influenza (480-487)	11	7	10
Bronchitis, Emphysema (490-492)	3	1	4
Chronic Airways Obstruction (496)	36	37	73
Other Respiratory Diseases (10-12, 493)	1	0	1
Total	**51**	**45**	**96**
Perinatal Conditions			
Short Gestation/Low Birth Weight (765)	1	0	1
Respiratory Distress Syndrome (769)	1	1	2
Respiratory Conditions-Newborn (770)	1	2	3
Sudden Infant Death Syndrome (798.0)	2	2	4
Total	**5**	**5**	**10**
Burn Deaths	6	1	7
Total	**240**	**145**	**385**

by Frank Hamilton
Environmental Health Consultant
Department of Health and Social Services

Swimmer's Rash

Some summers are worse than others, but usually there are a number of complaints in the NWT concerning skin rashes which appear after a day of swimming at the beach. Swimmer's itch or swimmer's dermatitis are two potential reasons for acquiring skin rashes while swimming at the beach.

What is swimmer's itch?

Swimmer's itch refers to a skin rash caused by a non-pathogenic parasite, schistosoma species. The larvae find their way into the water via aquatic bird excrement and then enter into snails to continue their development to the cercarial stage. These cercariae are then able to penetrate human skin, causing transient, pruritic papular eruptions. This rash, caused by schistosoma parasite, is also called cercarial dermatitis. In previous years, water samples from northern lakes and skin biopsies from affected individuals have failed to identify schistosoma.

What is swimmer's dermatitis?

Algae blooms are also known to cause rashes in swimmers who have come in contact with algae toxins. More specifically, algae blooms produced by blue-green algae or Cyanobacteria have been documented as causing severe dermatitis in swimmers.

The first recognized species of blue-green algae were blue-green in colour, which is how the algae received their name. Species identified since, range in colour from olive-green to red. The blue-green algae form in shallow, warm, slow-moving or still water. They are made up of cells which can house poisons called *cyanobacterial toxins*. A mass of Cyanobacteria in a body of water is called a *bloom*. When this mass rises to the surface of the water, it is known as *surface scum* or a *surface water bloom*. Cyanobacterial blooms occur across Canada. They mostly appear in the hot summer months and are quite prevalent in the prairies.[1]

Last summer, this problem was documented at Yellowknife's Long Lake Beach and arrangements were made with a laboratory in Winnipeg to identify the algae. The lab identified the algae as Lynghya limetica, one of the blue-green family known to produce toxin that causes skin rash in swimmers.

Contact with the algae toxins can cause a reaction in certain individuals. This is similar to the type of reaction seen when an individual is in contact with poison ivy. This includes itchy and irritated eyes and skin, as well as other hay fever-like allergic reactions.[2] Treatment generally involves removing the source of irritation and providing symptomatic relief, such as:

- soothing skin soaks (e.g. baking soda);
- antipruritic medication;
- topical applications, such as calamine lotion or topical steroids if necessary;
- analgesics (e.g. Acetaminophen); or
- oral steroids, only in severe cases.

If contaminated water is swallowed symptoms include headaches, fever, diarrhea, abdominal pain, nausea and vomiting.[3]

Toxins are not removed by boiling.[4]

Prevention of cercarial and contact dermatitis

Some preventive measures include drying off well with a towel immediately, rather than allowing water to evaporate on the skin, showering as soon as possible once home and possibly using a waterproof sunscreen prior to going in the water (which acts as a barrier and protects the skin).

Who to contact

The regional Environmental Health Officer should be contacted as soon as possible and provided with as much information as available. Prior to initiation of an investigation, the following questions should be answered:

- How many people have been affected?
- How long does this condition last?
- Are the affected individuals responding to treatment? If yes, what treatment is being used?
- Were all individuals exposed to the same source, or are there multiple sources?
- Are there any unusual activities occurring nearby, such as dumping of sewage, garbage, chemicals, wildlife, etc.?
- Has any testing occurred (such as water or soil testing) for presence of chemicals or bacteria?

Other information needed would vary, depending on the particular case.

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1,2,3,4 Health Canada. Blue-green algae (cyanobacteria) and their toxins.

<http://www.hc-sc.gc.ca/main/hc/web/ehp/ehd/catalogue/general/iyh/algea.htm>

Health Effects of Smoking

by Alexandra Robles
Summer Student
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Smoking cigarettes, which results in nicotine addiction, is a problem in the Northwest Territories. Smoking contributes to health problems that have crippling and, at times, fatal consequences. Cigarette smoke contains various toxic chemicals that promote addiction and cause adverse effects on health.

There is no requirement for the tobacco industry to list the chemical ingredients of the products that they sell. Nicotine, tar and carbon monoxide are ingredients that smokers may already be aware of, but there are up to 4,000 chemicals in tobacco smoke. Many of them are known carcinogens or otherwise harmful to health.

Some of the chemicals found in tobacco smoke are also found in household items, labelled as poisons. As stated by a Government of British Columbia information article, these chemicals include:

Turpentine: very toxic, commonly used as a paint stripper.

Acetone: the tobacco industry refuses to say how it gets into cigarettes; it's one of the active ingredients in nail polish remover.

Ammonia: this chemical is added to enhance flavour and make it easier for smoke to be inhaled. Ammonia also increases the absorption of nicotine, which in turn keeps smokers hooked on smoking.

Propylene Glycol: this chemical is used in antifreeze. The tobacco industry claims they add it to keep cheap "reconstituted tobacco" from drying out; but scientists say it facilitates the delivery of nicotine - tobacco's addictive drug - to the brain.

Butane: highly flammable, it's one of the key components of gasoline.

Benzene: cancer-causing chemical used to make everything from pesticides to detergent and is also found in gasoline.

Benzopyrene: found in coal tar and cigarette smoke; one of the most potent cancer-causing chemicals known.

Arsenic: this deadly poison makes your lips burn, and gives you bad breath.

Methoprene: a chemical used to get rid of fleas on your pets.

Formaldehyde: causes cancer and can damage your lungs, skin and digestive system; embalmers use it to preserve bodies.[1]

Other chemicals in cigarette smoke include cadmium and lead, which are currently being monitored in contaminant research in the North. Cadmium "causes damage to the liver, kidney and brain, and stays in the body for years," while "lead poisoning stunts growth, causes vomiting and damages the brain."[2]

Inhaling these chemicals by way of smoking cigarettes contributes to many health problems. "Tobacco is a known or probable cause of about 25 diseases."[3] The risk of a person developing diseases, like lung cancer and heart disease, depends on the age when a person begins smoking, how long a person has smoked for and how many cigarettes a person smokes on a regular basis. Tobacco is well known as the most important cause of lung cancer, but other diseases are linked to tobacco use and they include:[4]

Cancer

- Lip, oral cavity (mouth) and nose and throat (nasopharnyx)
- Esophagus
- Pancreas
- Larynx
- Lung, trachea, and bronchus
- Bladder
- Kidney and other urinary organs

Cardiovascular diseases

- Hypertension
- Rheumatic heart disease
- Other heart diseases
- Atherosclerosis
- Aortic aneurysm
- Other arterial diseases

Respiratory diseases

- Tuberculosis
- Chronic airway obstruction (COPD)
- Asthma
- Emphysema

Other diseases and health problems associated with smoking are:[5]

1) Cataracts - The more an individual smokes, the more likely he/she is to develop cataracts (50% higher risk).
2) Stomach ulcers - Smokers are more likely to develop peptic ulcers. Stomach ulcers in smokers do not heal as fast and they recur more often.
3) Skin damage - Tar from tobacco smoke stains finger and fingernails yellow. Smoking decreases the blood flow to the skin, which results in wrinkling and

premature aging (the leathery look).

4) Psoriasis - Smokers are twice as likely as non-smokers to develop this skin disease. Psoriasis is a red and silver rash that can occur anywhere on the body.
5) Alzheimer's disease and dementia - Smokers are twice as likely to suffer this form of brain damage, as well as other forms of brain dementia.[6]

Environmental Tobacco Smoke

Smokers directly affect their health by smoking cigarettes, but smoking also has indirect health effects, which affect smokers and non-smokers. According to Health Canada, two-thirds of cigarette smoke ends up in the surrounding environment.[7] This is called environmental tobacco smoke (ETS), more commonly known as second-hand smoke. An idling cigarette, pipe or cigar produces the two-thirds of smoke that freely moves around the immediate environment.[8]

Exposure to ETS occurs in social settings like restaurants and parties. Continuous exposure will happen in the homes of smokers. Family members smokers and non-smokers alike are constantly subjected to second-hand smoke in this enclosed environment. Health problems will arise as a consequence of this continuous ETS exposure.

Health Effects Associated with Environmental Tobacco Smoke

Health effects associated with ETS include irritation of the eyes, throat and nose, headaches, dizziness, nausea, coughing and wheezing. In addition, those who suffer from allergies and asthma will find further aggravation of their symptoms because of exposure to ETS.[9] Smoking in the home by adult members of a family particularly affects children. Children exposed to second-hand smoke have an increased risk of suffering from middle ear infection and upper respiratory infections.[10]

In Nunavut for example, Inuit children suffer from middle ear infections, which in turn can lead to hearing loss. According to Manon Leblanc, an audiologist with Iqaluit Public Health Centre "95% of all hearing loss among school-aged children in the Baffin region is caused by middle ear infections, which are in turn aggravated by exposure to second-hand smoke."[11] ETS is also a major risk factor in sudden infant death syndrome (SIDS), one of the main causes of death during the first year of life in the NWT.

All NWT residents should be aware of the health effects of smoking and environmental tobacco smoke. Feel free to use any of the above information for smoking prevention programs in your community.

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New National Guidelines for Healthy Pregnancy

Pregnancy exerts a strong and lasting influence on the health of a mother, her child, her future children and the rest of her family. Given the importance of this relationship and major changes happening in both the philosophy and scientific information related to nutrition and the outcome of pregnancy, it is timely and highly welcome that Health Canada has just released, *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years.* This document replaces *Nutrition in Pregnancy: National Guidelines* published by Health and Welfare Canada in 1987. New and updated information is provided, which reflects major changes in the areas of preconceptional and prenatal nutrition over the past decade. This document is intended to:

- provide basic information for communicating consistent messages about nutrition during pregnancy and the childbearing years to women across Canada;
- serve as a basis for the development of practical education and implementation tools for those advising women of childbearing age about nutrition; and
- help practitioners identify pregnant women, and women planning to become pregnant, who may be at nutritional risk and refer them to appropriate prenatal programs and services. It is expected that more consistent access to programs will result.[1]

These new guidelines also provide information on healthy eating and nutrition issues for counselling women throughout pregnancy and the childbearing years. Nutrition issues are looked at in the context of health determinants, such as socio-economic status, culture and education. Lifestyle issues such as substance abuse, alcohol, physical activity and smoking are also examined.

The guidelines are directed at health practitioners who regularly offer nutrition advice and guidance to women. Physicians, midwives, nurses, nutritionists and dietitians will all find useful information within the document. The following is a sample of issues discussed in the guidelines.

Nutrients of Special Concern

With pregnancy, a large number of physiological changes take place, which increase a woman's energy and nutrient needs. Folate, iron, calcium, and vitamin D are nutrients that must be taken in adequate amounts.

Folate: Folate is important for the growth of maternal and fetal tissue and to reduce the risk of neural tube defect (NTD). Folic acid supplementation is required during the prenatal period. Recommended intake rises from 200µg (0.2 mg) to almost 400µg (0.4mg) per day. The recent mandatory fortification of flour and pasta will increase levels by about 0.1 mg, but will not, by itself, enable prenatal women to reach recommended intake.

Iron: Iron is required to maintain sufficient levels of maternal hemoglobin and to sustain fetal and placental growth. The recommended nutrient intake (RNI) for iron rises from 13 mg to 18 mg per day during the second trimester, and then to 23 mg in the third trimester.

Calcium and Vitamin D: During pregnancy, the RNI for calcium is between 1200 and1500 mg per day (depending on age), while for vitamin D it is 5µg (200 UI). People who do not drink milk, live in the northern regions of Canada or use sun screen with a protection factor of 8 or greater, may be at risk for low vitamin D status.

TABLE

RNI's During Pregnancy

Trimester	Folate (µg)	Iron (mg)	Calcium (mg)	Vitamon D (µg)
1st trimester	400	13	1200-1500	5
2nd trimester	400	18	1200-1500	5
3rd trimester	400	23	1200-1500	5

**The recommended intakes of each of these nutrients will be revised when the new Recommended Daily Intakes come into effect*

From *Rapport* (Ottawa, National Institute of Nutrition, Vol 1, No. 1 Winter 1999).

Smoking

A 1993 study on tobacco use before, during and after pregnancy in the NWT, found that only a small percentage of women who used tobacco prior to pregnancy abstained from using it during and after pregnancy. Smoking during pregnancy can harm both mother and fetus. Tobacco use increases the risk of cardiovascular and pulmonary disease in the mother. Prenatal smoking has also been linked to low birth weight (<2500 g), small size for gestational age, premature birth, congenital defects, spontaneous abortion and perinatal mortality.

The guidelines offer information regarding smoking and its adverse effects, research related to smoking cessation and the effects of smoking on healthy eating. For example, tobacco smoke alters the sense of taste, reducing the palatability of vegetables. Smokers are likely to eat less vegetables and fruit, whole grains and lower fat milk than non-smokers. Some practical considerations to take into account when advising women to give up smoking are: understand that smoking is a difficult addiction to overcome and to be sensitive when explaining the health risks associated with smoking during pregnancy to the expectant mother and advise all smokers to smoke away from pregnant women and infants.

Physical Activity

Canadian women are interested in strengthening or maintaining their level of physical activity throughout pregnancy.[2] This gives the chance for health practitioners to promote physical activity in the daily life of pregnant women. Regular mild-to-moderate physical activity does not affect the fetus and can benefit the mother in a number of ways. Previously sedentary women can begin a physical activity program during pregnancy.

Physiological changes related to pregnancy may affect the ability to participate in some forms of physical activity. Activities that use large muscle groups are suggested, such as walking, swimming, snowshoeing, stationary cycling, fishing and low impact aerobics. Women who engage in physical activity during pregnancy should:

- consume sufficient energy to meet the increased demands of pregnancy and physical activity;
- drink liquids before, during and after physical activity to ensure adequate hydration; and
- avoid over exertion.[3]

Encourage pregnant women to build physical activity into their daily lives!

Other Topics

Other major topics covered by the guidelines include:

The Childbearing Years

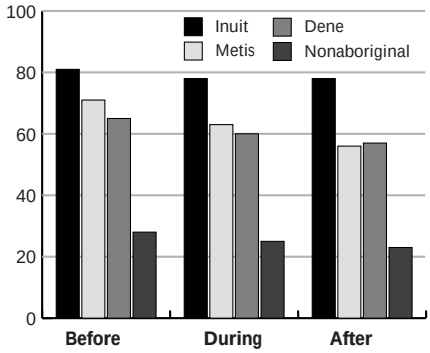
- Emphasizing nutrition and healthy eating throughout the childbearing years.
- Discussing nutrients of special concern
- Making healthier eating easier
- Discussing other areas of concern

The Prenatal Period

- Emphasizing healthy eating during pregnancy.
- Discussing nutrients of special concern.
- Discussing breastfeeding.
- Recommending healthy gestational weight gain.
- Discussing active living.
- Addressing at-risk population groups and lifestyle issues (Some Aboriginal health issues are discussed here).
- Knowing about various cultural beliefs.
- Advising on food safety.

On-line copies of *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years* can be found on Health Canada's web site at www.hc-sc.gc.ca. Printed copies are also available by phoning Health Canada at 613-954-5995 or by faxing them at 613-941-5366.

Tobacco Use Before, During and After Pregnancy, NWT 1993 (n=1,057)



Source: Health Research & Analysis Unit GNWT. Database on Breastfeeding, 1993, H&SS

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Population Health and Public Health Practice — What's the Link?

by Dr. Penny Sutcliffe
Regional Medical Health Officer
Stanton Regional Health Board

"More recently, population health has gained prominence as an underlying concept for public health programs... This is truly the challenge of population health; how to use the emerging evidence about determinants and their interactions to guide development of the next generation of public health programs." CJPH 1999;90(1):10-11

Many public health practitioners will have heard the term "population health" and there is a good chance that it is causing some confusion. So, what is it and what does it have to do with public health practice? The purpose of this article is to provide a brief overview of the concept of population health and to present some initial ideas about the implications for public health practice.

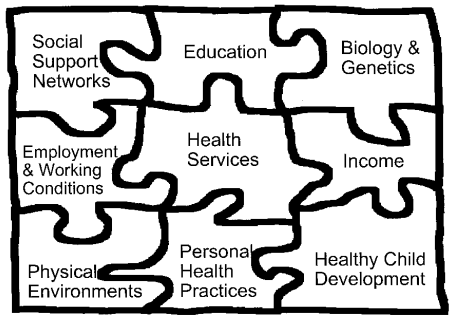
Population health

Population health is a term with a relatively recent history in Canada. It has been widely adopted (and debated) by academics, governments and their agencies and by front line workers. The underlying concepts of population health, however, are not new.

Population health is defined by the FPT Advisory Committee on Population Health in 1997 as "the health of a population as *measured* by health status indicators and as *influenced* by social, economic, and physical environments, personal health practices, individual health capacity and coping skills, human biology, early childhood development and health services" (emphasis added).

One of the key elements of the definition above is that population health recognizes that there are many factors that determine or influence health, in addition to access to health care services. Accordingly, a population health approach attempts to address the entire range of factors that determine health.

Determinants of Health



For those readers who are familiar with health promotion, you will note that population health and health promotion have common roots. From the 1974 Lalonde Report, *A New Perspective on the Health of Canadians* to the 1986 *Ottawa Charter for Health Promotion*, Canadian public health practitioners have recognized the importance to health of socio-economic and physical environments, lifestyle choices, human biology and health care services.

It is perhaps most helpful to think of health promotion as one set of tools that practitioners can use to improve population health. Other sets of tools include disease prevention and health protection.

So what's new about population health?

The concept of population health builds on both public health experience with health promotion and on mounting scientific evidence of the impact of socio-environmental conditions on health.

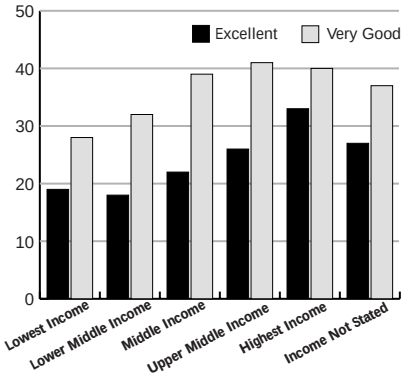
Public Health Experience

Experienced public health practitioners will agree that although controlling an outbreak of tuberculosis is exciting (initially anyway), *preventing* the outbreak is much more rewarding. Prevention requires attention to the factors that facilitate outbreaks. These factors include adequate case and contact management, but also include socio-environmental factors such as crowded housing, underlying nutrition and substance abuse. Public health interventions are at least as important at this level as they are at the level of case and contact management.

Scientific Evidence

The emerging scientific literature provides additional evidence for the importance of working on underlying determinants of health. In particular, studies that have examined health disparities among different income groups reveal that there is a "health gradient." This means that it is not only those at the very bottom of the income ladder who have worse health than those at the top. Health improves each step along the socioeconomic gradient.

Percentage of Canadians Reporting Excellent or Very Good Health by Income



Source: Statistics Canada, National Population Survey, 1996/97

Many studies have examined this stepwise relationship between health and wealth to determine why it exists. A common hypothesis is that those with low levels of income and education have more health risk behaviours (smoking, drinking, unprotected sex, high fat diets, etc.) which result in higher rates of disease and death.

Higher rates of health risk behaviours among lower income and education groups do exist. However, studies show that these differences account for less than 20% of the health differences. The conclusion is that although reducing health risk behaviours in low income populations is important, socioeconomic differences in health are due to a broader range of factors and would persist even with improved health behaviours.

Many hypotheses exist to explain the stepwise relationship between health and wealth. Researchers have proposed that the association may be caused by socioeconomic differences in:

- exposure to environmental and occupational hazards;
- access to preventive medical care;
- social relationships and supports;
- sense of self control/empowerment; and
- exposure to chronic stress in life and work.

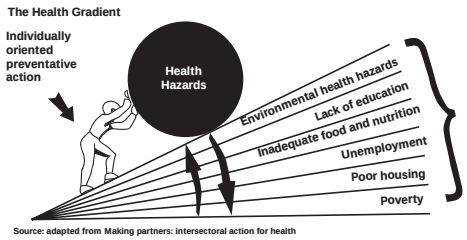
Public heath experience and the scientific literature inform the concept of population health and underscore the importance of working on the broader determinants of health. The challenge is to translate this growing knowledge into practical public health strategies and programs.

What does this mean for public health practice?

While important, public health practice that focuses uniquely on changing individual behaviours will only marginally change health status and reduce health inequities. Public health practice that responds to disease occurrences is necessary but, in a sense, too late. Public health practice must reflect our knowledge of what keeps people healthy.

The population health concept provides a framework for a public health practice that maintains important lifestyle-based health promotion strategies and the necessary health protection and disease prevention efforts. However, in addition to traditional public health practice, population health supports other strategies that should be the (shared) domain of public health. These include for example:

- building community capacity/social cohesion;
- partnering with other organizations that also have a stake in health or its determinants;
- engaging in community development such that there is maximum involvement of those who are affected by underlying determinants; and
- advocating for changes in broader policies that impact on health.



Source: adapted from Making partners: intersectoral action for health

The Health Gradient

It is clear that the health sector does not "own" many of the determinants of health. It is also clear that within the health sector, public health has a mandate to be involved. In many instances public health may be the catalyst for coordinated efforts to improve those factors that impact on the health of our communities.

This article has presented some initial ideas about the implications of population health for local and regional public health practice. Public health practitioners should be encouraged to discuss these ideas further so that future public health programs may be guided by our evolving knowledge of the determinants of health and their interactions.

Notifiable Diseases Reported by Community in Nunavut

Disease	January 1999	February 1999	March 1999
Campylobacteriosis			
Chicken Pox	**Nunavut 14:** Igloolik, 4; Arviat, 4; Kugluktuk,2; Pond Inlet, 1; Pangnirtung, 1; Clyde River, 1; Arctic Bay, 1.	**Nunavut, 26:** Rankin Inlet, 21; Chesterfield Inlet, 3; Whale Cove, 1; Iqaluit, 1.	**Nunavut 14:** Chesterfield Inlet, 8; Rankin Inlet, 4; Whale Cove, 2.
Chlamydia	**Nunavut 35:** Iqaluit, 9; Pangnirtung, 6; Taloyoak, 4; Arviat, 4; Kugluktuk, 3; Rankin Inlet, 2; Cape Dorset, 2; Cambridge Bay, 2; Igloolik, 1; Clyde River, 1; Qikiqtarjuaq, 1.	**Nunavut 52:** Iqaluit, 10; Pangnirtung, 7; Cape Dorset, 7; Igloolik, 5; Arviat, 5; Kugluktuk, 3; Taloyoak, 2; Qikiqtarjuak, 2; Baker Lake, 1; Cambridge Bay, 1; Chesterfield Inlet, 1; Arctic Bay, 1; Gjoa Haven, 1; Whale Cove, 1; Kimmirut, 1; Pond Inlet, 1; Rankin Inlet, 1; Repulse Bay, 1; Clyde River, 1.	**Nunavut 30:** Repulse Bay, 5; Rankin Inlet, 4; Kugluktuk, 4; Gjoa Haven, 4; Cambridge Bay, 4; Arviat, 3; Taloyoak, 2; Resolute Bay, 1; Coral Harbour, 1; Cape Dorset, 1; Baker Lake, 1.
Giardiasis			
Gonorrhea	**Nunavut 9:** Iqaluit, 6; Pond Inlet, 1; Pangnirtung, 1; Kugluktuk, 1.	**Nunavut 10:** Iqaluit, 8; Pond Inlet, 1; Cape Dorset, 1.	
Group A Strep		**Nunavut 1:** Cambridge Bay, 1.	
Hepatitis C	**Nunavut 1:** Iqaluit, 1.		**Nunavut 3:** Iqaluit, 2; Rankin Inlet, 1.
Influenza			**Nunavut 1:** Rankin Inlet, 1.
Invasive Strep			
Legionellosis		**Nunavut 1:** Cambridge Bay, 1.	
Malaria			
Meningitis/Unspecified			
Pertussis	**Nunavut 2:** Cambridge Bay, 2.	**Nunavut 2:** Gjoa Haven, 2.	
Salmonellosis	**Nunavut 1**: Rankin Inlet, 1.	**Nunavut 1:** Iqaluit, 1.	**Nunavut 1:** Rankin Inlet, 1.
Trichinosis	**Nunavut 2:** Coral Harbour, 1; Sanikiluaq, 1.	**Nunavut 1:** Repulse Bay, 1.	**Nunavut 1:** Repulse Bay, 1.
Tuberculosis	**Nunavut 2:** Iqaluit, 1; Arctic Bay, 1.	**Nunavut 2:** Iqaluit, 2.	**Nunavut 2:** Pangnirtung, 1; Pond Inlet, 1.
Yersinia	**Nunavut 1:** Kugluktuk, 1.		

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Notifiable Diseases Reported by Community in the NWT

Disease	January 1999	February 1999	March 1999
Campylobacteriosis		**NWT 1:** Yellowknife, 1.	
Chicken Pox	**NWT 21:** Yellowknife, 15; Ft. Simpson, 4; Wrigley, 2.	**NWT 12:** Ft. Smith, 11; Wrigley, 1.	**NWT 3:** Yellowknife, 2; Lutsel K'e, 1.
Chlamydia	**NWT 40**: Inuvik, 11; Yellowknife, 9; Tulita, 4; Rae Edzo, 4; Holman, 2; Tuktoyaktuk, 2; Deline, 1; Ft. McPherson, 1; Ft. Resolution, 1; Ft. Simpson, 1; Hay River, 1; Norman Wells, 1; Sachs Harbour, 1; Wha Ti, 1.	**NWT 21:** Yellowknife, 6; Inuvik, 4; Rae Edzo, 3; Deline, 1; Ft. Good Hope, 1; Ft. Liard, 1; Ft. MacPherson, 1; Ft. Resolution, 1; Ft Simpson, 1; Ft. Smith, 1; Hay River, 1.	**NWT 28:** Yellowknife, 7; Inuvik, 6; Rae Edzo, 6; Ft. Liard, 2; Ft. Good Hope, 1; Ft. McPherson, 1; Ft. Providence, 1; Ft. Simpson, 1; Hay River, 1; Tuktoyaktuk, 1; Wha Ti, 1.
Giardiasis		**NWT 1:** Yellowknife, 1.	**NWT 1:** Ft. Good Hope, 1.
Gonorrhea	**NWT 13:** Inuvik, 5; Deline, 4; Hay River, 2; Rae Edzo, 1; Yellowknife, 1.	**NWT 3:** Inuvik, 2; Yellowknife, 1.	**NWT 11:** Yellowknife, 3; Inuvik, 2; Deline, 1; Ft. Smith, 1; Lutsel K'e, 1; Rae Edzo, 1; Tuktoyaktuk, 1; Wha Ti, 1.
Group A Strep			
Hepatitis C	**NWT 1:** Yellowknife, 1.	**NWT 3:** Yellowknife, 2; Hay River, 1.	**NWT 2:** Yellowknife, 2.
Influenza			
Invasive Strep		**NWT 1:** Yellowknife, 1.	
Legionellosis			**NWT 1:** Yellowknife, 1.
Malaria		**NWT 1:** Yellowknife, 1.	
Meningitis/Unspecified		**NWT 1:** Ft. Providence, 1.	
Pertussis	**NWT 7:** Yellowknife, 7.	**NWT 3:** Yellowknife, 3.	**NWT 9:** Yellowknife, 9.
Salmonellosis		**NWT 2:** Rae Edzo, 1; Yellowknife, 1.	**NWT 1:** Yellowknife, 1.
Trichinosis			
Tuberculosis		**NWT 2:** Rae Edzo, 1; Ft. Good Hope, 1.	**NWT 2:** Rae Edzo, 2.
Yersinia			

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Notifiable Diseases by Territory and Region: January 1999 - March 1999

		Territories		Regions				
	Disease	NWT	Nunavut	Baffin	Ft Smith Mackenzie	Inuvik	Keewatin	Kitikmeot
Vaccine Preventable Diseases	H.Influenzae B	0	0	0	0	0	0	0
	Hepatitis B	0	0	0	0	0	0	0
	Influenzae	0	1	0	0	0	1	0
	Measles	0	0	0	0	0	0	0
	Mumps	0	0	0	0	0	0	0
	Pertussis	19	4	0	19	0	0	4
	Rubella	0	0	0	0	0	0	0
Sexually Transmitted/ Bloodborne Diseases	Chlamydia	89	117	57	50	37	34	28
	Gonorrhea	27	19	18	12	15	0	1
	Hepatitis C	6	4	3	6	0	1	0
	Hepatitis, Other	0	0	0	0	0	0	0
	Syphilis	0	0	0	0	0	0	0
Diseases by Direct Contact/ Respiratory Route	Chicken Pox	36	54	9	36	0	43	2
	Group A Strep	0	1	0	0	0	0	1
	Invasive Strep	1	0	0	1	0	0	0
	Legionellosis	1	1	0	1	0	0	1
	Meningitis, Pneomococcal	0	0	0	0	0	0	0
	Meningitis, Other Bacterial	0	0	0	0	0	0	0
	Meningitis, Unspecified	1	0	0	1	0	0	0
	Meningitis, Viral	0	0	0	0	0	0	0
	Meningococcal Infections	0	0	0	0	0	0	0
	Tuberculosis	4	6	6	3	1	0	0
Enteric, Food and Waterborne Diseases	Botulism	0	0	0	0	0	0	0
	Campylobacteriosis	1	0	0	1	0	0	0
	Cryptospiridosis	0	0	0	0	0	0	0
	E.Coli 0157:H7	0	0	0	0	0	0	0
	Food Poisoning	0	0	0	0	0	0	0
	Giardiasis	2	0	0	1	1	0	0
	Hepatitis A	0	0	0	0	0	0	0
	Salmonellosis	3	3	1	3	0	2	0
	Shigellosis	0	0	0	0	0	0	0
	Tapeworm Infestation	0	0	0	0	0	0	0
	Trichinosis	0	4	0	0	0	4	0
	Yersinia	0	1	0	0	0	0	1
Vectorborne/ Other Zoonotic Diseases	Brucellosis	0	0	0	0	0	0	0
	Malaria	1	0	0	1	0	0	0
	Rabies Exposure	0	0	0	0	0	0	0

HIV Infections Reported in NWT Residents

	1987	88	89	90	91	92	93	94	95	96	97	98	99(YTD)
NWT	2	1	1	2	1	8	0	2	0	2	0	1	1
Nunavut	0	1	2	1	2	1	3	0	0	0	1	0	0