

06/15

New Brunswick Disease Watch Bulletin

Office of the Chief Medical Officer of Health

Introduction

Welcome to the 21st edition of the *New Brunswick Disease Watch Bulletin*.

This volume contains two case studies on events of public health interest in New Brunswick (NB). There is an update on recent initiatives taken to build a Healthy Smoke-Free New Brunswick, as well as a reminder about the timely administration of the preschool booster.

We congratulate N.B.'s Chief Medical Officer of Health (CMOH), who recently received the Dr. Donald Morgan Service Award. An article written by Dr. Cleary describes her recent work experience in West Africa and lessons learned.

As usual, we welcome feedback and suggestions for topics. Please submit them to our editor Dr. Cristin Muecke, Medical Officer of Health – Provincial Programs at dr.cristin.muecke@gnb.ca.

Electronic copies of the bulletin can also be found on the Department of Health website under publications at: <http://www2.gnb.ca/content/gnb/en/departments/ocmoh/publications.html>.

On the mark: Target lesion in an elementary school child

Case Presentation:

An eight-year-old boy presents to your clinic in late June with malaise, low grade fever and headache that improves with Children's Advil. He has a homogeneously erythematous oval rash on his upper left chest approximately 8 cm in diameter. The rash is not painful or itchy. His mother says about nine days ago a small red "spot" appeared that has gradually expanded.

The patient lives with his parents in Quispamsis and has two younger siblings (one and three years of age). The child attends the local elementary school, and walks to and from school to home. The patient is up to date on routine vaccinations, and has not travelled in the past three months. In March, the family vacationed in Disneyland in California for two weeks.

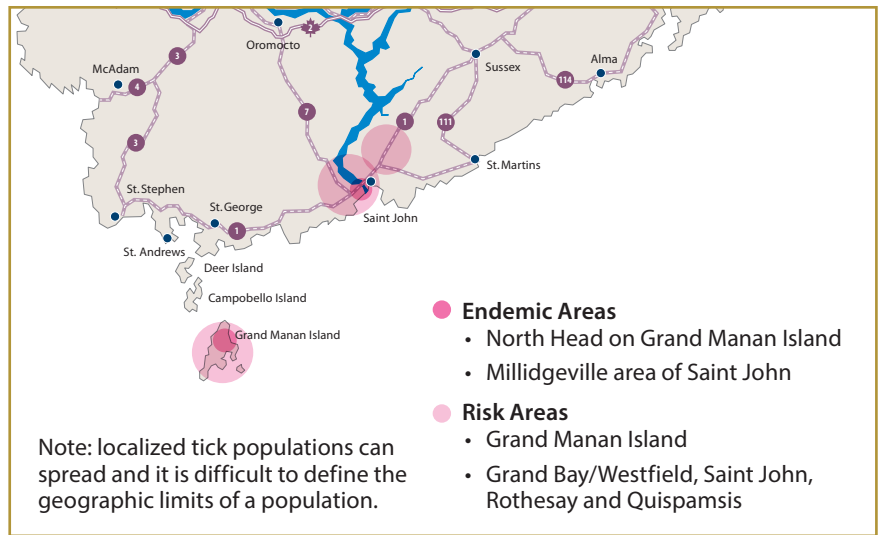


Photo courtesy of Centers for Disease Control and Prevention

Discussion:

Erythema migrans is a classic presentation of early localized Lyme disease. Clinician-observed erythema migrans with a history of residence in or visit to an endemic area is sufficient to be considered a probable case of Lyme disease and warrant short-course antibiotic treatment. A history of tick exposure may be solicited by asking patients if they have travelled to or lived in an area where blacklegged ticks are established (endemic areas) or are emerging (risk areas). On average, 12% of ticks tested in New Brunswick are positive for *Borrelia burgdorferi* (which causes Lyme disease), although the proportion can be higher in endemic areas. **When diagnosing patients, it is important to remember that ticks can be found outside currently established endemic areas and infected ticks have been found sporadically over the years throughout the province.**

Figure 1: Areas of established or emerging tick populations in N.B.



In New Brunswick, known endemic areas are North Head on Grand Manan Island, and the Millidgeville area of Saint John. Risk areas, based on provincial tick surveillance and reports of human disease, include Grand Manan Island, and Grand Bay/Westfield, Saint John, Rothesay, and Quispamsis.

Patients with clear symptoms of early localized Lyme disease should be diagnosed and treated as early as possible. Laboratory testing should only be used to supplement clinical findings, rather than as a basis for diagnosis for early Lyme disease. The two-tiered serological testing approach is an appropriate tool and includes an enzyme immunoassay (EIA) screening test and a confirmatory Western blot test (if the EIA is positive or equivocal).

In 2011, the Association of Medical Microbiology and Infectious Disease (AMMI) Canada fully endorsed the Infectious Disease Society of America (IDSA) guidelines (found at http://www.idsociety.org/uploadedfiles/idsa/guidelines-patient_care/pdf_library/lyme%20disease.pdf). As such, Western blot results should be interpreted according to the IDSA guidelines. This is to obtain the best balance between sensitivity and specificity. Canadian laboratory diagnostic guidelines for Lyme disease are consistent with those followed by public health authorities in the United States and Europe. They also meet current international standards. It is important to verify that the referral laboratory follows these guidelines since some laboratories may not be using properly validated tests or recommended standards for interpreting test results. This can lead to false positive results and considerable patient concern.

Report clinically diagnosed and laboratory confirmed cases of Lyme disease to Public Health.

From 2011-2014, the average number of newly confirmed cases of Lyme disease in New Brunswick was 5.5, although some may have been infected outside the province.

Advise patients to continue to enjoy outdoor activities and to protect themselves by following tick bite prevention precautions. These include using insect repellents (always follow directions), doing daily full body checks for ticks, and seeing a physician if you develop a rash or if you have flu-like symptoms after being bitten by a tick.

More specific information, including tick bite prevention measures, and reference material is available at www.gnb.ca and www.healthycanadians.gc.ca. An IDSA online CME case study course for the clinical assessment, treatment, and prevention of Lyme Disease can be found at <http://lymecourse.idsociety.org>.

‘Something smells fishy’: Food borne illness in an international ship crew in St. John, NB

Case Presentation:

On April 11, 2015, nine male crew members of an international cargo vessel docked in Saint John presented to the Emergency room at the Saint John Regional Hospital (SJRH) with gastrointestinal symptoms (nausea, vomiting, diarrhea, abdominal cramps). Other significant symptoms included dizziness, weakness and peripheral extremity paresthesias. When examined several of them were further found to have hypotension and bradycardia. All were admitted for intensive care level monitoring and management, including continuous cardiac monitoring, atropine for bradycardia, antiemetics,



and intravenous rehydration. Shortly thereafter, five more crew members presented with the same symptoms and were also admitted. The crew members reported that they had consumed a common meal of fish stew using fish they had caught during their voyage in the Caribbean, and had begun feeling ill 1-1.5 hours afterwards. The attending physicians consulted with the Poison Control centre in Halifax and identified ciguatera fish poisoning as the most likely diagnosis. The incident was reported to Public Health. A Code Orange was initiated by the SJRH to manage this large influx of critically ill patients.

Investigation:

In New Brunswick, clinicians are required to report clusters of illness thought to be food or water borne immediately (verbally within one hour) to their regional Public Health office. There is also a requirement to report unusual illness (not expected to occur in NB or unknown etiology) within 24 hours. Investigation of this incident was conducted jointly by New Brunswick Public Health staff (Health Protection Branch, Department of Health) and Environmental Health Officers from the Public Health Agency of Canada's Travelling Public Program.

The galley kitchen was closed until a full inspection was conducted and remaining crew obtained food off ship during that time. Remaining crew members were briefly monitored until it could be firmly established that there were no remaining susceptible individuals. There were 19 crew members onboard the cargo vessel when the outbreak occurred, of which fourteen (73.7%) had eaten the suspect meal of fish soup. The five remaining crew were either sleeping or ate the alternative pork meal that was served. All crew that ate the fish meal were ill and required admission to hospital for intensive care level monitoring and management. The average length of stay was 3.5 days and one individual required a readmission for continued symptoms. Following discharge, the crew members were repatriated by the ship owners as several of them were considered to be "unfit for duty" by attending physicians.

The severity of symptoms directly correlated with the amount of fish soup that was consumed and what part of the fish was ingested. For example, the individual who experienced the most severe symptoms ate the largest portion of the meal including the head of the fish.

Further questioning revealed that the crew had line fished off the boat while anchored in the Bahamas and had caught more than 125 kilos of fish in this manner. The fish was separated and frozen intact for crew consumption, and portions were eaten daily during their voyage north to Saint John, NB. While at port in Saint John one of the larger fish was thawed then prepared by removing entrails, gills, and fins, descaled, and then cooked in a fish soup with the head still attached.

Samples of fish left over from the suspect meal and samples of frozen fish that were also caught in the Bahamas were sent to the Canadian Food Inspection Agency Laboratory (Dartmouth) for species analysis and toxin testing. The fish stew specimen was reported as 'suspected positive' for ciguatoxin (due to lack of analytical standards the lab is unable to quantify the concentration of ciguatoxin in the sample). The remaining fish on the ship that was unlabelled or obtained from an unapproved food supplier was soaked in a strong sodium hypochlorite solution to render it inconsumable and then disposed (Public Health Agency of Canada. Environmental Health Report. New Brunswick: Traveling Public Program; 2015 *unpublished report*).

Ciguatera fish poisoning:

Ciguatera is a food-borne illness that is caused by eating reef fish contaminated with a toxin called "ciguatoxin". Ciguatoxin is colorless, odorless and tasteless, and the fish are not altered in appearance. The toxin cannot be destroyed by cooking, smoking, freezing, canning, salting or drying. This poison is produced by dinoflagellates: small organisms that attach to algae growing in warm ocean reef areas. Small plant eating fish ingest these toxic algae and are then eaten by larger predatory fish, which are in turn consumed by humans [1]. Fish in affected areas are not uniformly impacted, so it is possible for only a few fish out of any given catch to contain sufficient levels of toxin to cause illness. The toxin is lipid-soluble and concentrates in the head, viscera and roe of the fish [2].

Symptoms of ciguatera fish poisoning can occur within minutes, but generally develop within 24 hours of eating contaminated fish. Initial gastrointestinal symptoms include nausea, vomiting, diarrhea and abdominal pain. These symptoms may last several days. Neurological symptoms develop after the initial gastrointestinal symptoms, and include tingling and numbness around the mouth,

lips, throat, arms and legs, sore muscles and tooth pain, temperature reversal (hot things feel cold and cold things feel hot), feeling tired, headaches and itchy skin. In severe cases, neurological symptoms can last months or longer and may be worsened by changes in dietary behavior (such as dieting or high protein meals), alcohol consumption, exercise or sexual intercourse [2]. Most people suffering from ciguatera fish poisoning will recover completely within a few days or weeks, but in very rare cases, ciguatera can be fatal [1].

Diagnosis is based on astute recognition of the clinical presentation and compatible food exposure history – no human diagnostic testing

References

1. Government of Canada: <http://travel.gc.ca/travelling/health-safety/diseases/ciguatera>
2. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report: Ciguatera Fish Poisoning – Texas, 1997. Georgia: Centers for Disease Control and Prevention; 1998. Available from <http://www.cdc.gov/mmwr/preview/mmwrhtml/00054548.htm>
3. Schlaich C, Hagelstein J-G, Burchard G-D, Schmiedel S. Outbreak of Ciguatera Fish Poisoning on a Cargo Ship in the Port of Hamburg. J Travel Med 2012; 19(4): 238-42.

is currently available. However, stool specimens should be routinely collected to rule out other more common causes of food borne intoxications. If food specimens are available they can be collected and tested for presence of ciguatera toxin. There is no antidote for ciguatera poisoning, and people who have consumed ciguatoxin receive symptomatic treatment [3].

Prevention relies on public and industry awareness of ciguatera affected areas and fish species (in particular, large predatory warm water fish), since ciguatera toxic fish are not easily detected and no known preparation method can remove or destroy the toxin.

Dr. Eilish Cleary honored with the Dr. Donald Morgan Service Award

Dr. Eilish Cleary, New Brunswick's Chief Medical Officer of Health, was recently honored with the Dr. Donald Morgan Service Award at the 2015 New Brunswick Medical Society's annual Celebration of Medicine event on May 30 in St. Andrews, NB. This award is presented to one NBMS member per year, for outstanding contribution in education and/or research in health promotion wellness and/or humanitarian service.

Dr. Cleary was appointed as the Chief Medical Officer of Health for the Province of New Brunswick in 2008. Originally from Ireland, Dr Cleary received her medical degree from Trinity College, Dublin. She came to New Brunswick from Manitoba where she worked as a Regional Medical Officer for several years before becoming the Medical Officer for Emergency Preparedness and Response for Manitoba.

Before working in the public health field, Dr. Cleary was trained as a primary care physician. She has worked in a variety of settings including Ireland, England and Sierra Leone. She also served as Chief of Staff in Norway House Hospital, in a Cree First Nations community in Northern Manitoba.

Since taking up her position in New Brunswick, Dr. Cleary has been committed to the work of improving, promoting and protecting the health of the people of New Brunswick. Examples of public health issues that have been advanced under her leadership include health equity with a particular focus on First Nations communities, the public health aspects of shale gas exploration, and response to major communicable disease events such as the H1N1 pandemic and Ebola Virus Disease.

Building a Healthy Smoke-Free New Brunswick

In New Brunswick, 19.6% of people over 15 are smokers, the highest rate in Canada according to the *Canadian Tobacco, Alcohol and Drug Survey 2013*. Amongst those who smoke, an average of 14.3 cigarettes are smoked per day, one of the highest rates of consumption in Canada. According to the *2012-13 Youth Smoking Survey*, in NB 3.4 % of grades six to nine and 15.9% of grades 10-12 are current smokers. Most concerning, according to the *New Brunswick Student Wellness Survey* 24% of youth grades 6-12 who have never smoked are considered susceptible to starting smoking.

Strong anti-tobacco policies help to reduce exposure to tobacco and second-hand smoke, to denormalize tobacco use and to support those trying to quit as well as those who have quit to stay smoke-free. On June 5, 2015 amendments to the *Smoke-Free Places Act* and the *Tobacco Sales Act* were passed to help make New Brunswickers healthier by creating more smoke-free environments. The suite of amendments targets the protection of youth, denormalization of smoking behavior, and prevention of second-hand smoke exposures for the whole population.

All the changes are effective July 1, 2015, with the exception of the ban on the sale of flavored tobacco which will come into effect January 1, 2016.

The *Smoke-free Places Act* defines enclosed public places and workplaces where indoor smoking is prohibited (including smoking in vehicles with children) and creates offences for those smoking in a public place, as well as for owner/managers who allow smoking in areas under their control. The *Act* will now not allow smoking (with a few minor exceptions) in a variety of outdoor public spaces, including: patios where food and/or alcohol is served; near doorways, windows and air intakes of public buildings; on or near children's playgrounds; on or near outdoor sports and recreational areas, public walking trails; or in most areas within provincial parks.

In addition, use of e-cigarettes and water pipes will not be permitted in the same areas that traditional smoking is not permitted.



Smoke-free logo designed by Diane Laughter, courtesy of NBATC

The *Tobacco Sales Act* restricts the sale of tobacco to persons under 19, it states areas in which tobacco cannot be sold such as pharmacies, it restricts advertisement and the visibility of tobacco products and prescribes minimum cigarette package size. The *Act* will now include banning the sale of e-cigarettes and their liquids to persons under 19 years and banning all forms of flavoured tobacco, as well as display of smoking supplies and their sale to minors.

We anticipate that these changes will help prevent tobacco uptake, encourage more quit attempts, and help those who have quit remain tobacco-free. Physicians, nurse practitioners, nurses and other health care professionals not only play a critical role in providing clinical support to smoking cessation efforts but, perhaps more importantly, in preventing smoking among children and youth. The Canadian Pediatric Society recommends the "Anticipate-Ask-Advise-Assist-Arrange" approach to smoking prevention and cessation (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2804514/pdf/pch06089.pdf>). A useful resource for patients in NB is the Smoker's Help Line (1 877 513-5333).

Additional anti-tobacco resources can be found on the New Brunswick Anti-Tobacco Coalition website at <http://www.nbatc.ca/en/>. You can also sign-up for their newsletter which shares current events, updates in the tobacco control areas as well as webinar information.

For information on the changes to the acts, please visit http://www2.gnb.ca/content/gnb/en/departments/ocmoh/healthy_people/content/LivingTobaccoFree.html

Preschool Booster

New Brunswick legislation and regulations (the *Public Health Act, Department of Education and Early Childhood Development Policy 706, and NB Immunization Guide*) require children to provide proof of immunization before entering school for the first time. These requirements play an important role in monitoring and ensuring that children are up-to-date with the New Brunswick Routine Immunization Schedule (<http://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/CDC/Immunization/RoutineImmunizationSchedule.pdf>); thus supporting the goal of minimizing vaccine-

preventable diseases and outbreaks. One of the required vaccines is the preschool booster (DTaP-IPV or Tdap-IPV) and is recommended at four years of age.

All healthcare practitioners play a vital role in the school immunization verification process. Family physicians, Nurse Practitioners and Public Health Nurses need to work together to ensure that children receive the recommended immunizations in a timely manner. The immunization record should be updated accordingly following the administration of the vaccine, and provided to the parent or guardian to take to the child's school.

Lessons from the front line: Dr. Eilish Cleary on her experience working in West Africa

The world has just experienced the worst Ebola outbreak in history. It has had a devastating impact on the lives of those affected in Africa and has caused fear and panic in Western countries. In addition to my work as your Chief Medical Officer of Health in preparing for the event of a domestic case, I have had the opportunity to spend the better part of the past seven months in West Africa with the World Health Organization Ebola Response Team. I was initially deployed to Nigeria, but for most of the time was based in Sierra Leone, the country that had the highest number of cases in this outbreak. Much of my work was at the national leadership level where I was responsible for leading and managing the team that was responsible for the containment of the spread of the disease through activities such as early case finding, exposure reduction, epidemiological investigation and contact tracing. I supervised the epidemic information and data management and also the rebuilding of the Sierra Leonean integrated disease surveillance and response system so that there would be a solid foundation for the future. As was the case with most of those who went, I also pitched in wherever help where needed –and by doing so I got to witness and contribute to the full spectrum of the Ebola response. In addition to visiting homes and villages to investigate the source of new transmissions chains and providing some basic primary health care, I was involved in teaching the donning and doffing of personal protective equipment, house decontamination and burial procedures. I helped



organize laboratory support, and assessed the capacity to deliver clinical care at community care centres. It was busy and intense work, but it was a privilege to be able to do it.

Although there was no doubt in my mind from the beginning that the outbreak was containable, it still feels a bit unbelievable, that the combined efforts of the Sierra Leonean people and a huge, unwieldy international force, are eventually paying off, and that the numbers of new confirmed cases are now small. It is too soon to breathe a sigh of relief though because even after the last case for now is gone, it is clear that the factors for similar events are still there. It is unlikely that this will be the end of Ebola in that region. It is worth noting though that Ebola, even if

there are further cases and outbreaks, will probably always be a minor direct contributor to the poor health status in West Africa. Indirectly though, in this past year, it has been a major factor as a result of the almost total disruption of routine health services including vaccination programs, and significant economic hardship which will be difficult to bounce back from. Lessons should be learned to mitigate unintended consequences of any future response.

Despite the hardships and suffering, I have been left with a strong admiration for the resiliency and endurance of the people for whom we were there to provide support. More than once I was amazed by the ingenuity and ability to get things done despite the barriers, and impressed by the strong family and community values which seem to be ingrained. It did make me wonder about our assumed superiority of the western ways and lifestyle. Although in Sierra Leone there are huge issues in terms of poverty and inequality, of corruption and poor infrastructure that certainly need to be addressed, I can't help wonder are we as a society in Canada, despite our comparative wealth, as equipped as we would like to think to deal with major threats to our existence. We too have our societal inequalities; and our values, when push comes to shove, do not seem to lean towards humanitarianism. Even for Ebola, which poses little risk of a large outbreak, the defensive practices of the health sector and the opportunism of politicians served to fuel public anxieties and set the stage for poor policy decisions. How would we respond collectively as a society if a more contagious and equally lethal virus were to affect us? Would we as the doctors of this province have the moral fortitude and the sense of professional responsibility to act as the leaders we would need to be, to ensure that due process, ethical and scientific principles were applied despite political and economic pressures?

In the past and even during this Ebola outbreak, we have not shown ourselves to be particularly concerned with the value of African lives. It's easy to forget that the Universal Declaration of Human Rights applies to everyone. But even if we do not feel obliged to act based on principles of social justice, we should not forget that doing so in a world where public health events are increasingly global in nature, and in a society where we are not as resilient or resourceful as we might like to think, means that we are missing opportunities to prevent or minimize the impacts of future outbreaks or other similar disasters.