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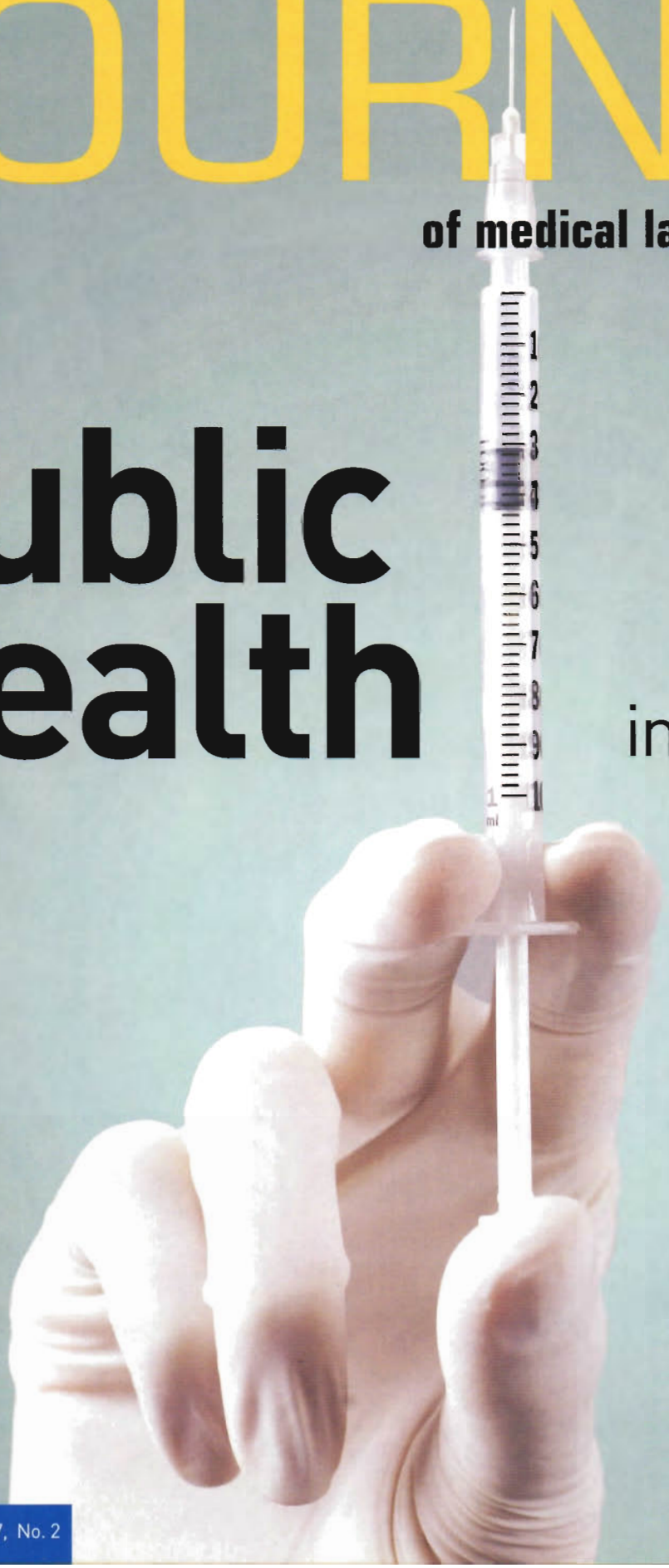
The Scare in Saskatoon

Protecting the Public

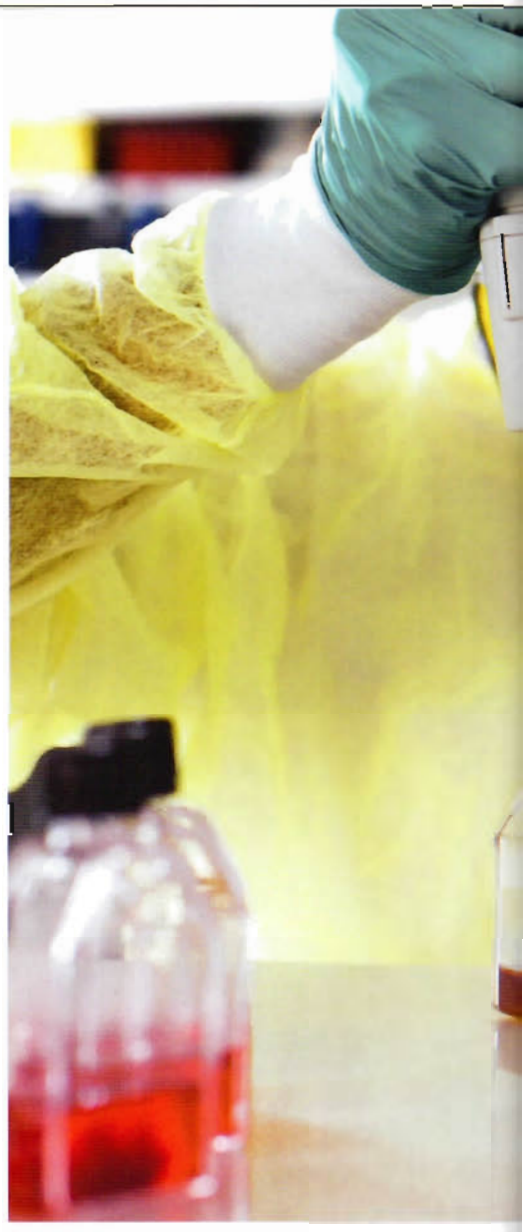


Official publication of:
CSMLS SCSLM
Canadian Society for Medical Laboratory Science
Société canadienne de science de laboratoire médical
PM #40063021

Summer 2015 | Vol 77, No. 2

The Scare in Saskatoon

How an Ebola scare improved Canadian biosafety measures



What happens when a patient brewing a suspected Risk Group 4 pathogen travels to Canada from the hot zone of a recent outbreak in Africa?

Last March 2014, this very situation occurred in Saskatoon. "It was a very extraordinary 96 hours – intense, scary, exciting – and it changed literally by the minute," says Dr. Joseph Blondeau, Acting Department Head for Pathology and Laboratory Medicine with Saskatoon Health Region.

The patient arrived at Saskatoon's St. Paul's Hospital on Sunday, March 23, 2014, at 23:00 hours and was diagnosed as critical with an unknown infection. His symptoms prompted diagnostic testing to determine if he had a viral hemorrhagic fever (VHF). By early the next morning, his condition had deteriorated dramatically. He was showing symptoms of diffuse rash, fever, and bleeding from the eyes and nasogastric tube. A medical history was difficult to obtain, however, it was determined that he had returned from Liberia within the two to 21-day incubation period for Ebola virus disease (Ebola).

The Ebola outbreak in West Africa had just been reported by global surveillance systems four days earlier. Over a year later, as of April 2, 2015, there have been more than 25,000 cases and more than 10,000 deaths attributed to Ebola in Guinea, Liberia and Sierra Leone. The disease has a fatality rate around 50 per cent, but transmission risk is low, requiring direct contact with bodily fluids such as vomit, feces, urine, blood or semen of infected people or those who have died from the disease. There is currently no licensed vaccine or treatment.

When a VHF became a strong consideration for the Saskatoon patient, Dr. Blondeau immediately halted all work and ordered the segregation and quarantine of all specimens in process. He contacted the Saskatchewan Disease Control Laboratory (SDCL) about a potential VHF case and the National Microbiology Laboratory (NML) was notified, prompting the activation of a coordinated response for an incident involving high-risk dangerous goods. Dr. Blondeau held a meeting to update staff on the situation and anxiety grew as information changed fast. The staff wondered about their personal risk and why a diagnosis was not yet clear.

Dr. Blondeau spoke with Dr. James Strong, Head of Diagnostics and Therapeutics, Special Pathogens Program at the NML in Winnipeg. He requested that the samples be transported to the NML, Canada's only Containment Level 4 lab equipped to handle Risk Group 4 infectious diseases. Other calls took place with multiple players from Saskatoon Regional Health (SRH), NML, Saskatchewan Ministry of Health, SDCL and Saskatchewan Public Health.

The response plan was going smoothly until it became evident that there was no TDG (Transportation of Dangerous Goods)–certified courier available to take the specimens from Saskatoon to Winnipeg, a 10-hour trip by car. Dr. Strong requested someone drive the samples personally, so Dr. Blondeau volunteered to be the 'mule'.

But before he had driven out of Saskatoon city limits, the Saskatchewan Ministry of Health contacted him by cell phone

and informed him that the provincial government jet had been dispatched to take the specimens to Winnipeg. Dr. Blondeau met the plane at the Saskatoon airport and retained custody until the specimens were loaded onto the plane. As the pilot was not trained in protocols for transporting dangerous goods, or the paperwork to accompany them, the transfer of specimens was not an easy task.

Fortunately, only 24 hours after the first patient call, the NML determined that the infectious agent was not a VHF. Cerebrospinal fluid and eye swab specimens in Saskatoon were immediately released from quarantine and processed. By Wednesday,

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Resources for MLPs

PHAC and the CFIA provide extensive resources to assist MLPs handling specimens containing human pathogens and toxins:

- The website portal about Ebola at **http://healthycanadians.gc.ca** contains the latest information for health care professionals, including:
  - Pathogen Safety Data Sheet
  - case definition
  - interim biosafety guidelines for labs handling specimens from patients under investigation for suspected Ebola
  - recruitment information for working with The Canadian Red Cross
  - clinical care and treatment

- A free Canadian Biosafety Standards and Guidelines app allows you to find specific containment requirements for your facility. You can save lists for different locations, link to additional guidance, add comments and use checklists for verified requirements. The app is available on both Apple and Android platforms at PHAC's Laboratory Biosafety and Biosecurity website: **www.phac.aspc.gc.ca/lab-bio/index-eng.php.**

- Free instructional videos on lab biosafety and biosecurity can be found at **http://publichealth.gc.ca/training**

- Public Health Agency of Canada Human Pathogens and Toxins Act. Information on the new framework is available on their website: **www.phac-aspc.gc.ca/lab-bio/regul/hpta-lapht-eng.php.**

tests indicated the infection was likely *Staphylococcus aureus* and by Thursday, blood cultures at the NML were positive for Gram-positive cocci. On Friday, March 27, 2014, the NML issued an official stand-down order and Dr. Blondeau agreed on behalf of SHR that the confirmed diagnosis was methicillin-sensitive *Staphylococcus aureus*. The patient's treatment plan was revised.[1] This was not Canada's first Ebola case, and at the time of writing, there have been no confirmed cases in Canada.

Throughout the Saskatoon scare, many things went well. Communication among multiple levels of local, regional, provincial and federal government health agencies took place according to established channels. Mary Louise Graham, Director, Office of Biosafety and Biocontainment Operations, Centre for Biosecurity at the Public Health Agency of Canada (PHAC) says, "From my experience with two prior emerging disease outbreaks, SARS and H1N1, I can say that our communications networks are stronger and more actively engaged. We consult in a much broader fashion, do so more quickly and working groups get established much faster. For example, we created a working group within the Canadian Public Health Laboratory Network (CPHLN) specifically on the Ebola agent, and that has rapidly enhanced our communication. Subgroups communicate several times per month as needed to discuss common issues and how to resolve them."

Dr. Blondeau has high praise for the staff involved in the scare: "Our technologists, like technologists in other health care facilities across the country, are highly educated, extremely dedicated, and appreciate the value that they bring to their roles in patient care. This situation was a perfect example of how people under a very scary situation kept it all together. I'll never forget that and I've told them a million times," says Dr. Blondeau.

As a result of the Saskatoon incident, the logistical wrinkles about how to safely and quickly transport Risk Group 4 human pathogens to the NML from anywhere in the country were ironed out. Graham says, "Cross-jurisdictional federal engagement has been happening at a very high level and includes our Transport Canada colleagues to ensure we continue to facilitate the changes that need to happen quickly so other provinces can also update their policies and practices." Dr. Blondeau says, "We now have a courier system in the country that's prepared to respond in the event that we have another suspected case. Other changes were made to reassure anyone transporting specimens that might contain an infectious agent that there's no danger because it's been properly packaged and meets all transportation regulations."

At the beginning of the global Ebola crisis, PHAC immediately stepped up surveillance activities and began reviewing and updating outbreak response protocols in collaboration with provincial and international counterparts and the WHO.

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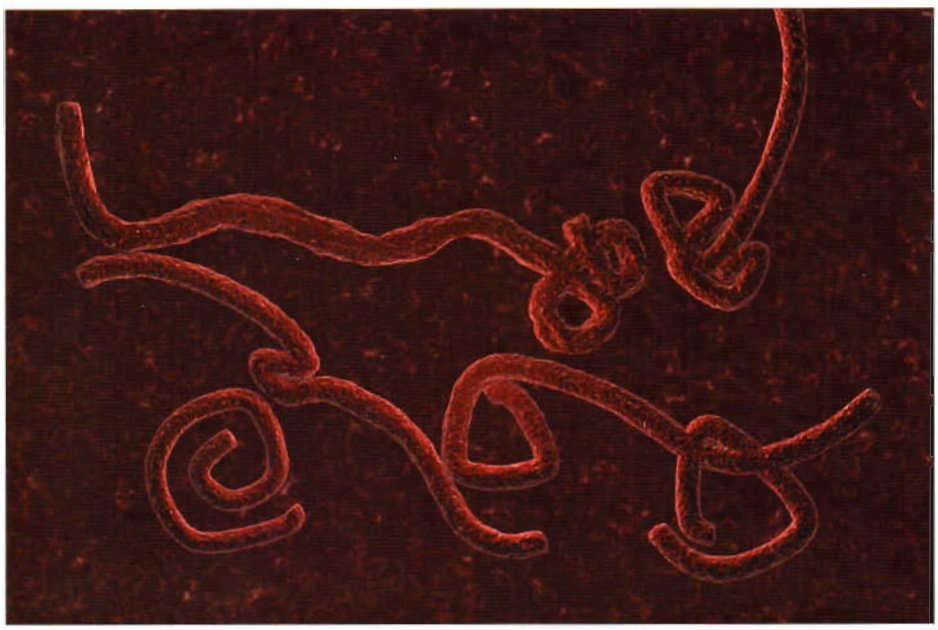

in collaboration with provincial and international counterparts and the WHO.[2] Interim biosafety guidelines for labs handling specimens for patients under investigation for Ebola virus diseases were issued in the fall of 2014 and they are continuously updated, as new information arises.[3]

The Canadian Biosafety Standards and Guidelines (CBSG) prepared jointly by PHAC and the Canadian Food Inspection Agency (CFIA) are robust, outlining the standards for labs handling specimens at all levels of risk and guidelines on how to achieve the standards. "The challenge with an emerging disease though, is how to categorize it for risk because there are unknown elements," says Graham. New federal Human Pathogens and Toxins Regulations came into law on March 11, 2015 and will come into force on December 1, 2015.[4] They require that all Canadian facilities dealing with human pathogens and toxins must be licensed, an overlay to the existing importation regulations that require permits.

Seven months after the scare, the Saskatoon team had an opportunity to test revised preparedness plans when they were alerted that a sick patient who had travelled to West Africa was arriving on an incoming flight and would be immediately transferred to hospital. All hospital and lab systems were alerted and ready to respond; regional, provincial and federal communications networks were activated; a TDG-certified courier was ready; and then half an hour later a stand-down order was issued as it was a false alarm.

"The scare in Saskatoon raised awareness and informed preparedness planning for handling Level 4 pathogens across Canada, whether it's Ebola or some other type of infection which could have consequences for the population," says Dr. Blondeau. "I absolutely believe that 100 per cent. It has also gone a long way to inform thinking of other health care facilities in North America."

Continuous improvements to preparedness plans and biosafety protocols are paramount as the world grapples with containing Ebola. Experts agree the crisis is not over until it's over, and when it ends, the point is not whether Ebola will return, but when. ■

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Special to *CMLS*

REFERENCES:

- [1]Biosafety Webinar: Lessons Learned in Handling and Transporting High Risk Pathogens (Ebola) in Canada, October 29, 2014. International Centre for Infectious Diseases, Winnipeg Manitoba. www.icid.com
- [2]The Health Portfolio: Framework for Action on the 2014 Ebola Virus Disease Outbreak, Government of Canada. http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/ebola/response-reponse/cadre-ebola-framework-eng.php
- [3]Interim Biosafety Guidelines for Laboratories Handling Specimens from Patients Under Investigation for Ebola Virus Disease, Public Health Agency of Canada. www.phac-aspc.gc.ca/id-mi/vhf-fvh/ebola-biosafety-biosecurite-eng.php
- [4]Human Pathogens and Toxins Regulations, Public Health Agency of Canada. www.phac-aspc.gc.ca/lab-bio/regul/hptr-rapht-reg-eng.php