

Pharmacists' reactions to natural disasters: From Japan to Canada

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PHARMACISTS ENGAGE IN PATIENT-CENTRED CARE on a daily basis, often without realizing the importance of their role. In this article, we tell the story of pharmacists' responses to patients during recent natural disasters in Japan and Canada, to show that beyond everyday work commitments, pharmacists can go a step further in patient care to ensure the safety of patients and to meet their medical needs in devastating situations. The disasters that are described here were very different, but these pharmacists gave their time and energy to make sure their patients' needs were met throughout the disaster period and after. At the time these interviews were conducted (summer 2015), years after the disasters, the pharmacists responded that they were taking steps to make sure that they could be more effective in their future patient care, as well.

Part 1

On March 11, 2011, a triple disaster hit Northern Japan (also called Tohoku), leaving in its wake destruction, fear, stress and panic, not only for the local people but also for the entire country. Mr. Yoshirou Tanno is a community pharmacist who survived the earthquake-tsunami-nuclear disaster, as well as a resulting local fire that destroyed his pharmacy. He is an inspiration of how to continue on after adversity—his role as pharmacist expanded to meet the needs of his community, and this has continued to give meaning to his work and life as he goes through the continuing stages of recovery. In sharing his experience here, Mr. Tanno hopes to inspire more pharmacists to educate themselves and to find their niche as they continue to provide essential pharmaceutical and patient care services to those in their communities.

Pre-event

The port city of Ishinomaki is located on the northern end of the Sendai Bay, northeast of Tokyo. In March 2011, before the triple disaster struck, the population was 160,394.¹ It was historically a prosperous rice-shipping port city and known for its deep-sea fishing market.² It stood 2 m above sea level at that time (Photo 1).

Mr. Tanno was a community pharmacist, born and raised in Ishinomaki, and had settled into his life and job as head of the city community pharmacy association. He owned 2 pharmacies: one was a small independent pharmacy near an ophthalmology clinic, and the other was a 2-story building, across the street from the city hospital on the coast, in the Minamihama area that also housed the city pharmacists' association office. The pharmacy's patients were either from the hospital or the local community. He worked mainly out of this second pharmacy.

The coastal community where the pharmacy was located also hosted the city hospital, the city cultural centre and several major industries. In the centre of the community (as with any Japanese community) were an old temple and an elementary school. Community events in Japan are still held at the local schools and temples, where the whole community can gather together. Because his pharmacy was local, the staff would attend these events to maintain important community relationships.

Mr. Tanno lived a few kilometers inland from there and was a school pharmacist at the elementary school near his home. In Japan, all compulsory education schools (which is elementary and junior high school) have a school pharmacist, who goes in once a month to check the water quality,

PHOTO 1 Pharmacist Yoshirou Tanno points out a landmark on a pre-tsunami photo of Ishinomaki



the air quality, the classroom lighting, and the overall environment and sanitation of the school. On occasion, the pharmacist may be asked to talk to students about drug abuse or safety.

The event

On the morning of March 11, 2011, Mr. Tanno went to work as usual. As he pulled into the parking lot, a strange thought crossed his mind. Here he was so close to the coast and if a tsunami did hit, where would he go? The only emergency plan the pharmacy had was to gather at the hospital across the street and to make sure that they all had each other's phone numbers recorded in their mobile phones. He shook the thought out of his head and went into the pharmacy to start his day.

That day at 14:46 JST, the largest earthquake to ever hit the area struck, triggering a large tsunami.³ People described the magnitude 9.0 earthquake as "the floor bouncing up and down." The sirens began to blare their warnings of a possible tsunami. Mr. Tanno was supervising a pharmacy student in her clerkship at the time, so his first thought was to get her to safety. They left the pharmacy on foot and headed inland toward his house. The warning sirens continued, adding to the chaos, as people tried to evacuate inland. They also met people who were returning to their homes along the coast despite the sirens, to check if their homes were okay. Mr. Tanno and his student kept heading inland to his house. An hour later, the water started to rise and flood the low-lying land.

The tsunami wave moved in to Ishinomaki slowly and steadily and then peaked between 3.3 m and 20 m, depending on the location, at 15:20 JST.³ They arrived at the house in time and moved upstairs to the second floor with his family, who had made it safely back home. Still having some mobile phone service an hour after the earthquake, Mr. Tanno received a photo from a doctor friend showing his pharmacy, now in flames. Cars had crashed in the water, resulting in a gasoline fire. His friend was up on the third floor of the hospital looking down at the grueling mess and reporting the chaos below him by his phone. It was later confirmed that the doctor eventually made it out safely, although many of the medical staff and patients did not. Mr. Tanno's family settled in for a sleepless night with unrelenting sirens and aftershocks. They no longer had phone service, electricity or heat, and it was cold.

Damage

This earthquake, tsunami and fire completely destroyed Mr. Tanno's main pharmacy (Photo 2) and the entire Minamihama coastal community. The area where the Old Kitagawa River enters the Ishinomaki Bay is now known as the Bay of Destruction (Photo 3). All that remains is charred building foundations and a burnt school amid the growing graveyard around the standing temple. Strong aftershocks continued for months afterward, adding to the fear and stress following the disaster. The disaster destroyed 28,000 houses in Ishinomaki, and 3182 people are

PHOTO 2 The only thing left of Mr. Tanno's pharmacy was part of the sign**PHOTO 3** Comparing this picture to Photo 1 shows why this area of Ishinomaki is now called Bay of Destruction

considered dead, with 557 still missing.⁴ Harsh living conditions following the disaster led to 1331 indirect deaths.³ It took nearly 11 months for the flood waters to recede. The land structure had changed and the whole coastal area had shifted. The land subsidence was reported afterward to be 78 cm, and it is believed that the coast has actually extended 2 m seaward.³

The next morning, March 12, Mr. Tanno left his house, facing a lake that now extended to the foundation. To his right, he could see a large fishing boat floating where there had once been the road to his house from the pharmacy. There was no road, only water, but he realized that he had to enter the water to get to the fire

station 500 m up the street to get any news. He recalls that it was extremely cold as he stepped further into the water and mud. He was up to his waist in the cold water and mud, when his thoughts began to pull him back and forth: Should he keep on going or just go back home and crawl into bed? He remembers that it was at that point, a “switch” flipped inside him, and filled with determination, he pushed onward to the fire station. Arriving there, he found that the situation was far worse than he had imagined. The firefighters could not get out to the coast or even into town and were getting news only from people coming out of the water. The coast was reportedly devastated.

Mr. Tanno then waded across the street to the elementary school. The principal and the school nurse were still there from the previous school day and desperately needed help to make the school into an evacuation centre. It was down to basic survival and needs, as people were now pouring into the evacuation centres with nothing left from their homes or lives. They needed food, clothing, blankets, toilet paper, towels—everything for basic living. Expanding on his role as school pharmacist, he worked in setting up the school as a living environment and discussed with the other leaders how to maintain sanitation standards without running water, heat or electricity. For example, with no running water, they had to decide what to do with the toilet situation. The swimming pool was still full of water, so if they could carry the water in buckets back to the school, any waste could be flushed away. There were also social issues to deal with from the beginning, like who would carry the water from the pool to the school throughout the day, if everyone was responsible for cleaning up their own waste. The children and elderly needed assistance. The evacuation centres had to establish leadership and maintain social order in this very desperate time.

At this point, all basic social functions (from food, water, shelter, to education and social structure) were considered to be at “critical threshold” levels.⁵ All transportation to the area was suspended due to damage to or disappearance of roads, bridges and train lines. With the city infrastructure destroyed and an estimated 24 to 25 tons of rubble covering the city,⁴ there was also no paperwork that could be recovered, including medicine and prescription lists. Food, water, medication and other supplies were provided by generous donations from within Japan and internationally. The displaced population settled into the evacuation centres, which were schools and community centres. If they had family they could stay with, they were directed to go there, but that meant they had no access to the food and supplies provided at the evacuation centres. With many people living in such close spaces, with no running water or heat, there were influenza and norovirus outbreaks, leading to secondary deaths. Bodies were being uncovered in the rubble that had to be identified and buried. People were not only suffering from a loss of their physical belongings, but family members were still missing. Everyone was

lonely and scared. There was little information and communication because of the disruption in the phone and Internet services and a lack of electricity. This all added to the stress of people’s daily survival and continued for almost half a year as new communities developed within each evacuation centre.

Change in function

Mr. Tanno continued to help in the school, which was now an evacuation centre, by educating the evacuees on maintaining the cleanliness of the living areas, limiting the spread of influenza and other viruses in a crowded confined area, soothing cracked skin that resulted from using alcohol sanitizer instead of washing with water and providing overall health instruction to the families. At the same time, Mr. Tanno also worked with the medical teams at the Red Cross Hospital, where contingency plans had been set in place for emergencies.

On March 14, the third day after the tsunami, Mr. Tanno started out early in the morning on his bicycle, trying to stay focused on getting across town through the water and mounds of wreckage everywhere. Roads were impassible. It took hours before he arrived at the hospital to a lobby filled with people and beds. He made contact with the exhausted medical staff and was greeted by the hospital disaster management coordinator who updated him on the state of the ravished city. They could not get out to help people, and many people were unable to come in. People had been trickling in with hyperthermia since the first night and were still coming in days later. What was worse, the Disaster Medical Assistance Team had just left! They were required to be there for the first 72 hours of an emergency, but they could no longer stay and had to move on.

The hospital asked Mr. Tanno to recruit more pharmacists and staff, so he used their satellite phone and contacted the Japan Pharmaceutical Association, requesting pharmacist volunteers from around the country. He then got to work with the medical staff on setting up medical charts and records, going through the inventory and stock of medicines in the hospital and talking to the patients. Patients had nothing with them after the disaster and often had no idea of what medications they needed. The medical staff needed to know what medications patients had been taking previously. The emergency doctors needed help in identifying what medications

the patients were carrying with them and which could be replaced with the ones they had in stock. The inventory and stock needed to be managed, and new medical records had to be written up for all the patients going through the hospital. These were all areas where the pharmacists could use their specialized knowledge and skills.

Mr. Tanno set up a temporary pharmacy association office in one of the local high schools, where he could organize the pharmacists and work with the other medical teams. Every morning he would go to the hospital, and then in the afternoon, go to the high school to work on the record keeping and inventory issues and then return to the hospital to assist with the medical practice there. This soon became his daily routine, 7 days a week. There was no time to think about holidays or days off. Everybody continued to work around the clock because the needs and demands had to be filled, and most could not sleep because of the continuing aftershocks. The distribution of medications was necessary, but access to many of the communities was limited. Local hospitals and clinics had been destroyed, leaving no medical record of the patients, and many people needed to be moved into appropriate care. The medical workers needed to determine the patients' exact needs and how to get the necessary supplies and medications to them.

About a week after the disaster, Mr. Tanno encountered people with Geiger counters walking around in the downtown area checking radiation levels. He later learned that the Fukushima nuclear plant to the south of the prefecture had melted down. The radioactive plume had moved north over Ishinomaki, and the radiation levels were high. The pharmacists were then provided with the potassium iodide medicine that had been retrieved from the city hall's storage, but by that point, they felt that they did not need it. They had not received adequate education to know what to do with it, what the interactions might be, dosages and who should be taking it. It was another problem amid the chaos they were in, and another item to add to the list of future pharmacist needs—education on nuclear disaster emergency procedures, especially considering the number of nuclear plants around the country.

Disaster relief

Volunteers from around the country and overseas poured in to assist with the massive cleanup.

Roads needed to be cleared of the mud and garbage so that supplies and help could be moved in and reach areas of need. The local residents had minimal amounts of food and supplies and needed assistance in obtaining more. Charitable organizations and the Japanese military (called the Jietai) came in with food, water and supplies. The local convenience stores and grocery stores maintained minimal stock for those who were not in the evacuation centres and allowed customers to purchase a maximum of 5 items at a time for a minimal cost. Kerosene stoves and fuel were provided to help to heat the homes and centres. Generators were brought in for electricity, and pumps were provided to remove the standing water.

About half a year later, residents were moved out of the schools into temporary housing settlements, and the schools were reopened for students to return to their studies. It was in that nearby housing settlement that Mr. Tanno set up a temporary pharmacy (Photo 4) to provide services for those in the area. He worked with the patients in the settlement by making house visits and checking for health and adherence. For people who were immobile, he would receive the prescriptions from the doctor and then fill and deliver them to each home in person, which gave him the opportunity to check up on patients. He made handmade compliance packs out of various supplies they had received. He did not provide counselling but just listened to the patients. He himself was still dealing with the shock of what had happened and his own losses. Everyone was in the same situation, and he knew that he could help the most when the patients had the medications they needed and had care support. This mission kept him going through this bleak time.

Recovery

Recovery in the Tohoku region of Japan will be a long process, and some believe that it could take a minimum of 10 years to rebuild.⁶ Ishinomaki is working continually on new contingency plans to prepare for future disasters.⁷ The social scars remain a divisive factor in the city. Families and communities were ripped apart, leaving residual anger and division within the community between those who lost everything and those who suffered more indirectly from the disaster. Many survivors face delays in reconstruction because of the loss of paperwork and limited funding and

PHOTO 4 Yoshirou Tanno and Denise A. Epp stand in front of his temporary pharmacy



are finding consolation in gambling and alcohol.⁸ Suicide trends continue to rise for both young and old, as many lose hope that their lives will return to what they were before. Psychological scars remain deep and unresolved in an area that was ripped apart by such devastating force.

Four years after the disaster, Mr. Tanno was able to set up his own pharmacy again near a repaired hospital and reestablished the office of Ishinomaki City's community pharmacists' association on the upper floor (Photo 5). The pharmacy again serves the local residents and the patients from the hospital. He still maintains his pharmacist-patient relationships with those who were in temporary housing and drives to the new homes of patients to provide them with care. He continues to go to the local elementary school near his house as a school pharmacist.

As Mr. Tanno continues with his community pharmacy work, he has found a new determination to educate himself and other pharmacists. Knowing now that the Disaster Medical Assistance Team functions for only the first 72 hours after an emergency or disaster, he and several pharmaceutical organizations across Japan have been working to organize a system of leadership, where pharmacists coordinate with the hospital and medical teams specifically in a geographic area to control the inventory and movement of medications. One such organization that he has been training with is called Pharmacist Disaster Life Support. In the time following a disaster, not everyone can rush to a disaster site to help. Daily life still continues elsewhere, and people

have to work. What is needed at that time are pharmacists who have specialized training to help specifically in the disaster situation, in particular with physical assessment and to be able to problem solve, adjusting to the stressful situation when there is no access to the equipment and information normally available. This training should obviously occur before a disaster hits. Mr. Tanno sincerely believes it is important to be prepared because nature repeats itself. He had the inkling that historical morning that something could happen and did not make any attempt to be prepared for such an event. If that instinct shows itself again, he knows that he will react immediately. His motto now is "Follow your first instinct."

Mr. Tanno also continues to work with researchers in Japan who, like him, want to prepare for future emergencies and disasters. Organizations that he is involved with have already pushed for education about and provision of potassium-iodide medication for anyone within 10 km of a nuclear plant and stress that pharmacists in these areas should also receive the necessary education for providing it. He has also been involved in encouraging several prefectures to purchase mobile pharmacy vans, equipped with refrigeration, counters, a washroom and supplies, to go out to the people in disaster-struck areas, since patients are often not able to get to a hospital or clinic (see p. 189 of this issue's editorial).

Although Mr. Tanno struggles with post-traumatic stress disorder (PTSD), it does not prevent him from continuing his work with his

PHOTO 5 Four years after the disaster, Mr. Tanno was able set up his own pharmacy again



patients. The “switch” that flipped while he stood waist deep in the mud that first morning after the disaster has not been turned off. He continues to educate himself and works to improve the emergency preparedness of his area and of other pharmacists. The motto for the Tohoku disaster was “One for all, all for one,” but Mr. Tanno says that it should be “All for all.” The pharmacists work for the people in the community, not for themselves. He wishes to see a return to that community way of thinking and hopes that future pharmacists will share in this vision.

Part 2

Canada, on the other side of the world, has experienced its own share of natural disasters, such as floods, tornadoes, winter storms and, of course, fires. (As this article was being finalized, everyone’s thoughts were with the people of Fort McMurray, Alberta.) Although many pharmacies may have plans in place to deal with a disaster such as an influenza pandemic, most would not be prepared to serve on the front lines of a natural disaster. Here we share a story of pharmacists caring for patients during one of the worst floods in Canadian history—these pharmacists were effective in their role as caregivers to their surrounding communities, even as disaster changed the community they lived in.

Pre-event

Okotoks is the largest town in Alberta, with a population of 26,319, and is considered to be one of the fastest-growing towns in Alberta.⁹ It is

part of the Calgary Health Region, 17 km north of the town of High River and 18 km south of the city of Calgary. The Sheep River flows through the town, which sits in the foothills of the Rocky Mountains and is part of the Bow River Basin. Unlike in High River and Calgary, the area next to the river in Okotoks is mostly reserved for parks and pathways.

Okotoks has a Health and Wellness Centre that provides public health services and urgent care services. The nearest hospitals are Oilfields General Hospital 22 km to the west in a town called Black Diamond and the South Health Campus hospital 21 km to the north in Calgary.¹⁰ There are fewer than 10 pharmacies in Okotoks, and one of them is the Shoppers Drug Mart, which is a mere 1 km away from the Wellness Centre in the south part of town. The pharmacy is owned and run by a husband and wife pharmacist team, Anita and Bob Brown (Photo 6). Anita has had her prescribing authority certification since 2008. The Browns had no emergency plan for their pharmacy in place before disaster struck (personal communication, Anita Brown, April 7, 2015).

High River is a smaller town 37 km south of Calgary. The last census of 2011 reported that High River had a population of 12,920.¹¹ It sits at 1040 m above sea level, and the Highwood River winds through the town. In 2005, the area suffered from a flood, so the town took action to build higher berms around the low-lying areas nearest to the river. The Shoppers Drug Mart in High River was located downtown near the Highwood River.

PHOTO 6 Bob and Anita Brown's Shoppers Drug Mart in Okotoks, Alberta, offered medications and medical help to flood victims from High River



Event

It was still early summer in the foothills on Thursday, June 20, 2013, when the unusually heavy rain that began the day before continued throughout the night and led to uncontrollable runoff into the rivers flowing into the Bow River Basin.¹² The snow in the mountains was also melting, increasing the runoff. The rivers coming off the basin, including the Sheep River, Elbow River, Bow River and the Highwood River, were unable to hold the water and overflowed their banks, flooding Southern Alberta. A State of Emergency was declared at around 7 AM in the town of High River, when town workers saw the river overflow its banks and the berms, but most people were unaware of it due to a lack of any warning system and left home to go to work and school as usual. By 9:20 AM, a mandatory evacuation order was given for the entire town, and the military and Royal Canadian Mounted Police moved into place to block people from entering High River, but the quickly rising water had already stranded many people in stores and offices. Bridges and roads were already impassable from the rising water, so people were evacuated by boats, helicopters and even combines. It was several days before limited information was provided to the displaced residents about the state of the town and their homes.

In the town of Okotoks, there was flooding from the Sheep River as well, but the Shoppers Drug Mart is far enough away and situated on a hill, so it was not affected. Bob and Anita Brown went to work as usual that day. They first began

hearing rumours of the flood disaster as patients trickled in requiring prescriptions that had been lost in the evacuation. One patient had recovered his prescriptions, only to have them fall into the water as he was evacuated in a boat from his home. There was no official news coming in from High River, except from the confused and frustrated patients who came in with rumours of what could be happening to their homes. Offering one of the closest services to High River, these pharmacists, their pharmacy staff, along with other Okotoks pharmacists, took on the role of assisting the evacuees with their medical needs through their pharmacy services.

Damage

Okotoks itself suffered damage along the Sheep River, and several bridges were impassable, but the damage was minimal, thanks to flood prevention measures implemented in the past.¹³ The Browns were fortunate to not suffer any damage in their home or pharmacy. As a result, they could continue to concentrate on the patients coming in who desperately needed assistance, as it became apparent that the hospital and all medical facilities in High River had been damaged and were not able to offer any service to the evacuated and rescued residents. The damage to the bridges blocked the transport of goods and services coming in and out of the town, which caused a problem for the Okotoks Shoppers in obtaining orders to maintain the inventory.

The flooding left areas of High River buried under meters of water. The entire downtown area

was standing in water, and several communities near the river had been completely destroyed. No public services were available, and residents were expected to live elsewhere until repairs and recovery had been made. The Shoppers Drug Mart downtown was flooded and heavily damaged, making access to electronic and hard-copy patient records in High River impossible. Power outages and damage to roads made it impossible to make any contact with the town, so Bob and Anita had to wait several days to retrieve the Shoppers Drug Mart hard drive from there and transfer the patient records over to the Okotoks pharmacy. It was not known how long it would take to recover and when the Shoppers in High River would begin to offer pharmacy services again.

Change in function

The Health and Wellness Centre in Okotoks that offers urgent care services became overrun with desperate patients needing medications and medical help on Friday, June 21, so they redirected the lighter-needs patients to the Shoppers, where Anita Brown could assist with her prescribing authority. Being short staffed, the team of pharmacists and assistants at the Shoppers streamlined their roles so that they could help as many patients as possible, but the line up to receive medications soon reached the door of their pharmacy. They needed to speak with each patient to determine who needed immediate care and which medications were needed, as most did not have charts or records there or their medications with them. As long as the computer system was available, they could process the patients who were in the health system. When the power in Okotoks went out for a few hours early Friday afternoon, the team had to keep working but maintain protocol for safety and care. As people lined up outside the store waiting for the electricity to return, the pharmacists also moved outside and continued to talk with the patients to determine their needs and work to help those who were scared and desperate for help.

The disaster had struck before a weekend (a Thursday), which meant that necessary stock and supplies could not be delivered until the following Monday. The sudden influx in patients meant that the pharmacy was not prepared for the amount of supplies and medications required to meet all the needs of the patients. Nobody knew the exact scale of the disaster or how long the pharmacy would have to be

functioning at full capacity, now filling almost 3 to 4 times the number of prescriptions as usual. The only information they were receiving came from the patients themselves, telling their stories of their evacuation and recovery. The team went into emergency prescription mode and provided only 10 days' worth of medication instead of the usual 3-month or 1-year provisions, in order to sustain the stock for longer. The Shoppers Drug Mart was eventually able to receive staff assistance and supplies from other Shoppers Drug Mart stores in the province once access to the town was reopened.

Relief

The High River Shoppers eventually received permission to put a portable trailer on its site to provide health supplies to the residents but was not yet able to open its pharmacy. The nearest temporary housing settlement also had medical staff that helped in setting up new medical files and would call in prescriptions, report on the patients and send requests for supplies to the Okotoks Shoppers. As a result, the Okotoks Shoppers continued to fill prescriptions and offer support to the evacuees and patients from High River. When they received the hard drive with the medical records from High River's Shoppers, they were then able to process those patients more effectively. The demographics of High River differ from Okotoks', so to provide for the needs of these patients, they needed to know more about the patients and which medications were being prescribed.

Volunteers from around North America came to assist with the cleanup in High River. Residents were eventually permitted to return to view their homes, then full of mildew and mold, and smelling of the sewage that had permeated up to 4 feet (1.5 m) or higher in some homes. Most homes were uninhabitable and had no electricity or running water. Garbage and damaged goods from the homes then lined the streets as people cleaned up. The military set up a temporary hospital in the town, and modular classrooms were built for the new school year starting in September. Rebuilding was slow, so the temporary settlement housed up to 1200 people, with 193 people remaining a year later.¹⁴ Because the city of Calgary had also suffered from severe flooding, there was a shortage of labour to rebuild, so the town remains under construction to date.

Recovery

According to provincial government reports,¹⁴ the recovery phase began officially just 1 month after the flood. The High River Municipal Hospital resumed urgent care a month after the disaster and full services 3 months later. All schools reopened in fall 2014. Plans were made to restrict any development in flood risk areas, and other plans were to divert potential flood water around the town. Berms have been rebuilt higher along the riverbanks in High River, and contingency plans have been reviewed and rewritten, but residents are still feeling uneasy and traumatized.¹⁵ Months later, some people were able to move back into their homes while waiting for reconstruction and compensation from insurance. Some communities were not permitted to rebuild and were relocated away from the river. A temporary business district was set up to help businesses reestablish in the town, but the downtown area remains under construction, and many services have not returned to full operation even several years later. It has taken years for people to resettle into their homes or relocate, and PTSD continues to be a serious concern for those who were displaced or who lost everything in the flood. Rumours of alcohol abuse, gambling and suicides continue as people struggle to recover the life they had before the disaster.

The Shoppers in High River finally reopened its pharmacy, but with many of the displaced still in Okotoks, the Okotoks Shoppers maintains a larger number of patients than before. The pharmacy team relied heavily on the network provisions of Netcare and the medical records from the High River Shoppers to effectively provide necessary medical services to the patients and also to maintain their own records and inventory. Thinking about what they could do better in the future, they admit they would like a back-up generator to supply the electricity to keep the computers going in case of another emergency. They also now have a contact database within the Shoppers chain, so that if an emergency arises, they can contact other pharmacists and quickly get the support needed to help patients (Photo 7).

The Browns stress the need for greater emergency pharmacy education, focusing on preparedness and problem solving through exposure to various kinds of disasters. It is necessary to adapt to sudden changes in intensity and stress after a disaster. Future contingency plans for pharmacies should include access to qualified staff to maintain pharmacy operations and to continue effective

workflow in the maintenance and protection of patient records through effective databases. Previous flood disasters in the province of Manitoba, for example, led to an emergency preparedness manual for pharmacists that outlines procedures for emergency care, including guidelines, duties and prescriptions. It begins with a “call to action” for pharmacists that states the following:

As direct patient care health providers, pharmacists, especially those in community practice, are often the first contact for patients. This will result in increased demands placed on pharmacists to provide advice to the public related to the emergency and to ensure the distribution of patient medication during the emergency. . . . The time is now for all pharmacists to ensure that emergency preparedness plans are in place and pharmacy staff is informed.¹⁶

It is difficult to prepare a pharmacy for an emergency situation by stocking up on medications or even making a list of necessary medications. Preparing a kit of medications, other than anaphylaxis kits, may be impossible because of the shelf life of various medications, potential lack of refrigeration for certain medicines and not knowing which medications should be stockpiled for the area. It cannot be predicted who will be able to be at the site to help out, but access to staff is a necessity. Consideration also needs to be made for PTSD and understanding the psychological ramifications as patients and staff work through the disaster and its recovery process. This is why the Browns believe that the best way to prepare for a potential disaster is to ensure that pharmacists are educated for working through a disaster, that the daily functioning of the pharmacy and patient records are always maintained and that patient care is kept in the forefront of practice.

Conclusion

These 3 community pharmacists, Yoshirou Tanno, Anita Brown and Bob Brown, continue to serve patients with a renewed passion to be effective in their roles as patient-centred pharmacists should a disaster strike again. They all spoke of the necessity for emergency education and training for present and future pharmacists. Pharmacists need to be aware of the kinds of disaster that are possible, the accompanying stress and the resulting social issues. It is also important that pharmacists receive

PHOTO 7 The pharmacy team at Shoppers Drug Mart, Okotoks, Alberta

specialized training before being in this type of situation so that they can continue to be effective in helping patients throughout a disaster. They want future pharmacists to understand that doing the job efficiently means being where your patients can get to you, maintaining records of your patients on a daily basis and making sure that your pharmacy is safe and protects your patients, their records and medications at all times.

In both of these cases, the pharmacists continue to maintain regular contact with the local hospitals and medical centres and have close relationships with other medical staff. They are also actively involved in community events with the local residents to establish and maintain local relationships. This community involvement is necessary because the people will know you and will trust your leadership when working together through a time of disaster. The medical staff at the urgent care centre in Okotoks was aware of the prescribing authority that Anita held and trusted her to take on

their patients and their prescriptions. In the case of Tohoku, Mr. Tanno's assistance in educating patients in the evacuation centre (school) and in having access to the medical community stemmed from his leadership in the pharmacist association and active involvement in the local community and the Red Cross Hospital. It is important to stay actively involved in the community and participate in contingency planning there.

These pharmacists were able to professionally serve the needs of the patients in their communities despite a lack of electricity, information or extra assistance. Because of their skills, persistence and determination to help patients, they serve as role models for everyone to understand that being a pharmacist is a calling, based on helping and educating patients and other professionals. These pharmacists continue to develop their own pharmacy skills and knowledge, so that they can be more effective in the future with their patients in the case of a disaster. At

BOX 1 Future considerations

Although both disaster situations were devastating in their after effects, they differ greatly in scope and recovery. Research in pharmacist activities through disasters can continue effectively by maintaining consistency with other cases by using the same format, framework and terminology. The framework of the stages of disaster management presented here move from pre-event through to recovery stages by looking at the effects on the basic social functions.⁵ The details about basic social functions include public health, medical care, water and sanitation, shelter and clothing, food and nutrition, energy supply, public works, social structure, communication, economy and education.⁵ This provides a structured comparison framework that will help with future research on emergency pharmacy and disaster management.

the time of these interviews (August 2015), Bob was working on getting his certification for prescribing authority, while Anita was continuing her work as a diabetes educator. Mr. Tanno continues in his disaster management and life support training, as well (see p. 188 of editorial for an update on Mr. Tanno's activities). It is both

sobering and inspirational to read these stories and to be reminded of the special place pharmacists have in society and the commitment they share to serving patients' needs on a daily basis and through disasters. You can make a difference wherever you are if you are focused and stay true to your profession in patient care. ■

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