

HEALTH SCIENCES CENTRE WELL EQUIPPED TO HANDLE FLOODING EVENTS ON URBAN CAMPUS

As a result of repeated flooding incidents over the years, staff at Winnipeg's Health Sciences Centre have become very proficient at protecting the safety of patients, staff and property.

INTRODUCTION

Winnipeg's Health Sciences Centre (HSC) is the largest health care centre in Manitoba. With an interdisciplinary team of nearly 8,000 staff and volunteers, HSC is a designated Trauma Centre for Manitoba and the province's centre for transplants, burns, neurosciences, cancer treatment and pediatrics. It provides compassionate care to communities in Manitoba, northwestern Ontario and Nunavut.

Two different types of flooding events frequently impact HSC and its ability to provide uninterrupted patient care in Winnipeg; each having a different effect on the site and requiring its own response measures.

Because of its location near the convergence of the historic Red and Assiniboine Rivers, spring flooding often threatens the city of Winnipeg and the HSC campus. When flooding is imminent, the flooding contingency plan is invoked and response teams are placed on stand-by.

In particular, 1997 and 2011 were years when flood levels were abnormally high. With a contingency plan in place, HSC Winnipeg becomes the safety net to other urban hospitals including St. Boniface and Misericordia Health Centre, both of which are in close proximity to the high water of the river. If required, patients are evacuated to HSC and ambulances are put on redirect.

HSC Winnipeg is also the tertiary care site for the city, therefore surgery, ICU and pediatric patients are redirected to the site during times like this.

The second type of flooding HSC Winnipeg encounters is related to extreme storm events which have increased in frequency in recent years, going from a storm of note every two or three years to multiple storms per year. As a result, overland flooding and sewer backups are more frequent causing flooding in the basements of some campus buildings.

During their most recent storm (August 2014), the Ann Thomas Building basement (Level 0) experienced flooding. The Medical Device Reprocessing area was hardest hit necessitating reprocessing of already prepared and sterilized devices. The incident did not create any surgery delays given the ability of the department to work



through the evening and night to remove water, repairs ceilings and reprocess supplies. Had the event happened during the day, it is likely that it would have interrupted the provision of services ongoing at that time. The majority of locations flooded did not have a significant impact on the delivery of clinical services but they did impact maintenance and cleaning crews and inconvenienced office and clinic occupants while they were decanted for repairs and cleaning.

IMPACTS

It should be noted that when HSC Winnipeg puts its contingency plan in place for high river levels, there isn't necessarily a flooding event that occurs. In some cases, planning for the event is all that happens and no actual flood damage results.

This is not, however, the case when severe rain storms occur such as happened the evening of August 22, 2014 when more than 80 mm of rain fell on parts of the city, earning it a one-in-100-year classification.

In addition to damage and temporary closure of the Medical Device Processing department during the rain event, numerous equipment storage rooms were flooded and patient food services were impacted meaning delays in services for patients and visitors at the hospital.

KEY VULNERABILITIES

Patient care can be negatively impacted by high river levels if HSC Winnipeg has to absorb patients being evacuated from other facilities. Accommodating new patients transferred in means patient rooms are often crowded and contingency beds are put into place to handle the overflow.

The hospital ends up operating well above its normal bed capacity for an extended period of time and elective procedures are often 'bumped' to accommodate the additional patients being cared for from St. Boniface and Misericordia.

During sudden weather events, patient care is directly influenced by the degree to which basement flooding impacts services housed on that level.

Under both types of incident, cleanup becomes the first priority. Immediate pumping and cleaning occurs to ensure services are interrupted for the shortest possible period of time.

During these events there is a significant impact to regular hospital operations as specific event contingency planning and recovery efforts become top priority over other planned activity.

Following the August flood, clean-up occurred outside regular daily operating hours at the hospital so patients experienced only minimal inconvenience and by morning the clean-up was finished allowing HSC to get back to the business of delivering patient care. An estimated \$50,000 was spent on additional labour, reprocessing and lost supplies.

RECOVERY

Following the last major weather event, flooded offices and labs were decanted, to alternate workspaces, all water was removed, flooring was inspected and remedial efforts were put in place to ensure mold would not spread throughout the centre.

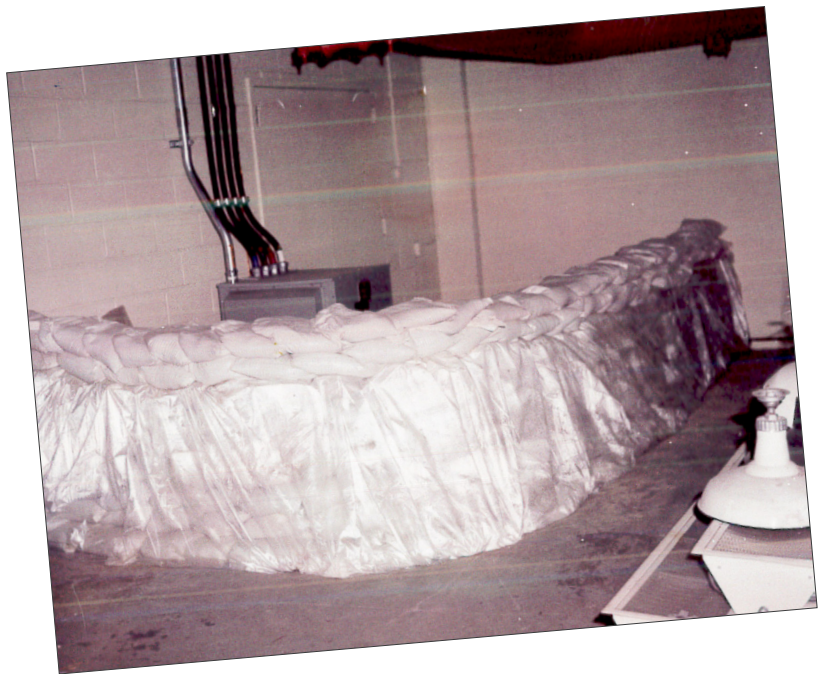
Medical records that had been damaged were sent for restoration which included freeze-drying the paper, wiping it clean and then ensuring the complete drying of the documents.

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Sandbags were deployed in numerous locations throughout the campus, such as in the cancer centre basement (pictured above) to prevent water from reaching critical pieces of electrical equipment.

PLANNING FOR RESILIENCY

As a result of flooding incidents over the years, HSC Winnipeg has put in place a number of guidelines and policies to protect patients, staff and property in the event of flooding brought on by either severe weather incidents or floodwaters from the Red and Assiniboine Rivers.

All construction projects are now reviewed to ensure emergency power and critical support services are not located in Level 0 (basement) areas. In addition, crawl spaces under level 0 are factored into plans to act as a buffer to basement floor flooding and carpet has been eliminated from as many rooms as possible, particularly those in basements.

Cove edging has also been added to vinyl flooring to make the clean-up of water easier. The cove edge also ensures that flooring does not have to be sectioned and removed to inspect for mold during post-flood remediation.

Backflow prevention valves have also been installed on all sewer systems, more pumping capabilities are now on hand at all times, and additional equipment such as wet/dry vacuums have been purchased to help HSC staff with post-event cleaning. HSC also has contracts with outside service providers to assist in clean-up efforts if required.

Thank you to Christie Nairn and Craig Doerksen for technical input in developing this profile. Photo credit: HSC Winnipeg.

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