

REGINA GENERAL HOSPITAL RESPONDS QUICKLY WHEN CLIMATE CHANGE IMPACTS PATIENT SAFETY

When unusually high humidity levels brought on by climate change forced the closure of operating rooms at the Regina General Hospital, delay in solving the problem was not an option.

INTRODUCTION

Saskatchewan's summer temperatures are rising. Evidence points to an increase in more frequent and severe heat waves which bring with them potential health risks such as aggravated asthma symptoms, heat stroke and exhaustion, and even death. Particularly vulnerable are the elderly, disabled, children, and the homeless.

Accompanying increased temperatures is the problem of elevated humidity levels which poses a very serious threat to those charged with maintaining a pleasant and safe healing environment in health care institutions across the province.

Whereas in the not too distant past, the humidity index (humidex) value in Regina would reach 42 to 43 for short 24 to 36 hour durations, it has in recent summers regularly been reaching the 44 to 47 range for prolonged periods of time.

IMPACTS

For the Regina General Hospital, elevated humidity was hampering its ability to adequately condition interior air, particularly in operating rooms where proper ventilation, including humidity, temperature, and high air change rate, is essential to reducing the risk of patient infection brought on by simply breathing airborne pathogens.

"Our existing chiller plants were simply just not designed to meet these new environmental extremes and as such were unable to adequately knock out the excessive humidity we've been encountering these past few summers," says Energy Centre Manager Peter Whiteman.



KEY VULNERABILITIES

In 2007, the humidity issue was so extreme that Regina General was forced to close their suite of operating rooms for approximately eight days for all but life-critical surgeries.

A precisely-controlled OR environment means decreased risk of surgical site contamination and the spread of infectious diseases. It also means a more pleasant work environment for doctors and surgical teams as excessive humidity can cause condensation to form on surfaces in the OR including on eye glasses and surgical equipment.

"High quality ventilation is imperative to the well-being of our surgical patients so with the reluctant acceptance of the fact these higher humidity levels were the new environmental normal, we reached out to dehumidification experts and developed a plan to solve the OR humidity issue."

RECOVERY

To combat the unusually high humidity and the issues it created in the ORs, Regina General initiated a full review of existing HVAC capabilities and ordered a much needed system redesign to improve performance.

Over the next eight months, cooling tower and chiller capacity was increased by fifty percent to meet the new elevated cooling and dehumidification loads now demanded by Regina's hotter and more humid summers.

The enhanced HVAC system is now configured for increased data monitoring in all sensitive areas of the hospital with humidity levels sensors tied directly to the building automation system (BAS) which records and interprets in real time. Once humidity thresholds are met, the BAS takes the appropriate action to return levels to the pre-set parameters without operator intervention.



Local contractors worked through the winter and spring of 2008 to upgrade chiller capacity by 50% in preparation for upcoming cooling season.

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The new cooling towers on the roof of the Regina General Hospital now provide sufficient capacity to reject the unwanted heat and humidity impacts of a much different Regina summer climate.



Regina General Hospital's updated cooling towers and chillers are now able to handle all the heat and humidity that a changing climate throws their way making the OR a safer and more comfortable place for patients and surgical teams.

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