



INSTITUT UNIVERSITAIRE  
DE CARDIOLOGIE  
ET DE PNEUMOLOGIE  
DE QUÉBEC

AFFILIÉ À  UNIVERSITÉ  
LAVAL

FOR IMMEDIATE  
RELEASE

## Press release

### **World First at the IUCPQ: New system for automated mechanical ventilation in intensive care**

**Quebec city, 2010 may the 5<sup>th</sup>, 10 h** • A research team specialized in Intensive Care Medicine at the *Institut universitaire de cardiologie et de pneumologie de Québec* (Quebec Heart and Lung Institute) completed the first assessment of a revolutionary system with fully automated mechanical ventilation. This new system allows computer-controlled mechanical ventilation with minimal human intervention. The study, which ended in December 2009, compared this system with standard mechanical ventilators in 60 patients immediately after cardiac surgery. The results of the study will be presented at the next meeting of the American Thoracic Society in New Orleans from May 14 to 19. Already, the results are very encouraging.

**The Institute has a ratio of ICU beds among the highest in Quebec, 15% of beds being dedicated to critical care. Annually, nearly 3,000 patients are under mechanical ventilation most of them after cardiac surgery. The Institute also has a mission to evaluate technologies and methods of health intervention.**

This innovative system of mechanical ventilation developed by the Swiss company *Hamilton Medical* opens a new era in this field. "Automation is now widespread in our society, all aircraft are equipped with automated systems for years, but automation in medicine has been slow. Our patients, mostly in intensive care units, are fragile and we need to evaluate the security and potential benefits of new apparatus. We compared this system to what is done with standard ventilators, when all the settings (respiratory rate, volume delivered, pressures, rate of oxygen administered) are carried out manually by physicians or respiratory therapists. At the end of this study, we found that the number of manual intervention was reduced by a factor of 30 with the automated system, while the patient remained within a predefined "optimal" ventilation for much longer in comparison with the standard ventilation", said Dr. Francois Lellouche, intensive care medicine physician, head of a research program on the automation at the Research Center of the Institute.

The automation in this field will probably become the standard in the future for several reasons. Firstly, major demographic changes are expected soon (baby boomers are 65 this year). The aging population will influence the entire health system, and primarily, intensive care units. A major increase in the number of patients under mechanical ventilation is therefore expected in the near future. By the next ten years, it is planned they will be 2-3 times more numerous than at present to use such care. Many arguments exist in favor of the development of automated systems in the field of health. These systems will help clinicians in the achievement of certain repetitive tasks, while also standardize practices and better follow medical recommendations. The time recovered will be invested with the patients that need the most.

"We believe that automation will gradually become a standard of care for patients under mechanical ventilation. We have already started thinking about this important topic as part of this arising public health problem and we are working for several years to develop our own "smart" systems, through the granting agencies (FRSQ and CFI). The automation of certain tasks, now possible thanks to technological advances, will grow by necessity to meet these challenges. The marketing of the new system we have evaluated should take place during the next year by Hamilton Medical, after obtaining approval from Health Canada ", concluded Dr. Lellouche.

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### **About Institute**

Annually, more than 14,000 people are hospitalized and 87,000 visits are made in outpatients. The catchment population is over 2 million people, or approximately 30% of the population of Quebec. Affiliated with Laval University, establishment relies on the cooperation and dedication of nearly 3,000 employees, doctors, professionals, researchers, managers and volunteers to provide care and quality services to clients in hospital and outpatient services. The Institute programs include care and highly specialized services for the treatment of cardiopulmonary diseases and diseases related to obesity. Doctors and health professionals of the Institute have extensive expertise and contribute to advancing the science of medicine. The Institute also has a mission to evaluate technologies and methods of health intervention.

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