

Title: Innovation in an Activity Based Funding Environment

Introduction: Quebec is the largest province in Canada by area (1.668million km²), and the second largest province by population (8.5 million). The Quebec government is responsible for funding health care and social services and has recently announced an increase in activity based funding (ABF) to [\\$12 billion in the next 5 years](#).

In the 1980's robotic assisted telemanipulation was introduced in surgery. In the 2000s, *Intuitive Surgical* introduced the "Da Vinci" robot, providing surgeons with a short learning curve and better ergonomics. Patient demand increased the use of a robotic assistance, such that in the US, prostatectomies with robotic assistance went from 1% in 2004 to 90% in 2014.

Methods: Six health service organizations collaborated to study they impacts of robotics on three surgical procedures: hysterectomies, prostatectomies and nephrectomies.

The Canadian Classification of Interventions (CCI) defines codes for surgical interventions, including a unique code for robotic assisted telemanipulation of tools.

This analysis evaluated the cost for the three surgeries by approach and with the use of robotics in Quebec, supplemented with data from other provinces with case costing data submitted to the Canadian Patient Cost Database. The data used was from 2019-20 to avoid the influence of the COVID-19 pandemic.

Clinical advantages of using robotic assisted telemanipulation were studied by the Unit for the [Unité d'évaluation des technologies et des modes d'intervention en santé et en services sociaux \(UETMISSS\)](#) at the Centre hospitalier universitaire de Sherbrooke.

Results:

The average direct cost of the original episode of hospital care for robotic assisted telemanipulation surgeries was almost twice as much as any of the other approaches (open, endoscopic, vaginal). The highest cost during this stay was related to the non-reusable operating room supplies.

This was consistent with the data from other provinces held in the Canadian Patient Cost Database.

Discussion:

ABF is usually based on the average cost of single stay for cases in a patient group (APR-DRG) rather than individual cases, which may include multiple surgical approaches. In addition to the clinical advantages, innovations such as robotic assisted telemanipulation surgeries can have overall financial efficiencies with shorter lengths of stay and lower readmission rates. Given the clinical and financial advantages of using innovative approaches, ABF should consider including approaches to fairly fund new and innovative approaches.

Innovation is critical to improving health care. ABF mechanisms should support innovation, and include mechanisms to fairly compensate new, and sometimes more expensive approaches. Without fair compensation for innovative approaches, hospital may be reluctant or slow to introduce such approaches. This could be detrimental to patient care if the approach has been shown to be beneficial.