Developing an Objective, Efficient, and Cost-Effective Approach to Managing the Waiting List for Cardiac Catheterization

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“The Effect of Early Education on Patient Anxiety While Waiting for Elective Cardiac Catheterization” awarded by the Heart and Stroke Foundation of Ontario, Principal Investigator — Dr. H. Arthur
Key Implications for Decision Makers

Cardiac catheterization is a surgical diagnostic procedure for heart patients. Waiting lists at Hamilton Health Sciences were studied to determine the best way to reduce waiting times to acceptable levels (between 1998 and 2000, only 37 percent of procedures were completed within the recommended waiting times).

- It is more expensive to keep patients in the hospital on a waiting list than to perform a cardiac catheterization. Keeping 900 inpatients in the hospital for more than the average seven-day wait was associated with excess costs per year of $2,025,000 for procedures done during normal hours and $1,705,500 for procedures done after hours.

- One-time increases in capacity to reduce or clear existing backlogs are ineffective, as waiting times will rise back to unacceptable levels once the one-time increase is withdrawn.

- Simulations on the effect of a SARS-like crisis showed that waiting times for urgent inpatients took weeks to return to their pre-crisis levels, nearly three years for urgent outpatients, and more than 10 years for less-urgent outpatients.

- Allowing patients and/or referring physicians to choose a particular specialist did not have an effect on waiting times.

- Waiting times are associated with many adverse effects for patients: hospitalization, heart attack, congestive heart failure, death, lower quality of life, higher anxiety, and more physical pain.

- Simple process changes could allow more patients to be treated:
  - having the same physician perform the same kind of procedure in the same lab consecutively;
  - moving most pre-surgical preparation from the catheterization lab to a pre-operative staging area;
  - allocating less time in the schedule to each procedure (as most procedures finish early); and
  - scheduling some diagnostic sessions as possible treatment sessions (since about 70 percent of treatments are done on an ad hoc basis at the same time as the diagnostic).

- Improved primary diagnosis could reduce the number of minimally ill or disease-free patients undergoing catheterization. Approximately one-third of patients have minimally diseased or normal arteries, and even a one-fifth reduction in the number of healthy patients would have the same effect as opening three new catheterization labs in Ontario.
Executive Summary

Cardiac or heart catheterization is a procedure that involves inserting a catheter through a vein or artery into the heart to measure pressures, inject dye, and take X-ray images. This procedure plays a pivotal role in managing patients with heart disease. Long waiting times for cardiac catheterization are common in any publicly-funded health system such as Canada’s. We found that waiting for catheterization is associated with major adverse cardiac events such as hospitalization for unstable angina (chest pain), myocardial infarction (heart attack), congestive heart failure, and death. These event rates are higher in outpatients, who wait for the procedure for a significantly longer average period of time than inpatients. A significant proportion of these events may be preventable if patients receive their procedure in a timely manner.

Waiting is also associated with a worsening of other aspects of a patient’s health. Patients on the waiting list for cardiac catheterization have a lower quality of life and higher anxiety levels compared to the overall population, adjusted by age and gender. Excessive waiting times are associated with a further worsening of these indices, including anxiety and physical pain.
Simple interventions, such as having a nurse available for telephone consultations with patients who are waiting for catheterization, result in less anxiety for patients on the waiting list.

Long waiting times, especially for inpatient procedures, represent a misallocation of healthcare dollars towards maintaining patients in hospital beds that could be better used to provide patients with the treatments for which they are waiting.

Simulation models developed for this study demonstrate a severe lack of cardiac catheterization capacity in Hamilton during the study period, which can potentially be alleviated by expanding available capacity from three labs to four, as well as by extending working hours. Severe capacity limitations also confer a potential risk of significant strain when subjected to an adverse shock, such as the SARS crisis of 2003, or rapid changes in technology or practice patterns, such as direct angioplasty for myocardial infarction.
However, increasing capacity is not the only solution to the problem of long waiting lists.

A comprehensive approach is required that a) incorporates initiatives such as improving the efficiency of procedures (for example, reducing variability of service provision and increasing unplanned angioplasty with diagnostic catheterization); b) the methods by which patients are triaged (such as prioritizing high-risk patients for earlier access); and c) continuous prospective monitoring of these implementations in the form of a registry. These strategies will be potentially effective in improving throughput, reducing burden of the wait (such as reducing morbidity, hospitalizations, and anxiety), and increasing cost-efficiency. These initiatives are required both at the provincial level (such as through the Cardiac Care Network of Ontario) and the regional and institutional levels.