



# CCORT PULSE

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## CCORT Objectives

- Improve the quality of cardiovascular care in Canada
- Work with local, provincial and national partners on policy-relevant research projects & knowledge exchange
- Train future leaders of cardiovascular outcomes research in Canada
- Make a measurable impact on the cardiovascular health of Canadians through research that changes clinical practice, health policy & patient outcomes

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## CCORT's Enhanced Feedback for Effective Cardiac Treatment (EFFECT) Study Completed—Results Presented at AHA & Published in JAMA

The EFFECT study, the first randomized controlled trial of public report cards, was designed to determine whether the quality of cardiac care improved when hospitals were provided with report cards on their care of patients admitted with Acute Myocardial Infarction (AMI) or Congestive Heart Failure (CHF).

In this population-based, cluster randomized trial, 86\* Ontario hospital corporations were randomized into two groups—Early feedback or Delayed feedback (21 months later) of a publicly released hospital report card. The study assessed performance on process-of-care quality indicators, where co-primary outcomes were composite AMI and CHF indicators (based on 12 AMI and 6 CHF indicators, respectively.) Secondary outcomes were the individual process-of-care indicators, a hospital report card impact survey, and all-cause AMI and CHF mortality. The report cards provided performance data derived from retrospective chart review by experienced cardiac research nurses.

The Early feedback arm hospitals' public report cards, containing information on their 1999-2001 baseline performance on 18 national process-of-care quality indicators, were published in January 2004. In September 2005, the Delayed feedback arm hospitals' public report cards for the same period (1999-2001) were published. In addition, a survey of participating hospital corporations was conducted following the release of the Early feedback report cards. Follow up data on AMI and CHF cases from 2004-2005 were also collected.

The study's findings were presented at the American Heart Association (AHA) Scientific Sessions, held in Orlando, Florida by Dr. Jack Tu and simultaneously published online in the Journal of the American Medical Association (JAMA) on November 18, 2009. As described in the paper, most AMI and CHF process-of-care indicators improved over time, with a similar rate of improvement observed in the composite indicators in both the Early feedback group and the Delayed feedback group of hospitals. However, Early feedback hospitals demonstrated greater improvement for two indicators:

AMI: Fibrinolytics given to patients with ST-segment elevation MI (STEMI) in the emergency room prior to transfer to CCU or ICU;

CHF: Angiotensin-Converting Enzyme (ACE) inhibitor or Angiotensin Receptor Blocker (ARB) given to CHF patients with left ventricular systolic dysfunction; Positive trends for several other indicators (e.g., timely reperfusion, utilization of aspirin, beta blockers) were observed.

In addition, mortality rates were lower at Early feedback hospitals as compared with Delayed feedback hospitals. Although there was no significant improvement in the composite AMI or CHF indicators in the Early feedback hospitals, there were many positive trends showing that the EFFECT report cards had a positive impact on the quality of cardiac care and improved patient outcomes in Ontario.

EFFECT Study	Early Feedback Hospitals (N=42)		Delayed Feedback Hospitals (N=39)		P Value
	Baseline	Follow up	Baseline	Follow up	
<b>All-Cause Mortality</b>					
<b>AMI patients</b>					
30 day	11.7%	9.6%	12.2%	12.2%	0.045
1 year	19.2%	19.4%	20.2%	22.5%	0.06
<b>STEMI patients</b>					
30 day	11.5%	8.3%	11.9%	11.4%	0.04
1 year	16.0%	13.5%	17.2%	17.4%	0.045
<b>CHF patients</b>					
30 day	11.3%	9.6%	10.4%	10.6%	0.26
1 year	32.6%	30.3%	33.2%	32.9%	0.10

Dr. Fred Masoudi, University of Colorado, designated discussant at the AHA Scientific Sessions, remarked "I would say this is a landmark trial. It is one of the most important studies presented at this meeting."

Hospital-specific results from the follow up data collection have been provided to all participating centres. This, along with the publication of the primary trial results, marks the completion of the study. The study team extends its sincere thanks to the hospitals and clinicians in Ontario who participated in the EFFECT study.

\*5 subsequently withdrew

## CCORT 2010-2011 Fellowship & Summer Student Program: Now Accepting Applications

A key objective of the CCORT initiative is to train students to become future leaders of cardiovascular outcomes research in Canada. This is facilitated through the annual fellowship program—now in its tenth year.

Fellowship and summer student opportunities currently exist for students involved in post-doctoral, PhD, or MSc research in Clinical Epidemiology or Health Services Research, or students with a MD enrolled in clinical training programs in relevant specialties (e.g., cardiology, internal

medicine, family medicine, etc.) whose research aligns with the CCORT mandate. Applications are now being accepted for the current funding period of July 2010 - March 2011. For program and application details, please visit <http://www.ccort.ca/StudentTraining.aspx>

For questions about the application process, please contact Heather Childs at [heather.childs@ices.on.ca](mailto:heather.childs@ices.on.ca) or (416) 480-4055 ext. 3119.

For copies of the EFFECT paper/commentaries/powerpoint presentations/associated media coverage, see [www.ccort.ca/effect.aspx](http://www.ccort.ca/effect.aspx)

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CIHR IRSC



## CCORT PROFILE—Elizabeth Freiheit, PhD (candidate)

Elizabeth Freiheit's career journey began, not in research but rather, in international relations. Originally from the US, Elizabeth obtained a BA in history and an MA in international affairs. This led to work in the Czech Republic and in the US, involving international exchange and grant-giving programs. A move to Michigan prompted a career change, and while working at a contract research organization she discovered her interest in clinical research. When she relocated to Calgary, she began a BSc in Statistics at the University of Calgary, where she is now pursuing a PhD in Community Health Sciences, specializing in Biostatistics.



covery in Older Cardiac Patients, where she is examining the risks of functional disability, functional recovery, and changes in health-related quality of life associated with baseline and incident measures of neurocognitive impairment and depressive symptoms in older patients.

Elizabeth gave an oral presentation on her paper *The Development of a Frailty Index for Patients with Coronary Artery Disease* (Freiheit EA, Hogan DB, Eliasziw M, Meekes MF, Ghali WA, Partlo LA, Maxwell CJ), at the Annual Meeting of the American Gerontological Society of America this past November. The paper has been submitted to the Journal of the American Geriatrics Society.

In addition to continuing her studies (recent courses involved generalized linear models and longitudinal data analysis) she has been working on various analyses including the association between cardiovascular risk factors and cognitive impairment and decline; caregiver burden with cardiovascular patients, treatment plan and cognitive decline over time; and treatment plan and health-related quality of life over time.

After moving to Calgary, Elizabeth began working with Drs. Peter Faris and Bill Ghali, in the area of knowledge translation for the Alberta Project for Outcome Assessment for Coronary Heart Disease (APPROACH). She later became the primary statistical analyst on the Calgary Cardiac and Cognition study working with Colleen Maxwell and Bill Ghali. In 2008, she received funding from the Alberta Heritage Fund for Medical Research (AHFMR) to work with the database, and support from the CIHR Tomorrow's Research Cardiovascular Health Professionals (TORCH) training program to develop a frailty index for people with coronary artery disease. She received a CCORT Doctoral fellowship in 2009 for her project entitled Risk Factors for Functional Re-

Following completion of her PhD, Elizabeth hopes to work with a variety of research teams providing study design consultation, statistical analysis, and reporting support as well as teach statistical methods to potential researchers. Elizabeth's experience with CCORT "has been nothing but positive. My CCORT project allows me to continue my involvement with the research objectives of the 3C study which focuses on outcomes of interest particular to survivors of coronary artery disease: quality of life and functional recovery. I strongly feel that this research is important and relevant. Our analysis plan is proving to be very fruitful in terms of experience, learning, and achievement."

## CCORT Makes the Rounds—Publications 2009/2010

Atzema C, Schull MJ, Austin PC, Tu JV. Emergency Department Triage of Acute Myocardial Infarction Patients: Predictors of Low Acuity Triage. *Am J Emerg Med.* (In press)

Guertin JR, Jackevicius C, Cox J, Humphries K, Johansen H, Pilote L, So D, Tu JV, Rinfret S. Potential cost savings with the restrictive access to angiotensin receptor blockers in Québec; a decision analysis model. *Can J Cardiol* 2009; 25 (Suppl SB).

Guertin JR, Jackevicius CA, Cox J, Humphries K, Johansen H, Pilote L, So D, Tu JV, Wijeyesundera H, Rinfret S. Potential Cost Savings With Restrictive Access to Angiotensin-Receptor Blockers in Canada: A Decision Analysis Model. *Circulation*, Nov 2009; 120: S470 - S471.

Ko DT, Chiu M, Guo H, Austin PC, Marquis JF, Tu JV. Patterns of use of thienopyridine therapy after percutaneous coronary interventions with drug-eluting stents and bare metal stents. *Am Heart J* 2009 Oct; 158(4):592-598.e1. Epub 2009 Aug 22.

Lee DS, Ghosh N, Floras JS, Newton GE, Austin PC, Wang X, Liu PP, Stukel TA, Tu JV. Association of blood pressure at hospital discharge with mortality

in patients diagnosed with heart failure. *Circ:Heart Fail* 2009; 2(6):616-623 Epub 2009 Sept 24.

Ouzounian M, Tu JV, Austin PC, Chong A, Liu PP, Lee DS. Statin therapy and clinical outcomes in heart failure: A propensity-matched analysis. *J Card Fail* 2009; 15(3):241-248.

Schull MJ, Vaillancort S, Donovan L et al. Underuse of prehospital strategies to reduce time to reperfusion for ST-elevation myocardial infarction patients in 5 Canadian provinces. *CJEM* 2009; 11(5):473-480.

Stukel TA, Alter DA, Schull MJ, Ko DT, Li P. Association between hospital cardiac management and outcomes for acute myocardial infarction patients. *Med Care* 2010;48(2):157-165.

Tu JV, Donovan LR, Lee DS, Wang JT, Austin PC, Alter DA, Ko DT. Effectiveness of Public Report Cards for Improving the Quality of Cardiac Care: The EFFECT Study: A Randomized Trial. *JAMA* 2009; 302(21): 2330-2337. Epub 2009 Nov 18.

## Did You Know CCORT...

- Was initiated in 2001 with a 5 year Interdisciplinary Health Research Team (IHRT) grant from CIHR
- Involves over 30 investigators plus students, coordinators, statisticians, IT specialists from across Canada, in BC, AB, ON, QC and NS
- Has trained over 60 students through the CCORT Student Training program—and is currently accepting applications for the 2010-2011 year
- Has published over 135 papers in the peer-reviewed literature
- Won the Robert E. Beamish award and the CIHR Knowledge translation award in 2005
- Freely distributed over 2,000 hard copies of the CCORT Canadian Cardiovascular Atlas and over 40,000 electronic copies via its web site



## CCORT Makes the Rounds—Presentations

### 2009

Guertin JR, Jackevicius C, Cox J, Humphries K, Johansen H, Pilote L, So D, Tu JV, Rinfret S. Potential cost savings with the restrictive access to angiotensin receptor blockers in Québec; a decision analysis model. 62nd Canadian Cardiovascular Congress. Edmonton, AB. October 24-28, 2009.

Guertin JR, Jackevicius CA, Cox J, Humphries K, Johansen H, Pilote L, So D, Tu JV, Wijeyesundera H, Rinfret S. Abstract 1285: Potential Cost Savings With Restrictive Access to Angiotensin-Receptor Blockers in Canada: A Decision Analysis Model. American Heart Association Scientific Sessions. Orlando, FL. November 14-18, 2009.

Izadnegahdar M, Pu A, Gao M, Humphries KH. Has the Sex Gap in 30-Day Mortality Post Acute Myocardial Infarction Narrowed in Recent Years? American Heart Association Scientific Sessions. Orlando, FL. November 14-18, 2009.

Jackevicius C, Pilote L. Pulmonary Toxicity Associated With Amiodarone: Population-Level Incidence and Risk Factors. American Heart Association Scientific Sessions. Orlando, FL. November 14-18, 2009.

Lee DS. Effects of Furosemide dose on mortality and morbidity in elderly patients with heart failure. 62<sup>nd</sup> Canadian Cardiovascular Congress. Edmonton, AB. October 24-28, 2009.

Lee DS, Tu JV. Complications Increase Mortality Risk After De Novo Implantation of a Cardioverter Defibrillator: Initial Findings From the Ontario ICD Database. American Heart Association Scientific Sessions. Orlando, FL. November 14-18, 2009.

Stukel TA. Association between Hospital Cardiac Management and Outcomes for AMI Patients. Conjoint Rounds, Institute for Clinical Evaluative Sciences, Toronto, ON. September 29, 2009.

Tu JV. Trends in Cardiovascular Disease in Canada. 62<sup>nd</sup> Canadian Cardiovascular Congress, Edmonton, AB. October 24-28, 2009.

Tu JV, Donovan LR, Lee DS et al. Effectiveness of public report cards for improving the quality of cardiac care: Results from the Enhanced Feedback for Effective Cardiac Treatment (EFFECT) Study. Late breaking Clinical Science presentation, American Heart Association Scientific Sessions. Orlando, FL. November 14-18, 2009.

Tu K, Mitiku T, Guo H, Lee D, Tu JV. Validation of Administrative Data to Identify Patients that have Ischemic Heart Disease and a Myocardial Infarction using data from EMRALD. Public Health Agency of Canada-Heart Disease Provincial/Territorial Administrative Data Working Group Meeting, Toronto, ON. Oct 2009.

Tu K, Guo H, Mitiku T. Validation of Administrative Data to Identify Patients that have had a MI using Data from Primary Care Electronic Medical Records. North American Primary Care Research Group (NAPCRG) Annual Meeting, Montreal, QC. November 2009.

Tu K. Using Primary Care Electronic Medical Record Data for Research. International Methodology Consortium for Coded Health Information (IMECCHI) Annual Meeting, Vancouver, BC. November 2009.

Wijeyesundera, H. Reductions in Coronary Heart Disease Mortality Associated with Changes in Risk Factors in Ontario between 1994 and 2005. 62<sup>nd</sup> Canadian Cardiovascular Congress. Edmonton, AB. October 24-28, 2009.

To send newsletter comments and contributions, contact Heather Childs at [heather.childs@ices.on.ca](mailto:heather.childs@ices.on.ca).

## 2010 CALENDAR OF EVENTS



### January 2010

**Annual CCORT Student Competition Opens**  
<http://www.ccort.ca/StudentTraining.aspx>

### February 23-26, 2010

International Stroke Conference,  
San Antonio, Texas  
<http://www.americanheart.org/presenter.jhtml?identifier=3067536>

### March 2-5, 2010

Joint Conference-50<sup>th</sup> Cardiovascular Disease Epidemiology and Prevention & Nutrition, Physical Activity and Metabolism-2010, San Francisco, CA  
<http://www.americanheart.org/presenter.jhtml?identifier=3065525>

### May 3-4, 2010

Annual CCORT National Meeting  
Toronto, Ontario

### May 19-21, 2010

Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Conference 2010, Washington, DC  
<http://www.americanheart.org/presenter.jhtml?identifier=3057695>

### June 21-22, 2010

Annual APPROACH meeting  
Calgary, Alberta  
<http://www.approach.org/index.html>

## NOTEWORTHY

**Congratulations to Dr. Jafna Cox, CCORT investigator,** recently named the inaugural Heart and Stroke Foundation of Nova Scotia Chair in Cardiovascular Outcomes Research



(Photo, QEII Foundation)