Achieving quality indicator benchmarks and potential impact on coronary heart disease mortality.

https://arctichealth.org/en/permalink/ahliterature131252

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Source: Can J Cardiol. 2011 Nov-Dec;27(6):756-62

Language: English

Publication Type: Article

Keywords: Adult
  Aged
  Aged, 80 and over
  Benchmarking - methods
  Coronary Disease - mortality - therapy
  Female
  Follow-Up Studies
  Humans
  Male
  Middle Aged
  Myocardial Revascularization - methods - standards
  Ontario - epidemiology
  Prognosis
  Quality Indicators, Health Care - utilization
  Retrospective Studies
  Risk Assessment - methods
  Risk factors
Abstract: Quality indicators in coronary heart disease (CHD) measure the practice gap between optimal care and current clinical practice. However, the potential impact of achieving quality indicator benchmarks remains unknown.

Using a validated, epidemiologic model of CHD in Ontario, Canada, we estimated the potential impact on mortality of improved utilization on CHD quality indicators from 2005 levels to recommend benchmark utilization of 90%. Eight CHD disease subgroups were evaluated, including inpatients with acute myocardial infarction (AMI), acute coronary syndromes, and heart failure, in addition to ambulatory patients who were post-acute myocardial infarction survivors, or had heart failure, chronic stable angina, hypertension, or hyperlipidemia. The primary outcome was the predicted mortality reduction associated with meeting quality indicator targets for each CHD subgroup-treatment combination.

In 2005, there were 10,060 CHD deaths in Ontario, representing an age-adjusted CHD mortality of 191 per 100,000 people. By meeting quality indicator utilization benchmarks, mortality could be potentially reduced by approximately 20% (95% confidence interval 17.8-21.1), representing approximately 1960 avoidable deaths. The bulk of this potential benefit was in ambulatory patients with chronic stable angina (36% of reduction) and heart failure (31% of reduction). The biggest drivers were optimizing angiotensin-converting enzyme inhibitor use in chronic stable angina patients (approximately 440 avoidable deaths) and β-blocker use in heart failure (approximately 400 avoidable deaths).

These findings reinforce the importance of quality indicators and could aid policy makers in prioritizing strategies to meet the goals outlined in the Canadian Heart Health Strategy and Action Plan for reducing cardiovascular mortality.

PubMed ID: 21920697 View in PubMed

Administrative hospitalization database validation of cardiac procedure codes.

https://arctichealth.org/en/permalink/ahliterature130676

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Source: Med Care. 2013 Apr;51(4):e22-6

Date: Apr-2013

Language: English

Publication Type: Article
Abstract: Although cardiac procedures are commonly used to treat cardiovascular disease, they are costly. Administrative data sources could be used to track cardiac procedures, but sources of such data have not been validated against clinical registries.

To examine accuracy of cardiac procedure coding in administrative databases versus a prospective clinical registry.

We examined a total of 182,018 common cardiac procedures including percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG) surgery, valve surgery, and cardiac catheterization procedures during fiscal years 2005 and 2006 across 18 cardiac centers in Ontario, Canada.

Accuracy of codes in the Canadian Institute for Health Information (CIHI) administrative databases were compared with the clinical registry of the Cardiac Care Network.

Comparing 17,511 CIHI and 17,404 registry procedures for CABG surgery, the positive predictive value (PPV) of CIHI-coded CABG surgery was 97%. In 6229 CIHI-coded and 5885 registry-coded valve surgery procedures, the PPV of the administrative data source was 96%. Comparing 38,527 PCI procedures in CIHI to 38,601 in the registry, the PPV of CIHI was 94%. Among 119,751 CIHI-coded and 111,725 registry-coded cardiac catheterization procedures, the PPV of administrative data was 94%. When the procedure date window was expanded from the same day to ±1 days, the PPV was 96% (PCI) and exceeded 98% (CABG surgery), 97% (valve surgery), and 95% (cardiac catheterization).

Using a clinical registry as the gold standard, the coding accuracy of common cardiac procedures in the CIHI administrative database was high.
Abstract: Higher blood pressure in acute heart failure has been associated with improved survival; however, the relationship between blood pressure and survival in stabilized patients at hospital discharge has not been established.

In 7448 patients with heart failure (75.2 +/- 11.5 years; 49.9% men) discharged from the hospital in Ontario, Canada, we examined the association of systolic blood pressure (SBP) and diastolic blood pressure with long-term survival. Parametric survival analysis was performed, and survival time ratios were determined according to discharge blood pressure group. A total of 25 427 person-years of follow-up were examined. In those with left ventricular ejection fraction \( \leq 40 \) mm Hg, respectively. In those with left ventricular ejection fraction >40%, survival time ratios were 0.69 (95% CI, 0.51 to 0.93), 0.83 (95% CI, 0.71 to 0.99), 0.95 (95% CI, 0.80 to 1.14), and 0.76 (95% CI, 0.61 to 0.95) for discharge SBPs or \( \leq 160 \) mm Hg, respectively.

In this long-term population-based study of patients with heart failure, the association of discharge SBP with mortality followed a U-shaped distribution. Survival was shortened in those with reduced or increased values of discharge SBP.
Association of hospital spending intensity with mortality and readmission rates in Ontario hospitals.

https://arctichealth.org/en/permalink/ahliterature126185

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Source: JAMA. 2012 Mar 14;307(10):1037-45

Date: Mar-14-2012

Language: English

Publication Type: Article

Keywords: Adolescent
         Adult
         Aged
         Aged, 80 and over
         Colonic Neoplasms - mortality - therapy
         Economics, Hospital
         Female
         Health Expenditures - statistics & numerical data
         Heart Failure - mortality - therapy
         Hip Fractures - mortality - therapy
         Hospital Costs - statistics & numerical data
         Humans
         Longitudinal Studies
         Male
         Middle Aged
         Myocardial Infarction - mortality - therapy
         Ontario - epidemiology
         Patient Readmission - statistics & numerical data
         Quality of Health Care
         Treatment Outcome
         Young Adult
Abstract: The extent to which better spending produces higher-quality care and better patient outcomes in a universal health care system with selective access to medical technology is unknown.

To assess whether acute care patients admitted to higher-spending hospitals have lower mortality and readmissions.

The study population comprised adults (>18 years) in Ontario, Canada, with a first admission for acute myocardial infarction (AMI) (n = 179,139), congestive heart failure (CHF) (n = 92,377), hip fracture (n = 90,046), or colon cancer (n = 26,195) during 1998-2008, with follow-up to 1 year. The exposure measure was the index hospital's end-of-life expenditure index for hospital, physician, and emergency department services.

The primary outcomes were 30-day and 1-year mortality and readmissions and major cardiac events (readmissions for AMI, angina, CHF, or death) for AMI and CHF.

Patients' baseline health status was similar across hospital expenditure groups. Patients admitted to hospitals in the highest- vs lowest-spending intensity terciles had lower rates of all adverse outcomes. In the highest- vs lowest-spending hospitals, respectively, the age- and sex-adjusted 30-day mortality rate was 12.7% vs 12.8% for AMI, 10.2% vs 12.4% for CHF, 7.7% vs 9.7% for hip fracture, and 3.3% vs 3.9% for CHF; fully adjusted relative 30-day mortality rates were 0.93 (95% CI, 0.89-0.98) for AMI, 0.81 (95% CI, 0.76-0.86) for CHF, 0.74 (95% CI, 0.68-0.80) for hip fracture, and 0.78 (95% CI, 0.66-0.91) for colon cancer. Results for 1-year mortality, readmissions, and major cardiac events were similar. Higher-spending hospitals had higher nursing staff ratios, and their patients received more inpatient medical specialist visits, interventional (AMI cohort) and medical (AMI and CHF cohorts) cardiac therapies, preoperative specialty care (colon cancer cohort), and postdischarge collaborative care with a cardiologist and primary care physician (AMI and CHF cohorts).

Among Ontario hospitals, higher spending intensity was associated with lower mortality, readmissions, and cardiac event rates.

Notes: Cites: N Engl J Med. 2009 Apr 2;360(14):1418-2819339721
Cites: Circulation. 2008 Dec 9;118(24):2596-64819001027
Cites: Med Care. 2010 Feb;48(2):157-6519927014
Cites: Med Care. 2010 Feb;48(2):125-3220057328
Cites: J Am Geriatr Soc. 2009 Nov;57(11):2046-5419793159
Cites: Health Aff (Millwood). 2010 Aug;29(8):1523-3120679657
Cites: Circulation. 2010 Nov 2;122(18):1806-1420956211
Cites: Health Serv Res. 2010 Dec;45(6 Pt 2):1872-9220880043
Cites: Health Serv Res. 2010 Dec;45(6 Pt 2):1893-902; discussion 1908-1121108529
Cites: Ann Intern Med. 2011 Feb 1;154(3):160-721282695

https://arctichealth.org/en/permalink/ahliterature143630

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Source: JAMA. 2010 May 12;303(18):1841-7

Date: May-12-2010

Language: English
Coronary heart disease (CHD) mortality has declined substantially in Canada since 1994. To determine what proportion of this decline was associated with temporal trends in CHD risk factors and advancements in medical treatments.

Prospective analytic study of the Ontario, Canada, population aged 25 to 84 years between 1994 and 2005, using an updated version of the validated IMPACT model, which integrates data on population size, CHD mortality, risk factors, and treatment uptake changes. Relative risks and regression coefficients from the published literature quantified the relationship between CHD mortality and (1) evidence-based therapies in 8 distinct CHD subpopulations (acute myocardial infarction [AMI], acute coronary syndromes, secondary prevention post-AMI, chronic coronary artery disease, heart failure in the hospital vs in the community, and primary prevention for hyperlipidemia or hypertension) and (2) population trends in 6 risk factors (smoking, diabetes mellitus, systolic blood pressure, plasma cholesterol level, exercise, and obesity).

The number of deaths prevented or delayed in 2005; secondary outcome measures were improvements in medical treatments and trends in risk factors.

Between 1994 and 2005, the age-adjusted CHD mortality rate in Ontario decreased by 35% from 191 to 125 deaths per 100,000 inhabitants, translating to an estimated 7585 fewer CHD deaths in 2005. Improvements in medical and surgical treatments were associated with 43% (range, 11% to 124%) of the total mortality decrease, most notably in AMI (8%; range, -5% to 40%), chronic stable coronary artery disease (17%; range, 7% to 35%), and heart failure occurring while in the community (10%; range, 6% to 31%). Trends in risk factors accounted for 3660 fewer CHD deaths prevented or delayed (48% of total; range, 28% to 64%), specifically, reductions in total cholesterol (23%; range, 10% to 33%) and systolic blood pressure (20%; range, 13% to 26%). Increasing diabetes prevalence and body mass index had an inverse relationship associated with higher CHD mortality of 6% (range, 4% to 8%) and 2% (range, 1% to 4%), respectively.

Between 1994 and 2005, there was a decrease in CHD mortality rates in Ontario that was associated primarily with trends in risk factors and improvements in medical treatments, each explaining about half of the decrease.
Cardiovascular outcomes are predicted by exercise-stress myocardial perfusion imaging: Impact on death, myocardial infarction, and coronary revascularization procedures.

https://arctichealth.org/en/permalink/ahliterature134519

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Source: Am Heart J. 2011 May;161(5):900-7

Date: May-2011

Language: English

Publication Type: Article

Keywords: Exercise Test - methods
Female
Follow-Up Studies
Humans
Male
Middle Aged
Myocardial Infarction - mortality - radionuclide imaging - surgery
Myocardial Revascularization - methods
Ontario - epidemiology
Prognosis
Retrospective Studies
Risk Assessment - methods
Survival Rate - trends
Tomography, Emission-Computed, Single-Photon - methods

Abstract: The aim of this study was to determine the impact of myocardial perfusion imaging (MPI) on the outcomes of death, myocardial infarction (MI), and late coronary revascularization procedures.

In patients undergoing exercise-stress MPI (January 1, 2003-March 31, 2007), we determined the impact of summed stress score (SSS) and percent left ventricular (LV) ischemia on (a) death or MI and (b) composite of death, MI, or late coronary revascularization occurring more than 90 days post-MPI.

During 35,007 person-years of follow-up among 9,605 patients (mean ? SD age 54.4 ? 13.2 years, 60.3% men), there were 290 deaths, 175 MIs, and 525 coronary revascularization procedures. Of those who attained =10 metabolic equivalents (METS) workload, major stress perfusion defects (SSS =7) were present in 4.2% overall and in 3.7% without ST-segment shifts, whereas large ischemic defects (=10% LV ischemia) were present in 1% overall and 0.7% without ST-segment shifts. For those with 1% to 4%, 5% to 9%, and =10% LV ischemia, adjusted hazard ratios were 1.40 (95% CI 1.13-1.73, P = .002), 2.07 (95% CI 1.56-2.74, P

PubMed ID: 21570520 View in PubMed

Care and outcomes of patients newly hospitalized for heart failure in the community treated by
cardiologists compared with other specialists.

https://arctichealth.org/en/permalink/ahliterature184813

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Date: Jul-15-2003

Language: English

Publication Type: Article

Keywords: Aged
Cardiology - standards - statistics & numerical data
Cohort Studies
Comorbidity
Databases as Topic - statistics & numerical data
Family Practice - standards - statistics & numerical data
Female
Heart Failure - mortality - therapy
Hospitalization - statistics & numerical data
Humans
Internal Medicine - standards - statistics & numerical data
Logistic Models
Male
Medicine - standards - statistics & numerical data
Odds Ratio
Ontario
Outcome Assessment (Health Care) - statistics & numerical data
Patient Care Management
Patient Readmission - statistics & numerical data
Poisson Distribution
Proportional Hazards Models
Risk assessment
Specialization

Abstract: It is not known whether subspecialty care by cardiologists improves outcomes in heart failure patients from the community over care by other physicians.

Using administrative data, we monitored 38 702 consecutive patients with first-time hospitalization for heart failure in Ontario, Canada, between April 1994 and March 1996 and examined differences in processes of care and clinical outcomes between patients attended by physicians of different disciplines. We found that patients attended by cardiologists had lower 1-year risk-adjusted mortality than those attended by general internists, family practitioners, and other physicians (28.5% versus 31.7%, 34.9%, and 35.9%, respectively; all pairwise comparisons, P

Notes: Comment In: Circulation. 2003 Jul 15;108(2):129-3112860891
CCORT/CCS quality indicators for acute myocardial infarction care.

https://arctichealth.org/en/permalink/ahliterature186778

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Date: Jan-2003

Language: English

Publication Type: Article

Keywords: Ambulatory Care
Benchmarking
Canada
Cardiovascular Agents - standards - therapeutic use
Guideline Adherence
Humans
International Classification of Diseases
Length of Stay
Myocardial Infarction - diagnosis - therapy
Outcome and Process Assessment (Health Care)
Quality Indicators, Health Care - standards
Abstract: Although quality indicators for the care of acute myocardial infarction (AMI) patients have been described for other countries, there are none specifically designed for the Canadian health care system. The authors' goal was to develop a set of Canadian quality indicators for AMI care.

A literature review identified existing quality indicators for AMI care. A list of potential indicators was assessed by a nine-member panel of clinicians from a variety of disciplines using a modified-Delphi panel process. After an initial round of rating the potential indicators, a series of indicators was identified for a second round of discussion at a national meeting. Further refinement of indicators occurred following a teleconference and review by external reviewers.

To identify an AMI cohort, case definition criteria were developed, using a hospital discharge diagnosis for AMI of International Classification of Diseases-Ninth revision (ICD-9) code 410.x. Thirty-seven indicators for AMI care were established. Pharmacological process of care indicators included administration of acetylsalicylic acid, beta-blockers, angiotensin-converting enzyme inhibitors, thrombolytics and statins. Mortality and readmissions for AMI, unstable angina and congestive heart failure were recommended as outcome indicators. Nonpharmacological indicators included median length of stay in the emergency department, and median waiting times for cardiac catheterization, percutaneous coronary intervention and/or coronary artery bypass graft surgery.

A set of Canadian quality indicators for the care of AMI patients has been established. It is anticipated that these indicators will be useful to clinicians and researchers who want to measure and improve the quality of AMI patient care in Canada.

PubMed ID: 12571693 View in PubMed

CCORT/CCS quality indicators for congestive heart failure care.
https://arctichealth.org/en/permalink/ahliterature185759

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Source: Can J Cardiol. 2003 Mar 31;19(4):357-64

Date: Mar-31-2003

Language: English

Publication Type: Article
Abstract:

Quality indicators are measurement tools for assessing the structure, processes and outcomes of care. Although quality indicators have been developed in other countries, Canadian cardiovascular disease indicators do not exist.

To develop quality indicators for measuring and improving congestive heart failure (CHF) care in Canada. An 11-member multidisciplinary national expert panel was selected from nominees from national medical organizations. Potential quality indicators were identified by a detailed search of published guidelines, randomized trials and outcomes studies. A two-step modified Delphi process was employed with an initial screening round of indicator ratings, followed by a national quality indicator panel meeting, where definitions of the indicators were developed using consensus methods. Indicators were designed to be measurable, using retrospective chart review and linking existing administrative databases.

The case definition criterion was developed based on a discharge diagnosis of CHF (International Classification of Diseases, 9th revision [ICD-9] code 428.x), with diagnostic confirmation using clinical criteria. In total, 29 indicators and five test indicators were recommended. Process indicators included prescription for angiotensin-converting enzyme inhibitors, beta-blockers or warfarin (for atrial fibrillation) at hospital discharge. Nonpharmacological in hospital process indicators included evaluation of left ventricular function, weight measurement and selected patient education counselling instructions. Process indicators in the ambulatory setting included prescription and adherence to drug therapies and physician follow-up. Outcome indicators included mortality, readmissions and emergency visits.

A set of Canadian quality indicators for CHF care encompassing organizational attributes, pharmacotherapy, investigations, counselling, continuity of care and disease outcomes has been developed. These quality indicators will serve as a foundation for future studies evaluating the quality of CHF care in Canada.

PubMed ID: 12704479 View in PubMed 🔗
Canadians of Chinese descent, represent one of the fastest growing visible minority groups in Canada, (as well as the second largest), but relatively little is known about the clinical features of heart failure (HF) in Chinese-Canadian versus non-Chinese Canadian patients.

We conducted a population-based analysis of urban patients hospitalized in Ontario, Canada for the first time with a most responsible diagnosis of HF between April 1, 1995 and March 31, 2008. Among the 99,278 patients, 1,339 (1.3%) were classified as Chinese using a previously validated list of Chinese surnames. Through linkage to other administrative databases, we compared the clinical characteristics, pharmacological management, and outcomes of Chinese versus non-Chinese HF patients.

Ischemic heart disease was identified as the possible etiology of HF in a greater proportion of non-Chinese patients (47.7% vs. 35.3%; p?