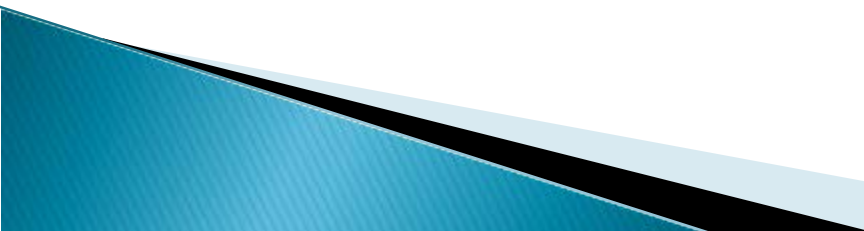


Inequity in Primary and Secondary Preventive Care for AMI? Utilization by SES across middle-age and older patients

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The Triple Aim Context

- ▶ The triple aim framework offers a unique opportunity to integrate a population health approach into more traditional healthcare planning and decision making
 - ▶ One of the fundamental concepts of population health is equity, which is particularly relevant given the universal nature of Canada's healthcare system
 - ▶ One of the fundamental opportunities to improve population via healthcare is through primary care and preventive services
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What Do We Know About Inequity in Canadian Healthcare?

- ▶ Two areas of focus on inequity in healthcare research
 - Acute care/hospital care – most often based on a homogenous cohort of patients with a specific acute illness, differences in practice patterns related to a disease condition are typically assessed across SES
 - Primary care – most often based on a heterogeneous patient cohort, differences in access to general practitioners are typically assessed across SES
- ▶ So what does this research tell us about equity for services related AMI?
 - Inequities in acute care have been demonstrated in cardiac catheterization, angioplasty and CABG
 - But inequities in preventive primary care for AMI are relatively unexplored

The present study

- ▶ Objective: To examine inequity in primary care for primary and secondary preventive care services specific to AMI
 - Primary preventive care – “services used to delay or prevent the onset of disease” (NLM -mesh term)
 - *Lipid testing, glucose testing*
 - Secondary preventive care – “services used to focus on the early detection and management of disease” (NLM -mesh term)
 - *Electrocardiogram, Echocardiogram, Stress Testing*
- ▶ Hypothesis: Given the universal nature of Canada’s healthcare system, SES should not effect the use of preventive services for this high risk patient cohort

Study Methods

Linked Data Sources

- ▶ Ontario's Myocardial Infarction Database (OMID) at the Institute for Clinical Evaluative Sciences in Ontario
- ▶ Ontario Health Insurance Plan Database (OHIP)
- ▶ Ontario's registered persons database (RPDB)

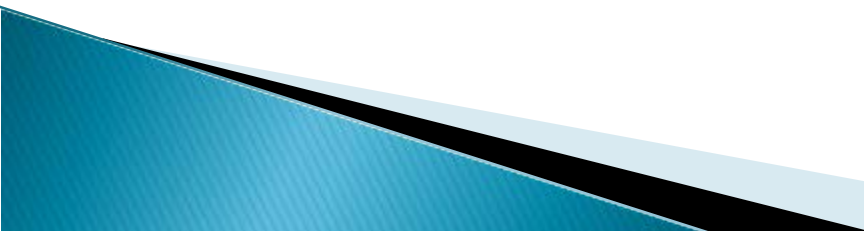
Study Cohort Case Selection

- All patients between April 1, 2003 and March 31, 2006 who had a primary diagnosis AMI (ICD 10 - I21)
- Incident cases only - based on a 15 yr look back window
- Ages between 40 and 105
- Residents of Kingston/Quinte/Rideau region excluded due to high use of shadow billing

Examination of preventive care prior to AMI

- Primary and secondary preventive services were examined for two years prior to the index AMI for each patient

Study methods continued

- ▶ Case mix for cohort examined by studying in patient co-morbidity based on Ontario Mortality Prediction rules (Tu et al. 2001) to confirm homogeneity in level of overall illness
 - ▶ Logistic regression used to examine the role of SES in the utilization of each preventive service
 - SES was approximated using an area-based income methodology at the DA level, split into three income groups
 - Regression models were stratified by middle-age and older age groups
 - Patients age, sex and urban/rural status were adjusted in the models
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Study Results

Patient Characteristics

- ▶ N= 44,622
- ▶ Average age 69 yrs
- ▶ 65% were older (over 65), 35% were middle-age (between 40–65)
- ▶ Low income patients (29%) median neighborhood personal income \$19,502
- ▶ Mid income patients (59%) median neighborhood personal income \$28,510
- ▶ High income patients (12%) median neighborhood personal income \$40,206

- ▶ Homogeneous inpatient case mix – no significant differences were found in any of the key co-morbid illnesses with the exception of CHF in middle age patients
 - Low income middle-age patients had significantly higher levels of CHF than high income counterparts

Logistic Regression Models

	<i>Age Group</i>	<i>p-value</i>	<i>(SES)</i>	<i>Odds ratio</i>	<i>Confidence Interval</i>
Primary Preventive Care					
Lipid Testing	Middle-Age	ns	Low vs High	0.922	(0.826-1.029)
	Middle-Age	ns	Med vs High	0.914	(0.827-1.010)
	Old-age	<.0001	Low vs High	0.812	(0.745-0.885)
	Old age	ns	Med vs High	0.872	(0.806-0.945)
Glucose testing	Middle-Age	ns	Low vs High	0.946	(0.844-1.059)
	Middle-Age	ns	Med vs High	0.908	(0.819-1.007)
	Old-age	<.0005	Low vs High	0.816	(0.736-0.905)
	Old-age	ns	Med vs High	0.875	(0.795-0.964)
Secondary Preventive Care					
Stress testing	Middle-Age	ns	Low vs High	1.066	(0.914-1.242)
	Middle-Age	ns	Med vs High	1.020	(0.887-1.173)
	Old-age	ns	Low vs High	0.895	(0.793-1.011)
	Old-age	ns	Low vs High	0.913	(0.817-1.020)
Electrocardiogram	Middle-Age	<.0001	Low vs High	1.149	(1.032-1.281)
	Middle-Age	ns	Med vs High	0.932	(0.845-1.028)
	Old-age	ns	Low vs High	0.921	(0.843-1.006)
	Old-Age	ns	Med vs High	0.911	(0.839-0.989)
Echocardiogram	Middle-Age	<.0001	Low vs High	1.352	(1.152-1.589)
	Middle-Age	ns	Med vs High	1.037	(0.893-1.204)
	Old-age	ns	Low vs High	0.929	(0.844-1.022)
	Old-age	ns	Med vs High	0.923	(0.845-1.007)

Summarized Results

	Middle-age	Senior
Primary preventive care		
Lipid testing	–	Gradient favours high income (19% higher odds for high income versus low income patients)
Glucose testing	–	Gradient favours high income (18% higher odds for high income versus low income patients)
Secondary preventive care		
ECG	Gradient favours low income (15% higher odds for low income versus high income patients)	–
Echocardiogram	Gradient favours low income (35% higher odds for low income versus high income patients)	–
Stress Test	–	–


Interpretation

- ▶ Many of the preventive services studied showed that SES was not a significant predictor—suggesting equity in preventive care in most cases


Exceptions included:

- ▶ Primary preventive care: Inequities in both lipid and glucose testing for senior patients were found, almost a 20% difference between highest and lowest income seniors
- ▶ Secondary preventive care: A reversed gradient favoring low income patients was found – demonstrating equitable care, likely based on higher overall needs among low SES patients

Limitations

- ▶ Linked administrative data did not allow for the examination of individual incomes
 - Area based methods were used instead however some research suggests that area based methods are more useful when studying seniors to approximate relative wealth
 - ▶ Study cohort contained high risk AMI patients, therefore study results are not generalizable to the overall population where larger disparities might be expected based on a greater heterogeneity in health status
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Conclusions

- ▶ Prevention in primary care is fundamental to population health, and service use is equitable in many cases
 - ▶ However...
 - ▶ It would appear that the system is doing a better job of providing equitable secondary preventive services – suggesting that equity is better when you are sick and present with specific symptoms
 - ▶ It would appear that the system is not doing as well in providing equitable primary preventive services
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Contributors to the Research

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