

Supplemental materials for:

Dahrouge S, Hogg W, Younger J, Muggah E, Russell G, Glazier RH. Primary care physician panel size and quality of care: a population-based study in Ontario, Canada. *Ann Fam Med.* 2016;14(1):26-33.

Appendix 1: Databases		
Database	Acronym	Description
Census data		Contains a measure of deprivation associated with different regions (small regions called dissemination areas)
Client Agency Program Enrolment	CAPE	Tracks patient enrolment to individual family physicians
Congestive Heart Failure Registry	CHFR	Identify individuals with a diagnosis of congestive heart failure using algorithms developed at ICES relying on OHIP and DAD data
Corporate Provider Database	CPDB	Captures family physician socio-demographic information, tracks their enrolment in practices and the model to which the practice belongs
Discharge Administrative Database	DAD	Supplies information on acute care hospitalizations
National Ambulatory Care Reporting System	NACRS	Provides information on all emergency room encounters
Ontario Asthma Surveillance Information System	OASIS	Identify individuals with a diagnosis of asthma using algorithms developed at ICES relying on OHIP and DAD data
Ontario Breast Screening Program	OBSP	Registry contains breast screening activities
Ontario Cancer Registry	OCR	Contains information on all Ontario residents newly diagnosed with cancer or who have died of cancer
Ontario Diabetes Database	ODD	Identify individuals with a diagnosis of diabetes using algorithms developed at ICES relying on OHIP and DAD data
Ontario Drug Benefit	ODB	Database tracks all prescription drug products dispensed to individuals 65 years of age or older and Ontarians on social assistance
Ontario Health Insurance Program	OHIP	Billing claims system captures provision of care to patients
Postal Code	PCCF+	Allow patients to be attributed to a census

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Conversion File		dissemination area based on postal code (Source: RPDB)
Registered Persons Database	RPDB	Captures patient demographic information, including age, sex and postal code

Appendix 2: Performance Indicators	
Indicator	Definition
Accessibility	
Emergency room use for low triage	Number (rate) of emergency room visits for triage category 4 (semi-urgent) and category 5 (non-urgent) per patient, (over 2 year observation period), excluding planned visits [<i>Source: NACRS</i>]
Ambulatory care sensitive admissions	Number (rate) of admissions for ambulatory care sensitive conditions [asthma, congestive heart failure, chronic obstructive pulmonary disease (COPD), diabetes, or asthma/COPD] per 1000 patients (over 2 year observation period) [<i>Source: DAD</i>]
Continuity	
Practice of Care Continuity Index	The proportion of primary care visits to physicians in the practice of the provider to whom they are attributed (rostered or virtually rostered) relative to all primary care visits in the 2 year observation period. [<i>Source: OHIP</i>]
Comprehensiveness	
Proportion of services (provider level)	Proportion of 20 standard primary care services rendered by the physician measured at the provider level [<i>Source: OHIP</i>]
Preventive care	
*Cervical cancer	Proportion of women ages 20-69 years who underwent a Papanicolaou test over 2 year observation period [<i>Source: OHIP, Cytobase</i>]
*Breast cancer ³	Proportion of women ages 50-69 who underwent a mammography over 2 year observation period [<i>Source: OHIP, OBSP</i>]

*Colorectal cancer ⁴	Proportion of patients ages 50-74 who had a Fecal occult blood testing, a sigmoidoscopy or colonoscopy in the past 2, 5 and 10 years, respectively [Source: OHIP]
Chronic Disease Management	
*Diabetes ⁵	
Eye exam	Proportion of individuals age ≥ 40 years at the start of the 2 year evaluation period with diabetes who have had an eye exam within the past 2 years [Source: OHIP]
Metformin	Proportion of individuals ≥ 65 years of age diagnosed with diabetes between 1 and 2 years prior to study period who received metformin as a first hypoglycemic agent prescription [Source: OHIP, ODB]
Angiotensin receptor blockers (ARB) or Angiotensin converting enzyme (ACE) inhibitor	Proportion of individuals ≥ 65 years of age with diabetes 1 year prior to the study period who received at least one prescription for ARB or ACE in past year [Source: OHIP, ODB]
Lipid-lowering agent	Proportion of individuals ≥ 65 years of age with diabetes 1 year prior to the study period who received at least one prescription for statin in past year [Source: OHIP, ODB]
Lipids test	Proportion of individuals age ≥ 40 years at the start of the 2 year evaluation period with diabetes who have had at least two lipids tests in the past 2 years [Source: OHIP]
HgA1c test	Proportion of individuals age ≥ 40 years at the start of the 2 year evaluation period with diabetes who have had at least four HbA1c tests in the past 2 years [Source: OHIP]
Congestive heart failure (CHF)⁶	
Echocardiogram (ECHO)	Proportion of individuals age ≥ 40 years diagnosed with CHF between 1 and 2 years prior to study period who received an ECHO within 1 year of diagnosis [Source: OHIP]

Angiotensin receptor blockers (ARB) or Angiotensin converting enzyme (ACE) inhibitor	Proportion of individuals ≥ 65 years of age diagnosed with CHF between 1 and 2 years prior to study period who received at least one prescription for ARB or ACE within 100 days of diagnosis [Source: OHIP, ODB]
Asthma⁷	
Spirometry	Proportion of individuals 11- 40 years old diagnosed with asthma between 1 and 2 years prior to study period who received spirometry testing within the first year after diagnosis (Simple Spirometry, Flow Volume Loop, Bronchial Provocation Challenge) [Source: OHIP, ODB]

(*) The indicators identified by an asterisk were incentivized during the study period. Physicians received a bonus for coordinating, providing and documenting all required elements of diabetic care. They also received a bonus for achieving target population coverage for each cancer screening.

References

1. Morrison BJ. Screening for cervical cancer. In: Canadian Task Force on the Periodic Health Examination. The Canadian Guide to clinical preventive health care. Ottawa: Canada Communications Group 1994;884-9.
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5. Canadian Diabetes Association. Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Canadian Journal of Diabetes*. 2008;32(suppl 1):S1-S201.
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Appendix 3: Estimated relationship between panel size and quality of care indicators

All graphs are fully adjusted showing the estimated performance level (Y axes) for the corresponding panel size (X axes)

Figure 1a: Percent of eligible patients receiving cancer screening by panel size

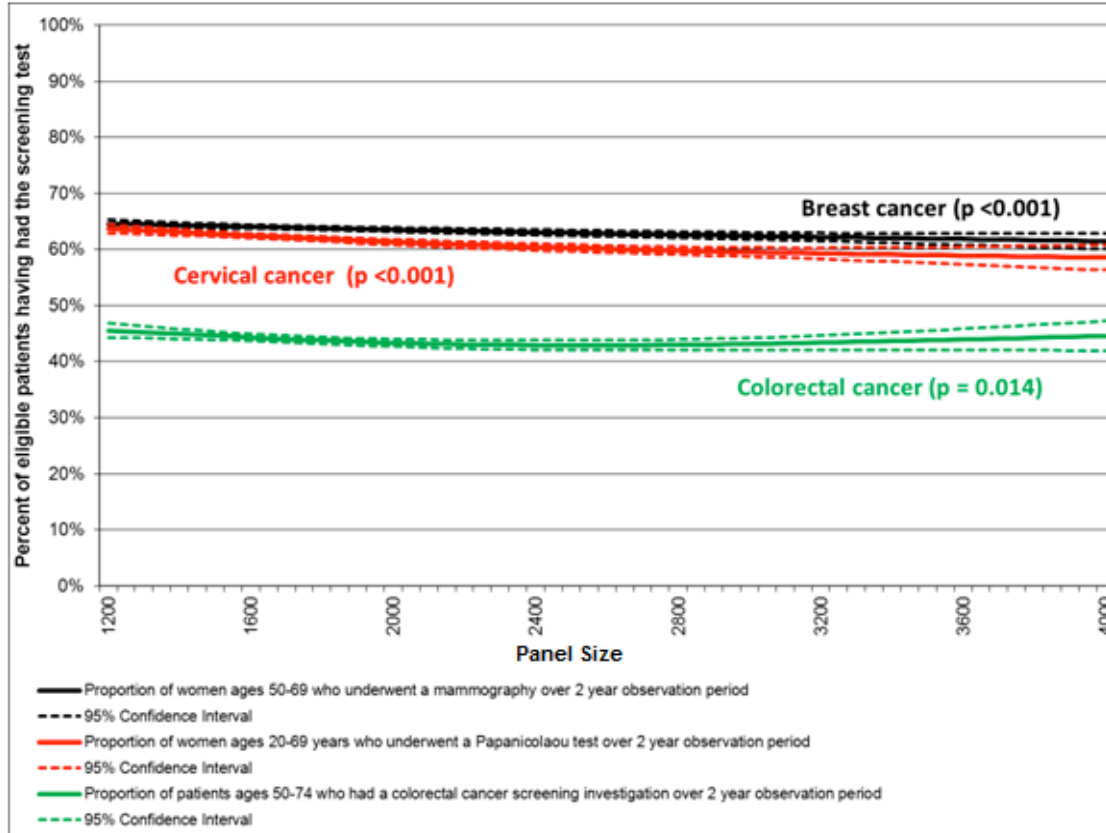


Figure 1b: Percent of eligible patients receiving diabetes testing by panel size

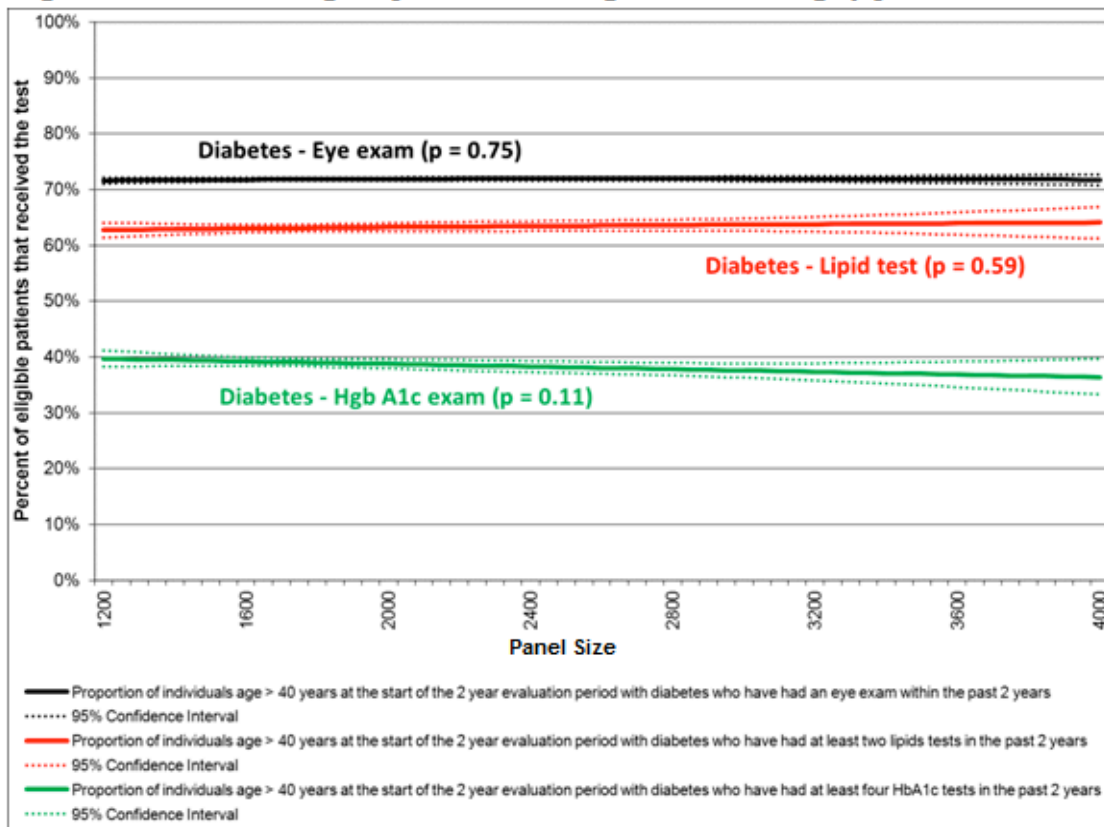


Figure 1c: Percent of eligible patients receiving diabetes medication by panel size

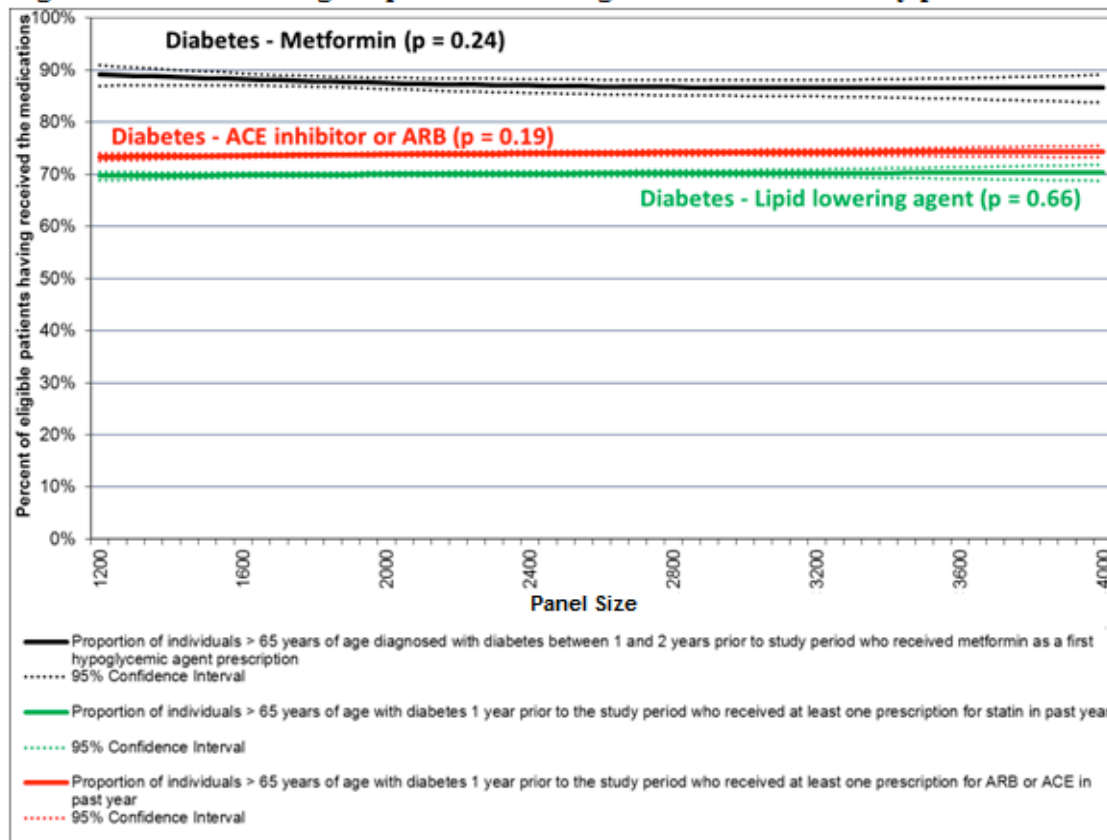


Figure 1d: Percent of eligible patients receiving test/medication by panel size

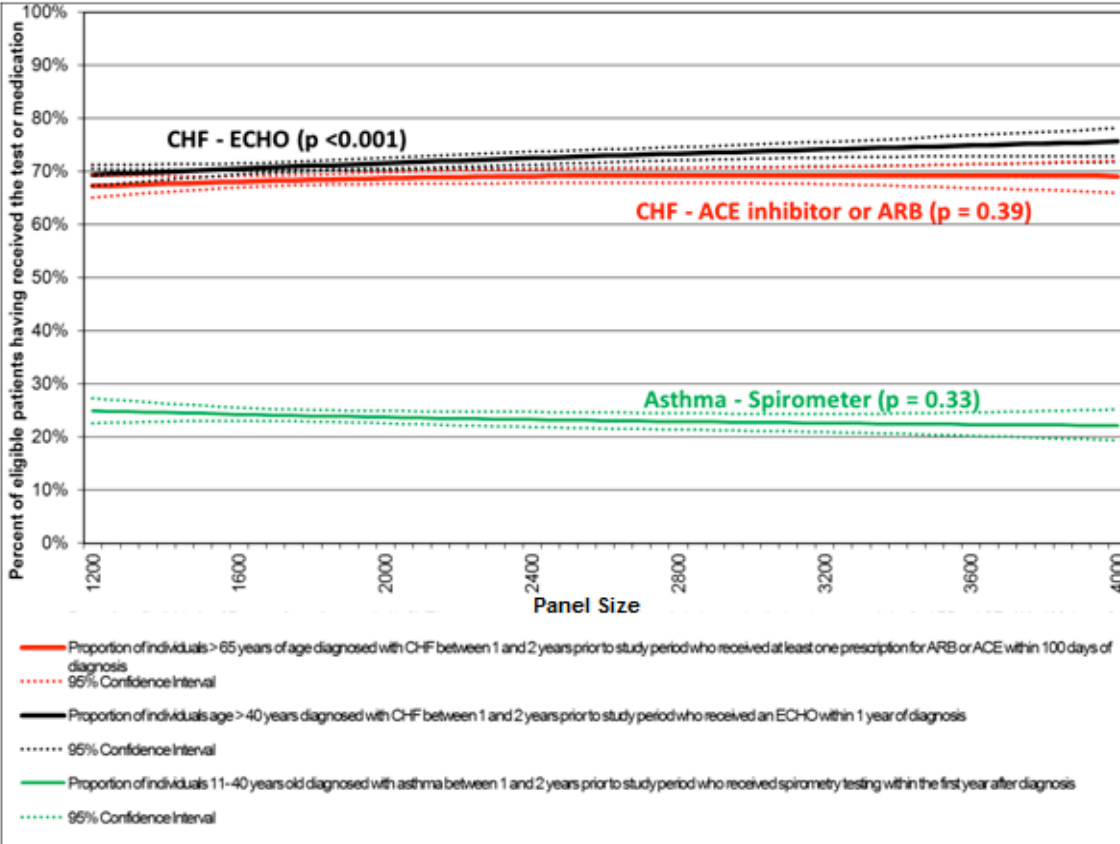


Figure 1e: Admission for low triage visits by panel size

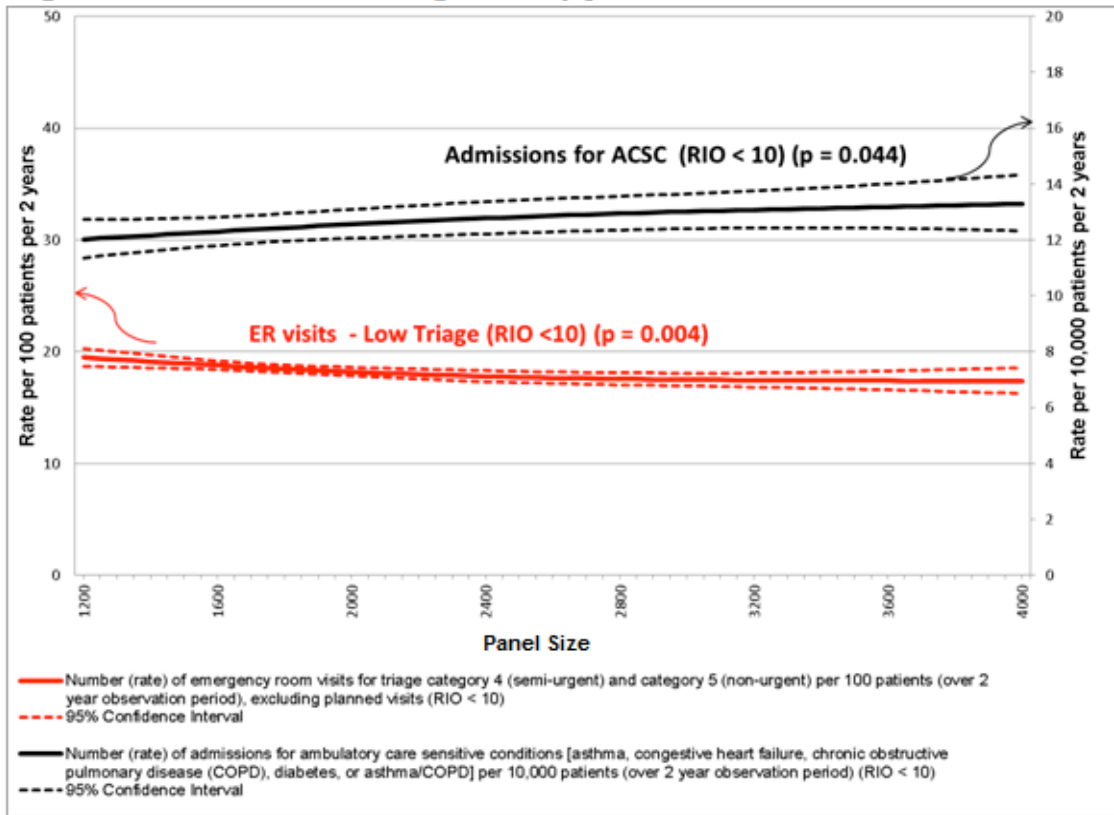


Figure 1f: Continuity and comprehensiveness scores by panel size

