Low screening prevalence among small areas by demographic, socioeconomic, and primary care characteristics: towards neighbourhood-level action plans for improved participation.

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ABSTRACT

Background:

Although screening is broadly promoted, demographic and socioeconomic factors are associated with low participation in Ontario and elsewhere. We describe participation in screening among small areas in Ontario, comparing areal to individual level results.

Methods:

We conducted a retrospective cohort study of persons eligible for any screening tests in Ontario. Using administrative health care databases, participation as of December 31, 2011 was determined, and linked to residential, demographic, socioeconomic, and primary care descriptors. Screening prevalence ratios (PR) comparing participation among most to least deprived strata were calculated. Factors associated with participation among individuals with, and without, an identifiable physician were evaluated. We used generalized estimating equations (GEE) with an exchangeable correlation matrix to account for clustering among persons by physician.

Results:

Median prevalence among small areas declined with increasing percent without high school completion - PR for all tests 0.67 (95% CI 0.66-0.69) and 0.74 (05% CI 0.73-0.76) for females and males, respectively; decreasing socioeconomic quintile - PR 0.65 (95% CI 0.64-0.66) and 0.69 (95% CI 0.67-0.70) ; and decreasing percent of persons with an identifiable physician - PR 0.71 (95% CI 0.69-0.72) and 0.66 (95% CI 0.65-0.67). Stratified individual-level modeling among persons with, and without, a physician showed similar association between low education, low income and recency of immigration with low participation in screening.

Interpretation:

Associations are similar in areal and individual level analyses. We recommend using these data in geographic information systems (GIS) to focus attention on areas where participation is low, for efforts to improve participation.

Introduction

Disease burden has varied geographically among large regions and small areas for centuries. Understanding this variation, and appropriate action in response, was one of the goals in the development of public health. In wealthy societies, disease burden varies geographically, by demographic, and by sociodemographic factors. Mortality from major circulatory diseases and common cancers is invariably highest among areas of low income [1-5]. Although the highest incidence of breast cancer is among areas of highest income, breast cancer mortality is always highest among areas of lowest income. Regardless of the funding model for health care, utilization of screening services is lowest among the most deprived in Ontario, Canada and the US [6-18].

Using 'small area'-based methods [19,20], we have recently shown the association of lower utilization of cervical, colorectal, breast, glucose and cholesterol screening with neighbourhood level factors of deprivation in Ontario as of December 31, 2009, among persons unaffected by prior diagnoses of cancer, diabetes mellitus, or myocardial infarction [12]. In order to explain this association, this paper examines the relationship as of December 31, 2011, across a wider range of demographic, socioeconomic [21,22] and primary care characteristics. This paper also examines if areal methods produce results similar to individual level methods.

Methods

We obtained approval for this study from the Research Ethics Board at Sunnybrook Health Sciences Centre in Toronto, Ontario, Canada, and conducted the work at the Institute for Clinical Evaluative Sciences.

Study Population

We conducted a population-based retrospective cohort study using linked administrative databases to examine uptake of cervical, colorectal, breast, glucose and cholesterol screening, as of December 31, 2011, among age-eligible residents of Ontario, Canada. Eligibles were identified from the Registered Persons Database by age, by residential code, and an encrypted version of the Ontario Health Insurance number which facilitates deterministic linkage to a wide range of health services databases and ecologic linkage to census variables. Persons already affected by these chronic diseases were excluded from the study population using the Ontario Cancer Registry, the Ontario Diabetes Database and the Ontario Myocardial Infarction Database.

Location of residence was assigned to census dissemination areas (DA), the smallest censal unit, which is derived from adjacent census enumeration areas in order to reduce the risk of identification of any one individual. In general we will refer to dissemination areas as 'small areas,' except when abbreviation is required, in which case we will use 'DA.' The named roads which bound and transect these small areas are readily visualized by geographic information systems (GIS).

Ascertainment of screen eligible-cohorts for each of five tests among women and each of three tests among men, and uptake of tests among these cohorts by censal areas have been described by us previously for 2009 [12]. Box 1 summarizes the screening cohort eligibility criteria and the databases used to determine the uptake of tests.

Access to chronic disease screening in Ontario

Screening for cervical, colorectal, and breast cancer in Ontario have some programmatic aspects (Ontario Breast Screening Programme, for which eligible women may self-refer), but cervical and colorectal screening always requires a conscious choice, by a physician or nurse, and a person, in the same clinical room, to participate every time, and followup coordination falls to the physician or nurse. This is also true among women who attend radiology services other than the Ontario Breast Screening Programme for breast screening. Glucose and cholesterol screening

is at the discretion of the physician or nurse and the person. Most of the testing we can identify is performed in the community setting, with the exception of breast screening and large bowel endoscopy in institutional settings.

While all permanent residents in Ontario are fully insured for all screening activities and their followup, it is up to each permanent resident to find a physician on arrival in Ontario, after moving within Ontario, and sometimes after a physician moves away or retires. Physicians are not obligated to take on a patient who does not have a physician, and in general, are not obligated to practice in a poorly served neighbourhood or region. None of these are major barriers for most middle and upper income persons; however, low income persons with or without other deprivations may not be able to travel to a physician at a distance from their residence, to identify a physician, or attend during normal working hours.

Description and analysis by small areas

From information collected at the 2006 census, each small area was described by rural versus urban residence, by quintiles of median household income among urban residence, by percent without high school completion, and by percent among whom neither official language is spoken at home. By agreement of its data custodian, the Citizenship and Immigration and Canada database (CIC) was used to determine the proportion of each small area who had immigrated during the past 27 years with the intention to reside in Ontario, by time since arrival. From the Ontario Health Insurance Plan physician billing claims database (OHIP), the following were tabulated by small area: percent of screen eligibles with an identifiable primary care physician, the univariate distribution of primary care visits between January 1, 2010 and December 31, 2011, the Patient Enrollment Model (PEM) status of eligible persons and of physicians who attended them, as well as age, sex, years in practice, and country of medical graduation, all by percent.

Small areas were categorized for each continuous variable based on distributional cut-offs (those among the 0-10th percentile were categorized as low and those among the 90-100th percentile were categorized as high). The percentage of each disease-specific screen-eligible cohort receiving the relevant testing (the screening prevalence) was calculated for each category, looking back three years prior to December 31, 2011 for cervical and breast screening, five years for glucose and cholesterol, and two years for colorectal stool testing or five years for flexible sigmoidoscopy or 10 years for colonoscopy. Prevalence ratios comparing the most extreme

groups (prevalence among lowest income quintile areas divided by highest quintiles, for example) were then calculated for each variable. 95% confidence intervals were calculated using bootstrapping methods[24].

We assembled the data so that the small area information could be readily evaluated neighbourhood by neighbourhood, visually, using Geographic Information Systems (GIS) [23]. The intended users would be public agencies, primary care providers, and by organizations of civil society, who would be able to identify the areas with poorest participation, identify information about deprivation within the small areas, and to plan action to improve participation among those geographically defined and demographically characterized small areas.

Individual-level description and analysis

We also described all individuals by the small area and individual level variables. In addition to computing rates among individuals, we also computed the percent of eligibles who participated in all types of testing for which they were eligible, and the percent who participated in one or more types of testing.

Five multivariable logistic regression models were used to evaluate factors associated with uptake of each screening test at the individual level, stratified by whether or not it was possible to identify a particular primary care physician for the individual.

Among those for whom a primary care physician was identified, models were run on a random sample of 1,000,000 individuals, so that DA, physician, and patient characteristics could be evaluated simultaneously. The generalized estimating equation (GEE) method was used to account for the clustering of individuals by physician, using an exchangeable correlation matrix. A random sample was required due to the population size. The five models were repeated without physician-level variables among all individuals without an identifiable physician.

The functional form of continuous variables was examined graphically using restricted cubic splines[25]. Continuous variables displaying non-linear relationships for any of the five outcomes were categorized for all models using distributional cut-offs for ease of presentation and interpretation. Multi-collinearity between variables was evaluated using a variance inflation factor of 10 or higher[26], resulting in the inclusion of the following variables: individual characteristics (sex, age, number of visits to a primary care physician within the last two years, CIC status, and PEM status), DA characteristics (neighbourhood income quintile, percent of DA who had not completed high school, percent of DA whose home language was not English or

French), and physician characteristics (country of medical education and number of years since graduation). The 32 distinct Aggregated Diagnosis Groups (ADGs) from the Johns Hopkins Adjusted Clinical Groups Case-Mix System were included as indicator variables in the multivariable models for adjustment. This system uses diagnostic information from administrative databases to describe and predict patients' use of health care resources[27].

For each of the five models, the variable pairs 'age and sex', the '32 ADG indicator variables and age,' the 'number of years since immigration and median household income quintile', and the primary care physicians' 'age and sex' were hypothesized *a priori* to have significant interactions that were tested using the score statistic for type III p-values for GEE analysis.

Results

Results from small areas

Table 1 summarizes the socio-demographic characteristics and median screening prevalence of the 6,656,632 screen-eligible persons among 18,951 small areas. Among the various cohorts are areas with very high median ages, very high percentage of persons (1) without high school completion (90-100th percentile: 35-100%), (2) whose home language is neither English nor French (90-100th percentile: 6-55%), (3) who are recent immigrants (90-100th percentile: 11-52%), (4) who have few if any recent primary care visits (0-10th percentile: 0-2 visits per year), (5) who are not enrolled with a PEM physician (90-100th percentile: 35-100%), and (6) who cannot be linked to any individual primary care physician (90th-100th percentile: 15-100%).

Figure 1 illustrates the median screening prevalence among small areas stratified by cohort and resident characteristics. Median screening prevalence for each test declines with increasing percent of persons without high school completion, decreasing percent of persons with an identifiable primary care physician, with lower income quintile and lower median number of recent primary care visits from any provider. As the percent of recent immigrants increases, median screening prevalence decreases for cancer tests but increases for glucose and cholesterol tests (not shown).

Figure 1 also illustrates the large difference between the percent with participation in any test and the percent with participation in all tests for which they are eligible, which is observed across the range of percent high school completion, median household income, number of primary care visits, and having an identifiable primary care physician.

Individual level results

Complete case analyses were carried out due to the low percentage of persons with incomplete data among the cohorts (less than 1%). None of the interaction terms defined *a priori* substantially changed effect estimates and hence were not included in the models. Figures 2a and 2b illustrate that a lower income quintile and a higher percentage of persons whose home language was not English or French contributed to a significantly decreased odds of being screened for any test. Being a more recent immigrant was associated with decreased odds of cancer screening. Odds of cervical cancer screening decreased for females aged 60 or older. Individuals with a physician were less likely to be screened if they or their physicians were not part of a physician enrollment model, or if their physician was male, was internationally trained, or was trained within the last 25 years.

Interpretation

In Ontario, participation in each of the five screening tests for women, and each of the three for men, is lower among small areas with lower high school completion, lower urban median household income, lower average number of primary care visits by any physician, and lower proportion of persons with an identifiable primary care physician. There is a large difference between the percent with participation in any one or more of the tests for which they are eligible, and the percent with participation in all tests for which they are eligible, observed across the values of these important ecologic variables. Adjusted analyses among all eligible individual residents of Ontario demonstrate associations between participation in each test, by eligible persons, and these ecologic variables. It was beyond the scope of this work to evaluate the followup of abnormal screening tests, however, followup of abnormals might also vary by the same demographic, socioeconomic, and primary care factors[9].

Ecologic variables have been derived by Statistics Canada from responses collected at the 2006 Canadian census, after which several years elapsed prior to the computation date for screening participation, December 31, 2011. However, the 2011 census data are not yet available, and many items in the 2006 census were no longer mandatory in the 2011 census.

The large proportion per small area with participation in one or more tests may reflect several factors: (1) there are multiple potential access points for the community laboratory tests and breast screening; (2) there is some misclassification of diagnostic testing as screening, in that one or two tests in which some persons have participated, might have been to diagnose the cause of symptoms or clinical signs. Although there is no record of the screening versus diagnostic intention of any of these tests, persons already affected by those cancers, diabetes, or myocardial infarction have been excluded from the study population, and the annual incidence of new cases of these diseases is very small compared to the volumes tested.

There is a sizable proportion of eligibles who have completed all tests for whom they are eligible. There is no provincial strategy to promote completion of all tests rather than each test as a discrete episode, and the interscreening interval of periodicity varies between two years and 10 years. The proportion completing all tests is much smaller than the proportion with one or more tests completed. Completion of all tests may reflect the ideal of comprehensive screening at some primary care practice locations, facilitated by either physicians or nurses. Ontario has provided financial incentives based on the proportion of screened eligibles in physician's

practices since 2005, although there is no evidence that this has been effective at improving participation in screening those previously eligible but unscreened [28].

On the basis of (1) decreased participation associated with ecologic measures of demography and socioeconomic status, and (2) the minority of persons among all small areas who have completed all tests for which they are eligible, across ecologic variables from most deprived to most favourable, we recommend that small area level characterizations be made available in GIS format, as Cancer Care Ontario has created. These areas can be seen in GIS bounded and transected by major streets and roadways. This should be available to all potential users (public agencies, primary care practitioners, and organizations of civil society), after appropriate training about protecting the data, which are composed of personal health information despite being aggregate (no counts or percents reflecting < 6 persons), anonymous, and impossible to link to any personal identity. The GIS containing these data should be used for developing and delivering strategies that intervene at the neighbourhood / community level to improve screening participation in Ontario, especially among small areas with low screening participation and lower average primary care visits.

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Box 1. Inclusion and Exclusion Criteria for the various screening cohorts.

Screening Cohort	Ages, Sex	Eligibility for Screening Cohorts (denominator)		Uptake of Tests (numerator)	
		Included (database)	**Excluded (database)**	**Test (database)**	**Look-back window***
Colorectal	50-74 years, men and women	Alive at any time during 2011 calendar year Age within specified range at any time during 2011 calendar year Ontario resident registered in the Registered Persons Database (RPDB) Valid Ontario health Insurance (OHIP) number Patient a resident of Ontario for at least 2 years as of December 31, 2011 In contact with the health care system within the last 6 years	History of colorectal cancer (OCR) or surgical removal of colon (CIHI)	FOBT or Flex-Sig or large bowel endoscopy (OHIP)	2 years for FOBT, 5 years for Flex-Sig, 10 years for endoscopy
Breast	50-74 years, women		History of breast cancer (OCR) or bilateral mastectomy (CIHI/OHIP)	Mammography (OBSP or OHIP)	2 years
Cervical	30-69 years, women		History of cervical cancer (OCR) or hysterectomy (CIHI/OHIP)	Pap test (CytoBase or OHIP)	3 years
Glucose	40-74 years, men and women		Diagnosis of diabetes (ODD)	Serum blood glucose test (OHIP)	3 years
Cholesterol	50-74 years, women and 40-74 years, men		Diagnosis of MI (OMID)	Serum blood cholesterol test (OHIP)	5 years

*The look-back window reflects the recommended screening interval for each test. There are different look-back windows because each test has a different recommended screening interval according to each specific screening guideline. For example, a woman who is screen-eligible for a Pap test in 2011 is recommended to have a Pap every 3 years. To identify whether she had one, we used the OHIP and CytoBase databases to find any record of her having a Pap test during the 3-year period (or look-back window) from 2008-2011 inclusive. OCR=Ontario Cancer Registry; CIHI=Canadian Institute for Health Information; FOBT=fecal occult blood test; OBSP=Ontario Breast Screening Program; ODD=Ontario Diabetes Database; OMID=Ontario Myocardial Infarction Database.

Table 1. Descriptive Statistics of the 8 Screen-eligible cohorts – patient characteristics.

	Women					Men		
Characteristic	**Colorectal**	**Breast**	**Cervical**	**Glucose**	**Cholesterol**	**Colorectal**	**Glucose**	**Cholesterol**
No. screen-eligible patients	1,919,046	1,890,329	3,199,197	2,598,759	1,935,221	1,819,904	2,410,743	2,782,569
No. DAs w/ screen-eligible patients	18,944	18,944	18,947	18,946	18,943	18,939	18,948	18,950
Screen-eligible patient characteristics summarized over DAs								
No. screen-eligible patients								
Mean (SD)	101 (78)	100 (77)	169 (193)	137 (122)	102(79)	96 (73)	127.23 (114)	147 (133)
0-10th percentile	1-51	1-50	1-86	1-71	1-51	1-50	1-67	1-78
Median (IQR)	85 (66-113)	84 (65-111)	132 (106-175)	114 (90-149)	86 (67-114)	82 (64-108)	106 (85-139)	121 (98-159)
90-100th percentile	160-3,407	158-3,355	262-10,811	214-6,426	162-3,439	151-3,501	196-6,197	227-7,131
Median age								
Mean (SD)	59 (2)	59.36 (2.13)	48.74 (3.40)	53.48 (2.88)	59.44 (2.14)	59.24 (2.09)	52.98 (2.70)	53.92 (2.75)
0-10th percentile	50-57	50-57	31-45	40-50	50-57	50-57	40-50	40-51
Median (IQR)	59 (58-61)	59 (58-61)	49 (47-51)	53 (52-55)	59 (58-61)	59 (58-61)	59 (58-61)	53 (51-55)
90-100th percentile	62-75	62-75	53-68	57-75	62-75	62-75	56-75	57-73
% not completed high school								
Mean (SD)	19.32 (11.54)	19.32 (11.54)	19.32 (11.54)	19.31 (11.53)	19.31 (11.53)	19.32 (11.54)	19.32 (11.54)	19.32 (11.54)
0-10th percentile	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Median (IQR)	18 (11-26)	18 (11-26)	18 (11-26)	18 (11-26)	18 (11-26)	18 (11-26)	18 (11-26)	18 (11-26)
90-100th percentile	35-100	35-100	35-100	35-100	35-100	35-100	35-100	35-100
% whose home language is not English/French								
Mean (SD)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)	1.87 (3.71)
0-10th percentile	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Median (IQR)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)
90-100th percentile	6-55	6-55	6-55	6-55	6-55	6-55	6-55	6-55
% Immigrants arriving in Canada within last…								
0-8y (Recent)								
Mean (SD)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)	3.85 (5.16)
0-10th percentile	0-0.19	0-0.19	0-0.19	0-0.19	0-0.19	0-0.19	0-0.19	0-0.19
Median (IQR)	2 (1-5)	2 (1-5)	2 (1-5)	2 (1-5)	2 (1-5)	2 (1-5)	2 (1-5)	2 (1-5)
90-100th percentile	11-52	11-52	11-52	11-52	11-52	11-52	11-52	11-52
9-16y								
Mean (SD)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)	3.87 (4.80)
0-10th percentile	0-0.18	0-0.18	0-0.18	0-0.18	0-0.18	0-0.18	0-0.18	0-0.18
Median (IQR)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)
90-100th percentile	11-29	11-29	11-29	11-29	11-29	11-29	11-29	11-29
17-27y (Distant)								
Mean (SD)	4.29 (4.62)	4.29 (4.62)	4.29 (4.63)	4.29 (4.62)	4.29 (4.62)	4.29 (4.63)	4.29 (4.63)	4.29 (4.63)
0-10th percentile	0-0.32	0-0.32	0-0.32	0-0.32	0-0.32	0-0.32	0-0.32	0-0.32
Median (IQR)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)	2 (1-6)
90-100th percentile	12-29	12-29	12-29	12-29	12-29	12-29	12-29	12-29
% Non-immigrants								
Mean (SD)	87.99 (13.53)	87.99 (13.53)	87.99 (13.54)	87.99 (13.53)	87.99 (13.53)	87.99 (13.54)	87.99 (13.54)	87.99 (13.54)
0-10th percentile	20-66	20-66	20-66	20-66	20-66	20-66	20-66	20-66
Median (IQR)	94 (82-98)	94 (82-98)	94 (82-98)	94 (82-98)	94 (82-98)	94 (82-98)	94 (82-98)	94 (82-98)
90-100th percentile	99-100	99-100	99-100	99-100	99-100	99-100	99-100	99-100
Income quintile with mean income per quintile, Can $, No. (%)								
Q1 (44,722)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)	2,964 (15.6)
Q2 (62,080)	3,380 (17.8)	3,380 (17.8)	3,382 (17.8)	3,382 (17.8)	3,380 (17.8)	3,382 (17.9)	3,382 (17.8)	3,382 (17.8)
Q3 (74,910)	3,198 (16.9)	3,198 (16.9)	3,198 (16.9)	3,198 (16.9)	3,198 (16.9)	3,196 (16.9)	3,199 (16.9)	3,199 (16.9)
Q4 (88,465)	3,254 (17.2)	3,254 (17.2)	3,253 (17.2)	3,253 (17.2)	3,254 (17.2)	3,253 (17.2)	3,253 (17.2)	3,253 (17.2)
Q5 (129,777)	3,430 (18.1)	3,430 (18.1)	3,429 (18.1)	3,429 (18.1)	3,430 (18.1)	3,428 (18.1)	3,429 (18.1)	3,429 (18.1)
Rural	2,672 (14.1)	2,672 (14.1)	2,674 (14.1)	2,674 (14.1)	2,671 (14.1)	2,670 (14.1)	2,673 (14.1)	2,674 (14.1)
Median No. visits to PCP within 2 years								
Mean (SD)	6.68 (2.07)	6.65 (2.07)	5.57 (1.71)	5.81 (1.72)	6.68 (2.06)	5.15 (1.69)	3.89 (1.29)	4.27 (1.42)
0-10th percentile	0-4	0-4	0-4	0-4	0-4	0-3	0-2	0-3
Median (IQR)	6 (5-8)	6 (5-8)	5 (4-7)	6 (5-7)	6 (5-8)	5 (4-6)	4 (3-5)	4 (3-5)
90-100th percentile	9-68	9-68	8-19	8-23	62-68	7-26	6-26	6-25
% of patients rostered (either virtually or *via* a PEM to a PCP								
Mean (SD)	96.35 (4.37)	96.32 (4.40)	95.47 (4.39)	95.8 (4.32)	96.37 (4.36)	93.6 (5.51)	91.3 (5.97)	92.19 (5.53)

Table 1. Descriptive Statistics of the 8 Screen-eligible cohorts – patient characteristics.

0-10th percentile	0-93	0-93	0-92	0-92	0-93	0-88	0-85	0-87
Median (IQR)	97 (95-99)	97 (95-99)	96 (94-98)	97 (95-98)	97 (95-99)	95 (92-97)	93 (89-95)	93 (90-95)
90-100th percentile	100-100	100-100	99-100	99-100	100-100	98-100	97-100	97-100
% of patients virtually rostered to PCP who is not part of a PEM								
Mean (SD)	5.39 (5.46)	5.40 (5.47)	5.17 (4.64)	5.50 (3.91)	5.39 (5.40)	6.18 (5.67)	6.16 (5.26)	6.14 (5.20)
0-10th percentile	0-0	0-0	0-1	0-2	0-0	0-0	0-1	0-1
Median (IQR)	4 (2-8)	4 (2-8)	4 (2-7)	4 (2-7)	4 (2-8)	5 (2-9)	5 (2-9)	5 (2-9)
90-100th percentile	12-100	12-100	11-100	10-100	12-100	13-100	13-100	12-100
% of patients virtually rostered to a PEM PCP								
Mean (SD)	5.06 (4.15)	5.07 (4.18)	5.78 (3.73)	5.50 (3.90)	5.06 (4.16)	6.34 (4.37)	7.40 (4.43)	7.09 (4.22)
0-10th percentile	0-1	0-1	0-2	0-2	0-1	0-2	0-3	0-3
Median (IQR)	5 (3-7)	5 (3-7)	5 (3-8)	5 (3-7)	5 (3-7)	6 (3-9)	7 (4-10)	7 (4-9)
90-100th percentile	9-100	9-100	10-67	10-100	9-100	11-100	13-100	12-100
% of patients rostered *via* PEM to PEM PCP								
Mean (SD)	85.9 (8.89)	85.9 (8.92)	84.52 (8.53)	85.07 (8.64)	86 (8.86)	81.06 (10.07)	77.8 (10.33)	79.0 (9.90)
0-10th percentile	0-76	0-76	0-75	0-76	0-76	0-69	0-65	0-67
Median (IQR)	87 (82-92)	87 (82-92)	86 (81-90)	86 (81-91)	87 (82-92)	83 (76-88)	79 (72-85)	80 (74-86)
90-100th percentile	95-100	95-100	93-100	94-100	95-100	92-100	89-100	90-100
Overall Median Screening Prevalence summarized over DAs, % (95% Confidence Interval)								
	58.2 (58.1-58.4)	61.8 (61.7-62.0)	68.2 (68.0-68.3)	69.1 (69.0-69.3)	87.4 (87.2-87.5)	52.8 (52.6-53.0)	58.4 (58.3-58.6)	76.3 (76.1-76.5)

Table 2. Descriptive Statistics of the 8 Screen-eligible cohorts – patients' primary care provider (PCP) characteristics.

	Women					Men		
Characteristic	**Colorectal**	**Breast**	**Cervical**	**Glucose**	**Cholesterol**	**Colorectal**	**Glucose**	**Cholesterol**
No. screen-eligible patients with a primary care provider	1,853,133	1,824,741	3,061,665	2,496,057	1,869,102	1,708,973	2,211,083	2,574,678
No. DAs w/ screen-eligible patients with a primary care provider	18,941	18,941	18,947	18,945	18,940	18,933	18,943	18,946
Screen-eligible patients' primary care provider (PCP) Characteristics summarized over DAs								
No. PCPs								
Mean (SD)	60.2 (39.0)	59.5 (38.5)	91.7 (68.4)	76.9 (51.4)	60.6 (39.2)	56.1 (35.3)	70.1 (47.1)	78.2 (52.6)
0-10th percentile	1-29	1-29	1-39	1-35	1-29	1-28	1-33	1-35
Median (IQR)	53 (39-70)	52 (38-69)	79 (54-108)	67 (48-91)	53 (39-71)	50 (37-66)	62 (45-82)	70 (50-92)
90-100th percentile	96-979	95-976	151-1,751	123-1,376	97-987	88-1,009	110-1,358	124-1,449
PCP Age								
Mean (SD)	52.86 (2.85)	52.86 (2.86)	51.66 (2.40)	52.30 (2.54)	52.86 (2.84)	53.61 (2.95)	52.97 (2.67)	53.01 (2.63)
0-10th percentile	31-49	29-49	31-49	31-49	31-49	33-50	33-50	35-50
Median (IQR)	53 (51-55)	53 (51-53)	52 (52-53)	52 (51-54)	53 (51-55)	54 (52-56)	53 (51-55)	53 (51-55)
90-100th percentile	56-68	56-68	55-68	55-70	56-68	57-80	56-80	56-80
% of female PCPs								
Mean (SD)	39.84 (11.93)	39.79 (11.98)	43.31 (11.55)	41.89 (11.79)	39.87 (11.91)	23.74 (8.46)	25.28 (8.32)	25.42 (8.06)
0-10th percentile	0-25	0-25	0-29	0-27	0-25	0-14	0-15	0-16
Median (IQR)	39 (31-48)	39 (31-48)	43 (35-52)	41 (33-50)	39 (34-48)	23 (18-29)	25 (20-31)	25 (20-31)
90-100th percentile	56-100	56-100	59-100	57-100	56-100	35-100	36-100	36-100
% of International Medical Graduates, median (IQR)								
Mean (SD)	19.49 (11.19)	19.51 (11.20)	19.64 (10.57)	19.24 (10.62)	19.46 (11.15)	19.42 (11.30)	19.34 (10.86)	19.51 (10.74)
0-10th percentile	0-6	0-6	0-7	0-6	0-6	0-6	0-6	0-7
Median (IQR)	19 (11-27)	19 (11-27)	19 (11-27)	19 (11-26)	19 (11-27)	18 (11-27)	18 (11-26)	18 (11-26)
90-100th percentile	34-100	34-100	34-100	33-100	34-100	35-100	34-100	34-100
% in PEM								
Mean (SD)	93.77 (5.28)	93.78 (5.29)	93.69 (4.53)	93.76 (4.75)	93.78 (5.22)	92.60 (5.73)	92.28 (5.47)	92.31 (5.25)
0-10th percentile	0-88	0-88	0-89	0-88	0-88	0-86	0-86	0-86
Median (IQR)	94 (91-97)	95 (91-97)	94 (91-97)	95 (91-97)	93 (90-97)	93 (90-97)	93 (89-96)	93 (89-96)
90-100th percentile	100-100	100-100	99-100	99-100	100-100	100-100	98-100	98-100
Median No. Yrs since Graduation,								
Mean (SD)	27.25 (2.98)	27.24 (2.99)	26.03 (2.45)	26.66 (2.63)	27.24 (2.97)	28.00 (3.11)	27.33 (2.79)	27.39 (2.74)
0-10th percentile	5-24	3-24	3-23	5-24	5-24	3-24	5-24	7-24
Median (IQR)	27 (25-29)	27 (25-29)	26 (25-28)	27 (25-28)	27 (25-29)	28 (26-30)	28 (26-29)	27 (25-28)
90-100th percentile	31-44	31-44	29-42	30-43	31-44	32-49	31-49	31-49

Figure 1. Median Screening Prevalence for DAs stratified by Cohort and Resident characteristics.
Y-axis: Median screening prevalence (%). X-axis: DAs stratified by cohort or resident characteristic specified in graph title. Prevalence ratios (PR) are reported as $\frac{\text{Median screening prevlance of Highest stratum}}{\text{Median screening prevlance of Lowest stratum}}$. ALL= Median screening prevalence for all tests among patients eligible for all tests. ANY= Median screening prevalence for any test among those eligible for all tests. CRC = Colorectal, BRC = Breast, CRC = Cervical, GLU = Glucose, CHO = Cholesterol.

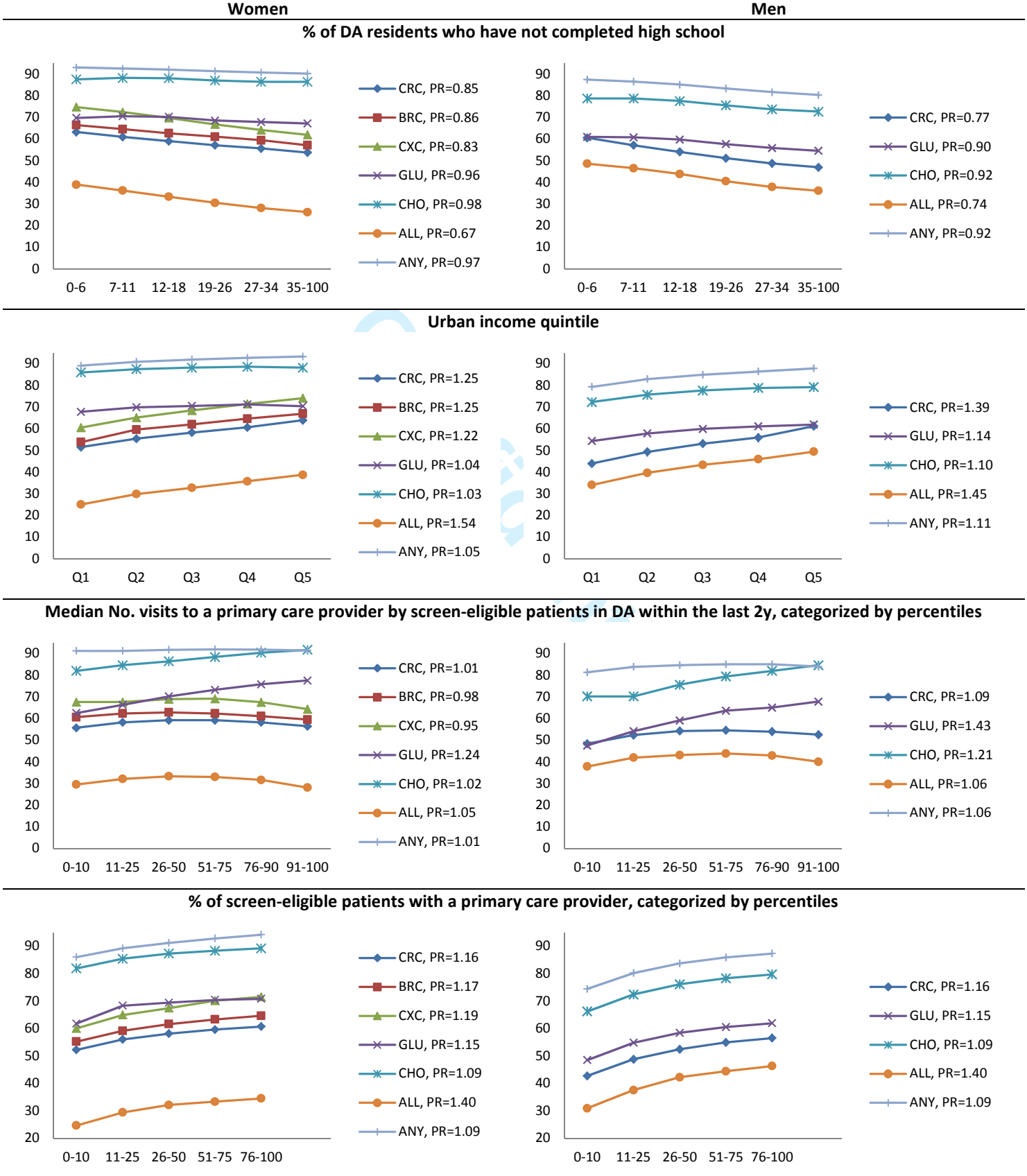


Figure 2a. For patients with an identifiable physician, adjusted odds ratios for being up to date on each screening test. The age reference group is indicated with **R**. All 95% confidence intervals do not overlap with 1.00 except those indicated with *. Odds ratios also adjusted for patient co-morbidities (not shown).

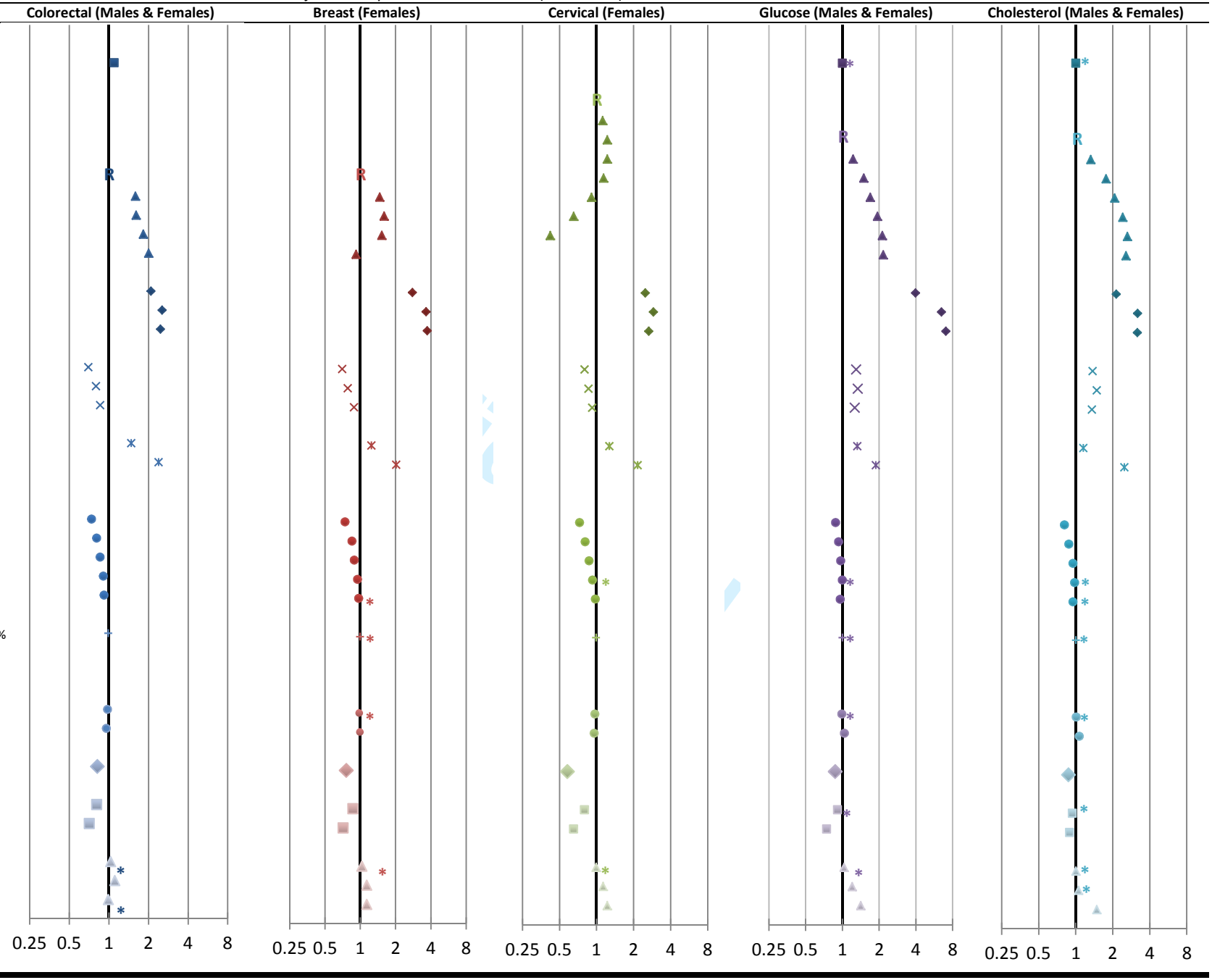
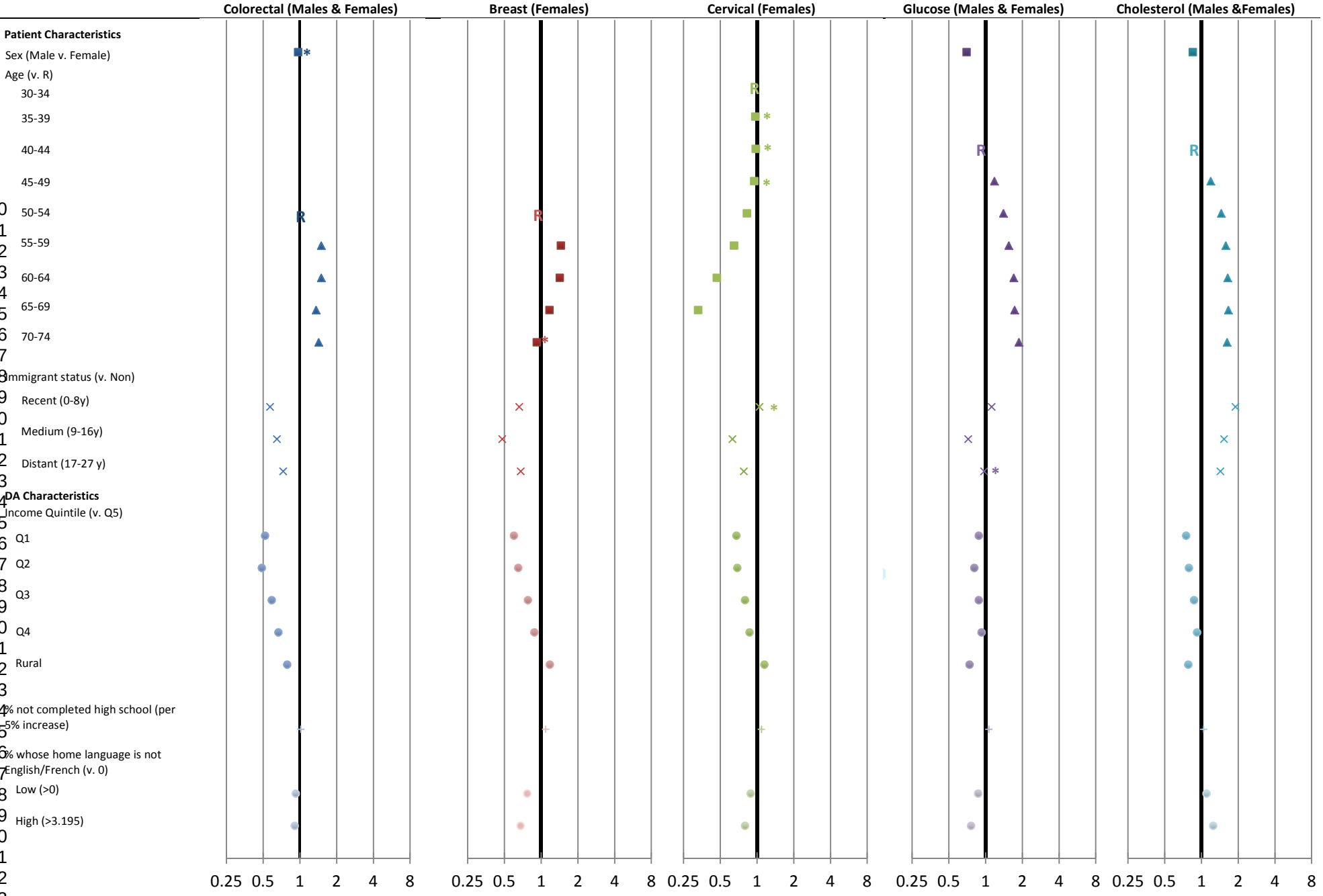


Figure 2b. For patients without an identifiable physician, adjusted odds ratios for being up to date on each screening test. The age reference group is indicated with **R**. All 95% confidence intervals do not overlap with 1.00 except those indicated with *. Odds ratios also adjusted for patient co-morbidities (not shown).



Supplementary Table 1. Descriptive statistics of the screen-eligible cohorts, stratified by screening status.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	1,648,064 (44 %)	2,090,886 (56%)	3,738,950	724,113 (38%)	1,166,216 (62%)	1,890,329	1,013,274 (32%)	2,185,923 (68%)	3,199,197	1,825,081 (36%)	3,184,421 (64%)	5,009,502	960,713 (20%)	3,757,077 (80%)	4,717,790
Baseline Characteristics															
Sex, N (%)															
F	796,820 (48.3)	1,122,226 (53.7)	1,919,046 (51.3)	724,113 (100.0)	1,166,216 (100.0)	1,890,329 (100.0)	1,013,274 (100.0)	2,185,923 (100.0)	3,199,197 (100.0)	814,688 (44.6)	1,784,071 (56.0)	2,598,759 (51.9)	276,473 (28.8)	1,658,748 (44.1)	1,935,221 (41.0)
M	851,244 (51.7)	968,660 (46.3)	1,819,904 (48.7)	0 (0)	0 (0)	0 (0)				1,010,393 (55.4)	1,400,350 (44.0)	2,410,743 (48.1)	684,240 (71.2)	2,098,329 (55.9)	2,782,569 (59.0)
Age (years)															
Median (IQR)	58 (53-64)	61 (55-67)	59 (54-66)	59(53-66)	60 (55-66)	59 (54-66)	50 (41-60)	47 (38-56)	48 (39-57)	50(45-58)	54 (48-63)	53 (46-61)	52 (46-59)	57 (51-65)	56(50-64)
Range	50-75	50-75	50-75	50-75	50-75	50-75	30-70	30-70	30-70	40-75	40-75	40-75	40-75	40-75	40-75
Immigrant status, N (%)															
Recent immigrant (<8y)	51,456 (3.1)	35,893 (1.7)	87,349 (2.3)	24,833 (3.4)	20,803 (1.8)	45,636 (2.4)	66,905 (6.6)	115,559 (5.3)	182,464 (5.7)	57,961 (3.2)	116,150 (3.6)	174,111 (3.5)	24,145 (2.5)	115,924 (3.1)	140,069 (3.0)
Non-distant immigrant (<16y)	81,546 (4.9)	70,889 (3.4)	152,435 (4.1)	37,194 (5.1)	38,716 (3.3)	75,910 (4.0)	83,236 (8.2)	150,395 (6.9)	233,631 (7.3)	92,460 (5.1)	196,841 (6.2)	289,301 (5.8)	39,127 (4.1)	202,761 (5.4)	241,888 (5.1)
Distant immigrant (<28 y)	126,833 (7.7)	131,102 (6.3)	257,935 (6.9)	54,435 (7.5)	72,973 (6.3)	127,408 (6.7)	79,189 (7.8)	159,592 (7.3)	238,781 (7.5)	102,751 (5.6)	257,267 (8.1)	360,018 (7.2)	47,218 (4.9)	294,820 (7.8)	342,038 (7.2)
Non-immigrant (28+ years)	1,388,229 (84.2)	1,853,002 (88.6)	3,241,231 (86.7)	607,651 (83.9)	1,033,724 (88.6)	1,641,375 (86.8)	783,944 (77.4)	1,760,377 (80.5)	2,544,321 (79.5)	1,571,909 (86.1)	2,614,163 (82.1)	4,186,072 (83.6)	850,223 (88.5)	3,143,572 (83.7)	3,993,795 (84.7)
Total # of PCP visits within the last 2y, N (%)															
Median (IQR)	4 (1-9)	7 (4-12)	6 (3-11)	5 (1-10)	7 (4-12)	7 (3-12)	4 (1-9)	6 (3-11)	6 (3-10)	2 (0-5)	7 (4-11)	5 (2-9)	1 (0-4)	6 (3-11)	5 (2-10)
Range	0-402	0-429	0-429	0-402	0-401	0-402	0-286	0-402	0-402	0-354	0-616	0-616	0-249	0-616	0-616
0	308,392 (18.7)	74,929 (3.6)	383,321 (10.3)	121,502 (16.8)	30,492 (2.6)	151,994 (8.0)	234,740 (23.2)	79,349 (3.6)	314,089 (9.8)	567,847 (31.1)	76,115 (2.4)	643,962 (12.9)	359,093 (37.4)	221,033 (5.9)	580,126 (12.3)
1 to 5	670,075 (40.7)	723,798 (34.6)	1,393,873 (37.3)	268,084 (37.0)	382,320 (32.8)	650,404 (34.4)	387,042 (38.2)	853,397 (39.0)	1,240,439 (38.8)	866,643 (47.5)	1,229,603 (38.6)	2,096,246 (41.8)	419,448 (43.7)	1,458,459 (38.8)	1,877,907 (39.8)
6 to 10	353,505 (21.4)	649,145 (31.0)	1,002,650 (26.8)	164,027 (22.7)	373,162 (32.0)	537,189 (28.4)	199,920 (19.7)	666,301 (30.5)	866,221 (27.1)	247,174 (13.5)	999,708 (31.4)	1,246,882 (24.9)	109,898 (11.4)	1,074,553 (28.6)	1,184,451 (25.1)
11+	316,092 (19.2)	643,014 (30.8)	959,106 (25.7)	170,500 (23.5)	380,242 (32.6)	550,742 (29.1)	191,572 (18.9)	586,876 (26.8)	778,448 (24.3)	143,417 (7.9)	878,995 (27.6)	1,022,412 (20.4)	72,274 (7.5)	1,003,032 (26.7)	1,075,306 (22.8)
DA-level Characteristics															
Neighbourhood Income Quintile, N (%)															
Q1	284,829 (17.3)	269,525 (12.9)	554,354 (14.8)	130,827 (18.1)	153,469 (13.2)	284,296 (15.0)	201,600 (19.9)	307,327 (14.1)	508,927 (15.9)	276,992 (15.2)	455,433 (14.3)	732,425 (14.6)	153,758 (16.0)	559,022 (14.9)	712,780 (15.1)
Q2	290,617 (17.6)	328,490 (15.7)	619,107 (16.6)	129,015 (17.8)	188,501 (16.2)	317,516 (16.8)	189,908 (18.7)	356,710 (16.3)	546,618 (17.1)	288,885 (15.8)	530,100 (16.6)	818,985 (16.3)	149,845 (15.6)	636,169 (16.9)	786,014 (16.7)
Q3	280,951 (17.0)	354,645 (17.0)	635,596 (17.0)	123,041 (17.0)	200,065 (17.2)	323,106 (17.1)	178,092 (17.6)	396,262 (18.1)	574,354 (18.0)	294,826 (16.2)	572,400 (18.0)	867,226 (17.3)	145,737 (15.2)	667,274 (17.8)	813,011 (17.2)
Q4	285,349 (17.3)	402,376 (19.2)	687,725 (18.4)	123,081 (17.0)	224,195 (19.2)	347,276 (18.4)	172,267 (17.0)	446,630 (20.4)	618,897 (19.3)	317,855 (17.4)	638,959 (20.1)	956,814 (19.1)	151,618 (15.8)	728,732 (19.4)	880,350 (18.7)
Q5	270,225 (16.4)	452,399 (21.6)	722,624 (19.3)	120,145 (16.6)	242,365 (20.8)	362,510 (19.2)	155,412 (15.3)	443,353 (20.3)	598,765 (18.7)	334,469 (18.3)	653,147 (20.5)	987,616 (19.7)	157,679 (16.4)	742,736 (19.8)	900,415 (19.1)
Rural	233,276 (14.2)	280,317 (13.4)	513,593 (13.7)	96,789 (13.4)	156,038 (13.4)	252,827 (13.4)	113,920 (11.2)	231,822 (10.6)	345,742 (10.8)	308,747 (16.9)	329,796 (10.4)	638,543 (12.7)	200,006 (20.8)	417,384 (11.1)	617,390 (13.1)
Unknown	2,817 (0.2)	3,134 (0.1)	5,951 (0.2)	1,215	1,583 (0.1)	2,798 (0.1)	2,075 (0.2)	3,819 (0.2)	5,894 (0.2)	3,307 (0.2)	4,586 (0.1)	7,893 (0.2)	2,070	5,760 (0.2)	7,830 (0.2)

Supplementary Table 1. Descriptive statistics of the screen-eligible cohorts, stratified by screening status.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	1,648,064 (44 %)	2,090,886 (56%)	3,738,950	724,113 (38%)	1,166,216 (62%)	1,890,329	1,013,274 (32%)	2,185,923 (68%)	3,199,197	1,825,081 (36%)	3,184,421 (64%)	5,009,502	960,713 (20%)	3,757,077 (80%)	4,717,790
				(0.2)									(0.2)		
% of DA who have not completed high school															
Median (IQR)	17.98 (11.02-25.81)	16.44 (9.80-24.29)	17.10 (10.33-25.00)	17.89 (10.92-25.71)	16.67 (10.00-24.44)	17.07 (10.31-25.00)	17.54 (10.66-25.38)	15.58 (9.23-23.25)	16.18 (9.68-23.88)	17.33 (10.28-25.37)	16.09 (9.65-23.75)	16.51 (9.88-24.32)	18.33 (10.98-26.67)	16.63 (10.00-24.29)	16.91 (10.17-24.71)
Range	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100
% of DA whose home language is not English or French, N (%)															
Median (IQR)	0.00 (0.00-2.82)	0.00 (0.00-2.52)	0.00 (0.00-2.63)	0.00 (0.00-2.90)	0.00 (0.00-2.52)	0.00 (0.00-2.65)	0.64 (0.00-3.41)	0.00 (0.00-2.97)	0.00 (0.00-3.09)	0.00 (0.00-2.25)	0.00 (0.00-2.97)	0.00 (0.00-2.68)	0.00 (0.00-2.11)	0.00 (0.00-2.94)	0.00 (0.00-2.74)
Range	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81	0.00-54.81
Physician-level Characteristics															
Patient rostered to a physician?, N (%)															
No	155,215 (9.4)	21,629 (1.0)	176,844 (4.7)	57,914 (8.0)	7,674 (0.7)	65,588 (3.5)	118,103 (11.7)	19,429 (0.9)	137,532 (4.3)	276,931 (15.2)	25,431 (0.8)	302,362 (6.0)	209,729 (21.8)	64,281 (1.7)	274,010 (5.8)
Yes, to a Non-PEM Physician	124,404 (7.5)	90,793 (4.3)	215,197 (5.8)	49,434 (6.8)	52,152 (4.5)	101,586 (5.4)	73,733 (7.3)	98,509 (4.5)	172,242 (5.4)	102,145 (5.6)	183,791 (5.8)	285,936 (5.7)	61,131 (6.4)	216,074 (5.8)	277,205 (5.9)
Yes, to a PEM physician, but not enrolled in a model	124,846 (7.6)	87,793 (4.2)	212,639 (5.7)	50,474 (7.0)	44,853 (3.8)	95,327 (5.0)	82,562 (8.1)	107,276 (4.9)	189,838 (5.9)	142,701 (7.8)	181,656 (5.7)	324,357 (6.5)	89,349 (9.3)	209,081 (5.6)	298,430 (6.3)
Yes, to a PEM physician via CAPE	1,243,599 (75.5)	1,890,671 (90.4)	3,134,270 (83.8)	566,291 (78.2)	1,061,537 (91.0)	1,627,828 (86.1)	738,876 (72.9)	1,960,709 (89.7)	2,699,585 (84.4)	1,303,304 (71.4)	2,793,543 (87.7)	4,096,847 (81.8)	600,504 (62.5)	3,267,641 (87.0)	3,868,145 (82.0)
Age, N (%)															
Patient not rostered to a physician/Unknown	165,060 (10.0)	33,105 (1.6)	198,165 (5.3)	62,341 (8.6)	14,157 (1.2)	76,498 (4.0)	124,144 (12.3)	30,533 (1.4)	154,677 (4.8)	288,003 (15.8)	42,036 (1.3)	330,039 (6.6)	215,799 (22.5)	84,437 (2.2)	300,236 (6.4)
<=41y	213,161 (12.9)	328,954 (15.7)	542,115 (14.5)	100,342 (13.9)	190,507 (16.3)	290,849 (15.4)	148,960 (14.7)	430,583 (19.7)	579,543 (18.1)	254,739 (14.0)	518,786 (16.3)	773,525 (15.4)	120,470 (12.5)	577,200 (15.4)	697,670 (14.8)
42=50y	353,191 (21.4)	525,725 (25.1)	878,916 (23.5)	161,575 (22.3)	295,700 (25.4)	457,275 (24.2)	226,413 (22.3)	610,870 (27.9)	837,283 (26.2)	399,331 (21.9)	826,507 (26.0)	1,225,838 (24.5)	187,433 (19.5)	940,440 (25.0)	1,127,873 (23.9)
51-58y	400,549 (24.3)	581,860 (27.8)	982,409 (26.3)	180,833 (25.0)	331,000 (28.4)	511,833 (27.1)	235,794 (23.3)	597,147 (27.3)	832,941 (26.0)	418,523 (22.9)	875,836 (27.5)	1,294,359 (25.8)	201,598 (21.0)	1,011,326 (26.9)	1,212,924 (25.7)
59+y	516,103 (31.3)	621,242 (29.7)	1,137,345 (30.4)	219,022 (30.2)	334,852 (28.7)	553,874 (29.3)	277,963 (27.4)	516,790 (23.6)	794,753 (24.8)	464,485 (25.5)	921,256 (28.9)	1,385,741 (27.7)	235,413 (24.5)	1,143,674 (30.4)	1,379,087 (29.2)
Sex, N (%)															
Patient not rostered to a physician/	155,215 (9.4)	21,629 (1.0)	176,844 (4.7)	57,914 (8.0)	7,674 (0.7)	65,588 (3.5)	118,103 (11.7)	19,429 (0.9)	137,532 (4.3)	276,931 (15.2)	25,431 (0.8)	302,362 (6.0)	209,729 (21.8%)	64,281 (1.7%)	274,010 (5.8%)
Unknown	4,976 (0.3)	4,138 (0.2)	9,114 (0.2)	2,151 (0.3)	2,236 (0.2)	4,387 (0.2)	3,051 (0.3)	3,780 (0.2)	6,831 (0.2)	6,103 (0.3)	5,805 (0.2)	11,908 (0.2)	3,135 (0.3%)	8,342 (0.2%)	11,477 (0.2%)
Female	400,661 (24.3)	681,408 (32.6)	1,082,069 (28.9)	225,526 (31.1)	489,703 (42.0)	715,229 (37.8)	285,644 (28.2)	1,071,361 (49.0)	1,357,005 (42.4)	451,551 (24.7)	1,094,040 (34.4)	1,545,591 (30.9)	181,660 (18.9%)	1,124,469 (29.9%)	1,306,129 (27.7%)
Male	1,087,212 (66.0)	1,383,711 (66.2)	2,470,923 (66.1)	438,522 (60.6)	666,603 (57.2)	1,105,125 (58.5)	606,476 (59.9)	1,091,353 (49.9)	1,697,829 (53.1)	1,090,496 (59.8)	2,059,145 (64.7)	3,149,641 (62.9)	566,189 (58.9%)	2,559,985 (68.1%)	3,126,174 (66.3%)

Supplementary Table 1. Descriptive statistics of the screen-eligible cohorts, stratified by screening status.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
	1,648,064 (44 %)	**2,090,886 (56%)**	**3,738,950**	**724,113 (38%)**	**1,166,216 (62%)**	**1,890,329**	**1,013,274 (32%)**	**2,185,923 (68%)**	**3,199,197**	**1,825,081 (36%)**	**3,184,421 (64%)**	**5,009,502**	**960,713 (20%)**	**3,757,077 (80%)**	**4,717,790**
International Medical School Graduate, N (%)															
Patient not rostered to a physician/	155,215 (9.4)	21,629 (1.0)	176,844 (4.7)	57,914 (8.0)	7,674 (0.7)	65,588 (3.5)	118,103 (11.7)	19,429 (0.9)	137,532 (4.3)	276,931 (15.2)	25,431 (0.8)	302,362 (6.0)	209,729 (21.8)	64,281 (1.7)	274,010 (5.8)
Unknown	5,462 (0.3)	4,842 (0.2)	10,304 (0.3)	2,417 (0.3)	2,694 (0.2)	5,111 (0.3)	3,418 (0.3)	4,674 (0.2)	8,092 (0.3)	6,656 (0.4)	6,881 (0.2)	13,537 (0.3)	3,448 (0.4)	9,484 (0.3)	12,932 (0.3)
No	1,148,570 (69.7)	1,675,544 (80.1)	2,824,114 (75.5)	512,466 (70.8)	932,362 (79.9)	1,444,828 (76.4)	666,915 (65.8)	1,686,645 (77.2)	2,353,560 (73.6)	1,278,385 (70.0)	2,439,376 (76.6)	3,717,761 (74.2)	636,814 (66.3)	2,865,454 (76.3)	3,502,268 (74.2)
Yes	338,817 (20.6)	388,871 (18.6)	727,688 (19.5)	151,316 (20.9)	223,486 (19.2)	374,802 (19.8)	224,838 (22.2)	475,175 (21.7)	700,013 (21.9)	263,109 (14.4)	712,733 (22.4)	975,842 (19.5)	110,722 (11.5)	817,858 (21.8)	928,580 (19.7)
Schoool Region, N (%)															
Patient not rostered to a physician/Unknown	154,977 (11.4)	21,867 (0.9)	176,844 (4.7)	57,886 (8.0)	7,670 (0.7)	65,556 (3.5)	118,103 (11.7)	19,429 (0.9)	137,532 (4.3)	276,931 (15.2)	25,431 (0.8)	302,362 (6.0)	209,729 (21.8)	64,281 (1.7)	274,010 (5.8)
Canadian	830,992 (61.3)	1,746,030 (73.2)	2,577,022 (68.9)	463,040 (64.1)	859,187 (73.7)	1,322,227 (70.0)	603,123 (59.5)	1,568,721 (71.8)	2,171,844 (67.9)	1,162,857 (63.7)	2,243,348 (70.4)	3,406,205 (68.0)	576,075 (60.0)	2,620,569 (69.8)	3,196,644 (67.8)
USA, Australia, New Zealand, UK, or Ireland	85,090 (6.3)	139,985 (5.9)	225,075 (6.0)	44,680 (6.2)	65,905 (5.7)	110,585 (5.9)	58,212 (5.7)	108,010 (4.9)	166,222 (0.9)	102,614 (5.6)	179,988 (5.7)	282,602 (5.6)	53,534 (5.6)	222,412 (5.9)	275,946 (5.8)
Other	283,748 (20.9)	476,261 (20.0)	760,009 (20.3)	157,242 (21.8)	232,446 (19.9)	389,688 (20.6)	233,836 (23.1)	489,763 (22.4)	723,599 (22.6)	282,679 (15.5)	735,654 (23.1)	1,018,333 (20.3)	121,375 (12.6)	849,815 (22.6)	971,190 (20.6)

Supplementary Table 2. Descriptive statistics for screen eligible cohorts, stratified by whether patient has an identifiable primary care physician (PCP)

	Colorectal (50-74)			Breast (50-74 y)			Cervical(30-69 y)			Glucose (40-74 y)			Cholesterol (50-74)		
	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total
	174,516 (5%)	3,529,787 (95%)	3,704,303	64,766 (3%)	1,808,811 (97%)	1,873,577	N=135,602 (4%)	3,034,575 (96%)	3,170,177	298,679 (6%)	4,666,078 (94%)	4,964,757	298,679 (6%)	4,666,078 (94%)	4,964,757
Baseline Characteristics															
Sex, N (%)															
F	65,083 (37.3)	1,837,020 (52.0)	1,902,103 (51.3)	64,766 (100.0)	1,808,811 (100.0)	1,873,577 (100.0)	135,602 (100.0)	3,034,575 (100.0%)	3,170,177 (100.0%)	101,512 (34.0)	2,475,557 (53.1)	2,577,069 (51.9)	101,512 (34.0)	2,475,557 (53.1)	2,577,069 (51.9)
M	109,433 (62.7)	1,692,767 (48.0)	1,802,200 (48.7)							197,167 (66.0)	2,190,521 (46.9)	2,387,688 (48.1)	197,167 (66.0)	2,190,521 (46.9)	2,387,688 (48.1)
Age (years), N (%)															
30-34							21,760 (16.0)	392,633 (12.9)	414,393 (13.1)						
35-39							20,236 (14.9)	399,482 (13.2)	419,718 (13.2)						
40-44							19,835 (14.6)	417,921 (13.8)	437,756 (13.8)	67,496 (22.6)	818,832 (17.5)	2,387,688 (48.1)	67,496 (22.6)	818,832 (17.5)	886,328 (17.9)
45-49							19,684 (14.5)	448,029 (14.8)	467,713 (14.8)	67,543 (22.6)	909,849 (19.5)	977,392 (19.7)	67,543 (22.6)	909,849 (19.5)	977,392 (19.7)
50-54	59,065 (33.8)	950,627 (26.9)	1,009,692 (27.3)	19,027 (29.4)	486,420 (26.9)	505,447 (27.0)	17,559 (12.9)	416,829 (13.7)	434,388 (13.7)	56,999 (19.1)	856,008 (18.3)	913,007 (18.4)	56,999 (19.1)	856,008 (18.3)	913,007 (18.4)
55-59	45,056 (25.8)	825,254 (23.4)	870,310 (23.5)	16,391 (25.3)	423,083 (23.4)	439,474 (23.5)	15,048 (11.1)	357,738 (11.8)	372,786 (11.8)	42,882 (14.4)	710,543 (15.2)	753,425 (15.2)	42,882 (14.4)	710,543 (15.2)	753,425 (15.2)
60-64	32,139 (18.4)	714,726 (20.2)	746,865 (20.2)	12,386 (19.1)	364,599 (20.2)	439,474 (23.5)	11,387 (8.4)	311,554 (10.3)	322,941 (10.2)	29,906 (10.0)	582,512 (12.5)	612,418 (12.3)	29,906 (10.0)	582,512 (12.5)	612,418 (12.3)
65-69	21,653 (12.4)	551,373 (15.6)	573,026 (15.5)	9,244 (14.3)	280,091 (15.5)	289,335 (15.4)	8,689 (6.4)	248,483 (8.2)	257,172 (8.1)	19,542 (6.5)	427,249 (9.2)	446,791 (9.0)	19,542 (6.5)	427,249 (9.2)	446,791 (9.0)
70-74	16,603 (9.5)	487,807 (13.8)	504,410 (13.6)	7,718 (11.9)	254,618 (14.1)	262,336 (14.0)	1,404 (1.0)	41,906 (1.4)	43,310 (1.4)	14,311 (4.8)	361,085 (7.7)	375,396 (7.6)	14,311 (4.8)	361,085 (7.7)	375,396 (7.6)
Total # of PCP visits within the last 2y, N (%)															
0	174,516 (100.0)	202,532 (5.7)	377,048 (10.2)	64,766 (100.0)	84,573 (4.7)	149,339 (8.0)	135,602 (100.0)	173,558 (5.7)	309,160 (9.8)	298,679 (100.0)	335,984 (7.2)	634,663 (12.8)	298,679 (100.0)	335,984 (7.2)	634,663 (12.8)
1 to 5	0 (0.0)	1,380,309 (39.1)	1,380,309 (37.3)	0 (0.0)	644,200 (35.6)	644,200 (34.4)	0 (0.0)	1,228,667 (40.5)	1,228,667 (38.8)	0 (0.0)	2,077,284 (44.5)	2,077,284 (41.8)	0 (0.0)	2,077,284 (44.5)	2,077,284 (41.8)
6 to 10	0 (0.0)	995,053 (28.2)	995,053 (26.9)	0 (0.0)	533,212 (29.5)	533,212 (28.5)	0 (0.0)	859,718 (28.3)	859,718 (27.1)	0 (0.0)	1,237,881 (26.5)	1,237,881 (24.9)	0 (0.0)	1,237,881 (26.5)	1,237,881 (24.9)
11+	0 (0.0)	951,893 (27.0)	951,893 (25.7)	0 (0.0)	546,826 (30.2)	546,826 (29.2)	0 (0.0)	772,632 (25.5)	772,632 (24.4)	0 (0.0)	1,014,929 (21.8)	1,014,929 (20.4)	0 (0.0)	1,014,929 (21.8)	1,014,929 (20.4)
Immigrant status, N (%)															
Recent immigrant (<8y)	6,562 (3.8)	81,973 (2.3)	88,535 (2.4)	2,984 (4.6)	43,285 (2.4)	46,269 (2.5)	10,903 (8.0)	173,736 (5.7)	184,639 (5.8)	14,223 (4.8)	162,396 (3.5)	176,619 (3.6)	14,223 (4.8)	162,396 (3.5)	176,619 (3.6)
Non-distant immigrant (<16y)	9,825 (5.6)	141,745 (4.0)	151,570 (4.1)	4,113 (6.4)	71,387 (3.9)	75,500 (4.0)	13,654 (10.1)	216,907 (7.1)	230,561 (7.3)	22,330 (7.5)	264,325 (5.7)	286,655 (5.8)	22,330 (7.5)	264,325 (5.7)	286,655 (5.8)
Distant immigrant (<28 y)	12,449 (7.1)	241,583 (6.8)	254,032 (6.9)	4,687 (7.2)	120,717 (6.7)	25,404 (6.7)	9,536 (7.0)	224,857 (7.4)	234,393 (7.4)	20,971 (7.0)	333,037 (7.1)	354,008 (7.1)	20,971 (7.0)	333,037 (7.1)	354,008 (7.1)
Non-immigrant (28+ years)	145,680 (83.5)	3,064,486 (86.8)	3,210,166 (86.7)	52,982 (81.8)	1,573,422 (87.0)	1,626,404 (86.8)	101,509 (74.9)	2,419,075 (79.7)	2,520,584 (79.5)	241,155 (80.7)	3,906,320 (83.7)	4,147,475 (83.5)	241,155 (80.7)	3,906,320 (83.7)	4,147,475 (83.5)
DA-level Characteristics															
Neighbourhood Income Quintile, N															

Supplementary Table 2. Descriptive statistics for screen eligible cohorts, stratified by whether patient has an identifiable primary care physician (PCP)

	Colorectal (50-74)			Breast (50-74 y)			Cervical(30-69 y)			Glucose (40-74 y)			Cholesterol (50-74)		
	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total	No Identifiable PCP	Identifiable PCP	Total
	174,516 (5%)	3,529,787 (95%)	3,704,303	64,766 (3%)	1,808,811 (97%)	1,873,577	N=135,602 (4%)	3,034,575 (96%)	3,170,177	298,679 (6%)	4,666,078 (94%)	4,964,757	298,679 (6%)	4,666,078 (94%)	4,964,757
(%)															
Q1	34,435 (19.7)	516,120 (14.6)	550,555 (14.9)	12,278 (19.0)	270,329 (14.9)	282,607 (15.1)	28,082 (20.7)	477,967 (15.8)	506,049 (16.0)	60,052 (20.1)	667,353 (14.3)	727,405 (14.7)	60,052 (20.1)	667,353 (14.3)	727,405 (14.7)
Q2	29,918 (17.1)	585,275 (16.6)	615,193 (16.6)	11,019 (17.0)	304,667 (16.8)	315,686 (16.8)	24,019 (17.7)	519,262 (17.1)	543,281 (17.1)	52,282 (17.5)	761,415 (16.3)	813,697 (16.4)	52,282 (17.5)	761,415 (16.3)	813,697 (16.4)
Q3	26,981 (15.5)	604,412 (17.1)	631,393 (17.0)	10,189 (15.7)	310,821 (17.2)	321,010 (17.1)	21,797 (16.1)	547,999 (18.1)	569,796 (18.0)	47,258 (15.8)	813,919 (17.4)	861,177 (17.3)	47,258 (15.8)	813,919 (17.4)	861,177 (17.3)
Q4	26,840 (15.4)	657,806 (18.6)	684,646 (18.5)	10,082 (15.6)	335,665 (18.6)	345,747 (18.5)	21,447 (15.8)	594,845 (19.6)	616,292 (19.4)	46,897 (15.7)	905,710 (19.4)	952,607 (19.2)	46,897 (15.7)	905,710 (19.4)	952,607 (19.2)
Q5	29,434 (16.9)	690,933 (19.6)	720,367 (19.4)	11,179 (17.3)	350,189 (19.4)	361,368 (19.3)	22,897 (16.9)	574,113 (18.9)	597,010 (18.8)	49,474 (16.6)	935,144 (20.0)	984,618 (19.8)	49,474 (16.6)	935,144 (20.0)	984,618 (19.8)
Rural	26,908 (15.4)	475,241 (13.5)	502,149 (13.6)	10,019 (15.5)	237,140 (13.1)	247,159 (13.2)	17,360 (12.8)	320,389 (10.6)	337,749 (10.7)	42,716 (14.3)	582,537 (12.5)	625,253 (12.6)	42,716 (14.3)	582,537 (12.5)	625,253 (12.6)
% of DA who have not completed high school															
Mean	19.53 7 12.07	18.42 7 10.72	18.48 7 10.79	19.36 7 12.22	18.44 7 10.73	18.47 7 10.78	18.68 7 12.37	17.66 7 10.56	17.70 7 10.64	19.28 7 11.87	17.90 7 10.62	17.98 7 10.70	19.28 7 11.87	17.90 7 10.62	17.98 7 10.70
Median (IQR)	18.00 (10.53-26.61)	17.04 (10.29-25.00)	17.07 (10.31-25.00)	17.74 (10.30-26.26)	17.04 (10.31-25.00)	17.07 (10.31-25.00)	16.76 (9.65-25.22)	16.16 (9.67-23.81)	16.18 (9.67-23.87)	17.74 (10.39-26.23)	16.46 (9.85-24.19)	16.51 (9.88-24.32)	17.74 (10.39-26.23)	16.46 (9.85-24.19)	16.51 (9.88-24.32)
Range	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00
% of DA whose home language is not English or French, N (%)															
0	95,044 (54.5)	1,980,652 (56.1)	2,075,696 (56.0)	34,893 (53.9)	1,009,196 (55.8)	1,044,089 (55.7)	66,211 (48.8)	1,534,976 (50.6)	1,601,187 (50.5)	158,749 (53.2)	2,558,066 (54.8)	2,716,815 (54.7)	158,749 (53.2%)	2,558,066 (54.8)	2,716,815 (54.7)
Low	38,674 (22.2)	801,124 (22.7)	839,798 (22.7)	14,478 (22.4)	413,573 (22.9)	428,051 (22.8)	32,615 (24.1)	762,598 (25.1)	795,213 (25.1)	68,010 (22.8)	1,108,190 (23.7)	1,176,200 (23.7)	68,010 (22.8%)	1,108,190 (23.7)	1,176,200 (23.7)
High	40,798 (23.4)	748,011 (21.2)	788,809 (21.3)	15,395 (23.8)	386,042 (21.3)	401,437 (21.4)	36,776 (27.1)	737,001 (24.3)	773,777 (24.4)	71,920 (24.1)	999,822 (21.4)	1,071,742 (21.6)	71,920 (24.1)	999,822 (21.4)	1,071,742 (21.6)
Screened?, N (%)															
No	153,260 (87.8)	1,477,144 (41.8)	1,630,404 (44.0)	57,257 (88.4)	659,256 (36.4)	716,513 (38.2)	116,667 (86.0)	885,315 (29.2)	1,001,982 (31.6)	273,655 (91.6)	1,530,178 (32.8)	1,803,833 (36.3)	273,655 (91.6%)	1,530,178 (32.8)	1,803,833 (36.3)
Yes	21,256 (12.2)	2,052,643 (58.2)	2,073,899 (56.0)	7,509 (11.6)	1,149,555 (63.6)	1,157,064 (61.8)	18,935 (14.0)	2,149,260 (70.8)	2,168,195 (68.4)	25,024 (8.4)	3,135,900 (67.2)	3,160,924 (63.7)	25,024 (8.4)	3,135,900 (67.2)	3,160,924 (63.7)

Supplementary Table 3. Descriptive Statistics of patients with an identifiable physician.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	1,477,144 (42%)	2,052,643 (58%)	3,529,787	659,256 (36%)	1,149,555 (64%)	1,808,811	885,315 (29%)	2,149,260 (71%)	3,034,575	1,530,178 (33%)	3,135,900 (67%)	4,666,078	740,385 (17%)	3,662,747 (83%)	4,403,132
Baseline Characteristics															
Sex, N (%)															
F	732,194 (39.9)	1,104,826 (60.1)	1,837,020 (52.0)	659,256 (36.4)	1,149,555 (63.6)	1,808,811 (100.0)	885,315 (29.2)	2,149,260 (70.8)	3,034,575 (100.0)	714,941 (28.9)	1,760,616 (71.1)	2,475,557 (53.1)	226,554 (12.2)	1,626,310 (87.8)	1,852,864 (42.1)
M	744,950 (44.0)	947,817 (56.0)	1,692,767 (48.0)	0 (0)	0 (0)	0 (0)				815,237 (37.2)	1,375,284 (62.8)	2,190,521 (46.9)	513,831 (20.1)	2,036,437 (79.9)	2,550,268 (57.9)
Age, N (%)															
30-34							93,597 (23.8)	299,036 (76.2)	392,633 (12.9)						
35-39							95,611 (23.9)	303,871 (76.1)	399,482 (13.2)						
40-44							103,793 (24.8)	314,128 (75.2)	417,921 (13.8)	356,251 (43.5)	462,581 (56.5)	818,832 (17.5)	136,308 (33.2)	273,747 (66.8)	2,550,268 (57.9)
45-49							115,264 (25.7)	332,765 (74.3)	448,029 (14.8)	358,391 (39.4)	551,458 (60.6)	909,849 (19.5)	126,642 (26.8)	345,777 (73.2)	472,419 (10.7)
50-54	505,160 (53.1)	445,467 (46.9)	950,627 (26.9)	206,341 (42.4)	105,431 (41.4)	486,420 (26.9)	111,944 (26.9)	304,885 (73.1)	416,829 (13.7)	292,299 (34.1)	563,709 (65.9)	856,008 (18.3)	172,497 (18.1)	778,564 (81.9)	951,061 (21.6)
55-59	350,464 (42.5)	474,790 (57.5)	825,254 (23.4)	145,267 (34.3)	277,816 (65.7)	423,083 (23.4)	112,527 (31.5)	245,211 (68.5)	357,738 (11.8)	215,943 (30.4)	494,600 (69.6)	710,543 (15.2)	122,794 (14.9)	700,851 (85.1)	823,645 (18.7)
60-64	266,658 (37.3)	448,068 (62.7)	825,254 (23.4)	115,072 (31.6)	249,527 (68.4)	364,599 (20.2)	112,527 (31.5)	194,707 (62.5)	311,554 (10.3)	148,741 (25.5)	433,771 (74.5)	582,512 (12.5)	84,446 (11.9)	626,968 (88.1)	711,414 (16.2)
65-69	266,658 (37.3)	365,027 (66.2)	551,373 (15.6)	87,145 (31.1)	192,946 (68.9)	280,091 (15.5)	112,949 (45.5)	135,534 (54.5)	248,483 (8.2)	90,938 (21.3)	336,311 (78.7)	427,249 (9.2)	54,159 (9.9)	494,109 (90.1)	548,268 (12.5)
70-74	168,516 (34.5)	319,291 (65.5)	487,807 (13.8)	105,431 (41.4)	149,187 (58.6)	254,618 (14.1)	22,783 (54.4)	19,123 (45.6)	41,906 (1.4)	67,615 (18.7)	293,470 (81.3)	361,085 (7.7)	43,539 (9.0)	442,731 (91.0)	486,270 (11.0)
Total # of PCP visits within the last 2y, N (%)															
0	150,789 (74.5)	51,743 (25.5)	202,532 (5.7)	62,525 (73.9)	22,048 (26.1)	394,545 (64.3)	114,889 (66.2)	58,669 (33.8)	173,558 (5.7)	286,698 (85.3)	49,286 (14.7)	335,984 (7.2)	147,113 (48.9)	153,686 (51.1)	300,799 (6.8)
1 to 5	662,736 (48.0)	717,573 (52.0)	1,380,309 (39.1)	265,152 (41.2)	379,048 (58.8)	394,545 (64.3)	382,484 (31.1)	846,183 (68.9)	1,228,667 (40.5)	857,011 (41.3)	1,220,273 (58.7)	2,077,284 (44.5)	413,761 (22.2)	1,446,174 (77.8)	1,859,935 (42.2)
6 to 10	350,362 (35.2)	644,691 (64.8)	995,053 (28.2)	162,560 (30.5)	370,652 (69.5)	394,545 (64.3)	198,038 (23.0)	661,680 (77.0)	859,718 (28.3)	244,601 (19.8)	993,280 (80.2)	1,237,881 (26.5)	108,331 (9.2)	1,067,074 (90.8)	1,175,405 (26.7)
11+	313,257 (32.9)	638,636 (67.1)	951,893 (27.0)	169,019 (30.9)	377,807 (69.1)	546,826 (30.2)	189,904 (24.6)	582,728 (75.4)	772,632 (25.5)	141,868 (14.0)	873,061 (86.0)	1,014,929 (21.8)	71,180 (6.7)	995,813 (93.3)	1,066,993 (24.2)
Immigrant status, N (%)															
Recent immigrant (<8y)	45,902 (56.0)	36,071 (44.0)	81,973 (2.3)	22,340 (51.6)	20,945 (48.4)	43,285 (2.4)	58,160 (33.5)	115,576 (66.5)	173,736 (5.7)	45,383 (27.9)	117,013 (72.1)	162,396 (3.5)	16,402 (12.6)	114,128 (87.4)	130,530 (3.0)
Non-distant immigrant (<16y)	71,665 (50.6)	70,080 (49.4)	141,745 (4.0)	32,914 (46.1)	38,473 (53.9)	71,387 (3.9)	69,311 (32.0)	115,576 (66.5)	173,736 (5.7)	69,868 (26.4)	194,457 (73.6)	264,325 (5.7)	24,993 (11.3)	196,621 (88.7)	221,614 (5.0)
Distant immigrant (<28 y)	113,363 (46.9)	128,220 (53.1)	241,583 (6.8)	49,176 (40.7)	71,541 (59.3)	120,717 (6.7)	69,311 (32.0)	155,896 (69.3)	224,857 (7.4)	69,868 (26.4)	251,740 (75.6)	333,037 (7.1)	32,391 (10.2)	285,002 (89.8)	317,393 (7.2)
Non-immigrant (28+ years)	1,246,214 (40.7)	1,818,272 (59.3)	3,064,486 (86.8)	554,826 (35.3)	1,018,596 (64.7)	1,573,422 (87.0)	688,883 (28.5)	1,730,192 (71.5)	2,419,075 (79.7)	1,333,630 (34.1)	2,572,690 (65.9)	3,906,320 (83.7)	666,599 (17.9)	3,066,996 (82.1)	3,733,595 (84.8)
Patient rostered to a physician?, N (%)															
Yes, to a Non-PEM Physician	122,315 (57.8)	89,477 (42.2)	211,792 (6.0)	48,577 (48.6)	51,434 (51.4)	100,011 (5.5)	688,883 (28.5)	97,111 (57.3)	2,419,075 (79.7)	99,972 (35.5)	181,807 (64.5)	281,779 (6.0)	59,349 (21.8)	213,483 (78.2)	272,832 (6.2%)
Yes, to a PEM physician, but not enrolled in a model	123,276 (58.6)	87,002 (41.4)	210,278 (6.0)	49,887 (52.9)	44,431 (47.1)	94,318 (5.2)	81,556 (43.4)	106,192 (56.6)	2,419,075 (79.7)	140,878 (43.9)	180,026 (56.1)	320,904 (6.9)	88,102 (29.9)	206,992 (70.1)	295,094 (6.7%)

Supplementary Table 3. Descriptive Statistics of patients with an identifiable physician.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	1,477,144 (42%)	2,052,643 (58%)	3,529,787	659,256 (36%)	1,149,555 (64%)	1,808,811	885,315 (29%)	2,149,260 (71%)	3,034,575	1,530,178 (33%)	3,135,900 (67%)	4,666,078	740,385 (17%)	3,662,747 (83%)	4,403,132
Yes, to a PEM physician via CAPE	1,231,553 (39.6)	1,876,164 (60.4)	3,107,717 (88.0)	560,792 (34.7)	1,053,690 (65.3)	1,614,482 (89.3)	731,263 (27.3)	1,945,957 (72.7)	2,677,220 (88.2)	1,289,328 (31.7)	2,774,067 (68.3)	4,063,395 (87.1)	592,934 (15.5)	3,242,272 (84.5)	3,835,206 (87.1%)
DA-level Characteristics															
Neighbourhood Income Quintile, N (%)															
Q1	251,525 (48.7)	264,595 (51.3)	516,120 (14.6)	118,736 (43.9)	151,593 (56.1)	270,329 (14.9)	175,641 (36.7)	302,326 (63.3)	477,967 (15.8)	219,776 (32.9)	447,577 (67.1)	667,353 (14.3)	110,487 (16.9)	542,795 (83.1%)	653,282 (14.8%)
Q2	261,206 (44.6)	324,069 (55.4)	585,275 (16.6)	118,037 (38.7)	186,630 (61.3)	304,667 (16.8)	167,177 (32.2)	352,085 (67.8)	519,262 (17.1)	238,072 (31.3)	523,343 (68.7)	761,415 (16.3)	111,862 (15.2)	621,774 (84.8%)	733,636 (16.7%)
Q3	254,611 (42.1)	349,801 (57.9)	604,412 (17.1)	112,900 (36.3)	197,921 (63.7)	310,821 (17.2)	157,317 (28.7)	390,682 (71.3)	519,262 (17.1)	248,925 (30.6)	564,994 (69.4)	813,919 (17.4)	111,869 (14.6)	652,846 (85.4%)	733,636 (16.7%)
Q4	260,129 (39.5)	397,677 (60.5)	657,806 (18.6)	113,411 (33.8)	222,254 (66.2)	335,665 (18.6)	157,317 (28.7)	442,261 (74.3)	594,845 (19.6)	272,918 (30.1)	632,792 (69.9)	905,710 (19.4)	118,560 (14.2)	715,753 (85.8%)	834,313 (18.9%)
Q5	244,746 (35.4)	446,187 (64.6)	690,933 (19.6)	109,830 (31.4)	240,359 (68.6)	350,189 (19.4)	135,080 (23.5)	439,033 (76.5)	574,113 (18.9)	288,202 (30.8)	646,942 (69.2)	935,144 (20.0)	123,746 (14.5)	729,569 (85.5%)	853,315 (19.4%)
Rural	204,927 (43.1)	270,314 (56.9)	475,241 (13.5)	86,342 (36.4)	240,359 (68.6)	237,140 (13.1)	97,516 (30.4)	222,873 (69.6)	320,389 (10.6)	262,285 (45.0)	320,252 (55.0)	582,537 (12.5)	163,861 (29.1)	400,010 (70.9%)	563,871 (12.8%)
% of DA who have not completed high school, N (%)															
Mean	19.21 ± 10.82	17.86 ± 10.62	18.42 ± 10.72	19.17 ± 10.85	18.01 ± 10.63	18.44 ± 10.73	18.99 ± 10.82	17.11 ± 10.40	17.66 ± 10.56	18.59 ± 10.89	17.56 ± 10.47	17.90 ± 10.62	19.57 ± 11.12	18.00 ± 10.59	18.26 ± 10.70
Median (IQR)	17.95 (11.11-25.74)	16.44 (9.80-24.24)	17.04 (10.29-25.00)	17.91 (10.98-25.71)	16.67 (10.00-24.39)	17.04 (10.31-25.00)	17.65 (10.81-25.42)	15.53 (9.21-23.17)	16.16 (9.67-23.81)	17.24 (10.26-25.27)	16.07 (9.65-23.68)	16.46 (9.85-24.19)	18.39 (11.11-26.67)	16.54 (10.00-24.24)	16.84 (10.14-24.64)
Range	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00
% of DA whose home language is not English or French, N (%)															
0	814,238 (41.1)	1,166,414 (58.9)	1,980,652 (56.1)	357,430 (35.4)	651,766 (64.6)	1,009,196 (55.8)	438,086 (28.5)	1,096,890 (71.5)	1,534,976 (50.6)	921,919 (36.0)	1,636,147 (64.0)	2,558,066 (54.8)	469,337 (19.4)	1,945,139 (80.6)	2,414,476 (54.8)
Low	333,055 (41.6)	468,069 (58.4)	801,124 (22.7)	150,622 (36.4)	262,951 (63.6)	413,573 (22.9)	212,514 (27.9)	550,084 (72.1)	762,598 (25.1)	342,032 (30.9)	766,158 (69.1)	1,108,190 (23.7)	154,802 (15.1)	870,968 (84.9)	1,025,770 (23.3)
High	329,851 (44.1)	418,160 (55.9)	748,011 (21.2)	151,204 (39.2)	234,838 (60.8)	386,042 (21.3)	234,715 (31.8)	502,286 (68.2)	737,001 (24.3)	266,227 (26.6)	733,595 (73.4)	999,822 (21.4)	116,246 (12.1)	846,640 (87.9)	962,886 (21.9)
Physician-level Characteristics															
Sex, N (%)															
Female	397,706 (37.0)	677,256 (63.0)	1,074,962 (30.5)	223,825 (31.5)	486,900 (68.5)	710,725 (39.3)	283,310 (21.0)	1,064,804 (79.0)	1,348,114 (44.4)	447,935 (29.2)	1,088,217 (70.8)	1,536,152 (32.9)	179,624 (13.8)	1,117,823 (86.2)	1,297,447 (29.5)
Male	1,079,438 (44.0)	1,375,387 (56.0)	2,454,825 (69.5)	435,431 (39.7)	662,655 (60.3)	1,098,086 (60.7)	602,005 (35.7)	1,084,456 (64.3)	1,686,461 (55.6)	1,082,243 (34.6)	2,047,683 (65.4)	3,129,926 (67.1)	560,761 (18.1)	2,544,924 (81.9)	3,105,685 (70.5)
School Region, N (%)															
Canada	1,026,868 (40.1)	1,533,687 (59.9)	2,560,555 (72.5)	460,683 (35.0)	855,115 (65.0)	1,315,798 (72.7)	598,577 (27.7)	1,084,456 (64.3)	2,158,043 (71.1)	1,154,000 (34.1)	2,231,790 (65.9)	3,385,790 (72.6)	570,331 (18.0)	2,605,822 (82.0)	3,176,153 (72.1)
United States, Australia, New Zealand, United Kingdom, and Ireland	104,164 (46.6)	119,469 (53.4)	223,633 (6.3)	44,426 (40.4)	65,579 (59.6)	110,005 (6.1)	57,762 (35.0)	107,300 (65.0)	165,062 (5.4)	1,154,000 (34.1)	178,981 (63.7)	280,860 (6.0)	53,065 (19.4)	221,102 (80.6)	274,167 (6.2)
Other	346,112 (46.4)	399,487 (53.6)	745,599 (21.1)	154,147 (40.2)	228,861 (59.8)	383,008 (21.2)	228,976 (32.2)	482,494 (67.8)	711,470 (23.4)	274,299 (27.4)	725,129 (72.6)	280,860 (6.0)	116,989 (12.3)	835,823 (87.7)	952,812 (21.6)

Supplementary Table 3. Descriptive Statistics of patients with an identifiable physician.

	Received Colorectal Screening? (50-74)			Received Breast Screening? (50-74 y)			Received Cervical Screening? (30-69 y)			Received Glucose Screening? (40-74 y)			Received Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	1,477,144 (42%)	**2,052,643 (58%)**	**3,529,787**	**659,256 (36%)**	**1,149,555 (64%)**	**1,808,811**	**885,315 (29%)**	**2,149,260 (71%)**	**3,034,575**	**1,530,178 (33%)**	**3,135,900 (67%)**	**4,666,078**	**740,385 (17%)**	**3,662,747 (83%)**	**4,403,132**
Number of years since graduation, N (%)															
0-<16y	186,726	291,639	478,365	87,408	167,723	255,131	228,976	367,890	494,319	226,681	446,417	673,098	109,519	502,191	611,710
	(39.0)	(61.0)	(13.6)	(34.3)	(65.7)	(14.1)	(32.2)	(74.4)	(16.3)	(33.7)	(66.3)	(14.4)	(17.9)	(82.1)	(13.9)
16-<25	358,975	534,773	893,748	165,283	302,307	467,590	236,475	633,726	870,201	405,632	850,865	1,256,497	188,418	502,191	1,150,352
	(40.2)	(59.8)	(25.3)	(35.3)	(64.7)	(25.9)	(27.2)	(72.8)	(28.7)	(32.3)	(67.7)	(26.9)	(16.4)	(82.1)	(26.1)
25-<35	485,735	699,462	1,185,197	219,100	394,545	613,645	284,119	712,669	996,788	507,939	1,051,560	1,256,497	244,419	1,219,385	1,463,804
	(41.0)	(59.0)	(33.6)	(35.7)	(64.3)	(33.9)	(28.5)	(71.5)	(32.8)	(32.6)	(67.4)	(26.9)	(16.7)	(83.3)	(33.2)
35+	445,708	526,769	972,477	187,465	394,545	472,445	238,292	434,975	673,267	389,926	787,058	1,176,984	198,029	979,237	1,177,266
	(45.8)	(54.2)	(27.6)	(39.7)	(64.3)	(26.1)	(35.4)	(64.6)	(22.2)	(33.1)	(66.9)	(25.2)	(16.8)	(83.2)	(26.7)

Supplementary Table 4. Descriptive Statistics of patients without an identifiable physician.

	Colorectal Screening? (50-74)			Breast Screening? (50-74 y)			Cervical Screening? (30-69 y)			Glucose Screening? (40-74 y)			Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	153,260 (88%)	21,256 (12%)	174,516	57,257 (88%)	7,509 (12%)	64,766	116,667 (86%)	18,935 (14%)	135,602	273,655 (92%)	25,024 (8%)	298,679	207,149 (77%)	63,295 (23%)	270,444
Baseline Characteristics															
Sex, N (%)															
F	56,711 (87.1)	8,372 (12.9)	65,083 (37.3)	57,257 (88.4)	7,509 (11.6)	64,766 (100.0)	116,667 (86.0)	18,935 (14.0)	135,602 (100.0)	90,788 (89.4)	10,724 (10.6)	101,512 (34.0)	46,136 (70.7)	19,147 (29.3)	65,283 (24.1)
M	96,549 (88.2)	8,372 (12.9)	109,433 (62.7)	0 (0)	0 (0)	0 (0)				182,867 (92.7)	14,300 (7.3)	197,167 (66.0)	161,013 (78.5)	44,148 (21.5)	205,161 (75.9)
Age, N (%)															
30-34							18,286 (84.0)	3,474 (16.0)	21,760 (16.0)						
35-39							17,195 (85.0)	3,041 (15.0)	20,236 (14.9)						
40-44							16,889 (85.1)	2,946 (14.9)	19,835 (14.6)	64,088 (95.0)	3,408 (5.0)	67,496 (22.6)	161,013 (78.5)	7,617 (15.9)	47,997 (17.7)
45-49							16,712 (84.9)	2,972 (15.1)	19,684 (14.5)	63,268 (93.7)	4,275 (6.3)	67,543 (22.6)	39,345 (81.5)	8,953 (18.5)	48,298 (17.9)
50-54	53,953 (91.3)	5,112 (8.7)	59,065 (33.8)	17,307 (91.0)	1,720 (9.0)	19,027 (29.4)	15,027 (85.6)	2,532 (14.4)	17,559 (12.9)	52,420 (92.0)	4,579 (8.0)	56,999 (19.1)	45,153 (76.5)	13,890 (23.5)	59,043 (21.8)
55-59	39,425 (87.5)	5,631 (12.5)	59,065 (33.8)	14,273 (87.1)	2,118 (12.9)	16,391 (25.3)	13,122 (87.2)	1,926 (12.8)	15,048 (11.1)	38,658 (90.1)	4,224 (9.9)	42,882 (14.4)	33,179 (73.7)	11,811 (26.3)	44,990 (16.6)
60-64	27,635 (86.0)	4,504 (14.0)	32,139 (18.4)	14,273 (87.1)	1,662 (13.4)	12,386 (19.1)	10,201 (89.6)	1,186 (10.4)	11,387 (8.4)	26,420 (88.3)	3,486 (11.7)	29,906 (10.0)	23,030 (71.9)	8,999 (28.1)	32,029 (11.8)
65-69	18,289 (84.5)	3,364 (15.5)	21,653 (12.4)	8,080 (87.4)	1,164 (12.6)	9,244 (14.3)	7,923 (91.2)	766 (8.8)	8,689 (6.4)	16,847 (86.2)	2,695 (13.8)	19,542 (6.5)	14,966 (69.4)	6,608 (30.6)	21,574 (8.0)
70-74	13,958 (84.1)	2,645 (15.9)	16,603 (9.5)	8,080 (87.4)	845 (10.9)	7,718 (11.9)	1,312 (93.4)	92 (6.6)	1,404 (1.0)	11,954 (83.5)	2,357 (16.5)	14,311 (4.8)	11,096 (67.2)	5,417 (32.8)	16,513 (6.1)
Immigrant status, N (%)															
Recent immigrant (<8y)	6,190 (94.3)	372 (5.7)	6,562 (3.8)	2,835 (95.0)	149 (5.0)	2,984 (4.6)	9,486 (87.0)	1,417 (13.0)	10,903 (8.0)	13,340 (93.8)	883 (6.2)	14,223 (4.8)	8,009 (69.6)	3,495 (30.4)	11,504 (4.3)
Non-distant immigrant (<16y)	9,243 (94.1)	582 (5.9)	9,825 (5.6)	3,969 (96.5)	144 (3.5)	4,113 (6.4)	12,683 (92.9)	971 (7.1)	13,654 (10.1)	21,486 (96.2)	844 (3.8)	22,330 (7.5)	13,679 (74.6)	4,658 (25.4)	18,337 (6.8)
Distant immigrant (<28 y)	11,482 (92.2)	967 (7.8)	12,449 (7.1)	4,394 (93.7)	293 (6.3)	4,687 (7.2)	8,623 (90.4)	913 (9.6)	9,536 (7.0)	19,573 (93.3)	1,398 (6.7)	20,971 (7.0)	13,964 (72.9)	5,202 (27.1)	19,166 (7.1)
Non-immigrant (28+ years)	126,345 (86.7)	19,335 (13.3)	145,680 (83.5)	46,059 (86.9)	6,923 (13.1)	52,982 (81.8)	85,875 (84.6)	15,634 (15.4)	101,509 (74.9)	219,256 (90.9)	21,899 (9.1)	241,155 (80.7)	171,497 (77.4)	49,940 (22.6)	221,437 (81.9)
DA-level Characteristics															
Neighbourhood Income Quintile, N (%)															
Q1	31,097 (90.3)	3,338 (9.7)	34,435 (19.7)	11,209 (91.3)	1,069 (8.7)	12,278 (19.0)	24,677 (87.9)	3,405 (12.1)	28,082 (20.7)	54,891 (91.4)	5,161 (8.6)	60,052 (20.1)	41,830 (76.8)	12,649 (23.2)	54,479 (20.1)
Q2	31,097 (90.3)	2,646 (8.8)	29,918 (17.1)	10,069 (91.4)	950 (8.6)	11,019 (17.0)	21,276 (88.6)	2,743 (11.4)	24,019 (17.7)	48,393 (92.6)	3,889 (7.4)	52,282 (17.5)	36,493 (77.4)	10,684 (22.6)	47,177 (17.4)
Q3	24,216 (89.8)	2,765 (10.2)	26,981 (15.5)	9,209 (90.4)	980 (9.6)	10,189 (15.7)	19,117 (87.7)	2,680 (12.3)	21,797 (16.1)	43,703 (92.5)	3,889 (7.4)	47,258 (15.8)	32,729 (76.8)	9,898 (23.2)	42,627 (15.8)
Q4	23,727 (88.4)	3,113 (11.6)	26,840 (15.4)	9,015 (89.4)	980 (9.6)	10,082 (15.6)	18,691 (87.1)	2,756 (12.9)	21,447 (15.8)	43,139 (92.0)	3,758 (8.0)	46,897 (15.7)	32,141 (76.3)	9,966 (23.7)	42,107 (15.6)
Q5	23,727 (88.4)	5,022 (17.1)	29,434 (16.9)	9,835 (88.0)	1,344 (12.0)	11,179 (17.3)	19,672 (85.9)	3,225 (14.1)	22,897 (16.9)	44,988 (90.9)	4,486 (9.1)	49,474 (16.6)	33,284 (75.1)	11,021 (24.9)	44,305 (16.4)
Rural	22,536 (83.8)	5,022 (17.1)	26,908 (15.4)	7,920 (79.0)	2,099 (21.0)	10,019 (15.5)	13,234 (76.2)	4,126 (23.8)	17,360 (12.8)	38,541 (90.2)	4,175 (9.8)	42,716 (14.3)	30,672 (77.2)	9,077 (22.8)	39,749 (14.7)

Supplementary Table 4. Descriptive Statistics of patients without an identifiable physician.

	Colorectal Screening? (50-74)			Breast Screening? (50-74 y)			Cervical Screening? (30-69 y)			Glucose Screening? (40-74 y)			Cholesterol Screening? (50-74)		
	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
	153,260 (88%)	**21,256 (12%)**	**174,516**	**57,257 (88%)**	**7,509 (12%)**	**64,766**	**116,667 (86%)**	**18,935 (14%)**	**135,602**	**273,655 (92%)**	**25,024 (8%)**	**298,679**	**207,149 (77%)**	**63,295 (23%)**	**270,444**
% of DA who have not completed high school, N (%)															
Mean	19.53 ± 11.82	19.57 ± 13.74	19.53 ± 12.07	18.98 ± 11.83	22.22 ±14.54	19.36 ± 12.22	18.20 ± 11.70	21.64 ± 15.53	18.68 ± 12.37	19.16 ± 11.82	20.58 ± 12.36	19.28 ± 11.87	19.36 ± 11.56	20.00 ± 13.41	19.51 ± 12.02
Median (IQR)	18.03 (10.68-26.48)	17.43 (9.29-27.40)	18.00 (10.53-26.61)	17.44 (10.14-25.71)	20.00 (12.00-30.00)	17.74 (10.30-26.26)	16.47 (9.52-24.64)	18.94 (10.61-28.63)	16.76 (9.65-25.22)	17.65 (10.31-26.00)	19.05 (11.11-28.42)	17.74 (10.39-26.23)	18.01 (10.59-26.47)	17.91 (10.45-26.79)	18.00 (10.53-26.53)
Range	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-91.18	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00	0.00-100.00
% of DA whose home language is not English or French, N (%)															
0	81,916 (86.2)	13,128 (13.8)	95,044 (54.5)	29,897 (85.7)	4,996 (14.3)	34,893 (53.9)	55,372 (83.6)	10,839 (16.4)	66,211 (48.8)	143,689 (90.5)	15,060 (9.5)	158,749 (53.2)	112,708 (77.8)	32,169 (22.2)	144,877 (53.6)
Low	34,368 (88.9)	4,306 (11.1)	38,674 (22.2)	13,163 (90.9)	1,315 (9.1)	14,478 (22.4)	28,597 (87.7)	4,018 (12.3)	32,615 (24.1)	62,820 (92.4)	5,190 (7.6)	68,010 (22.8)	46,485 (76.5)	14,308 (23.5)	60,793 (22.5)
High	36,976 (90.6)	3,822 (9.4)	40,798 (23.4)	14,197 (92.2)	1,198 (7.8)	15,395 (23.8)	32,698 (88.9)	4,078 (11.1)	36,776 (27.1)	67,146 (93.4)	4,774 (6.6)	71,920 (24.1)	47,956 (74.0)	16,818 (26.0)	64,774 (24.0)

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.