Regional differences in where and how family medicine residents intend to practice

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Abstract

Background: Family medicine residents (FMRs) choose among a range of options as they enter the workforce. Their choices have implications for the supply of comprehensive primary care services. We describe practice intentions among FMRs across Canada and consider how differences in the organization of primary care may shape regional variation in practice intentions.

Methods: We analyzed national survey data collected by the College of Family Physicians of Canada and 17 university-based family medicine residency programs. We describe intentions for comprehensive practice, practice type, clinical domains, settings, and populations at completion of training, as well as demographic and personal characteristics of FMRs in Atlantic Canada, Quebec, Ontario, and Western Canada. We used logistic regression to estimate odds of practice intentions across regions, adjusting for FMR characteristics.

Results: Among 1,680 respondents, two thirds reported it is somewhat or highly likely they will provide comprehensive care to the same group of patients within the first three years of practice, but this varied from 40.3% in Atlantic Canada to 85.1% in Ontario. Most respondents reported it is somewhat or highly likely that they will seek group physician practices (93.8%) and interprofessional team-based practice (88.1%), compared to only 7.7% for solo practice.

Interpretation: We observe substantial regional variation in intentions for comprehensive primary care. Workforce projections may overestimate the supply of physicians entering practice who will deliver comprehensive care. There appears to be misalignment between available practice opportunities and the intentions of most FMRs to practice in a team-based environment.

Introduction

Challenges accessing primary care persist across Canada despite historically high ratios of primary care providers per capita. Currently 15% of Canadians do not have a regular care provider (1) and only 43% are able to get same- or next-day appointments to see a doctor or nurse (2). Changes in primary care physician activity levels (3) and the types of services delivered (4,5) may help explain the gap between patient access and per-capita physician supply.

Upon completion of training, family physicians may pursue a variety of clinical practice areas, and their choices may shape the supply of primary care services available to patients. Family physicians may choose comprehensive (generalist) practice or one focused on a particular clinical area (e.g. emergency medicine, palliative care, sports medicine, or addictions). They may choose among patient populations and among practice settings, including office-based practice, hospital-based practice, work in long-term care facilities, or providing care through home visits. Family physicians may also choose among practice types, including solo practice, group physician practice, and inter-professional team-based care.

The organization and delivery of primary care and associated options for practice vary markedly among regions in Canada (6–8). For instance, in Ontario more than three-quarters of family physicians work in a model of group physician or interdisciplinary team-based practice, paid through blended salary or capitation (9). In Quebec, more than half of family physicians work in Family Medicine Groups that include multiple physicians and integration of nurses and other care providers (10). Most Albertans receive services from Primary Care Networks which can include nurses, dieticians, pharmacists, as well as physicians, though the structure varies (11). Elsewhere in Western and Atlantic Canada, supports for inter-professional practice are

developing but have been more limited in scope (6–8). Research suggests that these options, along with payment models, have differing effects on physician behaviour (12–15) and may shape practice intentions among family medicine residents (FMRs).

While some research examines choice of family medicine as a specialty among medical students (16–19), we have only limited information about practice intentions of Canadian FMRs from a subset of training programs (20,21). We use national survey data to describe the practice intentions of FMRs with respect to practice comprehensiveness, clinical domain, setting, and population. We also examine differences in demographic and personal characteristics of FMRs between Ontario, Quebec, Western Canada, and Atlantic Canada, and explore the degree to which these characteristics shape regional differences in practice intentions.

Methods

Data

We analyzed data from the Family Medicine Longitudinal Survey collected by the College of Family Physicians of Canada from all 17 university-based family medicine residency programs in 2016 and 2017. Surveys were sent to all FMRs in Canada within 3 months of program completion. Our analysis focused on responses to questions about practice intentions with respect to comprehensiveness, type, clinical domains, settings, and populations (see full questions in Appendix 1). The survey measured intentions for practice on a five-point scale. We dichotomized responses by grouping those selecting “somewhat likely” or “highly likely” and those selecting “neutral,” “somewhat unlikely,” or “highly unlikely.”

Analysis

We summarized the demographic and personal characteristics of respondents overall and in each region as well as the number and percent of respondents selecting "somewhat likely" or "highly likely" for all survey questions capturing practice intentions. We investigated differences among regions using chi-square tests. To explore how survey respondents differ from all FMRs we compared respondent characteristics with publicly available data from the Canadian Post-MD Education Registry (CAPER) (22).

We used logistic regression to examine the relationship between region and each dichotomized practice intention variable. We used multivariable models including sex/gender,[1] location of medical training (Canadian or international medical graduates (IMGs)), age, and childhood geographic environment to estimate adjusted odds ratios. We excluded the number of years in service since it was collinear with age. We also included a variable that captured whether FMRs intended to work in an urban or rural environment as intentions for specific clinical domains, settings, and populations may be closely connected to whether FMRs anticipate practicing in rural or urban environment and intentions for rural practice differed markedly among regions. Respondents missing data for variables other than the outcome of interest were retained with indicator variables for "missing/prefer not to answer." We excluded respondents with missing data for practice outcomes from each model. In describing results of logistic regression, we report "odds of intentions for" each practice outcome, as shorthand for odds of selecting "somewhat likely" or "highly likely" vs. selecting "neutral," "somewhat unlikely," or

[1] The survey question wording specifies "sex." While it is plausible that biological differences specific to pregnancy and childbirth may shape intentions to some degree, it is likely socially-constructed gender roles that play a larger role. It is not possible to distinguish between sex and gender effects in this analysis, so we use the term sex/gender

"highly unlikely." We conducted sensitivity analysis to confirm that grouping "neutral" with "somewhat likely" or "highly likely" resulted in similar patterns across regions.

Ethics approval for secondary analysis of the FMLS survey data was obtained from the Simon Fraser University Research Ethics Board.

Results

Across Canada, 1,680 FMRs completed the survey with response rates of 60.1% (n=785) in 2016 and 62.8% (n=895) in 2017. For respondents exiting residency in 2017, the average age was 30.5 years, 61.0% were female, and 14.6% were IMGs. These percentages are comparable to the 1,438 family medicine trainees exiting residency in 2017 captured in CAPER data [22] where the average age was 30.1 years, 62.1% were female, and 15.5% were IMGs.

We observed statistically significant differences among regions with respect to sex/gender, training location, age, years since MD, and childhood environment (Table 1). 62.4% of respondents were female, varying from 54.7% in Western Canada to 68.1% in Ontario. The percentage of IMGs varied from 4.8% in Ontario to 21.1% in Western Canada. Ontario respondents were younger and had more recently completed their MDs. Quebec had the highest percentage of respondents reporting that they grew up in an inner city, urban, or suburban environment (71.7%), and Atlantic Canada the lowest (47.6%).

Across Canada, two-thirds of FMRs report it is somewhat or highly likely they will commit to providing comprehensive care to the same group of patients in their first three years of practice. This varied from 40.3% in Atlantic Canada to 85.1% in Ontario (Table 2). Across Canada, over 90% of respondents reported they are confident in their ability to provide

comprehensive care to the same group of patients over time; this was slightly lower in Atlantic Canada (82.1%). In multivariable models, significant differences in intentions to provide comprehensive care persist, but regional differences in confidence are not significant (Table 3).

Intentions for practice types differ substantially among regions. A higher percentage of respondents in Quebec and Western Canada indicate intentions for care in one clinical setting (Table 2) an effect which persisted in multivariable analysis (Table 3). A higher percentage of respondents in Atlantic Canada anticipate providing care across multiple clinical settings (Table 2) but this effect was attenuated in multivariable analysis (Table 3).

Two thirds of respondents indicate intentions for comprehensive practice that includes special interest (Table 2) with no significant variation among regions (Table 3). Almost a third of respondents (31.5%) indicate that practice focused on specific clinical areas is somewhat or highly likely (Table 2) and odds are highest in Ontario (Table 3).

Few respondents (7.7%) indicated it is somewhat or highly likely they will work in a solo practice, compared to 93.8% in group physician practice, and 88.1% with interprofessional teams (Table 2). Odds of intentions for solo practice are higher for all regions relative to Ontario, and odds of group physician and working in interprofessional teams are lower (Table 3). Intentions for practice that includes teaching health professional learners are lowest in Ontario (66.9%) and highest in Western Canada (86.8%) (Table 2). In multivariable analysis, there are significantly higher odds of pursuing a practice that includes teaching in all regions relative to Ontario (Table 3)

While we did not detect significant variation by region in intentions in some clinical domains (chronic disease and management mental health care; Table 3), variation existed in intentions for other clinical domains. Respondents in Ontario were less likely to report intentions

for intrapartum care, palliative care, care in the home, and long-term care facilities (Tables 2 and 3). With respect to intentions for practice settings, nationally 42.0% report intentions to provide care in the home and 41.0% in long-term care facilities, with Ontario having the lowest odds (Tables 2 and 3). Odds of intentions for practice serving marginalized populations and First Nations, Inuit and Métis peoples were lowest for Ontario and highest for Western Canada.

Sensitivity analyses confirmed that our results did not change given different analytic decisions. Grouping "neutral" with "somewhat unlikely" and "highly unlikely" vs. "somewhat likely" and "highly likely," including years since MD instead of age, and excluding intentions for rural practice resulted in only very small changes in parameter estimates for regions. Respondents did not appear to be constrained in their ratings: mean ratings varied from a minimum of 1.6/5 for solo practice to a maximum of 4.7/5 for group physician practice.

Interpretation

Intentions to provide comprehensive care differ markedly across regions. They do not appear to correspond to FMRs' confidence in their clinical ability (Table 2), nor are differences eliminated when adjusting for demographic variables or intentions for rural practice (Table 3). Intentions to provide comprehensive care to the same group of patients within the first three years of practice are highest in Ontario, along with intentions to practice in a group and/or interprofessional team. Importantly, we found that intentions for interprofessional, team-based care are very high across all regions, with more than 80% of family medicine residents across the country stating intention to practice in such models. This does not correspond to current availability of these models (8). In Ontario the number of primary care physicians working in

interprofessional teams has increased dramatically (23), but is still a fraction of the total workforce. Elsewhere in Canada the proportion is much lower (8).

Team-based care is a focus of medical training at all Canadian medical schools (24), pointing to a lag between advances in training and changes in primary care organization and delivery. The impacts of misalignment between aspirational practice intentions of graduating family physicians and actual opportunities for team-based practice are not known. It is possible such misalignments lead early-career physicians to exit comprehensive primary care and make other practice choices (e.g., serial locum practice, walk-in clinic work, hospital-based care). This is consistent with the observation that regions with lower intentions for group physician and team-based practice also had lower intentions for providing comprehensive care.

Even among those early-career physicians who intend to provide comprehensive care, there are differences by region. In Atlantic Canada, a higher proportion of respondents intend to provide care across multiple clinical settings and to rural populations. In Ontario, FMRs are more likely to report intentions for comprehensive care overall, but less likely to report intentions in specific clinical domains, settings, and populations. This may reflect widespread access to specialized resources in Ontario, combined with team structures that do not require individual physicians to provide the full range of services. Paradoxically, Ontario FMRs are also more likely to report intentions for focused practice and comprehensive care. It is possible that this reflects differences in primary care organization, with larger group physician and interprofessional team-based practices providing coverage for patients and allowing physicians to devote time to focused practice. Of course, intentions are not mutually exclusive as physicians may practice in different ways as opportunities allow and as their career evolves, and FMRs may not yet be certain of when and how they will combine types of practice.

Our results offer information that may shape service planning. In particular, we find that one third of FMRs do not anticipate providing comprehensive primary care when they enter practice, and two thirds anticipate practice that includes a special interest (Table 2). This underscores the fact that workforce estimates based on headcounts may overestimate supply of physicians delivering comprehensive care (3). Further, only a minority of physicians intend to provide care in the home and in long-term care facilities. This finding is consistent with information on practicing physicians (5,25,26), but may be at odds with the primary care needs of an aging population. Another key finding is that only 52.8% of physicians intend to provide care to marginalized, disadvantaged and vulnerable populations, and 41.9% to First Nations, Inuit, and Métis peoples. This may reflect differences in the patient populations across regions, but may also signal gaps in recruitment and training.

Although response rates to this survey were high compared with other physician surveys (27,28) and demographic characteristics appear similar to CAPER data, it is plausible that respondents and non-respondents differ with respect to practice intentions. It is also possible that perceived desirability of comprehensive family practice may have biased respondents and led to over-reporting of intentions for comprehensive practice. In addition, no definitions of terms like "comprehensive care" were provided in the survey, and respondents may have interpreted terms differently across regions. "Comprehensive care in one clinical setting" may have included walk-in style practice for some respondents, for instance, as the survey did not include questions specific to walk-in practice.

We examined only personal characteristics and region, not the content of training programs. We can only observe location of training, not region of subsequent practice, and so could not observe practice intentions among FMRs likely to practice in the Territories or in

provinces other than where they trained. We have no information about how payment models shape practice intentions from this survey, yet there is evidence that payment models may shape practice choice (12–15), and evidence that early career primary care physicians may prefer non fee-for-service models of compensation (29). Finally, it is unknown whether our study's findings are unique to the current cohort of FMRs, or reflect changing practice intentions, and potentially changing of actual practice, among physicians of all ages.

We found that one third of FMRs do not anticipate providing comprehensive care to the same group of patients when they start practice, and that two thirds intend to include a special interest in their practice. These findings suggest that we may be overestimating the expected future supply of physicians delivering comprehensive primary care despite growing per-capita supply of primary care physicians. Across the country, there appears to be misalignment between available practice opportunities and the intentions of most early career family physicians to practice in a team-based care environment. Further research is needed to determine whether practice intentions predict future practice and to better understand what additional factors shape the choices family physicians make as they navigate the early stages of their careers.

Table 1. Characteristics of family medicine residents exiting programs in 2016 and 2017, by region (n, %)

	Total (N=1,680)	Ontario (N=561)	Western Canada (N=663)	Atlantic Canada (N=68)	Quebec (N=388)	
	n (%)	n (%)	n (%)	n (%)	n (%)	p-value (chi^2)
Sex/gender						<0.001
Male	619 (37.6)	177 (31.9)	291 (45.3)	23 (35.4)	128 (33.7)	
Female	1027 (62.4)	378 (68.1)	355 (54.7)	42 (64.6)	252 (66.3)	
Location of MD training						<0.001
Canada	1386 (85.6)	477 (95.2)	523 (78.9)	59 (86.8)	327 (84.5)	
International	233 (14.4)	24 (4.8)	140 (21.1)	9 (13.2)	60 (15.5)	
Age groupings (years)						<0.001
<30	931 (58.6)	410 (73.3)	318 (48.3)	28 (42.4)	175 (57)	
30-34	433 (27.2)	80 (14.3)	222 (33.7)	24 (36.4)	107 (34.9)	
35+	226 (14.2)	69 (12.3)	118 (17.9)	14 (21.2)	25 (8.1)	
Years since MD						<0.001
2	1325 (79.1)	470 (83.8)	489 (74.0)	56 (82.4)	310 (80.3)	
3	145 (8.7)	28 (5.0)	67 (10.1)	8 (11.8)	42 (10.9)	
4+	206 (12.3)	63 (11.2)	105 (15.9)	4 (5.9)	34 (8.8)	
Childhood environment						<0.001
Inner city/ Urban/Suburban	1051 (63.0)	317 (56.5)	428 (64.9)	30 (47.6)	276 (71.7)	
Small town	280 (16.8)	107 (19.1)	93 (14.1)	15 (23.8)	65 (16.9)	
Rural/remote/isolated	234 (14.0)	92 (16.4)	96 (14.6)	15 (23.8)	31 (8.1)	
Mixed	103 (6.2)	45 (8.0)	42 (6.4)	3 (4.8)	13 (3.4)	

Note: 34 residents offered no response/preferred not to answer for sex/gender, 61 for place of MD, 90 for age, 4 for years since MD, and 12 for childhood environment.

Table 2. Practice intentions among family medicine residents exiting residencies in 2016 and 2017, by region (n, %,)

	Total	Ontario	Western Canada	Atlantic Canada	Quebec	p-value (chi^2)
Residents reporting that they are somewhat or highly likely they						
Will commit to providing comprehensive care to the same group of patients in first three years of practice (Q17, N=1,652)	1,095 (66.3)	474 (85.1)	401 (61.2)	27 (40.3)	193 (51.7)	<0.001
Agree with the statement: "I am confident in my current ability to provide comprehensive care to the same group of patients over time." (Q19, N=1,658)	1,529 (92.2)	509 (91.2)	609 (93.4)	55 (82.1)	356 (93.4)	0.006
Residents reporting that after completing residency, it is somewhat or highly likely they will practice in the following practice types						
Comprehensive care delivered in one clinical setting (e.g. office–based) (Q16a, N=1,659)	1,019 (61.4)	320 (57.5)	416 (63.7)	32 (47.8)	251 (65.7)	0.004
Comprehensive care provided across multiple clinical settings (e.g. in-hospital, long-term care, office) (Q16b, 1,661)	1,261 (75.9)	437 (78.0)	504 (77.2)	56 (83.6)	264 (69.3)	0.004
Comprehensive care that includes a special interest (e.g. sports medicine, emergency medicine, palliative care, etc.) (Q16c, N=1,661)	1,122 (67.6)	372 (66.6)	451 (69.1)	49 (73.1)	250 (65.5)	0.446
Practice focused on specific clinical areas (e.g. sports medicine, maternity care, emergency medicine, palliative care, hospital medicine) (Q16d, N=1,658)	522 (31.5)	225 (40.3)	179 (27.5)	18 (26.9)	100 (26.3)	<0.001
Solo practice (Q15a, N=1,645)	126 (7.7)	25 (4.6)	59 (9.1)	8 (12.1)	34 (9.0)	0.007
Group physician practice (Q15b, N=1,658)	1,556 (93.8)	536 (96.2)	615 (94.0)	60 (90.9)	345 (90.6)	0.003
Interprofessional team-based practice (Q15c, N=1,656)	1,459 (88.1)	520 (93.7)	561 (85.9)	59 (89.4)	319 (83.5)	<0.001
Practice that includes teaching health profession learners (Q15d, N=1,652)	1,293 (78.3)	370 (66.9)	566 (86.8)	53 (79.1)	304 (80.0)	<0.001
Residents reporting it is somewhat or highly likely they will provide care in the following clinical domains in the first 3 years						
Care across the life cycle (Q21a, N=1,658)	1,506 (90.8)	515 (92.1)	594 (91.0)	56 (83.6)	341 (90.0)	0.127
Intrapartum care (Q21b, N=1,654)	623 (37.7)	174 (31.2)	276 (42.5)	28 (41.8)	145 (38.3)	0.001
Mental health care (Q21c, N=1,654)	1,467 (88.7)	484 (86.7)	587 (90.3)	60 (89.6)	336 (88.7)	0.276
Chronic disease management (Q21d, N=1,650)	1,541 (93.4)	513 (92.1)	618 (94.8)	59 (90.8)	351 (93.4)	0.232
Palliative care/end of life care (Q21e, N=1,653)	1,060 (64.1)	276 (49.6)	483 (74.1)	48 (72.7)	253 (66.8)	<0.001
Office-based clinical procedures (Q21f, N=1,649)	1,382 (83.8)	435 (78.4)	585 (90.0)	52 (78.8)	310 (82.0)	<0.001
In-hospital clinical procedures (e.g. chest tube insertion, adult lumbar puncture, nasogastric tube insertion) (Q21g, N=1,655)	646 (39.0)	193 (34.6)	296 (45.5)	24 (35.8)	133 (35.1)	<0.001
Residents reporting it is somewhat or highly likely they will provide care in the following practice settings/populations in the first 3 years						
Emergency departments (Q21h, N=1,656)	693 (41.8)	194 (34.8)	324 (49.7)	32 (47.8)	143 (37.7)	<0.001
In-hospital (Q21i, 1,653)	983 (59.5)	315 (56.7)	430 (66.0)	49 (74.2)	189 (49.9)	<0.001
Care in the home (Q21j, N=1,654)	695 (42.0)	176 (31.6)	298 (45.8)	35 (52.2)	186 (49.1)	<0.001
Long-term care facilities (Q21k, N=1,655)	678 (41.0)	169 (30.3)	344 (52.8)	27 (40.3)	138 (36.4)	<0.001
Marginalized, disadvantaged and vulnerable populations (Q21l, N=1,652)	873 (52.8)	177 (31.9)	449 (69.0)	43 (64.2)	204 (53.8)	<0.001
Rural populations (Q21m, N=1,577)	852 (54.0)	252 (45.2)	383 (58.7)	46 (68.7)	171 (57.2)	<0.001
Elderly populations (Q21n, N=1,576)	1,425 (90.4)	480 (86.0)	607 (93.0)	62 (92.5)	276 (92.6)	<0.001
First Nations, Inuit and Métis (Q21o, N=1,656)	694 (41.9)	121 (21.7)	422 (64.6)	22 (32.8)	129 (34.0)	<0.001

Table 3. Results of logistic regression exploring odds of practice intentions (OR, 95% CI)*

FMLS question (Question number, response count)	Region	Unadjusted OR	Adjusted OR**
		Reference is Ontario	
Residents reporting that they are somewhat or highly likely they			
Will commit to providing comprehensive care to the same group of patients in first three years of practice (Q17, N=1,652)	Western	**0.28 (0.21, 0.37)**	**0.18 (0.13, 0.25)**
	Atlantic	**0.12 (0.07, 0.20)**	**0.07 (0.04, 0.12)**
	Quebec	**0.19 (0.14, 0.26)**	**0.14 (0.10, 0.20)**
Agree with the statement: "I am confident in my current ability to provide comprehensive care to the same group of patients over time." (Q19, N=1,658)	Western	1.36 (0.89, 2.09)	1.53 (0.95, 2.45)
	Atlantic	0.44 (0.22, 0.88)	0.50 (0.24, 1.05)
	Quebec	1.37 (0.83, 2.26)	1.55 (0.86, 2.79)
Residents reporting that after completing residency, it is somewhat or highly likely they will practice in the following practice types			
Comprehensive care delivered in one clinical setting (e.g. office–based) (Q16a, N=1,659)	Western	**1.30 (1.03, 1.64)**	**1.32 (1.02, 1.72)**
	Atlantic	0.68 (0.41,1.13)	0.74 (0.43, 1.27)
	Quebec	**1.42 (1.08, 1.86)**	**1.37 (1.00, 1.87)**
Comprehensive care provided across multiple clinical settings (e.g. in-hospital, long-term care, office) (Q16b, 1,661)	Western	0.95 (0.73,1.25)	0.83 (0.61, 1.13)
	Atlantic	1.43 (0.73, 2.82)	1.05 (0.51, 2.19)
	Quebec	**0.64 (0.47, 0.85)**	**0.60 (0.42, 0.85)**
Comprehensive care that includes a special interest (e.g. sports medicine, emergency medicine, palliative care, etc.) (Q16c, N=1,661)	Western	1.12 (0.88, 1.43)	1.12 (0.86, 1.48)
	Atlantic	1.37 (0.78, 2.42)	1.34 (0.74, 2.43)
	Quebec	0.95 (0.72, 1.25)	0.91 (0.66, 1.25)
Practice focused on specific clinical areas (e.g. sports medicine, maternity care, emergency medicine, palliative care, hospital medicine) (Q16d, N=1,658)	Western	**0.56 (0.44, 0.71)**	**0.55 (0.42, 0.72)**
	Atlantic	**0.54 (0.31, 0.96)**	0.58 (0.32, 1.04)
	Quebec	**0.53 (0.40, 0.70)**	**0.48 (0.35, 0.67)**
Solo practice (Q15a, N=1,645)	Western	**2.10 (1.30, 3.40)**	**2.53 (1.43, 4.48)**
	Atlantic	**2.90 (1.25, 6.72)**	2.63 (0.99, 6.96)
	Quebec	**2.06 (1.21, 3.52)**	**3.09 (1.65, 5.78)**
Group physician practice (Q15b, N=1,658)	Western	0.62 (0.36, 1.06)	**0.45 (0.23, 0.87)**
	Atlantic	0.39 (0.15, 1.01)	**0.30 (0.10, 0.88)**
	Quebec	**0.38 (0.22, 0.65)**	**0.28 (0.14, 0.57)**
Interprofessional team-based practice (Q15c, N=1,656)	Western	**0.41 (0.27, 0.62)**	**0.35 (0.22, 0.56)**
	Atlantic	0.57 (0.24, 1.33)	0.46 (0.18, 1.15)
	Quebec	**0.34 (0.22, 0.53)**	**0.26 (0.16, 0.44)**
Practice that includes teaching health profession learners (Q15d, N=1,652)	Western	**3.26 (2.44, 4.34)**	**3.81 (2.76, 5.25)**
	Atlantic	1.87 (1.01, 3.46)	**1.93 (1.01, 3.71)**
	Quebec	**1.98 (1.45, 2.69)**	**2.24 (1.57, 3.21)**
Residents reporting it is somewhat or highly likely they will provide care in the following domains in the first 3 years			
Care across the life cycle (Q21a, N=1,658)	Western	0.86 (0.57, 1.29)	0.72 (0.45, 1.15)
	Atlantic	**0.43 (0.21, 0.89)**	**0.31 (0.14, 0.68)**
	Quebec	0.77 (0.49, 1.21)	0.78 (0.44, 1.38)
Intrapartum care (Q21b, N=1,654)	Western	**1.63 (1.28, 2.06)**	**1.83 (1.40, 2.40)**
	Atlantic	1.58 (0.94, 2.66)	1.48 (0.85, 2.58)
	Quebec	**1.37 (1.04, 1.80)**	**1.50 (1.09, 2.07)**
Mental health care (Q21c, N=1,654)	Western	1.42 (1.00, 2.04)	1.26 (0.84, 1.91)
	Atlantic	1.31 (0.58, 2.98)	1.13 (0.45, 2.82)
	Quebec	1.19 (0.80, 1.78)	1.05 (0.64, 1.71)
Chronic disease management (Q21d, N=1,650)	Western	1.56, 0.98, 2.48)	1.08 (0.63,1.83)
	Atlantic	0.84 (0.34, 2.06)	0.54 (0.20, 1.45)
	Quebec	1.20 (0.72, 2.00)	0.86 (0.46,1.61)
Palliative care/end of life care (Q21e, N=1,653)	Western	**2.90 (2.28, 3.69)**	**2.61 (1.99, 3.42)**
	Atlantic	**2.71 (1.54, 4.77)**	**2.32 (1.26, 4.27)**
	Quebec	**2.04 (1.55, 2.67)**	**2.05 (1.49, 2.83)**

Office-based clinical procedures (Q21f, N=1,649)	Western	**2.48 (1.79, 3.44)**	**2.22 (1.55, 3.17)**
	Atlantic	1.02 (0.55, 1.91)	0.82 (0.42,1.60)
	Quebec	1.26 (0.90, 1.75)	1.25 (0.84,1.87)
In-hospital clinical procedures (e.g. chest tube insertion, adult lumbar puncture, nasogastric tube insertion) (Q21g, N=1,655)	Western	1.58 (1.25, 1.99)	**1.51 (1.14, 2.00)**
	Atlantic	1.06 (0.62, 1.79)	0.84 (0.47, 1.51)
	Quebec	1.02 (0.78, 1.34)	0.96 (0.68, 1.35)
Residents reporting it is somewhat or highly likely they will provide care in the following practice settings/populations in the first 3 years			
Emergency departments (Q21h, N=1,656)	Western	**1.85 (1.47, 2.34)**	**1.85 (1.39, 2.47)**
	Atlantic	**1.72 (1.03, 2.86)**	1.51 (0.85, 2.70)
	Quebec	1.14 (0.87, 1.49)	1.10 (0.78, 1.55)
In-hospital (Q21i, 1,653)	Western	**1.48 (1.17, 1.87)**	1.07 (0.82, 1.41)
	Atlantic	**2.21 (1.24, 3.93)**	1.37 (0.73, 2.58)
	Quebec	0.76 (0.59, 0.99)	0.59 (0.43, 0.82)
Care in the home (Q21j, N=1,654)	Western	**1.83 (1.44, 2.31)**	**1.84 (1.41, 2.40)**
	Atlantic	**2.37 (1.42, 3.95)**	**2.17 (1.26, 3.73)**
	Quebec	**2.09 (1.59, 2.73)**	**2.54 (1.86, 3.48)**
Long-term care facilities (Q21k, N=1,655)	Western	**2.58 (2.03, 3.27)**	**2.61 (2.00, 3.41)**
	Atlantic	1.55 (0.92, 2.61)	1.49 (0.86, 2.57)
	Quebec	1.32 (1.00, 1.74)	**1.47 (1.07, 2.02)**
Marginalized, disadvantaged and vulnerable populations (Q21l, N=1,652)	Western	**4.75 (3.72, 6.06)**	**4.22 (3.21, 5.55)**
	Atlantic	**3.83 (2.25, 6.50)**	**2.99 (1.69, 5.28)**
	Quebec	**2.49 (1.90, 3.26)**	**2.06 (1.50, 2.83)**
Elderly populations (Q21n, N=1,576)	Western	**2.14 (1.46, 3.15)**	1.15 (0.72, 1.83)
	Atlantic	2.02 (0.79, 5.17)	1.07 (0.37, 3.06)
	Quebec	**2.04 (1.24, 3.35)**	1.02 (0.58, 1.80)
First Nations, Inuit and Métis (Q21o, N=1,656)	Western	**6.58 (5.09, 8.52)**	**9.05 (6.62, 12.38)**
	Atlantic	**1.76 (1.02, 3.05)**	1.61 (0.89, 2.93)
	Quebec	**1.86 (1.39, 2.49)**	**2.42 (1.69, 3.45)**

Note: Estimates indicated in bold are significant at $p<0.05$.
*Odds ratios reflect odds of selecting "somewhat likely" or "highly likely" divided by the odds of selecting "neutral," "somewhat unlikely," or "highly unlikely
**Multivariable models include resident sex/gender, IMG vs. Canadian graduate, age, childhood environment, and intention for rural practice. Full regression results are provided in Appendix 2.

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Appendix 1. List of Family Medicine Longitudinal Survey questions describing practice intentions

15. After completing your residency, how likely are you to practice in the following organizational models?

a. Solo practice □
b. Group physician practice □
c. Interprofessional team-based practice □
d. Practice that includes teaching health profession learners □

16. After completing your residency, how likely are you to practice in the following family medicine practice types?

e. Comprehensive care delivered in one clinical setting. (e.g., office –based) □
f. Comprehensive care provided across multiple clinical settings (in-hospital, long-term care, □office). □
g. Comprehensive care that includes a special interest (such as sports medicine, emergency □medicine, palliative care, etc.) □
h. I plan to focus only on specific clinical areas (such as sports medicine, maternity care, □emergency medicine, palliative care, hospital medicine etc.) □

17. In your first three years of practice, do you intend to commit to providing comprehensive care to the same group of patients?

18. If very unlikely or somewhat unlikely, what is your primary reason? (check one only)

19. To what extent do you agree or disagree with the following statement:□"*I am confident in my current ability to provide comprehensive care to the same group of patients over time."*

20. How much exposure have you had to the following domains, practice settings, and specific populations in your medical education to date?

a. Care across the life cycle □
b. Intrapartum care □
c. Mental health care □
d. Chronic disease management □
e. Palliative Care/End of life □
f. Office-based clinical procedures □
g. In-hospital clinical procedures (e.g. chest tube insertion, adult lumbar puncture, □nasogastric tube insertion) □
h. Practice setting – Emergency departments □
i. Practice setting – In-hospital □
j. Practice setting – Care in the home □
k. Practice setting – Long-term care facilities □
l. Marginalized, disadvantaged and vulnerable populations □
m. Rural populations □
n. Elderly populations □

o. Aboriginal populations/First Nations, Inuit and Métis

21. In your future practice as a family physician, how likely are you to provide care in each of the following domains, practice settings, and specific populations in the first 3 years?

a. Care across the life cycle □
b. Intrapartum care □
c. Mental health care □
d. Chronic disease management □
e. Palliative Care/End of life □
f. Office-based clinical procedures □
g. In-hospital clinical procedures (e.g. chest tube insertion, adult lumbar puncture, □nasogastric tube insertion) □
h. Practice setting – Emergency departments □
i. Practice setting – In-hospital □
j. Practice setting – Care in the home □
k. Practice setting – Long-term care facilities □
l. Marginalized, disadvantaged and vulnerable populations □
m. Rural populations □
n. Elderly populations □
o. Aboriginal populations/First Nations, Inuit and Métis □

22. To what extent do you agree or disagree with the following statement:
'I am confident to begin the practice of comprehensive family medicine in any community in Canada.'

Appendix 2. Results of multivariable logistic regression exploring odds of practice intentions (OR, 95% CI)

	Intend to provide comprehensive care to the same group of patients within first 3 years	Confident in ability	Comprehensive care - one clinical setting. (e.g. office)	Comprehensive care - multiple clinical settings	Comprehensive care that includes a special interest
Western Canada	**0.18 (0.13, 0.25)**	1.53 (0.95, 2.45)	**1.32 (1.02, 1.71)**	0.83 (0.61, 1.13)	1.13 (0.86, 1.48)
Atlantic Canada	**0.07 (0.04, 0.12)**	0.50 (0.24, 1.05)	0.74 (0.43, 1.27)	1.05 (0.50, 2.19)	1.34 (0.74, 2.43)
Quebec	**0.14 (0.10, 0.20)**	1.55 (0.86, 2.79)	**1.37 (1.00, 1.87)**	**0.60 (0.42, 0.85)**	0.91 (0.66, 1.25)
Physician characteristics					
Female (reference is male)	1.12 (0.89, 1.42)	1.12 (0.76, 1.65)	**1.48 (1.19, 1.84)**	1.14 (0.89, 1.47)	0.93 (0.74, 1.16)
IMG (reference is graduate of Canadian school)	**3.26 (2.21, 4.81)**	1.04 (0.59, 1.86)	**1.87 (1.31, 2.67)**	0.85 (0.59, 1.23)	1.04 (0.74, 1.45)
Age (reference is age <30)					
30-34	1.20 (0.92, 1.56)	0.76 (0.48, 1.21)	1.00 (0.78, 1.29)	0.87 (0.65, 1.18)	**0.75 (0.58, 0.98)**
35+	**2.06 (1.37, 3.11)**	0.54 (0.31, 0.94)	1.52 (1.05, 2.19)	0.75 (0.50, 1.11)	0.74 (0.52, 1.06)
Childhood environment (reference is inner city/urban/suburban)					
Small town	1.21 (0.88, 1.67)	1.07 (0.63, 1.81)	**0.58 (0.44, 0.77)**	1.40 (0.97, 1.95)	1.08 (0.80, 1.44)
Rural/remote/isolated	1.40 (0.98, 2.00)	0.86 (0.50, 1.46)	**0.61 (0.45, 0.83)**	**2.38 (1.47, 3.83)**	1.32 (0.94, 1.85)
Mixed	1.02 (0.61, 1.70)	1.34 (0.58, 3.05)	0.66 (0.42, 1.02)	0.99 (0.60, 1.61)	1.06 (0.68, 1.66)
Rural practice somewhat/highly likely (reference is neutral/unlikely)	1.06 (0.83, 1.35)	1.08 (0.72, 1.60)	**0.51 (0.41, 0.64)**	**3.25 (2.50, 4.23)**	**1.74 (1.39, 2.17)**

Note: Estimates significant at $p \leq 0.05$ are indicated in bold. Estimates for category capturing missing responses/"prefer not to answer" not shown.

Appendix 2 (continued). Results of multivariable logistic regression exploring odds of practice intentions (OR, 95% CI)

	Focused practice	Solo practice	Group physician practice	Interprofessional team-based practice	Practice that includes teaching
Region of residency (reference is Ontario)					
Western Canada	**0.55 (0.42, 0.72)**	**2.53 (1.43, 4.48)**	**0.45 (0.23, 0.87)**	**0.35 (0.22, 0.56)**	**3.81 (2.77, 5.25)**
Atlantic Canada	0.58 (0.32, 1.04)	2.63 (0.99, 6.96)	**0.30 (0.10, 0.88)**	0.46 (0.18, 1.15)	**1.93 (1.01, 3.71)**
Quebec	**0.48 (0.35, 0.67)**	**3.09 (1.65, 5.78)**	**0.28 (0.14, 0.57)**	**0.26 (0.16, 0.44)**	**2.24 (1.57, 3.21)**
Physician characteristics					
Female (reference is male)	0.72 (0.58, 0.90)	0.78 (0.53, 1.15)	**2.48 (1.59, 3.85)**	**2.19 (1.60, 3.01)**	1.09 (0.84, 1.41)
IMG (reference is graduate of Canadian school)	0.91 (0.64, 1.31)	1.50 (0.89, 2.54)	1.40 (0.71, 2.78)	1.04 (0.65, 1.65)	**0.64 (0.44, 0.95)**
Age (reference is age <30)					
30-34	0.95 (0.73, 1.23)	0.69 (0.43, 1.10)	1.09 (0.65, 1.84)	0.75 (0.52, 1.08)	1.01 (0.73, 1.39)
35+	**0.71 (0.49, 1.03)**	1.05 (0.59, 1.87)	0.92 (0.47, 1.80)	0.95 (0.57, 1.59)	**0.65 (0.44, 0.96)**
Childhood environment (reference is inner city/urban/suburban)					
Small town	0.95 (0.71, 1.28)	0.92 (0.53, 1.62)	**0.54 (0.31, 0.93)**	**0.62 (0.41, 0.93)**	0.93 (0.66, 1.30)
Rural/remote/isolated	0.84 (0.60, 1.17)	1.55 (0.91, 2.65)	0.71 (0.36, 1.42)	1.09 (0.63, 1.88)	1.19 (0.80, 1.77)
Mixed	**1.81 (1.18, 2.79)**	0.98 (0.43, 2.23)	**0.44 (0.21, 0.93)**	**0.43 (0.24, 0.75)**	1.16 (0.69, 1.94)
Intention for rural practice					
Rural practice somewhat/highly likely (reference is neutral/unlikely)	1.13 (0.90, 1.42)	1.28 (0.85, 1.93)	1.26 (0.79, 2.02)	**1.41 (1.01, 1.97)**	**1.61 (1.24, 2.09)**

Note: Estimates significant at $p \leq 0.05$ are indicated in bold. Estimates for category capturing missing responses/"prefer not to answer" not shown.

Appendix 2 (continued). Results of multivariable logistic regression exploring odds of practice intentions (OR, 95% CI)

	Care across the life cycle	Intrapartum care	Mental health care	Chronic disease management	Palliative care/end of life care
Region of residency (reference is Ontario)					
Western Canada	0.72 (0.45, 1.15)	**1.83 (1.40, 2.40)**	1.26 (0.84, 1.91)	1.08 (0.63, 1.83)	**2.61 (1.99, 3.42)**
Atlantic Canada	**0.31 (0.14, 0.68)**	1.48 (0.85, 2.58)	1.13 (0.45, 2.82)	0.54 (0.20, 1.45)	**2.32 (1.26, 4.27)**
Quebec	0.78 (0.44, 1.38)	**1.50 (1.09, 2.07)**	1.05 (0.64, 1.71)	0.86 (0.46, 1.61)	**2.05 (1.49, 2.83)**
Physician characteristics					
Female (reference is male)	**1.96 (1.38, 2.80)**	**2.64 (2.10, 3.32)**	**1.80 (1.30, 2.50)**	**2.24 (1.48, 3.38)**	0.84 (0.70, 1.06)
IMG (reference is graduate of Canadian school)	1.79 (0.98, 3.27)	0.96 (0.69, 1.34)	0.78 (0.48, 1.27)	1.82 (0.82, 4.05)	0.89 (0.63, 1.27)
Age (reference is age <30)					
30-34	0.99 (0.64, 1.55)	0.91 (0.70, 1.18)	0.88 (0.59, 1.32)	1.18 (0.71, 1.96)	1.04 (0.79, 1.37)
35+	0.64 (0.37, 1.10)	1.20 (0.84, 1.70)	0.70 (0.42, 1.14)	1.13 (0.57, 2.23)	0.83 (0.58, 1.20)
Childhood environment (reference is inner city/urban/suburban)					
Small town	1.05 (0.63, 1.75)	0.82 (0.61, 1.10)	0.87 (0.55, 1.37)	0.93 (0.52, 1.66)	**1.39 (1.03, 1.89)**
Rural/remote/isolated	0.83 (0.48, 1.45)	1.10 (0.81, 1.51)	0.82 (0.49, 1.37)	0.75 (0.40, 1.42)	**1.43 (1.01, 2.02)**
Mixed	0.62 (0.33, 1.17)	1.19 (0.76, 1.86)	0.64 (0.36, 1.15)	0.54 (0.26, 1.14)	0.99 (0.63, 1.57)
Intention for rural practice					
Rural practice somewhat/highly likely (reference is neutral/unlikely)	2.01 (1.37, 2.95)	**1.82 (1.45, 2.28)**	2.07 (1.46, 2.93)	**1.89 (1.21, 2.95)**	**2.22 (1.77, 2.79)**

Note: Estimates significant at p≤0.05 are indicated in bold. Estimates for category capturing missing responses/"prefer not to answer" not shown.

Appendix 2 (continued). Results of multivariable logistic regression exploring odds of practice intentions (OR, 95% CI)

	Office-based clinical procedures	In-hospital clinical procedures	Emergency departments	In-hospital	Care in the home
Region of residency (reference is Ontario)					
Western Canada	**2.22 (1.55, 3.17)**	**1.51 (1.14, 2.00)**	**1.85 (1.39, 2.47)**	1.07 (0.82, 1.41)	**1.84 (1.41, 2.40)**
Atlantic Canada	0.82 (0.42, 1.60)	0.84 (0.47, 1.51)	1.51 (0.85, 2.70)	1.37 (0.73, 2.58)	**2.17 (1.26, 3.73)**
Quebec	1.25 (0.84, 1.87)	0.96 (0.68, 1.35)	1.10 (0.78, 1.55)	0.59 (0.43, 0.82)	**2.54 (1.86, 3.48)**
Physician characteristics					
Female (reference is male)	1.25 (0.94, 1.66)	**0.47 (0.37, 0.58)**	0.40 (0.32, 0.51)	0.70 (0.56, 0.88)	1.07 (0.86, 1.32)
IMG (reference is graduate of Canadian school)	1.53 (0.93, 2.53)	**0.70 (0.50, 1.00)**	0.80 (0.56, 1.13)	0.98 (0.69, 1.38)	**1.39 (1.01, 1.92)**
Age (reference is age <30)					
30-34	1.08 (0.76, 1.53)	1.14 (0.87, 1.49)	1.07 (0.81, 1.41)	1.09 (0.83, 1.43)	0.94 (0.73, 1.21)
35+	0.83 (0.52, 1.31)	0.77 (0.53, 1.12)	0.82 (0.56, 1.19)	0.78 (0.54, 1.13)	0.96 (0.68, 1.36)
Childhood environment (reference is inner city/urban/suburban)					
Small town	1.36 (0.91, 2.03)	1.28 (0.95, 1.73)	**1.53 (1.13, 2.07)**	1.21 (0.89, 1.64)	1.21 (0.92, 1.61)
Rural/remote/isolated	1.00 (0.65, 1.54)	**1.84 (1.33, 2.54)**	**1.57 (1.13, 2.18)**	**1.61 (1.13, 2.30)**	1.35 (0.99, 1.84)
Mixed	0.89 (0.51, 1.55)	**1.83 (1.15, 2.90)**	**1.64 (1.02, 2.63)**	0.73 (0.46, 1.15)	0.99 (0.63, 1.54)
Intention for rural practice					
Rural practice somewhat/highly likely (reference is neutral/unlikely)	**2.01 (1.50, 2.71)**	**4.63 (3.62, 5.90)**	**5.85 (4.57, 7.50)**	**3.96 (3.15, 4.98)**	**1.99 (1.60, 2.48)**

Note: Estimates significant at p≤0.05 are indicated in bold. Estimates for category capturing missing responses/"prefer not to answer" not shown.

Appendix 2 (continued). Results of multivariable logistic regression exploring odds of practice intentions (OR, 95% CI)

	Long-term care facilities	Marginalized, disadvantaged and vulnerable	Rural populations	Elderly populations	First Nations
Region of residency (reference is Ontario)					
Western Canada	**2.61 (2.00, 3.41)**	**4.22 (3.21, 5.55)**	**1.57 (1.21, 2.03)**	1.15 (0.72, 1.83)	**9.05 (6.62, 12.38)**
Atlantic Canada	1.49 (0.86, 2.57)	**2.99 (1.69, 5.28)**	**2.21 (1.23, 3.97)**	1.07 (0.37, 3.06)	1.61 (0.89, 2.93)
Quebec	**1.47 (1.07, 2.02)**	**2.06 (1.50, 2.83)**	**1.64 (1.20, 2.23)**	1.02 (0.58, 1.80)	**2.42 (1.69, 3.45)**
Physician characteristics					
Female (reference is male)	0.93 (0.75, 1.16)	1.16 (0.92, 1.45)	**0.82 (0.66, 1.02)**	1.33 (0.91, 1.96)	0.98 (0.77, 1.25)
IMG (reference is graduate of Canadian school)	**1.38 (1.00, 1.91)**	1.02 (0.72, 1.45)	1.16 (0.82, 1.62)	1.57 (0.81, 3.04)	**0.70 (0.49, 1.00)**
Age (reference is age <30)					
30-34	0.87 (0.67, 1.12)	1.14 (0.88, 1.49)	1.37 (1.06, 1.77)	0.83 (0.53, 1.31)	0.99 (0.75, 1.31)
35+	1.14 (0.81, 1.61)	1.00 (0.69, 1.43)	1.13 (0.80, 1.60)	0.53 (0.30, 0.94)	1.00 (0.68, 1.47)
Childhood environment (reference is inner city/urban/suburban)					
Small town	1.08 (0.81, 1.44)	0.77 (0.57, 1.03)	**2.17 (1.63, 2.89)**	1.03 (0.59, 1.79)	0.92 (0.67, 1.27)
Rural/remote/isolated	1.20 (0.88, 1.64)	0.84 (0.60, 1.16)	5.00 (3.50, 7.15)	0.70 (0.39, 1.27)	1.18 (0.83, 1.68)
Mixed	0.87 (0.55, 1.36)	**0.60 (0.38, 0.97)**	**1.59 (1.02, 2.48)**	0.57 (0.29, 1.14)	1.21 (0.73, 2.01)
Intention for rural practice					
Rural practice somewhat/highly likely (reference is neutral/unlikely)	**2.12 (1.70, 2.65)**	**3.27 (2.60, 4.12)**	N/A	**3.90 (2.55, 5.97)**	**4.88 (3.78, 6.31)**

Note: Estimates significant at $p \leq 0.05$ are indicated in bold. Estimates for category capturing missing responses/"prefer not to answer" not shown.

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4-5
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	4
Bias	9	Describe any efforts to address potential sources of bias	
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	n/a
		(*e*) Describe any sensitivity analyses	6
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	6
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6
		(b) Indicate number of participants with missing data for each variable of interest	6,8
Outcome data	15*	Report numbers of outcome events or summary measures	7
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	6,7, 13,14

		(*b*) Report category boundaries when continuous variables were categorized	4,13,14
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	8
Discussion			
Key results	18	Summarise key results with reference to study objectives	8
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	9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10
Generalisability	21	Discuss the generalisability (external validity) of the study results	11
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	1

*Give information separately for exposed and unexposed groups.

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.