

Supplementary Online Content

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eReferences

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Comorbidity characteristics of patients with diabetes or chronic kidney disease by physician payment model, before and after matching by propensity score

| | Before matching | | | | | After matching | | | | |
|-----------------------------|-----------------|------|--------------|------|-------------------------|-----------------|------|--------------|------|-------------------------|
| | Fee-for-service | | Salary-based | | Standardized difference | Fee-for-service | | Salary-based | | Standardized difference |
| | N=90605 | | N=19234 | | | N=15949 | | N=15949 | | |
| | n | % | n | % | n | % | n | % | | |
| Alcohol use disorder | 3931 | 4.3 | 986 | 5.1 | 3.7 | 799 | 5.0 | 788 | 4.9 | 0.3 |
| Asthma | 5080 | 5.6 | 1153 | 6.0 | 1.7 | 973 | 6.1 | 984 | 6.2 | 0.3 |
| Atrial Fibrillation | 9451 | 10.4 | 2320 | 12.1 | 5.2 | 1843 | 11.6 | 1934 | 12.1 | 1.8 |
| Cancer, lymphoma | 956 | 1.1 | 237 | 1.2 | 1.7 | 208 | 1.3 | 191 | 1.2 | 1.0 |
| Cancer, metastatic | 1256 | 1.4 | 383 | 2.0 | 4.7 | 317 | 2.0 | 305 | 1.9 | 0.5 |
| Cancer, non metastatic* | 4776 | 5.3 | 1138 | 5.9 | 2.8 | 935 | 5.9 | 938 | 5.9 | 0.1 |
| Chronic heart failure | 11173 | 12.3 | 3047 | 15.8 | 10.1 | 2342 | 14.7 | 2450 | 15.4 | 1.9 |
| Chronic pain | 12207 | 13.5 | 3056 | 15.9 | 6.8 | 2593 | 16.3 | 2594 | 16.3 | 0.0 |
| Chronic pulmonary disease | 21018 | 23.2 | 4334 | 22.5 | 1.6 | 3560 | 22.3 | 3616 | 22.7 | 0.8 |
| Chronic viral hepatitis B | 173 | 0.2 | 197 | 1.0 | 10.7 | 93 | 0.6 | 100 | 0.6 | 0.6 |
| Cirrhosis | 569 | 0.6 | 330 | 1.7 | 10.1 | 215 | 1.4 | 220 | 1.4 | 0.3 |
| Dementia | 3119 | 3.4 | 1527 | 7.9 | 19.5 | 1154 | 7.2 | 1169 | 7.3 | 0.4 |
| Depression | 11048 | 12.2 | 2626 | 13.7 | 4.4 | 2290 | 14.4 | 2225 | 14.0 | 1.2 |
| Epilepsy | 2081 | 2.3 | 583 | 3.0 | 4.6 | 480 | 3.0 | 481 | 3.0 | 0.0 |
| Hypertension | 65496 | 72.3 | 13529 | 70.3 | 4.3 | 10803 | 67.7 | 11132 | 69.8 | 4.5 |
| Hypothyroidism | 14998 | 16.6 | 2279 | 17.6 | 2.7 | 2824 | 17.7 | 2848 | 17.9 | 0.4 |
| Inflammatory bowel disease | 1568 | 1.7 | 379 | 2.0 | 1.8 | 299 | 1.9 | 317 | 2.0 | 0.8 |
| Irritable bowel syndrome | 3231 | 3.6 | 627 | 3.3 | 1.7 | 516 | 3.2 | 542 | 3.4 | 0.9 |
| Multiple sclerosis | 775 | 0.9 | 177 | 0.9 | 0.7 | 142 | 0.9 | 143 | 0.9 | 0.1 |
| Myocardial infarction | 6760 | 7.5 | 1146 | 6.0 | 6.0 | 964 | 6.0 | 965 | 6.1 | 0.0 |
| Parkinson's disease | 618 | 0.7 | 163 | 0.9 | 1.9 | 128 | 0.8 | 129 | 0.8 | 0.1 |
| Peptic ulcer disease | 358 | 0.4 | 102 | 0.5 | 2.0 | 78 | 0.5 | 80 | 0.5 | 0.2 |
| Peripheral vascular disease | 3171 | 3.5 | 797 | 4.1 | 3.4 | 633 | 4.0 | 644 | 4.0 | 0.4 |
| Psoriasis | 1239 | 1.4 | 206 | 1.1 | 2.7 | 183 | 1.2 | 172 | 1.1 | 0.7 |
| Rheumatoid arthritis | 4506 | 5.0 | 1604 | 8.3 | 13.5 | 1283 | 8.0 | 1284 | 8.1 | 0.0 |

| | | | | | | | | | | |
|---------------------|-------|------|------|------|-----|------|------|------|------|-----|
| Schizophrenia | 1675 | 1.9 | 306 | 1.6 | 2.0 | 1284 | 8.1 | 251 | 1.6 | 0.8 |
| Severe constipation | 2325 | 2.6 | 640 | 3.3 | 4.5 | 509 | 3.2 | 518 | 3.3 | 0.3 |
| Stroke or TIA | 12646 | 14.0 | 3027 | 15.7 | 5.0 | 2398 | 15.0 | 2511 | 15.7 | 2.0 |

* includes breast, cervical, colorectal, lung, prostate cancer

eTable 2. Unadjusted overall visit rate for the matched cohort by specialist physician characteristics and payment model

| | N | FFS | 95% CI | ARP | 95% CI |
|--|----------|------------|---------------|------------|---------------|
| Overall | 31877 | 2.02 | (1.69, 2.40) | 1.90 | (1.67, 2.15) |
| Provider Type^a | | | | | |
| Kidney specialist | 6575 | 3.07 | (3.01, 3.14) | 3.13 | (3.07, 3.19) |
| Diabetes specialist | 3349 | 2.25 | (2.18, 2.31) | 1.97 | (1.90, 2.04) |
| Internal Med | 21953 | 1.63 | (1.63, 1.68) | 1.44 | (1.41, 1.46) |
| Clinical Workload^b | | | | | |
| Low | 4751 | 0.977 | (0.94, 1.02) | 1.29 | (1.24, 1.34) |
| Medium | 23478 | 2.12 | (2.09, 2.15) | 1.79 | (1.76, 1.81) |
| High | 3648 | 2.84 | (2.76, 2.93) | 3.16 | (3.08, 3.24) |
| Years Billing in Alberta since 1994 | | | | | |
| <5 | 6943 | 1.71 | (1.66, 1.77) | 1.49 | (1.44, 1.53) |
| 5 to 10 | 11194 | 1.79 | (1.75, 1.83) | 1.96 | (1.92, 2.00) |
| 11 to 17 | 9315 | 2.53 | (2.48, 2.57) | 2.17 | (2.13, 2.22) |
| 18+ | 4425 | 1.6 | (1.53, 1.66) | 1.68 | (1.62, 1.75) |

Patients saw a total of 489 physicians (295 FFS, 194 salary-based). Censored for dialysis, death, and leaving Alberta. From April 1, 2011-March 31, 2014 (N=4224)

^aKidney specialists are all nephrologists; diabetes specialists are endocrinologist and internal medicine physicians who see >50 patients with diabetes each year and >30% of claims are for outpatient diabetes care ^bClinical workload is defined as the following: low=less than 94 days billing per year, medium=95-221 days billing per year, high=222-365 days billing per year.

eTable 3. Unadjusted mean total and categorical costs per patient (2016 CAD\$) of matched cohort, one and two years after index visit by primary specialist payment model

| | First year after index visit ^a | | | | Second year after index visit ^b | | | |
|---|---|----------------------------|---------------------------|----------------------------|--|----------------------------|---------------------------|----------------------------|
| | Fee-for-service (n=14365) | | Salary-based (n=14355) | | Fee-for-service (n=13164) | | Salary-based (n=13235) | |
| | Mean cost | 95% confidence interval | Mean cost | 95% confidence interval | Mean cost | 95% confidence interval | Mean cost | 95% confidence interval |
| Primary specialist physician | 384 | (378 - 389) | 399 | (394 - 404) | 68 | (66 - 70) | 75 | (72 - 78) |
| Other specialist physician | 1897 | (1835 - 1960) | 2242 | (2172 - 2312) | 1190 | (1144 - 1236) | 1299 | (1248 - 1349) |
| Primary care physician | 962 | (940 - 984) | 976 | (953 - 998) | 720 | (700 - 739) | 718 | (700 - 736) |
| Hospital admission for ACSCs ^c | 974 | (838 - 1110) | 1045 | (921 - 1168) | 606 | (503 - 709) | 668 | (573 - 763) |
| Emergency visits for ACSCs ^c | 73 | (66 - 80) | 77 | (70 - 83) | 50 | (46 - 55) | 59 | (53 - 64) |
| Nephrology clinics | 111 | (99 - 122) | 195 | (176 - 215) | 87 | (78 - 96) | 156 | (135 - 178) |
| Cardiology clinics | 195 | (177 - 212) | 294 | (270 - 319) | 101 | (89 - 123) | 154 | (137 - 172) |
| Diabetes clinics | 25 | (22 - 28) | 45 | (42 - 49) | 7 | (6 - 9) | 12 | (11 - 14) |
| Chronic disease medication ^d | 701 | (674 - 727) | 628 | (606 - 727) | 621 | (590 - 652) | 565 | (539 - 591) |
| Diagnostic imaging | 359 | (351 - 368) | 302 | (294 - 309) | 192 | (186 - 199) | 177 | (171 - 183) |
| Laboratory ^e | 261 | (254 - 268) | 295 | (288 - 302) | 187 | (181 - 192) | 207 | (201 - 213) |
| Total | 5941 | (5752 - 6130) | 6498 | (6315 - 6681) | 3830 | (3685 - 3974) | 4091 | (3947 - 4233) |

Patients saw a total of 489 physicians (295 FFS, 194 salary-based). Censored for dialysis, death, and leaving Alberta. From April 1, 2011-March 31, 2014 (N=4224). ^aincludes costs for patients with index visit dates April 1, 2011-March 31, 2014 to ensure all patients have one year of follow up data; ^bincludes costs for patients with index visit dates April 1, 2011-March 31, 2013 to ensure all patients have two years of follow-up data; ^cACSCs (Ambulatory Care Sensitive Conditions) include CKD-specific ACSCs ¹ and the following CIHI defined conditions: chronic obstructive pulmonary disease, asthma, diabetes, heart failure and pulmonary edema, hypertension, and angina ². ^dChronic disease medications include antiarrhythmic drugs, nitrates and nitrites, statins, non-statin cholesterol lowering drugs, beta blockers, ACE-inhibitors, angiotensin receptor blockers, calcium channel blockers, diuretics, other blood pressure medications, anticoagulants, anti-diabetes medications, anti-platelet agents, insulin, smoking cessation aids, erythropoietin, and darbepoietin; ^eincludes 25 of the most frequently ordered diagnostic tests at Canadian laboratories: completed blood count, creatinine, ALT, thyroid stimulating hormone, hemoglobin A1c, LDL cholesterol, ferritin, alkaline phosphate, prothrombin time (INR), albumin, glucose random, glucose fasting, calcium, urea, magnesium, iron and TIBC, phosphate, Bilirubin total, creatine kinase, free T4, prostate specific antigen, urate, lactate dehydrogenase, lipase, albumin random urine; ^fTotal is the sum of all categorical costs.

eReferences

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2. Canadian Institute for Health Information (CIHI). Technical note: ambulatory care sensitive conditions (ACSC). 2010; https://www.cihi.ca/en/phc_policy_acsc_en.pdf. Accessed January 31, 2018, 2018.