**Supplementary material**

**Supplementary Table 1: Results from difference-in-difference sensitivity analyses for the association between coverage gap and being adherent (PDC >=0.8) for DPP-4i and Sulfonylurea initiators who entered the coverage gap in 2016, but did not enter the catastrophic phase in 2016**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **% with PDC>=0.8 before coverage gap** | **% with PDC>=0.8 while in coverage gap** | **Difference (in coverage gap -before coverage gap)** | **Relative risk (95% CI)** |
| **DPP-4i** |  |  |  |  |
| Non-subsidized patients | 68.5 (66.7, 70.3) | 44.3 (42.5, 46.2) | -24.2 (-25.8, -22.5) |  |
| Subsidized patients  | 69.4 (67.7, 71.2) | 62.6 (60.8, 64.4) | -6.9 (-8.9, -4.9) |  |
| Coverage Effect |  |  | -17.3 (-19.9, -14.7) | 0.73 (0.70, 0.76) |
| **Sulfonylureas** |  |  |  |  |
| Non-subsidized patients | 70.0 (67.9, 72.1) | 61.7 (59.6, 63.9) | -8.3 (-9.8, -6.8) |  |
| Subsidized patients  | 65.0 (63.0, 66.9) | 57.9 (55.9, 59.8) | -7.2 (-9.2, -5.2) |  |
| Coverage Effect |  |  | -1.2 (-3.6, 1.3) | 0.99 (0.95, 1.03) |
| DPP-4i: Dipeptidyl peptidase 4 inhibitors,SMD: Standardized mean difference, Subsidized patients: patients with full low income subsidy; Non-subsidized patients: patients without low income subsidy. Proportion of days covered (PDC) calculated as the number of days’ supply for the drug class in a certain period (pre or post-coverage gap period in 2016), divided by the number of days in that period; All models adjusted for age, sex, race and comorbidities. |
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**Supplemental Table 2: Charlson comorbidity index and comorbidity definitions**

|  |  |  |
| --- | --- | --- |
| **Covariate** | **ICD-9 Codes** | **ICD-10 Codes** |
| Myocardial infarction^ | 410.x, 412.x | I21.x, I22.x, I25.x |
| Congestive Heart Failure^ | 398,91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428.x | I50.x |
| Peripheral vascular disease^ | 093.0, 437.3, 440.x, 441.x, 443.1-443.9, 447.1557.1, 557.9, V43.4 | I71.x, I79.0, I73.9, Z95.8, Z95.9 |
| Cerebrovascular disease^ | 362.34, 430.x-438.x | I60.x-I66.x, G45.0-G45.2, G45.4-G45.9, I67.0-I67.2, I67.4-I67.9, I68.1, I68.2, I68.8, I69.x |
| Dementia^ | 290.x, 294.1, 331.2 | F01.x, F02.x |
| Chronic pulmonary disease^ | 416.8, 416.9, 490.x-505.x, 506.4, 508.1, 508.8 | J40.x-J47.x, J60.x-J66.x |
| Rheumatic disease^ | 446.5, 710.0-701.4, 714.0-714.2, 714.8, 725.x | M05.0x-M05.3x, M05.8, M05.9, M06.0x, M06.3x, M06.9, M32.x, M33.2x, M34.x |
| Peptic ulcer disease^ | 531.x-534.x | K25.x-K28.x |
| Mild liver disease^ | 070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 570.x, 571.x, 573.3, 573.4, 573.8, 573.9, V42.7 | K70.2, K70.3, K73, K74.0, K74.2, K74.3, K74.4, K74.5, K74.6x |
| Diabetes without chronic complication^ | 250.0-250.3, 250.8, 250.9 | E10.1x, E10.5x, E10.9, E11.5x, E11.9, E13.1x, E13.5x, E13.9 |
| Diabetes with chronic complication^ | 250.4-250.7 | E10.2x-E10.4x, E11.2x-E11.4x, E13.2x-E13.4x |
| Hemiplegia, paraplegia^ | 334.1, 342.x, 343.x, 344.0-344.6, 344.9 | G04.1, G81.x, G82.x |
| Renal disease^ | 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582.x, 583.0-583.7, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x | N01.x, N03.x, N05.2-N05.6, N07.2-N07.4, N18.x, N19, N25.x |
| Any malignancy (except malignant neoplasm of skin)^ | 140.x-172.x, 174.x-195.8, 200.x-208.x, 238.6 | C0x.x-C76.x, C80.x-C85.x, C88.3, C88.9, C90.0x, C90.1x, C91.x-C93.x, C94.0x, C94.2x, C94.3x, C95.x, C96.x |
| Moderate or severe liver disease^ | 456.0-456.2, 572.2-572.8 | K72.1x, K72.9x, K76.6, K76.7 |
| Metastatic solid tumor^ | 196.x-199.x | C77.x-C80.x |
| AIDS/HIV^ | 042.x-044.x | B20 |
| Retinopathy | 250.5x, 362.0x | E10.31x, E103.6, E103.7x, E11.3x, E11.329x, E11.339x, E11.349x, E11.359x, E11.36 |
| Nephropathy | 250.4x | E10.21, E10.29, E11.21, E11.29 |
| Neuropathy | 250.6x | E10.40, E11.40 |
| Hyperlipidemia | 272.0-272.4 | E78.00, E78.01, E78.1, E78.2, E78.3, E78.4, E78.5 |
| Atherosclerosis | 411.x-414.x, 433.x, 435.x, 437.0, 440.x, 441.x, 785.9, V12.54 | G45.0, I20.x, I24.0, I24.1, I24.8, I25.10, I25.2-I25.5, I25.82-I25.89, I25.9, I65.09, I65.1, I65.29, I65.8, I65.9, I67.2, I70.0, I70.1, I70.209, I70.2190, I70.229, I70.25, I70.269, I70.90, I70.91, I71.0x, I71.2, I71.4, I71.6, I71.9, R09.89, Z86.73 |
| Myocardial infarction | 410.x | I21.09-I21.A9 |
| Chronic kidney disease | 250.4x, 274.10, 403.x404.x, 440.1, 442.1, 572.4, 580.x-587, 593.x, 753.0, 753.3, 791.2, 791.3, 866.x | E10.29, E11.29, I12.9, I13.x, K76.7, M103.0, N00.3, N00.9, N01.3, N02.2, N03.2, N03.3, N03.5, N03.8, N03.9, N04.0, N04.3, N04.4, N04.8, N04.9, N05.2, N05.5, N05.9, N08, N13.70-N13.72x, N18.1-N18.6, N19, N26.9, N28.1, N28.81, N28.82, R80.2, R82.1, R82.3 |

**Supplementary Table 3: Treatment discontinuation among patients reaching the coverage gap and those that did not**

| **Discontinued** | **DPP-4i: Subsidized** | **DPP-4i: Non-subsidized** | **Sulfonylureas: Subsidized** | **Sulfonylureas: Non- subsidized** |
| --- | --- | --- | --- | --- |
| 2015: Pre Coverage gap | 874 (11.7%) | 1,274 (12.2%) | 1,075 (10.8%) | 938 (7.3%) |
| 2015 (No Coverage gap) | 1,009 (13.5%) | 2,535 (24.2%) | 2,372 (23.9%) | 4,402 (34.3%) |
| 2015: After entering the Coverage gap | 1,889 (25.3%) | 2,216 (21.2%) | 1,975 (19.9%) | 1,268 (9.9%) |
| 2016: Pre Coverage gap | 1,445 (19.4%) | 1,463 (14.0%) | 1,433 (14.4%) | 1,379 (10.7%) |
| 2016 (No Coverage gap) | 861 (11.5%) | 1,855 (17.7%) | 2,033 (20.4%) | 4,257 (33.2%) |
| 2016: After entering the Coverage gap | 1,384 (18.5%) | 1,113 (10.6%) | 1,056 (10.6%) | 591 (4.6%) |