**Appendix for The Affordable Care Act – Effects of Insurance on Diabetes Biomarkers**

**Appendix Table 1**. Diabetes Medication categories and medication names

|  |  |
| --- | --- |
| **Diabetes Medication Category** | **Medication Name** |
| Insulin | AFREZZA, APIDRA, APIDRA SOLOSTAR, HUMALOG, HUMALOG MIX 50/50, HUMALOG MIX 75/25, HUMALOG U-100 INSULIN, HUMULIN 70/30, HUMULIN 70/30 U-100, HUMULIN N, HUMULIN N NPH U-100, HUMULIN R, HUMULIN R REGULAR U-100, HUMULIN R U-500, INSULIN ASPAR PROT, INSULIN ASPART (U-100) N, INSULIN CARTRIDGE, INSULIN DETEMIR (U-100), INSULIN GLARGINE, INSULIN GLULISINE, INSULIN HUMAN U-100 NPH-REGULR, INSULIN LISPRO (U-100), INSULIN LISPRO PROTAMINE-LISPRO, INSULIN NPH HUMAN SEMI-SYNTHETIC, INSULIN NPH ISOPHANE U-100, INSULIN NPH, BEEF-PORK 1, INSULIN NPH-REG HUMAN INSULIN, INSULIN NPH-REGULAR HUM SEMI-SYN, INSULIN NPH-REGULAR HUMAN 100 UNIT/ML (70-30) SUBCUTANEOUS CARTRIDGE, INSULIN REGULAR (HUMAN), LANTUS, LEVEMIR, NOVOLIN 70/30, NOVOLIN N, NOVOLIN R, NOVOLOG, NOVOLOG MIX 70/30, NOVOLOG PENFILL, TOUJEO SOLOSTAR |
|  |  |
| **Non-Insulin Medications** |  |
|  |  |
| Alpha-glucosidase inhibitors | ACARBOSE, GLYSET, MIGLITOL, PRECOSE |
|  |  |
| Dipeptidyl Peptidase-4 (DPP4 Inhibitors) | ALOGLIPTIN, JANUVIA, JUVISYNC, LINAGLIPTIN, NESINA, ONGLYZA, OSENI, PIOGLITAZONE HCL, SAXAGLIPTIN, SIMVASTATIN, SITAGLIPTIN, TRADJENTA |
|  |  |
| Glucagon-like peptide-1 receptor agonists | ALBIGLUTIDE, BYDUREON, BYETTA, DULAGLUTIDE, EXENATIDE, LIRAGLUTIDE, TANZEUM, TRULICITY, VICTOZA |
|  |  |
|  |  |
|  |  |
| Meglitinides | NATEGLINIDE, PRANDIN, REPAGLINIDE, STARLIX |
|  |  |
| Metformin | FORTAMET, GLUCOPHAGE, GLUCOPHAGE XR, GLUMETZA, METFORMIN, METFORMIN ER, METFORMIN HCL, METFORMIN XR |
|  |  |
|  |  |
|  |  |
|  |  |
| Metformin-DPP4 | ALOGLIPTIN-METFORMIN, JANUMET, JANUMET XR, JENTADUETO, KOMBIGLYZE XR, LINAGLIPTIN-METFORMIN, SAXAGLIPTIN -METFORMIN, SITAGLIPTIN-METFORMIN |
|  |  |
| Metformin-Sulfonylureas | GLIPIZIDE-METFORMIN HCL, GLUCOVANCE, GLYBURIDE, GLYBURIDE-METFORMIN |
|  |  |
| Metformin-Thiazolidinediones | ACTOPLUS MET, AVANDAMET, PIOGLITAZONE -METFORMIN, ROSIGLITAZONE-METFORMIN |
|  |  |
| Pramlintide | PRAMLINTIDE, SYMLINPEN |
|  |  |
| Sodium-glucose co-transporter 2 (SGLT2) inhibitors | CANAGLIFLOZIN, DAPAGLIFLOZIN, DAPAGLIFLOZIN, EMPAGLIFLOZIN, FARXIGA, INVOKAMET, INVOKANA, JARDIANCE, XIGDUO XR |
|  |  |
| Sulfonylureas | AMARYL, DIABETA, GLIMEPIRIDE, GLIPIZIDE, GLIPIZIDE ER, GLIPIZIDE XL, GLUCOTROL, GLUCOTROL XL, GLYBURIDE, GLYBURIDE MICRONIZED, GLYNASE, MICRONASE |
|  |  |
| Thiazolidinediones | ACTOS, AVANDIA, PIOGLITAZONE HCL, ROSIGLITAZONE |
|  |  |
| Thiazolidinediones-Sulfonylureas | DUETACT, PIOGLITAZONE |

**Note:** Medications on the Oregon Medicaid Preferred drug list used to treat diabetes were identified by OCHIN clinician researchers. The RxNorm common uniform identifiers (RxNorm CUI) for the listed drugs were used to identify medications of the same type in ADVANCE prescription records. For the outcome of ‘Total diabetes-related prescriptions’ we included any of the medications listed in this table. For the outcome of ‘total insulin prescriptions’ we included only those that fell into the insulin category.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Appendix Table 2**. Study Patient Characteristics by Insurance cohort | | | | | |
|  | **Continuously uninsured** | **Discontinuously insured** | **Continuously insured** | **Newly insured** | **P value** |
| **HbA1c Cohort (n=14,792)** | | | | | |
| **Characteristic** | **n = 2,556** | **n = 5,285** | **n = 4,830** | **n = 2,121** |  |
| Male, *N (%)* | 1166 (45.6) | 2278 (43.1) | 2028 (42.0) | 1014 (47.8) | <0.001 |
| Age in yearsa, *mean (SD)* | 44.41 (8.86) | 47.25 (9.09) | 47.02 (9.43) | 47.55 (9.12) | <0.001 |
| Race/Ethnicity, *N (%)* |  |  |  |  | <0.001 |
| Hispanic | 2114 (82.7) | 2328 (44.0) | 1636 (33.9) | 924 (43.6) |  |
| Non-Hispanic White | 198 (7.7) | 1570 (29.7) | 2070 (42.9) | 810 (38.2) |  |
| Non-Hispanic Black | 162 (6.3) | 1065 (20.2) | 659 (13.6) | 226 (10.7) |  |
| Non-Hispanic Other | 58 (2.3) | 208 (3.9) | 322 (6.7) | 94 (4.4) |  |
| No. of Comorbiditiesb (%) |  |  |  |  | <0.001 |
| 1 | 316 (12.4) | 463 (8.8) | 341 (7.1) | 211 (9.9) |  |
| 2-4 | 1523 (59.6) | 2342 (44.3) | 1786 (37.0) | 1037 (48.9) |  |
| 5-6 | 391 (15.3) | 1106 (20.9) | 1038 (21.5) | 457 (21.5) |  |
| 7 or more | 181 (7.1) | 1064 (20.1) | 1453 (30.1) | 300 (14.1) |  |
| Unknown | 145 (5.7) | 310 (5.9) | 212 (4.4) | 116 (5.5) |  |
| No. of visits pre-ACA, mean (SD) | 7.39 (5.67) | 10.44 (9.04) | 10.09 (7.68) | 7.03 (6.10) | <0.001 |
| Current Smoker prior to ACAc (%) | 228 (8.9) | 1185 (22.4) | 1286 (26.6) | 494 (23.3) | <0.001 |
| Urban settingd(%) | 2420 (94.7) | 4959 (93.8) | 4539 (94.0) | 1968 (92.8) | 0.062 |
| **LDL Cohort (n=4,890)** | | | | | |
| **Characteristic** | **n = 813** | **n = 1,836** | **n = 1,600** | **n = 641** |  |
| Male, *N (%)* | 336 (41.3) | 728 (39.7) | 620 (38.8) | 264 (41.2) | 0.561 |
| Age in yearsa, *mean (SD)* | 44.72 (8.52) | 47.44 (8.57) | 47.36 (9.03) | 48.14 (8.48) | <0.001 |
| Race/Ethnicity, *N (%)* |  |  |  |  | <0.001 |
| Hispanic | 700 (86.1) | 805 (43.8) | 543 (33.9) | 263 (41.0) |  |
| Non-Hispanic White | 53 (6.5) | 558 (30.4) | 685 (42.8) | 261 (40.7) |  |
| Non-Hispanic Black | 31 (3.8) | 359 (19.6) | 222 (13.9) | 61 (9.5) |  |
| Non-Hispanic Other | 21 (2.6) | 69 (3.8) | 103 (6.4) | 35 (5.5) |  |
| No. of Comorbiditiesb (%) |  |  |  |  | <0.001 |
| 1 | 66 (8.1) | 129 (7.0) | 105 (6.6) | 53 (8.3) |  |
| 2-4 | 518 (63.7) | 837 (45.6) | 642 (40.1) | 319 (49.8) |  |
| 5-6 | 133 (16.4) | 382 (20.8) | 337 (21.1) | 145 (22.6) |  |
| 7 or more | 47 (5.8) | 387 (21.1) | 455 (28.4) | 93 (14.5) |  |
| Unknown | 49 (6.0) | 101 (5.5) | 61 (3.8) | 31 (4.8) |  |
| No. of visits pre-ACA, mean (SD) | 7.62 (5.41) | 11.01 (9.08) | 10.35 (7.68) | 7.31 (6.13) | <0.001 |
| Current Smoker prior to ACAc (%) | 59 (7.3) | 391 (21.3) | 364 (22.8) | 133 (20.7) | <0.001 |
| Urban settingd(%) | 769 (94.6) | 1725 (94.0) | 1509 (94.3) | 602 (93.9) | 0.908 |
| **Body Mass Index Cohort (n=15,926)** | | | | | |
| **Characteristic** | **n = 2,777** | **n = 5,574** | **n = 5,221** | **n = 2,354** |  |
| Male, *N (%)* | 1259 (45.3) | 2391 (42.9) | 2159 (41.4) | 1094 (46.5) | <0.001 |
| Age in yearsa, *mean (SD)* | 44.32 (9.01) | 47.03 (9.29) | 46.72 (9.66) | 47.44 (9.26) | <0.001 |
| Race/Ethnicity, *N (%)* |  |  |  |  | <0.001 |
| Hispanic | 2242 (80.7) | 2437 (43.7) | 1723 (33.0) | 1030 (43.8) |  |
| Non-Hispanic White | 254 (9.1) | 1675 (30.1) | 2245 (43.0) | 898 (38.1) |  |
| Non-Hispanic Black | 192 (6.9) | 1125 (20.2) | 731 (14.0) | 252 (10.7) |  |
| Non-Hispanic Other | 60 (2.2) | 210 (3.8) | 355 (6.8) | 95 (4.0) |  |
| No. of Comorbiditiesb (%) |  |  |  |  | <0.001 |
| 1 | 346 (12.5) | 495 (8.9) | 387 (7.4) | 238 (10.1) |  |
| 2-4 | 1632 (58.8) | 2467 (44.3) | 1902 (36.4) | 1157 (49.2) |  |
| 5-6 | 414 (14.9) | 1166 (20.9) | 1128 (21.6) | 495 (21.0) |  |
| 7 or more | 194 (7.0) | 1103 (19.8) | 1545 (29.6) | 323 (13.7) |  |
| Unknown | 191 (6.9) | 343 (6.2) | 259 (5.0) | 141 (6.0) |  |
| No. of visits pre-ACA, mean (SD) | 7.26 (5.72) | 10.34 (8.95) | 9.96 (7.77) | 6.86 (5.94) | <0.001 |
| Current Smoker prior to ACAc (%) | 263 (9.5) | 1285 (23.1) | 1457 (27.9) | 545 (23.2) | <0.001 |
| Urban settingd(%) | 2621 (94.4) | 5227 (93.8) | 4898 (93.8) | 2185 (92.8) | 0.144 |
| **Blood Pressure Cohort (n=16,512)** | | | | | |
| **Characteristic** | **n = 2,879** | **n = 5,747** | **n = 5,415** | **n = 2,471** |  |
| Male, *N (%)* | 1315 (45.7) | 2480 (43.2) | 2249 (41.5) | 1159 (46.9) | <0.001 |
| Age in yearsa, *mean (SD)* | 44.39 (8.95) | 47.10 (9.18) | 46.80 (9.54) | 47.48 (9.21) | <0.001 |
| Race/Ethnicity, *N (%)* |  |  |  |  | <0.001 |
| Hispanic | 2317 (80.5) | 2510 (43.7) | 1761 (32.5) | 1070 (43.3) |  |
| Non-Hispanic White | 270 (9.4) | 1730 (30.1) | 2359 (43.6) | 946 (38.3) |  |
| Non-Hispanic Black | 195 (6.8) | 1147 (20.0) | 758 (14.0) | 265 (10.7) |  |
| Non-Hispanic Other | 67 (2.3) | 223 (3.9) | 369 (6.8) | 104 (4.2) |  |
| No. of Comorbiditiesb (%) |  |  |  |  | <0.001 |
| 1 | 364 (12.6) | 511 (8.9) | 396 (7.3) | 249 (10.1) |  |
| 2-4 | 1687 (58.6) | 2544 (44.3) | 1961 (36.2) | 1213 (49.1) |  |
| 5-6 | 427 (14.8) | 1206 (21.0) | 1166 (21.5) | 517 (20.9) |  |
| 7 or more | 197 (6.8) | 1136 (19.8) | 1624 (30.0) | 337 (13.6) |  |
| Unknown | 204 (7.1) | 350 (6.1) | 268 (4.9) | 155 (6.3) |  |
| No. of visits pre-ACA, mean (SD) | 7.19 (5.72) | 10.35 (9.07) | 9.92 (7.77) | 6.80 (5.92) | <0.001 |
| Current Smoker prior to ACAc (%) | 272 (9.4) | 1317 (22.9) | 1498 (27.7) | 574 (23.2) | <0.001 |
| Urban settingd(%) | 2717 (94.4) | 5390 (93.8) | 5079 (93.8) | 2296 (92.9) | 0.182 |

Note: HbA1c, glycosylated hemoglobin; LDL, low-density lipoprotein. HbA1c cohort: The initial study sample included n=35,819 patients from expansion states who had diabetes before Medicaid expansion and at least one HbA1c measurement. When we exclude those without a valid pre or post HbA1c measurement during the study period, our sample is reduced to n=24,887. The inclusion criteria also required at least one ambulatory visit pre- and post-ACA restricting our sample to n=22,289. Finally, after excluding patients with greater than 138% federal poverty level and those with missing zip code, our final study sample for HbA1c analyses was n=14,792. LDL cohort: The initial study sample included n=21,252 patients from expansion states who had diabetes before Medicaid expansion and at least one LDL measurement. When we exclude those without a valid pre or post LDL measurement during the study period, our sample is reduced to n=7,965. The inclusion criteria also required at least one ambulatory visit pre- and post-ACA restricting our sample to n=7,383. Finally, after excluding patients with greater than 138% federal poverty level and those with missing zip code, our final study sample for LDL analyses was n=4,890. Body Mass Index cohort: The initial study sample included n=36,576 patients from expansion states who had diabetes before Medicaid expansion and at least one weight and height measurement. When we exclude those without a valid pre or post body mass index measurement during the study period, our sample is reduced to n=26,154. The inclusion criteria also required at least one ambulatory visit pre- and post-ACA restricting our sample to n=24,218. Finally, after excluding patients with greater than 138% federal poverty level and those with missing zip code, our final study sample for body mass index analyses was n=15,926. Blood Pressure cohort: The initial study sample included N=37,550 patients from expansion states who had diabetes before Medicaid expansion and at least one blood pressure measurement. When we exclude those without a valid pre or post blood pressure measurement during the study period, our sample is reduced to n=27,206. The inclusion criteria also required at least one ambulatory visit pre- and post-ACA restricting our sample to n=25,154. Finally, after excluding patients with greater than 138% federal poverty level and those with missing zip code, our final study sample for blood pressure analyses was n=16,512.

aPatient age was the age as of 1/1/2012 (the beginning of the study period).

b We considered 54 chronic disease and comorbidities: (1) Diabetes Mellitus, (2) Coronary Heart Disease, includes MI, (3) Breast cancer, (4) Endometrial Cancer, (5) Lung Cancer, (6) Prostate Cancer, (7) Colorectal Cancer, (8) Leukemia/ Lymphoma, (9) Basal or Squamous cell Skin cancer, (10) Any non benign cancer not reported separately, (11) Liver disease, (12) Biliary tract disease, (13) Gastric/Peptic/Duodenal Ulcer or Gastroesophageal Reflux, (14) Depressive disorder, except Bipolar, (15) Rheumatoid arthritis autoimmune disease, (16) Osteoarthritis, (17) Anxiety disorder, including PTSD, (18) Psychosis or bipolar, (19) Metal/Intellectual/Developmental disability, (20) Cardiac disrhythmia, including atrial fibrillation, (21) Impaired vision, (22) Chronic neuromuscular disease, (23) Congestive Heart Failure, (24) Alzheimers/Dementia, (25) Attention Deficit/Hyperactivity disorder, (26) Anemia, (27) Asthma, (28) Chronic Obstructive Pulmonary disorder, (29) Chronic Kidney disease, (30) Cystic fibrosis, (31) epilepsy, (32) Chronic pain/fibromyalgia, (33) Hearing disorder, (34) Hepatitis A,B,C,D,E or unspecified, (35) Hip/pelvis fracture, (36) Hyperlipidemia, (37) HIV/AIDS, (38) Hypertension, (39) Migraine, chronic headache, (40) Mobility Impairment, (41) Obesity, (42) Peripheral Vascular disease, (43) Benign prostatic hyperplasia, (44) Benign prostatic hyperplasia, (45) Thyroid disorder, (46) Tobacco disorder, (47) alcohol use disorder, (48) substance abuse, (49) Mental Health disorder not included in alcohol diagnosis, substance use diagnosis, psychosis diagnosis, depression diagnosis or anxiety PTSD diagnosis, (50) Tuberculosis, (51) Diabetes Mellitus due to underlying condition or medication use, (52) Diabetic retinopathy, (53) Diabetic Neuropathy, (54) Cerebrovascular Disease

c Binary category creation of Current Smoker vs Former/Never/Missing smoker status.

d Urban setting was created by collapsing RUCA codes “Urban Area” and “Urban Cluster”. Rural consists of “Rural” and “Small Town”. Missing RUCA code was indicated as “Unknown”.

NOTE: Some percentages may not add up to 100% due to missing data. Chi-square tests for categorical variables and ANOVA tests for continuous variables were utilized to test for differences between insurance groups.

**Appendix Table 3**. Unadjusted Mean changes in biomarkers from pre- to post-ACA between insurance groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Measure** | **Continuously uninsured** | **Discontinuously insured** | **Continuously**  **insured** | **Newly insured** |
| **Glycosylated Hemoglobin (HbA1c), %** | | | | |
| Pre-ACA, mean | 8.21 | 8.12 | 7.78 | 8.22 |
| Post-ACA, mean | 8.38 | 8.21 | 7.92 | 8.15 |
| Change pre- to post-ACA | +0.17 | +0.09 | +0.14 | -0.07 |
|  |  |  |  |  |
| Difference-in-difference | **+0.24** | **+0.16** | **+0.21** | Ref |
| 95% Confidence Interval | **0.18, 0.30** | **0.11, 0.22** | **0.16, 0.27** | Ref |
| P value | **<0.001** | **<0.001** | **<0.001** | Ref |
| **Low-density Lipoprotein (LDL) Cholesterol, mg/dL** | | | | |
| Pre-ACA | 108.00 | 108.49 | 105.06 | 109.28 |
| Post-ACA | 104.25 | 104.38 | 101.25 | 102.27 |
| Change pre- to post-ACA | -3.75 | -4.11 | -3.81 | -7.01 |
|  |  |  |  |  |
| Difference-in-difference | **+3.26** | **+2.90** | **+3.20** | Ref |
| 95% Confidence Interval | **1.45, 5.07** | **1.32, 4.48** | **1.61, 4.79** | Ref |
| P value | **<0.001** | **<0.001** | **<0.001** | Ref |
| **Systolic Blood Pressure (SBP),** **mmHg** | | | | |
| Pre-ACA | 126.74 | 129.10 | 128.29 | 130.54 |
| Post-ACA | 127.42 | 129.27 | 128.73 | 129.49 |
| Change pre- to post-ACA | +0.68 | +0.17 | +0.44 | -1.05 |
|  |  |  |  |  |
| Difference-in-difference | **+1.73** | **+1.22** | **+1.49** | Ref |
| 95% Confidence Interval | **1.30, 2.16** | **0.87, 1.57** | **1.13, 1.84** | Ref |
| P value | **<0.001** | **<0.001** | **<0.001** | Ref |
| **Diastolic Blood Pressure (DBP), mmHg** | | | | |
| Pre-ACA | 78.37 | 79.39 | 79.26 | 80.40 |
| Post-ACA | 77.90 | 78.83 | 78.76 | 78.91 |
| Change pre- to post-ACA | -0.47 | -0.56 | -0.50 | -1.49 |
|  |  |  |  |  |
| Difference-in-difference | **+1.02** | **+0.94** | **+1.00** | Ref |
| 95% Confidence Interval | **0.76, 1.29** | **0.73, 1.16** | **0.78, 1.22** | Ref |
| p-value | **<0.001** | **<0.001** | **<0.001** | Ref |
| **Body Mass Index (BMI),** **kg/m2** | | | | |
| Pre-ACA | 32.31 | 33.79 | 34.45 | 33.13 |
| Post-ACA | 32.17 | 33.58 | 34.09 | 33.00 |
| Change pre- to post-ACA | -0.14 | -0.21 | -0.36 | -0.13 |
|  |  |  |  |  |
| Difference-in-difference | -0.02 | **-0.08** | **-0.24** | Ref |
| 95% Confidence Interval | -0.08, 0.04 | **-0.13, -0.03** | **-0.29, -0.19** | Ref |
| p-value | 0.523 | **<0.001** | **<0.001** | Ref |

**Note**: ACA, Affordable Care Act. Unadjusted means at each period (pre- and post-ACA) and for each insurance group was estimated using a linear mixed effects model that included the following covariates: ACA period, insurance group and interaction between period and insurance group with the addition of state fixed effects. Random effects for patients and community health centers accounted for temporal observations of biomarkers within patients and patients nested with CHCs.

**Appendix Table 4**. Comparison of adjusted mean changes in biomarkers from pre- to post-ACA between insurance groups between covariate-adjusted linear mixed effects modeling and inverse probability of treatment weighting (IPTW) linear mixed effects modeling.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Covariate Adjusted** | | **IPTW** | |
| **Insurance Group** | **DD**  **Estimate** | **95% CI** | **DD**  **Estimate** | **95% CI** |
| **Glycosylated Hemoglobin (HbA1c), %** | | | | |
| Newly Insured | Ref | Ref | Ref | Ref |
| Continuously Uninsured | **+0.24** | **0.17, 0.30** | **+0.16** | **0.11, 0.21** |
| Discontinuously Insured | **+0.16** | **0.11, 0.22** | **+0.14** | **0.09, 0.19** |
| Continuously Insured | **+0.22** | **0.16, 0.27** | **+0.19** | **0.14, 0.24** |
| **Low-density Lipoprotein (LDL) Cholesterol, mg/dL** | | | | |
| Newly Insured | Ref | Ref | Ref | Ref |
| Continuously Uninsured | **+3.26** | **1.45, 5.07** | **+5.83** | **3.72, 7.95** |
| Discontinuously Insured | **+2.88** | **1.30, 4.45** | **+2.80** | **0.77, 4.83** |
| Continuously Insured | **+3.19** | **1.59, 4.78** | **+4.26** | **2.22, 6.30** |
| **Systolic Blood Pressure (SBP),** **mmHg** | | | | |
| Newly Insured | Ref | Ref | Ref | Ref |
| Continuously Uninsured | **+1.76** | **1.34, 2.19** | **+1.79** | **1.46, 2.12** |
| Discontinuously Insured | **+1.23** | **0.89, 1.58** | **+1.00** | **0.71, 1.29** |
| Continuously Insured | **+1.49** | **1.14, 1.84** | **+1.34** | **1.04, 1.63** |
| **Diastolic Blood Pressure (DBP), mmHg** | | | | |
| Newly Insured | Ref | Ref | Ref | Ref |
| Continuously Uninsured | **+1.04** | **0.77, 1.30** | **+1.11** | **0.90, 1.31** |
| Discontinuously Insured | **+0.95** | **0.73, 1.17** | **+0.86** | **0.68, 1.04** |
| Continuously Insured | **+1.00** | **0.78, 1.22** | **+0.98** | **0.80, 1.17** |
| **Body Mass Index (BMI),** **kg/m2** | | | | |
| Newly Insured | Ref | Ref | Ref | Ref |
| Continuously Uninsured | -0.02 | -0.08, 0.04 | -0.04 | -0.08, 0.01 |
| Discontinuously Insured | **-0.09** | **-0.13, -0.03** | **-0.10** | **-0.14, -0.06** |
| Continuously Insured | **-0.24** | **-0.29, -0.19** | **-0.22** | **-0.26, -0.18** |

**Note**: IPTW, Inverse probability of treatment weighting; DD, difference-in-difference. Biomarker covariate-adjusted means at each period (pre- and post-ACA) and for each insurance group was estimated using a linear mixed effects model. Random effects for patients and community health centers accounted for temporal observations of biomarkers within patients and patients nested with CHCs. For IPTW linear mixed effects modeling, a generalized boosted model that included all covariates was used to produce a separate set of weights for each biomarker cohort using the twang (toolkit for weighting and analysis of non-equivalent groups) package in R (version 3.6.0).