Supplemental Table 1. The performance of each data combination in ascertaining diabetes cases in total study population (N=57,767)in the Carolina Data Warehouse for Health in 2011

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The number of criteria met and their combinations | Presumptive cases | True cases\* | | | | FP n(%) | Se (%) | Sp (%) | PPV (%) | NPV (%) |
| Total | Type 1 | Type 2 | Other |
| One criterion met | 742 | 50 | 22 | 18 | 10 | 692(93.3) | 9.3 | 98.8 | 6.7 | 99.1 |
| HbA1c | 70 | 3 | 0 | 3 | 0 | 67(95.7) | 0.6 | 99.9 | 4.3 | 99.1 |
| glucose | 435 | 1 | 0 | 0 | 1 | 434(99.8) | 0.2 | 99.2 | 0.2 | 99.1 |
| Problem list | 4 | 1 | 1 | 0 | 0 | 3(75.0) | 0.2 | 99.9 | 25.0 | 99.1 |
| Billing data | 119 | 39 | 19 | 11 | 9 | 80(67.2) | 7.3 | 99.9 | 32.8 | 99.1 |
| Meds | 114 | 6 | 2 | 4 | 0 | 108(94.7) | 1.1 | 99.8 | 5.3 | 99.1 |
|  |  |  |  |  |  |  |  |  |  |  |
| Two criteria met | 94 | 50 | 23 | 16 | 11 | 44(46.8) | 9.3 | 99.9 | 53.2 | 99.2 |
| HbA1c + Glucose | 4 | 0 |  |  |  | 4(100.0) | 0 | 99.9 | 0 | 99.1 |
| HbA1c + Meds | 15 | 1 | 0 | 0 | 1 | 14(93.3) | 0.2 | 99.9 | 6.7 | 99.1 |
| HbA1c + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| HbA1c + Billing data | 7 | 5 | 3 | 2 | 0 | 2(28.6) | 0.9 | 99.9 | 71.4 | 99.1 |
| Glucose + Meds | 10 | 3 | 0 | 0 | 3 | 7(70.0) | 0.6 | 99.9 | 30.0 | 99.1 |
| Glucose + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| Glucose + Billing data | 10 | 3 | 2 | 1 | 0 | 7(70.0) | 0.6 | 99.9 | 30.0 | 99.1 |
| Meds + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| Meds + Billing data | 38 | 31 | 14 | 11 | 6 | 7(18.4) | 5.8 | 99.9 | 81.6 | 99.1 |
| Problem list + Billing data | 10 | 7 | 4 | 2 | 1 | 3(30.0) | 1.3 | 99.9 | 70.0 | 99.1 |
|  |  |  |  |  |  |  |  |  |  |  |
| Three criteria met | 76 | 65 | 42 | 18 | 5 | 11(14.5) | 12.1 | 99.9 | 85.5 | 99.2 |
| HbA1c + Glucose + Meds | 3 | 1 | 0 | 0 | 1 | 2(66.7) | 0.2 | 99.9 | 33.3 | 99.1 |
| HbA1c + Glucose + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| HbA1c + Glucose + Billing data | 2 | 1 | 1 | 0 | 0 | 1(50.0) | 0.2 | 99.9 | 50.0 | 99.1 |
| HbA1c + Meds + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| HbA1c + Meds + Billing data | 26 | 22 | 13 | 9 | 0 | 4(15.4) | 4.1 | 99.9 | 84.6 | 99.1 |
| HbA1c + Problem list + Billing data | 0 |  |  |  |  |  |  |  |  |  |
| Glucose + Meds + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| Glucose + Meds + Billing data | 36 | 32 | 27 | 2 | 3 | 4(11.1) | 6.0 | 99.9 | 88.9 | 99.1 |
| Glucose + Problem list + Billing data | 1 | 1 | 0 | 0 | 1 | 0 | 0.2 | 100.0 | 100.0 | 99.1 |
| Meds + Problem list + Billing data | 8 | 8 | 1 | 7 | 0 | 0 | 1.5 | 100.0 | 100.0 | 99.1 |
|  |  |  |  |  |  |  |  |  |  |  |
| Four criteria met | 174 | 171 | 139 | 19 | 13 | 3(1.7) | 31.8 | 99.9 | 98.3 | 99.4 |
| HbA1c + Glucose + Meds + Problem list | 0 |  |  |  |  |  |  |  |  |  |
| HbA1c + Glucose + Meds + Billing data | 134 | 131 | 110 | 10 | 11 | 3(2.2) | 24.4 | 99.9 | 97.8 | 99.3 |
| HbA1c + Meds + Problem list + Billing data | 21 | 21 | 11 | 9 | 1 | 0 | 3.9 | 100.0 | 100.0 | 99.1 |
| Glucose + Meds + Problem list + Billing data | 18 | 18 | 17 | 0 | 1 | 0 | 3.4 | 100.0 | 100.0 | 99.1 |
| HbA1c + Glucose + Problem list + Billing data | 1 | 1 | 1 | 0 | 0 | 0 | 0.2 | 100.0 | 100.0 | 99.1 |
|  |  |  |  |  |  |  |  |  |  |  |
| All five criteria met | 203 | 201 | 179 | 15 | 7 | 2(1.0) | 37.4 | 99.9 | 99.0 | 99.4 |

Abbreviations: FP, false positive; Meds, medications; NPV, negative predictive value; PPV, positive predictive value; Se, sensitivity; Sp, Specificity.

\*True diabetes cases (N=537) confirmed by medical record review established our “gold standard” for evaluation of algorithms’ performance. Only outpatient medications were included for analyses.