## Supplementary Table 1. Definitions of stroke types and risk factors

| Condition | Definition |
| :--- | :--- |
| Acute ischemic stroke | Acute onset of neurological deficit with signs or symptoms persisting longer than 24 hours with or without <br> acute ischemic lesion(s) on brain computed tomography or with acute ischemic diffusion-weighted imaging <br> lesion(s) on magnetic resonance imaging that corresponded to the clinical presentations. |
| Transient ischemic attack | Transient focal neurologic deficit of ischemic causes that resolved within 24 hours |
| Intracerebral hemorrhage | Non-traumatic abrupt onset of symptoms with relevant focal neurological deficit with or without headache or <br> altered level of consciousness with a focal collection of blood within the brain parenchyma on computed <br> tomography or magnetic resonance imaging that was not a hemorrhagic conversion of a cerebral infarction. |
| Hypertension | On antihypertensive agents, or documented to have hypertension in prior clinic visits or hospital admissions |
| Diabetes | On oral hypoglycemic agents or insulin, or documented to have diabetes in prior clinic visits or hospital <br> admissions |
| Hyperlipidemia | On lipid-lowering agents or with one of the following: fasting serum cholesterol $\geq 200$ mg/dl; fasting serum <br> low-density lipoprotein $\geq 130$ mg/dl; fasting serum high density lipoprotein < 40 mg/dl; fasting serum <br> triglyceride $\geq 150$ mg/dl |
| Atrial fibrillation | Atrial fibrillation documented on $\geq 1$ electrocardiogram tracing during the admission, or in prior clinic visits or <br> hospital admissions |
| Ischemic heart disease | Documented to have coronary artery disease, including angina pectoris, unstable angina, myocardial infarction, <br> in prior clinic visits or hospital admissions |

## Supplementary Table 2. Performance of various algorithms to identify hypertension

| Dx | Rx | Y | Alg | Sen, \% (95\%CI) | Spe, \% (95\%CI) | PPV, \% (95\% CI) | NPV, \% (95\% CI) | Kappa (95\% CI) | Estimated Prevalence, \% (95\% CI) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \mathrm{IH} \\ 20 \\ \text { ICDs } \end{gathered}$ |  | NA | 1 | 93.2 (92.3-94.0) | 73.3 (70.5-76.0) | 92.3 (91.4-93.2) | 75.7 (72.9-78.4) | 0.672 (0.646-0.699) | 78.2 (77.0-79.4) |
|  | AND | NA | 2 | 73.6 (72.1-75.1) | 80.2 (77.7-82.6) | 92.8 (91.7-93.7) | 46.9 (44.5-49.3) | 0.430 (0.404-0.456) | 61.5 (60.0-62.9) |
|  | OR | NA | 3 | 97.2 (96.6-97.7) | 53.6 (50.5-56.7) | 87.8 (86.7-88.8) | 84.6 (81.6-87.3) | 0.583 (0.554-0.613) | 85.7 (84.7-86.7) |
| $\begin{gathered} \hline \mathrm{IH} \\ 5 \\ \mathrm{ICDs} \end{gathered}$ |  | NA | 4 | 74.9 (73.4-76.3) | 80.0 (77.5-82.4) | 92.8 (91.8-93.7) | 48.1 (45.7-50.5) | 0.444 (0.418-0.471) | 62.5 (61.1-63.9) |
|  | AND | NA | 5 | 58.8 (57.1-60.4) | 85.1 (82.8-87.3) | 93.1 (92.0-94.2) | 37.5 (35.5-39.5) | 0.303 (0.280-0.325) | 48.9 (47.4-50.3) |
|  | OR | NA | 6 | 93.7 (92.8-94.5) | 55.5 (52.4-58.6) | 87.9 (86.8-88.9) | 71.9 (68.6-75.0) | 0.535 (0.504-0.565) | 82.6 (81.5-83.7) |
| $\begin{gathered} 1 \text { IC } \\ \text { or } \\ 2 \\ \text { OC } \end{gathered}$ | - | 1 | 7 | 35.6 (34.0-37.2) | 91.3 (89.4-92.9) | 93.4 (91.9-94.6) | 29.2 (27.6-30.8) | 0.153 (0.137-0.169) | 29.5 (28.2-30.9) |
|  | AND | 1 | 8 | 31.3 (29.8-32.8) | 93.6 (92.0-95.1) | 94.4 (92.9-95.7) | 28.4 (26.9-29.9) | 0.137 (0.123-0.151) | 25.7 (24.4-27.0) |
|  | OR | 1 | 9 | 54.1 (52.5-55.8) | 74.4 (71.6-77.0) | 87.9 (86.4-89.2) | 32.0 (30.2-33.9) | 0.194 (0.171-0.217) | 47.7 (46.3-49.2) |
|  | - | 2 | 10 | 41.2 (39.6-42.9) | 89.2 (87.2-91.1) | 92.9 (91.6-94.2) | 30.6 (29.0-32.3) | 0.182 (0.164-0.199) | 34.4 (33.0-35.8) |
|  | AND | 2 | 11 | 36.5 (34.9-38.1) | 91.7 (89.8-93.3) | 93.8 (92.4-95.0) | 29.5 (28.0-31.2) | 0.161 (0.145-0.177) | 30.1 (28.8-31.5) |
|  | OR | 2 | 12 | 58.5 (56.8-60.1) | 71.0 (68.1-73.8) | 87.4 (86.0-88.7) | 33.2 (31.2-35.2) | 0.210 (0.186-0.235) | 51.8 (50.4-52.9) |
| $\begin{gathered} \mathrm{IH} \\ \text { or } \\ 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \text { OC } \end{gathered}$ | - | 1 | 13 | 84.2 (83.0-85.4) | 75.5 (72.8-78.1) | 92.2 (91.2-93.1) | 58.2 (55.5-60.8) | 0.540 (0.513-0.568) | 70.8 (69.4-72.1) |
|  | AND | 1 | 14 | 72.9 (71.4-74.4) | 80.4 (77.9-82.8) | 92.8 (91.7-93.7) | 46.3 (44.0-48.7) | 0.423 (0.397-0.449) | 60.9 (59.5-62.3) |
|  | OR | 1 | 15 | 96.8 (96.1-97.3) | 48.3 (45.2-51.5) | 86.6 (85.5-87.6) | 81.4 (78.1-84.4) | 0.527 (0.496-0.558) | 86.6 (85.6-87.6) |
|  | - | 2 | 16 | 85.7 (84.5-86.8) | 74.1 (71.3-76.7) | 91.9 (90.9-92.8) | 60.1 (57.3-62.8) | 0.552 (0.524-0.580) | 72.2 (70.9-73.5) |
|  | AND | 2 | 17 | 75.2 (73.7-76.6) | 78.8 (76.1-81.2) | 92.4 (91.4-93.4) | 48.0 (45.6-50.4) | 0.439 (0.413-0.466) | 63.0 (61.6-64.4) |
|  | OR | 2 | 18 | 97.0 (96.4-97.6) | 47.0 (43.9-50.1) | 86.3 (85.2-87.3) | 82.2 (78.8-85.2) | 0.519 (0.488-0.550) | 87.1 (86.1-88.1) |

Abbreviations: Alg, algorithm; CI, confidence interval; Dx, diagnosis; IC, inpatient claim; ICD, International Classification of Diseases; IH, index
hospitalization; NA, not applicable; NPV, negative prediction value; OC, outpatient claim; PPV, positive predictive value; Rx, prescription; Sen, sensitivity; Spe, specificity; Y, years of lookback period.

## Supplementary Table 3. Performance of various algorithms to identify diabetes

| Dx | Rx | Y | Alg | Sen, \% (95\%CI) | Spe, \% (95\%CI) | PPV, \% (95\% CI) | NPV, \% (95\% CI) | Kappa (95\% CI) | Estimated Prevalence, \% (95\% CI) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \mathrm{IH} \\ 20 \\ \mathrm{ICDs} \end{gathered}$ |  | NA | 1 | 88.6 (87.1-90.0) | 95.9 (95.0-96.6) | 93.8 (92.6-94.9) | 92.2 (91.2-93.2) | 0.852 (0.836-0.867) | 39.2 (37.8-40.7) |
|  | AND | NA | 2 | 75.1 (73.0-77.0) | 97.5 (96.8-98.0) | 95.5 (94.3-96.5) | 84.6 (83.3-85.9) | 0.749 (0.729-0.768) | 32.6 (31.3-34.0) |
|  | OR | NA | 3 | 90.9 (89.5-92.1) | 91.5 (90.4-92.6) | 88.4 (86.9-89.8) | 93.4 (92.4-94.3) | 0.821 (0.804-0.837) | 42.7 (41.2-44.1) |
| $\begin{gathered} \hline \mathrm{IH} \\ 5 \\ \mathrm{ICDs} \\ \hline \end{gathered}$ |  | NA | 4 | 69.7 (67.6-71.8) | 97.2 (96.6-97.8) | 94.7 (93.4-95.8) | 81.9 (80.5-83.2) | 0.696 (0.675-0.717) | 30.5 (29.2-31.9) |
|  | AND | NA | 5 | 58.8 (56.5-61.0) | 98.2 (97.6-98.6) | 95.8 (94.4-96.9) | 77.0 (75.6-78.5) | 0.603 (0.581-0.626) | 25.5 (24.2-26.8) |
|  | OR | NA | 6 | 88.2 (86.6-89.6) | 92.2 (91.2-93.2) | 89.0 (87.5-90.4) | 91.7 (90.5-92.7) | 0.805 (0.788-0.823) | 41.1 (39.7-42.6) |
| $\begin{gathered} 1 \text { IC } \\ \text { or } \\ 2 \\ \text { OC } \end{gathered}$ | - | 1 | 7 | 40.2 (38.0-42.5) | 98.5 (98.0-98.9) | 95.0 (93.2-96.4) | 69.9 (68.4-71.4) | 0.423 (0.399-0.447) | 17.6 (16.5-18.7) |
|  | AND | 1 | 8 | 34.8 (32.6-37.0) | 99.1 (98.7-99.4) | 96.5 (94.8-97.7) | 68.2 (66.7-69.6) | 0.373 (0.350-0.397) | 15.0 (13.9-16.0) |
|  | OR | 1 | 9 | 47.9 (45.7-50.2) | 97.1 (96.4-97.7) | 92.1 (90.3-93.7) | 72.4 (70.9-73.9) | 0.484 (0.460-0.508) | 21.6 (20.4-22.8) |
|  | - | 2 | 10 | 45.0 (42.7-47.3) | 98.0 (97.4-98.5) | 94.1 (92.4-95.6) | 71.5 (70.0-73.0) | 0.465 (0.441-0.489) | 19.9 (18.7-21.1) |
|  | AND | 2 | 11 | 38.3 (36.1-40.6) | 98.8 (98.3-99.2) | 95.8 (94.1-97.1) | 69.3 (67.8-70.8) | 0.407 (0.383-0.430) | 16.6 (15.5-17.7) |
|  | OR | 2 | 12 | 52.2 (49.9-54.5) | 96.3 (95.5-97.0) | 90.9 (89.1-92.6) | 74.0 (72.5-75.4) | 0.517 (0.493-0.542) | 23.8 (22.6-25.1) |
| $\begin{gathered} \mathrm{IH} \\ \text { or } \\ 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \mathrm{OC} \end{gathered}$ | - | 1 | 13 | 79.6 (77.7-81.4) | 96.4 (95.6-97.1) | 94.0 (92.8-95.2) | 87.0 (85.7-88.1) | 0.778 (0.759-0.796) | 35.1 (33.8-36.6) |
|  | AND | 1 | 14 | 71.7 (69.6-73.7) | 97.7 (97.1-98.2) | 95.7 (94.5-96.7) | 82.9 (81.6-84.3) | 0.720 (0.700-0.741) | 31.1 (29.8-32.5) |
|  | OR | 1 | 15 | 89.9 (88.4-91.2) | 90.7 (89.5-91.8) | 87.3 (85.7-88.7) | 92.6 (91.6-93.6) | 0.802 (0.784-0.820) | 42.8 (41.3-44.2) |
|  | - | 2 | 16 | 80.8 (79.0-82.6) | 96.1 (95.3-96.8) | 93.6 (92.3-94.7) | 87.6 (86.3-88.8) | 0.785 (0.766-0.803) | 35.9 (34.5-37.3) |
|  | AND | 2 | 17 | 73.5 (71.5-75.5) | 97.6 (97.0-98.2) | 95.6 (94.5-96.6) | 83.9 (82.5-85.1) | 0.736 (0.716-0.756) | 31.9 (30.6-33.3) |
|  | OR | 2 | 18 | 90.3 (88.9-91.6) | 90.2 (89.0-91.3) | 86.8 (85.2-88.3) | 92.9 (91.9-93.9) | 0.801 (0.783-0.819) | 43.2 (41.8-44.7) |

Abbreviations: Alg, algorithm; CI, confidence interval; Dx, diagnosis; IC, inpatient claim; ICD, International Classification of Diseases; IH, index
hospitalization; NA, not applicable; NPV, negative prediction value; OC, outpatient claim; PPV, positive predictive value; Rx, prescription; Sen, sensitivity; Spe, specificity; Y, years of lookback period.

Supplementary Table 4. Performance of various algorithms to identify hyperlipidemia

| Dx | Rx | Y | Alg | Sen, \% (95\%CI) | Spe, \% (95\%CI) | PPV, \% (95\% CI) | NPV, \% (95\% CI) | Kappa (95\% CI) | Estimated Prevalence, \% (95\% CI) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|c\|} \hline \mathrm{IH} \\ 20 \\ \mathrm{ICDs} \end{array}$ |  | NA | 1 | 72.3 (70.3-74.2) | 77.8 (76.0-79.4) | 74.9 (73.0-76.7) | 75.3 (73.6-77.0) | 0.501 (0.476-0.526) | 46.2 (44.7-47.7) |
|  | AND | NA | 2 | 66.8 (64.7-68.7) | 80.9 (79.3-82.5) | 76.2 (74.3-78.1) | 72.6 (70.9-74.3) | 0.479 (0.454-0.504) | 41.9 (40.5-43.4) |
|  | OR | NA | 3 | 85.6 (84.0-87.0) | 69.3 (67.4-71.1) | 71.9 (70.1-73.6) | 84.0 (82.3-86.5) | 0.544 (0.520-0.568) | 57.0 (55.5-58.4) |
| $\begin{gathered} \hline \mathrm{IH} \\ 5 \\ \mathrm{ICDs} \\ \hline \end{gathered}$ |  | NA | 4 | 50.9 (48.8-53.0) | 85.7 (84.2-87.1) | 76.5 (74.3-78.7) | 65.5 (63.8-67.2) | 0.371 (0.345-0.397) | 31.8 (30.5-33.2) |
|  | AND | NA | 5 | 47.6 (45.5-49.7) | 87.9 (86.5-89.2) | 78.3 (76.0-80.5) | 64.6 (62.9-66.3) | 0.361 (0.335-0.386) | 29.1 (27.8-30.5) |
|  | OR | NA | 6 | 83.4 (81.7-84.9) | 70.2 (68.3-72.0) | 72.0 (70.2-73.7) | 82.1 (80.4-83.8) | 0.532 (0.508-0.557) | 55.4 (54.0-56.9) |
| $\begin{gathered} 1 \text { IC } \\ \text { or } \\ 2 \\ \text { OC } \end{gathered}$ | - | 1 | 7 | 15.8 (14.3-17.4) | 91.4 (90.2-92.5) | 62.8 (58.6-66.8) | 54.2 (52.6-55.7) | 0.074 (0.055-0.094) | 9.7 (8.8-10.6) |
|  | AND | 1 | 8 | 12.5 (11.2-14.0) | 92.9 (91.8-93.9) | 62.0 (57.2-66.5) | 53.6 (52.1-55.2) | 0.056 (0.039-0.074) | 19.7 (18.6-20.9) |
|  | OR | 1 | 9 | 25.5 (23.6-27.3) | 85.5 (84.1-86.9) | 61.8 (58.5-65.0) | 55.6 (53.9-57.2) | 0.113 (0.089-0.137) | 14.2 (13.2-15.2) |
|  | - | 2 | 10 | 18.6 (17.0-20.3) | 89.9 (88.7-91.1) | 63.0 (59.1-66.7) | 54.6 (53.1-56.2) | 0.088 (0.067-0.109) | 14.2 (13.2-15.2) |
|  | AND | 2 | 11 | 15.4 (13.9-17.0) | 91.4 (90.2-92.5) | 62.3 (58.0-66.4) | 54.1 (52.5-55.6) | 0.071 (0.051-0.090) | 11.9 (10.9-12.8) |
|  | OR | 2 | 12 | 28.5 (26.7-30.5) | 84.2 (82.7-85.7) | 62.4 (59.3-65.5) | 56.2 (54.6-57.9) | 0.131 (0.106-0.155) | 21.9 (20.7-23.1) |
| $\begin{gathered} \mathrm{IH} \\ \text { or } \\ 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \mathrm{OC} \end{gathered}$ | - | 1 | 13 | 59.1 (57.0-61.2) | 79.8 (78.1-81.4) | 72.8 (70.7-74.9) | 68.0 (66.2-69.7) | 0.392 (0.365-0.418) | 38.8 (37.4-40.3) |
|  | AND | 1 | 14 | 56.1 (54.0-58.2) | 82.4 (80.8-83.9) | 74.5 (72.4-76.6) | 67.1 (65.4-68.9) | 0.389 (0.363-0.415) | 36.0 (34.6-37.4) |
|  | OR | 1 | 15 | 86.9 (85.4-88.3) | 65.1 (63.1-67.0) | 69.6 (67.8-71.3) | 84.4 (82.6-86.0) | 0.514 (0.490-0.539) | 59.8 (58.3-61.2) |
|  | - | 2 | 16 | 60.5 (58.4-62.5) | 78.5 (76.8-80.2) | 72.1 (70.0-74.2) | 68.4 (66.6-70.1) | 0.392 (0.366-0.419) | 40.1 (38.7-41.6) |
|  | AND | 2 | 17 | 57.4 (55.3-59.5) | 81.1 (79.5-82.7) | 73.7 (71.5-75.7) | 67.5 (65.7-69.2) | 0.389 (0.363-0.415) | 37.3 (35.9-38.7) |
|  | OR | 2 | 18 | 87.6 (86.1-88.9) | 64.2 (62.2-66.1) | 69.2 (67.4-70.9) | 84.9 (83.2-86.5) | 0.512 (0.488-0.536) | 60.6 (59.2-62.0) |

Abbreviations: Alg, algorithm; CI, confidence interval; Dx, diagnosis; IC, inpatient claim; ICD, International Classification of Diseases; IH, index
hospitalization; NA, not applicable; NPV, negative prediction value; OC, outpatient claim; PPV, positive predictive value; Rx, prescription; Sen, sensitivity; Spe, specificity; Y, years of lookback period.

## Supplementary Table 5. Performance of various algorithms to identify atrial fibrillation

| Dx | Rx | Y | Alg | Sen, \% (95\%CI) | Spe, \% (95\%CI) | PPV, \% (95\% CI) | NPV, \% (95\% CI) | Kappa (95\% CI) | $\begin{gathered} \text { Estimated Prevalence, } \\ \%(95 \% \mathrm{CI}) \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \mathrm{IH} \\ 20 \\ \text { ICDs } \end{gathered}$ |  | NA | 1 | 86.4 (83.2-89.1) | 98.4 (97.9-98.7) | 88.0 (84.9-90.6) | 98.1 (97.7-98.5) | 0.854 (0.831-0.878) | 11.9 (11.0-12.9) |
|  | AND | NA | 2 | 55.0 (50.7-59.2) | 99.3 (99.0-99.5) | 91.3 (87.7-94.1) | 94.1 (93.3-94.8) | 0.655 (0.618-0.692) | 7.3 (6.6-8.1) |
|  | OR | NA | 3 | 89.5 (86.6-91.9) | 96.3 (95.7-96.9) | 76.9 (73.5-80.1) | 98.5 (98.1-98.9) | 0.801 (0.775-0.827) | 14.1 (13.1-15.2) |
| $\begin{gathered} \mathrm{IH} \\ 5 \\ \mathrm{ICDs} \end{gathered}$ | - | NA | 4 | 65.0 (60.8-69.0) | 98.8 (98.4-99.1) | 88.4 (84.9-91.3) | 95.3 (94.6-96.0) | 0.720 (0.687-0.754) | 8.9 (8.1-9.8) |
|  | AND | NA | 5 | 41.6 (37.4-45.8) | 99.4 (99.2-99.7) | 91.2 (87.0-94.4) | 92.5 (91.7-93.3) | 0.536 (0.494-0.578) | 5.5 (4.9-6.2) |
|  | OR | NA | 6 | 81.5 (78.0-84.6) | 96.6 (96.0-97.1) | 76.6 (73.0-80.0) | 97.4 (96.9-97.9) | 0.760 (0.731-0.789) | 12.9 (12.0-13.9) |
| $\begin{gathered} 1 \text { IC } \\ \text { or } \\ 2 \\ \text { OC } \end{gathered}$ | - | 1 | 7 | 27.9 (24.2-31.9) | 99.2 (98.9-99.5) | 82.8 (76.6-87.9) | 90.9 (90.0-91.7) | 0.380 (0.335-0.425) | 4.1 (3.5-4.7) |
|  | AND | 1 | 8 | 22.9 (19.4-26.6) | 99.5 (99.2-99.7) | 86.3 (79.6-91.4) | 90.3 (89.4-91.2) | 0.327 (0.283-0.372) | 3.2 (2.7-3.8) |
|  | OR | 1 | 9 | 36.3 (32.3-40.5) | 97.6 (97.1-98.0) | 67.6 (61.9-72.9) | 91.7 (90.9-92.5) | 0.423 (0.380-0.467) | 6.5 (5.8-7.3) |
|  | - | 2 | 10 | 31.6 (27.7-35.6) | 99.0 (98.7-99.3) | 82.1 (76.2-87.0) | 91.3 (90.4-92.1) | 0.417 (0.372-0.461) | 4.7 (4.1-5.3) |
|  | AND | 2 | 11 | 25.4 (21.8-29.3) | 99.4 (99.1-99.6) | 85.4 (79.0-90.4) | 90.6 (89.7-91.5) | 0.356 (0.311-0.400) | 3.6 (3.1-4.2) |
|  | OR | 2 | 12 | 39.9 (35.8-44.2) | 96.9 (96.4-97.5) | 64.3 (59.0-69.4) | 92.1 (91.3-92.9) | 0.441 (0.398-0.483) | 7.5 (6.8-8.3) |
| $\begin{gathered} \mathrm{IH} \\ \text { or } \\ 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \text { OC } \\ \hline \end{gathered}$ | - | 1 | 13 | 72.6 (68.7-76.3) | 98.4 (97.9-98.7) | 86.0 (82.5-89.0) | 96.3 (95.7-96.9) | 0.761 (0.730-0.791) | 10.2 (9.4-11.2) |
|  | AND | 1 | 14 | 53.0 (48.7-57.2) | 99.1 (98.8-99.4) | 89.6 (85.7-92.7) | 93.9 (93.1-94.6) | 0.633 (0.595-0.671) | 7.2 (6.4-8.0) |
|  | OR | 1 | 15 | 85.1 (81.9-88.0) | 95.3 (94.6-95.9) | 71.5 (67.9-74.9) | 97.9 (97.4-98.3) | 0.743 (0.714-0.772) | 14.5 (13.4-15.5) |
|  | - | 2 | 16 | 73.5 (69.6-77.1) | 98.3 (97.8-98.7) | 85.6 (82.1-88.7) | 96.4 (95.8-97.0) | 0.765 (0.734-0.795) | 10.4 (9.5-11.3) |
|  | AND | 2 | 17 | 54.6 (50.4-58.8) | 99.1 (98.7-99.3) | 89.1 (85.2-92.2) | 94.0 (93.3-94.7) | 0.644 (0.607-0.682) | 7.4 (6.7-8.3) |
|  | OR | 2 | 18 | 85.8 (82.7-88.6) | 94.8 (94.1-95.5) | 69.6 (65.9-73.0) | 98.0 (97.5-98.4) | 0.733 (0.703-0.762) | 15.0 (14.0-16.1) |

Abbreviations: Alg, algorithm; CI, confidence interval; Dx, diagnosis; IC, inpatient claim; ICD, International Classification of Diseases; IH, index
hospitalization; NA, not applicable; NPV, negative prediction value; OC, outpatient claim; PPV, positive predictive value; Rx, prescription; Sen, sensitivity; Spe, specificity; Y, years of lookback period.

## Supplementary Table 6. Performance of various algorithms to identify ischemic heart disease

| Dx | Rx | Y | Alg | Sen, \% (95\%CI) | Spe, \% (95\%CI) | PPV, \% (95\% CI) | NPV, \% (95\% CI) | Kappa (95\% CI) | Estimated Prevalence, \% (95\% CI) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \mathrm{IH} \\ 20 \\ \mathrm{ICDs} \end{gathered}$ | - | NA | 1 | 48.1 (42.5-53.8) | 96.7 (96.1-97.2) | 52.2 (46.3-58.0) | 96.1 (95.5-96.7) | 0.465 (0.414-0.515) | 6.5 (5.8-7.3) |
|  | AND | NA | 2 | 42.5 (37.0-48.1) | 97.0 (96.4-97.5) | 51.7 (45.5-57.9) | 95.7 (95.0-96.3) | 0.430 (0.378-0.483) | 5.8 (5.1-6.5) |
|  | OR | NA | 3 | 94.1 (90.9-96.4) | 13.3 (12.2-14.3) | 7.6 (6.8-8.5) | 96.7 (94.9-98.0) | 0.012 (0.007-0.016) | 87.3 (86.3-88.2) |
| $\begin{array}{\|c} \hline \mathrm{IH} \\ 5 \\ \mathrm{ICDs} \\ \hline \end{array}$ | - | NA | 4 | 26.6 (21.8-31.8) | 98.1 (97.7-98.5) | 51.8 (43.9-59.7) | 94.6 (93.9-95.3) | 0.319 (0.263-0.374) | 3.6 (3.1-4.2) |
|  | AND | NA | 5 | 22.8 (18.3-27.8) | 98.3 (97.9-98.7) | 51.0 (42.6-59.5) | 94.4 (93.7-95.0) | 0.284 (0.229-0.340) | 3.2 (2.7-3.7) |
|  | OR | NA | 6 | 92.2 (88.7-94.9) | 13.4 (12.4-14.4) | 7.5 (6.7-8.3) | 95.8 (93.8-97.2) | 0.009 (0.004-0.014) | 87.0 (86.0-88.0) |
| $\begin{gathered} 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \mathrm{OC} \end{gathered}$ | - | 1 | 7 | 53.4 (47.8-59.0) | 96.1 (95.5-96.7) | 50.9 (45.4-56.4) | 96.5 (95.8-97.0) | 0.484 (0.435-0.533) | 7.4 (6.7-8.2) |
|  | AND | 1 | 8 | 51.9 (46.2-57.5) | 96.3 (95.7-96.9) | 51.7 (46.1-57.3) | 96.3 (95.7-96.9) | 0.481 (0.432-0.531) | 7.1 (6.3-7.9) |
|  | OR | 1 | 9 | 75.6 (70.5-80.2) | 55.0 (53.4-56.5) | 11.3 (10.0-12.7) | 96.7 (96.0-97.4) | 0.084 (0.068-0.100) | 47.2 (45.7-48.7) |
|  | - | 2 | 10 | 58.8 (53.1-64.2) | 95.0 (94.3-95.7) | 47.2 (42.2-52.3) | 96.8 (96.2-97.3) | 0.483 (0.436-0.530) | 8.8 (8.0-9.6) |
|  | AND | 2 | 11 | 56.6 (50.9-62.1) | 95.2 (94.5-95.9) | 47.4 (42.3-52.5) | 96.7 (96.1-97.2) | 0.475 (0.428-0.523) | 8.4 (7.6-9.3) |
|  | OR | 2 | 12 | 79.1 (74.2-83.4) | 50.8 (49.3-52.3) | 10.9 (9.6-12.2) | 97.0 (96.2-97.6) | 0.077 (0.062-0.091) | 51.3 (49.9-52.8) |
| $\begin{gathered} \mathrm{IH} \\ \text { or } \\ 1 \mathrm{IC} \\ \text { or } \\ 2 \\ \mathrm{OC} \end{gathered}$ | - | 1 | 13 | 64.4 (58.9-69.6) | 94.9 (94.2-95.6) | 49.0 (44.2-53.9) | 97.2 (96.7-97.7) | 0.518 (0.473-0.564) | 9.3 (8.4-10.1) |
|  | AND | 1 | 14 | 62.8 (57.3-68.1) | 95.0 (94.3-95.6) | 48.8 (43.9-53.7) | 97.1 (96.6-97.6) | 0.510 (0.464-0.556) | 9.1 (8.3-10.0) |
|  | OR | 1 | 15 | 97.2 (94.7-98.7) | 9.5 (8.7-10.5) | 7.5 (6.8-8.4) | 97.8 (95.9-99.0) | 0.010 (0.007-0.014) | 90.9 (90.1-91.8) |
|  | - | 2 | 16 | 68.1 (62.7-73.2) | 94.0 (93.2-94.7) | 46.2 (41.6-50.8) | 97.5 (97.0-98.0) | 0.509 (0.465-0.553) | 10.4 (9.5-11.3) |
|  | AND | 2 | 17 | 66.6 (61.1-71.7) | 94.0 (93.3-94.7) | 45.9 (41.3-50.6) | 97.4 (96.8-97.8) | 0.502 (0.457-0.546) | 10.2 (9.4-11.1) |
|  | OR | 2 | 18 | 97.5 (95.1-98.9) | 8.9 (8.1-9.8) | 7.5 (6.7-8.4) | 97.9 (95.9-99.1) | 0.010 (0.007-0.013) | 91.6 (90.7-92.4) |

Abbreviations: Alg, algorithm; CI, confidence interval; Dx, diagnosis; IC, inpatient claim; ICD, International Classification of Diseases; IH, index
hospitalization; NA, not applicable; NPV, negative prediction value; OC, outpatient claim; PPV, positive predictive value; Rx, prescription; Sen, sensitivity; Spe, specificity; Y, years of lookback period.

