**e-Figure 1. Clinical definitions health systems are encouraged to use to best align with currently endorsed guidelines and the methods used to develop the Hypertension Prevalence Estimator Tool**

**Gender:** Based on patient self-report.

**Age:** Based on patient self-report.

**Race-ethnicity:** In alignment with the US Office of Management and Budget (OBM) race-ethnicity standards1, report the number of patients in each of the collapsed race-ethnicity groups (Non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic other). Most health systems should be collecting race-ethnicity using the OMB standards to be in alignment with Meaningful Use reporting standards.

**Obesity:** Having a body mass index—calculated as weight in kilograms over height in meters squared (kg/m2)—of 30 kg/m2 or greater.

**Diabetes:** Determined by health care documentation, applying clinical diagnostic criteria, and/or querying administrative claims data (e.g., diabetes defined using International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) code of 250 and/or prescriptions for insulin or oral antidiabetic medications); look-back period may differ based on health system. Ideally, the health system uses the American Diabetes Association's current clinical definition for diagnosing diabetes.**2**

**Chronic kidney disease (CKD):** Determined by health care documentation, applying clinical diagnostic criteria, and/or querying administrative claims data (e.g., CKD defined using ICD-9-CM codes of 403, 404, and 585); look-back period may differ based on health system. The definition used in development of this tool included: 1) having an estimated glomerular filtration rate of <60 mL/min per 1.73 m2 using the Chronic Kidney Disease Epidemiology Collaboration equation3 or 2) the presence of albuminuria (albumin-to-creatinine ratio of ≥30 mg/g).

**Hypertension:** Ideally, health systems use the two or more elevated blood pressure measures at two or more outpatient office visits criteria to diagnosis their hypertensive patients.4 All health systems are encouraged to use devices which passed the validation protocol from the U.S. Association for the Advancement of Medical Instrumentation, British Hypertension Society, or European Society of Hypertension.5 Health systems are asked to use only outpatient medical records to identify their hypertensive population and to exclude women with gestational hypertension from their prevalence calculations. There are likely multiple ways health systems can use their patient medical records to identify their hypertensive population. This could include using administrative claims documentation (e.g., ICD-9-CM codes for essential hypertension (401), hypertensive heart and/or chronic kidney disease (402–404), and/or secondary hypertension (405)). Ideally, if administrative claims data are being used, a hypertensive patient would be identified using ICD-9-CM codes 401–404 and exclude secondary hypertension cases. If the health system reports on the National Committee on Quality Assurance’s Healthcare Effectiveness Data and Information Set Controlling High Blood Pressure measure, they may only use ICD-9-CM code 401 to identify their hypertension patient population and possibly exclude those patients with document end-stage renal disease (ICD-9-CM codes of: 585.5, 585.6, V42.0, or V45.1).

**References**

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5. Pickering TG, Hall JE, Appel LJ, et al. Recommendations for blood pressure measurement in humans and experimental animals: part 1: blood pressure measurement in humans: a statement for professionals from the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. *Circulation.* 2005;111(5):697-716.

**e-Table 1. Comorbiditya prevalence, by gender, age, and race-ethnicity, NHANES, 2005–2012b**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age (years)** | **Race/ethnicity** | **Number of comorbidities** | **Prevalence among men (95% CI)** | **Prevalence among women (95% CI)** |
| 18-44 | Non-Hispanic white | 0 | 67.1 (63.7-70.3) | 66.5 (63.2-69.7) |
| 1 | 30.0 (26.8-33.4) | 29.1 (25.9-32.4) |
| 2-3 | 2.9 (2.0-4.2) | 4.4 (3.2-6.0) |
| Non-Hispanic black | 0 | 55.5 (50.8-60.0) | 42.0 (39.1-45.0) |
| 1 | 37.4 (33.1-41.9) | 50.3 (47.1-53.4) |
| 2-3 | 7.2 (5.7-9.0) | 7.7 (5.7-10.2) |
| Hispanic | 0 | 59.0 (53.7-64.0) | 56.0 (53.1-58.8) |
| 1 | 34.0 (29.4-39.0) | 37.2 (34.3-40.1) |
| 2-3 | 7.0 (5.2-9.4) | 6.9 (5.3-8.9) |
| Other | 0 | 75.0 (68.1-80.9) | 72.4 (64.3-79.3) |
| 1 | 21.6 (16.3-28.0) | 24.4 (18.0-32.1) |
| 2-3 | 3.4 (1.5-7.2) | 3.2 (1.6-6.4) |
| Total | 0 | 65.2 (62.5-67.8) | 62.0 (59.8-64.2) |
| 1 | 30.8 (28.4-33.4) | 32.8 (30.7-35.0) |
| 2-3 | 4.0 (3.2-5) | 5.2 (4.2-6.3) |
| 45-64 | Non-Hispanic white | 0 | 53.4 (49.9-56.8) | 54.9 (51.2-58.4) |
| 1 | 34.6 (31.9-37.5) | 34.7 (31.5-38.1) |
| 2-3 | 12.0 (10.0-14.3) | 10.4 (8.8-12.3) |
| Non-Hispanic black | 0 | 41.7 (36.9-46.5) | 27.8 (24.6-31.3) |
| 1 | 37.5 (33.2-41.9) | 47.1 (43.5-50.7) |
| 2-3 | 20.9 (17.5-24.7) | 25.1 (21.8-28.6) |
| Hispanic | 0 | 42.7 (37.7-47.8) | 40.0 (35.7-44.4) |
| 1 | 35.4 (30.9-40.3) | 38.1 (34.1-42.2) |
| 2-3 | 21.9 (17.8-26.7) | 22.0 (18.2-26.3) |
| Other | 0 | 49.5 (39.5-59.5) | 59.6 (49.4-68.9) |
| 1 | 43.4 (34.2-53.0) | 30.1 (22.1-39.6) |
| 2-3 | 7.1 (3.7-13.2) | 10.3 (5.8-17.8) |
| Total | 0 | 51.1 (48.3-54.0) | 50.6 (47.9-53.4) |
| 1 | 35.4 (33.2-37.7) | 36.2 (33.8-38.7) |
| 2-3 | 13.4 (11.7-15.4) | 13.2 (11.8-14.6) |
| 65-74 | Non-Hispanic white | 0 | 40.9 (36.9-45.0) | 43.3 (38.8-48.0) |
| 1 | 35.5 (31.7-39.5) | 38.6 (33.7-43.7) |
| 2-3 | 23.6 (19.6-28.1) | 18.1 (14.7-22.0) |
| Non-Hispanic black | 0 | 30.5 (25.2-36.3) | 19.1 (14.6-24.6) |
| 1 | 34.1 (29.1-39.5) | 39.5 (33.4-45.9) |
| 2-3 | 35.4 (30.1-41.1) | 41.4 (34.1-49.1) |
| Hispanic | 0 | 39.6 (31.2-48.8) | 31.0 (24.7-38.2) |
| 1 | 29.2 (23.2-36.1) | 42.5 (35.2-50.1) |
| 2-3 | 31.1 (25.1-37.9) | 26.5 (20.6-33.3) |
| Other | 0 | 57.1 (35.4-76.4) | 44.5 (28.5-61.7) |
| 1 | 21.1 (12.0-34.5) | 28.2 (18.0-41.4) |
| 2-3 | 21.8 (8.3-46.0) | 27.3 (15.1-44.3) |
| Total | 0 | 40.8 (37.3-44.4) | 40.3 (36.7-44.0) |
| 1 | 34.2 (31.0-37.7) | 38.6 (34.6-42.7) |
| 2-3 | 25.0 (21.8-28.4) | 21.1 (18.2-24.4) |
| ≥75 | Non-Hispanic white | 0 | 30.0 (26.7-33.5) | 27.7 (24.2-31.6) |
| 1 | 45.5 (41.8-49.2) | 46.2 (42.8-49.6) |
| 2-3 | 24.6 (21.5-27.8) | 26.1 (22.8-29.6) |
| Non-Hispanic black | 0 | 23.0 (17.1-30.3) | 15.4 (11.2-20.8) |
| 1 | 38.2 (29.1-48.2) | 31.0 (23.6-39.4) |
| 2-3 | 38.8 (29.8-48.6) | 53.7 (45.0-62.1) |
| Hispanic | 0 | 25.0 (17.3-34.8) | 22.6 (15.6-31.5) |
| 1 | 42.9 (32.2-54.3) | 45.8 (35.9-56.1) |
| 2-3 | 32.1 (22.5-43.5) | 31.6 (22.3-42.6) |
| Other | 0 | 17.3 (8.3-32.5) | 18.4 (9.4-32.9) |
| 1 | 46.1 (30.1-63.1) | 40.5 (26.8-55.9) |
| 2-3 | 36.6 (19.7-57.6) | 41.1 (27.6-56.0) |
| Total | 0 | 28.9 (26.0-32.0) | 26.3 (23.2-29.6) |
| 1 | 44.9 (41.6-48.2) | 44.9 (41.8-48.0) |
| 2-3 | 26.2 (23.4-29.2) | 28.8 (25.6-32.3) |

Abbreviations: NHANES, National Health and Nutrition Examination Survey

a Comorbidities include obesity, diagnosed diabetes, and chronic kidney disease.

b Data from 2005–2012 were used to describe these estimates, because there was no statistical change in the prevalence of these comorbidities during this period (data not shown).

**e-Table 2. External validity testing results for the modified Hypertension Prevalence Estimator Tool that does not include comorbidity status, by random sample size**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Hypertension prevalence, %** | **Percent Difference, Estimated - Observed** | **P-valuea** |
|   | Estimated (95% CI) | Observed  |
| Pooled random samples (n = 1500) |  |  |  |  |
| Sample 1 | 44.6 (43.1-46.1) | 46.3 | -1.7 | 0.170 |
| Sample 2 | 45.7 (44.2-47.2) | 48.0 | -2.3 | 0.073 |
| Sample 3 | 46.5 (45.0-48.0) | 47.7 | -1.2 | 0.376 |
|  |  |  |  |  |
| Pooled random samples (n = 3000) |  |  |  |  |
| Sample 1 | 45.3 (44.2-46.3) | 46.4 | -1.1 | 0.196 |
| Sample 2 | 44.9 (43.9-45.9) | 45.5 | -0.6 | 0.498 |
| Sample 3 | 45.2 (44.2-46.2) | 46.3 | -1.1 | 0.218 |
|  |  |  |  |  |
| Pooled random samples (n = 6000) |  |  |  |  |
| Sample 1 | 45.6 (44.9-46.3) | 46.4 | -0.8 | 0.217 |
| Sample 2 | 45.1 (44.4-45.8) | 45.7 | -0.6 | 0.302 |
| Sample 3 | 45.1 (44.3-45.8) | 46.2 | -1.1 | 0.067 |

a Chi-square test to assess the association between the expected prevalence estimates and the observed prevalence values.