**Predicted cardiovascular risk and blood pressure for Americans with diabetes, chronic kidney disease, and ≥65 years of age**

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**MAIN RESULTS**

Table 1: Characteristics of US adults overall and with diabetes, chronic kidney disease, ≥ 65 years of age, and any of the preceding conditions

|  | | **Sub-groups** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Characteristic\*** | **Overall  N = 25,780** | **Diabetes  N = 5,187†** | **Chronic kidney disease  N = 4,390‡** | **Diabetes and chronic kidney disease  N = 1,876** | **Age 65+ years  N = 7,480** | **Any preceding condition  N = 11,836** |
| Age, years | 55.6 (0.12) | 59.8 (0.21) | 61.4 (0.24) | 62.0 (0.32) | 70.8 (0.07) | 64.1 (0.15) |
| Male | 48.7 | 54.5 | 45.2 | 53.5 | 46.5 | 47.8 |
| Race / ethnicity | | | | | | |
| Hispanic | 10.8 | 15.1 | 12.6 | 15.9 | 7.6 | 11.0 |
| Non-Hispanic Asian | 2.3 | 3.5 | 2.4 | 3.2 | 2.2 | 2.5 |
| Non-Hispanic White | 73.3 | 61.4 | 65.0 | 57.5 | 79.6 | 71.5 |
| Non-Hispanic Black | 9.6 | 14.9 | 15.6 | 18.0 | 7.7 | 11.1 |
| Other Race - Including Multi-Racial | 4.0 | 5.1 | 4.4 | 5.3 | 2.9 | 3.9 |
| Total cholesterol, mg/dl | 203.1 (0.47) | 190.1 (1.1) | 200.0 (1.1) | 193.4 (2.1) | 196.2 (0.76) | 197.6 (0.70) |
| HDL-cholesterol, mg/dl | 53.9 (0.20) | 46.4 (0.32) | 52.4 (0.46) | 46.3 (0.48) | 55.4 (0.37) | 52.8 (0.30) |
| Systolic blood pressure, mm Hg | 125.7 (0.20) | 130.9 (0.42) | 134.7 (0.43) | 136.9 (0.68) | 133.2 (0.37) | 131.7 (0.28) |
| Diastolic blood pressure, mm Hg | 73.3 (0.15) | 71.2 (0.27) | 72.9 (0.24) | 71.3 (0.47) | 68.5 (0.21) | 71.0 (0.19) |
| Antihypertensive medication use | 31.0 | 59.2 | 53.7 | 67.7 | 52.3 | 50.5 |
| Diabetes | 14.5 | 100.0 | 36.0 | 100.0 | 22.8 | 39.9 |
| Chronic kidney disease | 12.7 | 31.4 | 100.0 | 100.0 | 25.2 | 34.8 |
| Aged 65+ years | 22.5 | 35.2 | 44.7 | 45.4 | 100.0 | 61.7 |
| Current smoker | 19.4 | 17.1 | 20.6 | 18.8 | 10.3 | 15.4 |
| Prevalent CVD§ | 10.0 | 22.7 | 22.6 | 31.5 | 21.8 | 19.0 |
| \*Table values are mean (standard error) or proportion. | | | | | | |
| †Diabetes was defined by fasting serum glucose ≥ 126 mg/dL, non-fasting glucose ≥ 200 mg/dL, HbA1c ≥ 6.5%, or self-reported use of insulin or oral glucose lowering medication. | | | | | | |
| ‡Chronic kidney disease is defined by an albumin-to-creatinine ratio ≥ 30 mg/dl or an estimated glomerular filtration rate <60 ml/min/1.73m² | | | | | | |
| §Prevalent cardiovascular disease was defined by self-report of previous heart failure, coronary heart disease, stroke, or myocardial infarction | | | | | | |
| CVD = cardiovascular disease; HDL = High density lipoprotein | | | | | | |

Table 2: Estimated distribution of blood pressure categories among US adults, overall and for subgroups with diabetes, chronic kidney disease, ≥ 65 years of age, or any of the preceding three conditions.

|  | | **Sub-groups** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Blood pressure category\*** | **Overall  N = 25,780** | **Diabetes  N = 5,187†** | **Chronic kidney disease  N = 4,390‡** | **Diabetes and chronic kidney disease  N = 1,876** | **Age 65+ years  N = 7,480** | **Any preceding condition  N = 11,836** |
| Normal blood pressure | 29.4 | 12.8 | 13.1 | 6.8 | 14.3 | 15.4 |
| Elevated blood pressure | 12.1 | 8.3 | 7.3 | 5.8 | 9.7 | 9.7 |
| Stage 1 hypertension | 16.3 | 10.1 | 10.7 | 6.7 | 10.1 | 11.4 |
| Stage 2 hypertension | 11.3 | 9.7 | 15.0 | 13.0 | 13.6 | 13.0 |
| Taking antihypertensive medication | 31.0 | 59.2 | 53.7 | 67.7 | 52.3 | 50.5 |
| \*Normal blood pressure: systolic/diastolic blood pressure < 120/80 mm Hg; Elevated blood pressure: systolic/diastolic blood pressure 120-129/<80 mm Hg; Stage 1 hypertension: systolic/diastolic blood pressure 130-139/80-89 mm Hg; Stage 2 hypertension: systolic/diastolic blood pressure ≥ 140/90 mm Hg. | | | | | | |
| †Diabetes was defined by fasting serum glucose ≥ 126 mg/dL, non-fasting glucose ≥ 200 mg/dL, HbA1c ≥ 6.5%, or self-reported use of insulin or oral glucose lowering medication. | | | | | | |
| ‡Chronic kidney disease is defined by an albumin-to-creatinine ratio ≥ 30 mg/dl or an estimated glomerular filtration rate <60 ml/min/1.73m² | | | | | | |

Table 3: Predicted atherosclerotic cardiovascular risk among US adults with diabetes, chronic kidney disease, ≥ 65 years of age, and any of the preceding conditions, overall and by BP category.

|  | | **Sub-groups** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Blood pressure category\*** | **Overall  N = 25,780** | **Diabetes  N = 5,187†** | **Chronic kidney disease  N = 4,390‡** | **Diabetes and chronic kidney disease  N = 1,876** | **Age 65+ years  N = 7,480** | **Any preceding condition  N = 11,836** |
| *Proportion (95% confidence interval) with predicted risk ≥ 10% or prevalent cardiovascular disease§‖* | | | | | | |
| Overall | 34.5 (33.5, 35.5) | 71.8 (69.9, 73.7) | 64.2 (62.0, 66.4) | 82.1 (79.6, 84.7) | 85.2 (84.0, 86.3) | 70.6 (69.3, 71.9) |
| Normal blood pressure | 13.5 (12.4, 14.6) | 49.2 (44.1, 54.2) | 32.5 (26.7, 38.3) | 58.9 (46.9, 70.9) | 63.6 (59.7, 67.5) | 47.1 (44.0, 50.3) |
| Elevated blood pressure | 23.7 (21.6, 25.9) | 57.3 (50.8, 63.8) | 43.4 (36.4, 50.4) | 63.1 (50.2, 76.0) | 70.7 (64.6, 76.7) | 56.8 (52.3, 61.2) |
| Stage 1 hypertension | 24.7 (22.7, 26.7) | 61.0 (54.4, 67.5) | 40.0 (33.7, 46.3) | 58.2 (45.5, 70.9) | 77.9 (73.1, 82.7) | 59.6 (55.6, 63.7) |
| Stage 2 hypertension | 46.1 (43.4, 48.7) | 77.5 (71.5, 83.4) | 67.1 (61.6, 72.6) | 84.1 (76.6, 91.6) | 92.1 (89.4, 94.8) | 77.7 (74.9, 80.6) |
| Taking antihypertensive medication | 59.5 (58.0, 61.0) | 79.6 (77.5, 81.8) | 78.9 (76.4, 81.3) | 88.1 (84.9, 91.3) | 93.4 (92.3, 94.4) | 81.0 (79.6, 82.5) |
| *Median (25th - 75th percentile) predicted risk¶* | | | | | | |
| Overall | 4.7 (1.8, 10.8) | 14.4 (7.0, 27.5) | 11.4 (4.3, 22.4) | 19.5 (9.4, 33.3) | 18.3 (11.6, 27.4) | 14.0 (7.2, 22.6) |
| Normal blood pressure | 1.9 (0.79, 4.6) | 7.2 (3.0, 15.1) | 3.3 (0.90, 8.5) | 8.0 (4.4, 18.5) | 10.9 (6.8, 15.9) | 7.4 (3.6, 13.3) |
| Elevated blood pressure | 4.1 (1.9, 8.4) | 10.4 (4.6, 17.6) | 6.0 (2.5, 14.8) | 11.6 (4.8, 20.9) | 13.8 (8.3, 19.9) | 10.4 (5.7, 17.5) |
| Stage 1 hypertension | 4.2 (1.9, 8.5) | 10.8 (5.5, 19.8) | 6.3 (2.0, 13.9) | 9.6 (5.2, 22.7) | 15.4 (10.0, 23.4) | 11.3 (5.8, 18.8) |
| Stage 2 hypertension | 8.1 (3.9, 16.7) | 19.7 (9.7, 30.1) | 14.7 (6.1, 23.7) | 20.9 (11.9, 34.2) | 21.9 (16.0, 29.7) | 18.3 (10.0, 26.2) |
| Taking antihypertensive medication | 9.9 (4.5, 19.1) | 17.8 (9.1, 31.5) | 16.9 (8.3, 28.9) | 23.4 (11.8, 36.9) | 21.6 (14.7, 31.7) | 17.1 (9.9, 27.5) |
| \*Normal blood pressure: systolic/diastolic blood pressure < 120/80 mm Hg; Elevated blood pressure: systolic/diastolic blood pressure 120-129/<80 mm Hg; Stage 1 hypertension: systolic/diastolic blood pressure 130-139/80-89 mm Hg; Stage 2 hypertension: systolic/diastolic blood pressure ≥ 140/90 mm Hg. | | | | | | |
| †Diabetes was defined by fasting serum glucose ≥ 126 mg/dL, non-fasting glucose ≥ 200 mg/dL, HbA1c ≥ 6.5%, or self-reported use of insulin or oral glucose lowering medication. | | | | | | |
| ‡Chronic kidney disease is defined by an albumin-to-creatinine ratio ≥ 30 mg/dl or an estimated glomerular filtration rate <60 ml/min/1.73m² | | | | | | |
| §Prevalent cardiovascular disease was defined by self-report of previous heart failure, coronary heart disease, stroke, or myocardial infarction | | | | | | |
| ‖Predicted risk for cardiovascular disease was computed using the Pooled Cohort Risk equations, based on the guideline by American College of Cardiology / American Heart Association, 2013 | | | | | | |
| ¶Data from survey participants with prevalent cardiovascular disease were not included for these statistics | | | | | | |

Figure 1: Distribution of 10-year predicted atherosclerotic cardiovascular risk among survey participants with predicted risk < 10% and diabetes, chronic kidney disease, ≥ 65 years of age, or any of the preceding conditions.



Results do not include data from survey participants with prevalent cardiovascular disease or 10-year predicted risk for atherosclerotic cardiovascular disease ≥ 10%.

Figure 2: Ten-year predicted risk for atherosclerotic cardiovascular disease as a function of age for survey participants overall and among those with diabetes, chronic kidney disease, or both diabetes and chronic kidney disease.



Figure 3: Probability of ten-year predicted risk for atherosclerotic cardiovascular disease ≥ 10% as a function of age for survey participants overall and among those with diabetes, chronic kidney disease, or both diabetes and chronic kidney disease.



**SUPPLEMENT**

Table S1: Characteristics of US adults with stage 1 hypertension, overall and with diabetes, chronic kidney disease, ≥ 65 years of age, or any of the three preceding conditions

|  | | **Sub-groups** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Characteristic\*** | **Overall  N = 3,918** | **Diabetes  N = 495†** | **Chronic kidney disease  N = 430‡** | **Diabetes and chronic kidney disease  N = 123** | **Age 65+ years  N = 782** | **Any preceding condition  N = 1,346** |
| Age, years | 53.1 (0.23) | 56.6 (0.70) | 56.6 (0.67) | 56.8 (1.4) | 70.1 (0.21) | 61.8 (0.42) |
| Male | 55.6 | 63.9 | 50.0 | 64.6 | 53.5 | 54.6 |
| Race / ethnicity | | | | | | |
| Hispanic | 11.2 | 20.6 | 15.9 | 25.9 | 8.0 | 13.4 |
| Non-Hispanic Asian | 2.4 | 3.8 | 2.6 | 2.1 | 1.8 | 2.5 |
| Non-Hispanic White | 73.7 | 58.8 | 64.6 | 53.5 | 81.2 | 70.7 |
| Non-Hispanic Black | 8.6 | 12.4 | 13.1 | 11.4 | 6.1 | 9.8 |
| Other Race - Including Multi-Racial | 4.1 | 4.4 | 3.8 | 7.1 | 2.9 | 3.6 |
| Total cholesterol, mg/dl | 210.9 (1.0) | 195.9 (2.8) | 206.9 (2.5) | 205.1 (5.7) | 208.2 (2.1) | 205.2 (1.7) |
| HDL-cholesterol, mg/dl | 52.8 (0.41) | 46.3 (0.89) | 52.9 (1.3) | 45.5 (1.7) | 56.4 (0.78) | 53.3 (0.62) |
| Systolic blood pressure, mm Hg | 128.4 (0.18) | 131.0 (0.41) | 129.6 (0.48) | 131.5 (0.86) | 132.4 (0.29) | 131.0 (0.26) |
| Diastolic blood pressure, mm Hg | 78.9 (0.18) | 76.0 (0.60) | 77.5 (0.52) | 75.7 (1.2) | 72.0 (0.45) | 75.0 (0.35) |
| Antihypertensive medication use | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Diabetes | 9.0 | 100.0 | 22.4 | 100.0 | 15.5 | 35.2 |
| Chronic kidney disease | 8.4 | 20.9 | 100.0 | 100.0 | 15.4 | 32.8 |
| Aged 65+ years | 13.9 | 24.1 | 25.8 | 22.5 | 100.0 | 54.7 |
| Current smoker | 20.5 | 20.5 | 26.5 | 25.8 | 11.7 | 18.0 |
| Prevalent CVD§ | 5.7 | 14.5 | 9.0 | 15.3 | 12.8 | 10.9 |
| \*Table values are mean (standard error) or proportion. | | | | | | |
| †Diabetes was defined by fasting serum glucose ≥ 126 mg/dL, non-fasting glucose ≥ 200 mg/dL, HbA1c ≥ 6.5%, or self-reported use of insulin or oral glucose lowering medication. | | | | | | |
| ‡Chronic kidney disease is defined by an albumin-to-creatinine ratio ≥ 30 mg/dl or an estimated glomerular filtration rate <60 ml/min/1.73m² | | | | | | |
| §Prevalent cardiovascular disease was defined by self-report of previous heart failure, coronary heart disease, stroke, or myocardial infarction | | | | | | |
| CVD = cardiovascular disease; HDL = High density lipoprotein | | | | | | |

Figure S1: Distribution of 10-year predicted atherosclerotic cardiovascular risk among survey participants with stage 1 hypertension, predicted risk < 10% and diabetes, chronic kidney disease, ≥ 65 years of age, or any of the preceding conditions.



Results do not include data from survey participants with prevalent cardiovascular disease or 10-year predicted risk for atherosclerotic cardiovascular disease ≥ 10%.

Figure S2: Ten-year predicted risk for atherosclerotic cardiovascular disease as a function of age for participants with stage 1 hypertension overall and among those with diabetes, chronic kidney disease, or both diabetes and chronic kidney disease.



Figure S3: Probability of ten-year predicted risk for atherosclerotic cardiovascular disease ≥ 10% as a function of age for participants with stage 1 hypertension overall and among those with diabetes, chronic kidney disease, or both diabetes and chronic kidney disease.

