Supplementary Table 1 The information of single nucleotide polymorphisms associated with type 2 diabetes at the genome-wide significance level

SNP	Effect allele	Non-effect allele	Effect allele frequency	Effect size
rs10193447	T	C	0.60	0.07
rs10238625	A	G	0.54	0.07
rs1061810	A	C	0.28	0.08
rs10965223	A	G	0.59	0.08
rs10965248	T	C	0.82	0.14
rs11187140	G	A	0.62	0.13
rs11616380	G	T	0.71	0.09
rs11708067	A	G	0.79	0.11
rs11712037	C	G	0.87	0.13
rs1558902	A	T	0.42	0.12
rs1635852	T	C	0.50	0.10
rs2023681	G	A	0.89	0.12
rs2292626	C	T	0.50	0.09
rs231360	T	C	0.41	0.08
rs233449	G	A	0.73	0.09
rs2925979	T	C	0.30	0.08
rs340874	C	T	0.55	0.07
rs35352848	T	C	0.78	0.09
rs3802177	G	A	0.68	0.11
rs3821943	T	C	0.54	0.10
rs4238013	C	T	0.20	0.10
rs429358	T	C	0.85	0.12
rs4402960	T	G	0.31	0.14
rs4774420	C	T	0.70	0.08
rs5219	T	C	0.38	0.07
rs56348580	G	C	0.68	0.08

rs6757251	C	T	0.90	0.13
rs7428936	T	C	0.59	0.07
rs756852	G	A	0.60	0.09
rs757209	G	A	0.58	0.09
rs76550717	A	G	0.83	0.10
rs7903146	T	C	0.29	0.29
rs8056814	G	A	0.92	0.15
rs810517	C	T	0.51	0.09
rs9410573	T	C	0.60	0.08
rs952471	G	C	0.69	0.08
rs9687833	A	G	0.19	0.10

SNP, single nucleotide polymorphism

Supplementary Table 2 Hazard ratio and 95% confidence interval of the genetic risk score with incident type 2 diabetes (N=113 927)

	Genetic risk score (tertiles)			HR (95% CI) for the continuous variable	P for trend
	Low genetic risk	Medium genetic risk	High genetic risk		
Cases/N	455/37 938	679/37 938	848/38 051		
Model 1[a]	1.00	1.50 (1.33-1.69)	1.88 (1.68-2.11)	1.98 (1.78-2.21)	<0.001
Model 2[b]	1.00	1.55 (1.37-1.74)	1.90 (1.69-2.13)	2.01 (1.80-2.25)	<0.001

HR: hazard ratio; CI: confidence interval.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment center, genotyping batch, and the first ten genetic principal components.

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment center, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of lipid-lowering drugs (yes/no), systolic blood pressure (continuous, mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), genotyping batch, and the first ten genetic principal components.

Supplementary Table 3 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure with further adjustment for serum creatinine

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.23 (1.07-1.42)	1.33 (1.16-1.52)	1.45 (1.27-1.65)	1.58 (1.39-1.80)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.90 (0.79-1.03)	0.97 (0.85-1.11)	1.14 (1.00-1.29)	1.23 (1.09-1.40)	1.11 (1.07-1.15)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and serum creatinine levels (continuous, umol/L).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and serum creatinine levels (continuous, umol/L).

Supplementary Table 4 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure with further adjustment for mean arterial pressure

| | Quintiles | | | | | Per SD | *P* trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.23 (1.07-1.42)	1.33 (1.16-1.52)	1.45 (1.27-1.66)	1.58 (1.39-1.81)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.88 (0.77-1.01)	0.92 (0.81-1.05)	1.04 (0.92-1.19)	1.07 (0.93-1.23)	1.06 (1.01-1.10)	0.01

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and mean arterial pressure (continuous, mm Hg).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and mean arterial pressure (continuous, mm Hg).

Supplementary Table 5 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure with further adjustment for waist circumference

| | Quintiles | | | | | Per SD | *P* trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.17 (1.01-1.34)	1.25 (1.09-1.43)	1.34 (1.17-1.53)	1.46 (1.28-1.66)	1.03 (1.01-1.04)	<0.001
PP [b]	1.00	0.93 (0.81-1.06)	0.99 (0.87-1.13)	1.16 (1.03-1.32)	1.27 (1.12-1.44)	1.12 (1.08-1.16)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and waist circumference (continuous, cm).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), and waist circumference (continuous, cm).

Supplementary Table 6 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure with further adjustment for antihypertensive drugs types

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.23 (1.07-1.42)	1.33 (1.16-1.52)	1.45 (1.27-1.65)	1.58 (1.39-1.80)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.91 (0.79-1.04)	0.98 (0.86-1.11)	1.15 (1.01-1.30)	1.25 (1.10-1.41)	1.11 (1.07-1.15)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), thiazide diuretics or beta-blockers (yes/no), and angiotensin-converting enzyme inhibitors, calcium channel blockers, or angiotensin receptor blockers (yes/no).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), thiazide diuretics or beta-blockers (yes/no), and angiotensin-converting enzyme inhibitors, calcium channel blockers, or angiotensin receptor blockers (yes/no).

Supplementary Table 7 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure by including participants with serum glucose levels≤6.1 mmol/L (N=146 439)

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.22 (1.04-1.43)	1.28 (1.10-1.49)	1.32 (1.13-1.53)	1.51 (1.30-1.74)	1.03 (1.01-1.04)	<0.001
PP [b]	1.00	0.90 (0.77-1.04)	0.93 (0.80-1.07)	1.12 (0.97-1.29)	1.13 (0.98-1.30)	1.07 (1.03-1.12)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).

Supplementary Table 8 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure with further adjustment for serum glucose and hemoglobin A1c

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.19 (1.04-1.37)	1.29 (1.13-1.48)	1.31 (1.15-1.50)	1.47 (1.29-1.67)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.91 (0.80-1.05)	0.99 (0.87-1.12)	1.12 (0.99-1.27)	1.15 (1.02-1.31)	1.07 (1.03-1.10)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), blood glucose (continuous, mmol/L), and hemoglobin A1c (continuous, mmol/mol).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), family history of diabetes (yes, no, or missing), blood glucose (continuous, mmol/L), and hemoglobin A1c (continuous, mmol/mol).

Supplementary Table 9 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure by excluding the participants with less than two years of follow-up (N=144 094)

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.20 (1.03-1.39)	1.35 (1.17-1.56)	1.42 (1.23-1.64)	1.56 (1.36-1.79)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.98 (0.85-1.13)	0.97 (0.85-1.12)	1.21 (1.05-1.38)	1.29 (1.13-1.48)	1.12 (1.08-1.16)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).

Supplementary Table 10 Hazard ratio and 95% confidence interval of incident type 2 diabetes for arterial stiffness index and pulse pressure by including participants without imputed data (N=113 140)

| | Quintiles | | | | | Per SD | P trend |
	Q1	Q2	Q3	Q4	Q5		
ASI [a]	1.00	1.21 (1.01-1.44)	1.35 (1.14-1.59)	1.45 (1.23-1.70)	1.59 (1.35-1.86)	1.03 (1.02-1.04)	<0.001
PP [b]	1.00	0.93 (0.79-1.09)	0.99 (0.84-1.16)	1.14 (0.98-1.33)	1.29 (1.11-1.51)	1.12 (1.08-1.17)	<0.001

ASI, arterial stiffness index; PP, pulse pressure.

[a] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), systolic blood pressure (mm Hg), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).

[b] Adjusted for age (continuous, years), sex (male and female), UK Biobank assessment centre, race (white European, mixed, South Asian, black, others), Townsend Deprivation index (continuous), alcohol consumption (current, former, never, missing), smoking status (current, former, never, missing), body mass index (continuous, kg/m^2), physical activity (continuous, MET-minutes), healthy diet score (0, 1, 2, 3, 4, 5), use of anti-hypertensive drugs (yes/no), use of cholesterol-lowering drugs (yes/no), low-density lipoprotein cholesterol (continuous, mmol/L), and family history of diabetes (yes, no, or missing).