

**Supplementary Table 1.** Numbers of missing data at enrolment period (n=3,011)

<b>Characteristics</b>	<b>Number of observations</b>	<b>Number of missing (%)</b>
Age at enrolment (year)	3,011	0
Sex	3,011	0
Educational level	3,002	9 (0.30)
Marital status	3,006	5 (0.20)
Reimbursement	2,984	27 (0.90)
Smoking status	3,011	0
Alcohol drinking	3,008	3 (0.10)
Having family history of diabetes mellitus	3,010	1 (0.03)
Underlying diseases		
- Hypertension	3,002	9 (0.30)
- Dyslipidemia	3,003	8 (0.30)
- Chronic kidney disease	2,999	12 (0.40)
- Coronary artery disease	2,998	13 (0.40)
- Cerebrovascular disease	2,998	13 (0.40)
- Fatty liver	2,999	12 (0.40)
- Cancer	2,999	12 (0.40)
Berlin category I $\geq$ 2	3,011	0
Body mass index (kg/m <sup>2</sup> )	3,000	11 (0.40)
Waist circumference (cm)	2,861	150 (4.98)
Systolic blood pressure (mmHg)	2,989	22 (0.70)
Diastolic blood pressure (mmHg)	2,988	23 (0.80)
Fasting plasma glucose (mg/dl)	3,011	0
HbA1c (%)	935	2,076 (68.95)

**Supplementary Table 2.** Numbers of missing data at follow up period (n=43,817)

<b>Characteristics</b>	<b>Number of observations</b>	<b>Number of missing (%)</b>
Body weight (kg)	23,723	20,094 (45.86)
Systolic blood pressure (mmHg)	23,917	19,900 (45.42)
Diastolic blood pressure (mmHg)	23,917	19,900 (45.42)
Serum triglyceride level (mg/dl)	36,855	6,962 (15.89)
Serum uric acid (mg/dl)	40,762	3,055 (6.97)
LDL-cholesterol (mg/dl)	43,811	6 (0.01)
HDL-cholesterol (mg/dl)	43,669	148 (0.34)

**Supplementary Table 3.** Imputation models: predictors & equations

Imputed variable	Predictors																	Model		
	Sex	Age	Education	Reimburse	Smoking	Alcohol	Family DM	Hypertension	Berlin category	FPG	HbA1c	Progression	SBP	DBP	Body weight	Triglyceride	Uric Acid		HDL	LDL
Fixed covariate																				
Education	√	√		√	√	√	√	√	√	√	√	√								Ordinal logit regression
Reimburse	√	√	√		√	√	√	√	√	√	√	√								Multi-logit regression
Alcohol	√	√	√	√	√		√	√	√	√	√	√								Multi-logit regression
Family DM	√	√	√	√	√	√		√	√	√	√	√								Logit regression
Hypertension	√	√	√	√	√	√		√	√	√	√	√								Logit regression
HbA1C	√	√			√	√	√	√	√	√		√	√	√						Interval regression
Time varying covariate																				
SBP	√	√			√			√	√	√	√		√	√	√	√	√	√	√	Interval regression
DBP	√	√			√			√	√	√	√		√		√	√	√	√	√	Interval regression
Body weight	√	√			√			√	√	√	√		√	√		√	√	√	√	Interval regression
Triglyceride	√	√			√			√	√	√	√		√	√	√		√	√	√	Interval regression
Uric acid	√	√			√			√	√	√	√		√	√	√	√		√	√	Interval regression
HDL	√	√			√			√	√	√	√		√	√	√	√	√		√	Interval regression
LDL	√	√			√			√	√	√	√		√	√	√	√	√	√		Interval regression

**Supplementary Table 4.** Characteristics of study's participants by FPG-HbA1c based on imputed data

Characteristics	Total N = 3011	FPG 100-109 & HbA1c <5.7 (N=610)	FPG 100-109 & HbA1c 5.7-6.49% (N=1533)	FPG 110-125 & HbA1c <5.7% (N=141)	FPG 110-125 & HbA1c 5.7-6.49% (N=727)
<b>Fixed covariates</b>	<b>Proportion/Mean (SE)</b>				
Age at enrolment (year)	63.377 (0.169)	59.420 (0.371)	64.392 (0.222)	59.805 (0.725)	65.250 (0.351)
Female	65.92 (0.01)	47.869 (0.020)	74.494 (0.011)	41.844 (0.042)	67.675 (0.017)
Educational level					
- Lower than primary school	2.723 (0.003)	0.656 (0.003)	3.327 (0.005)	0.709 (0.007)	3.576 (0.007)
- Primary school	32.248 (0.009)	28.197 (0.018)	32.420 (0.012)	31.206 (0.039)	35.488 (0.018)
- Secondary school	28.960 (0.008)	29.836 (0.019)	26.941 (0.011)	31.206 (0.039)	32.050 (0.017)
- College or higher	36.068 (0.009)	41.311 (0.020)	37.312 (0.012)	36.879 (0.041)	28.886 (0.017)
Reimbursement					
- Universal health care coverage	1.827 (0.002)	2.951 (0.007)	1.435 (0.003)	0.709 (0.007)	1.926 (0.005)
- Social security scheme	9.432 (0.005)	11.803 (0.013)	9.589 (0.008)	7.092 (0.022)	7.565 (0.010)
- Civil servant	59.808 (0.009)	58.361 (0.020)	59.752 (0.013)	60.284 (0.041)	61.348 (0.018)
- Others	28.861 (0.008)	26.885 (0.018)	29.224 (0.012)	31.915 (0.039)	29.161 (0.017)
Smoking status					
- Never	75.656 (0.008)	66.230 (0.019)	80.170 (0.010)	58.865 (0.041)	77.304 (0.016)
- Past smoker	20.359 (0.007)	27.705 (0.018)	16.895 (0.010)	30.496 (0.039)	19.532 (0.015)
- Current smoker	3.985 (0.004)	6.066 (0.010)	2.935 (0.004)	10.638 (0.026)	3.164 (0.006)
Alcohol drinking					
- Never	53.969 (0.009)	41.639 (0.020)	59.491 (0.013)	40.426 (0.041)	55.296 (0.018)
- Past drinking	26.536 (0.008)	29.180 (0.018)	25.179 (0.011)	32.624 (0.039)	25.997 (0.016)
- Current drinking	19.495 (0.007)	29.180 (0.018)	15.329 (0.009)	26.950 (0.037)	18.707 (0.014)
Having family history of diabetes mellitus	40.020 (0.009)	37.869 (0.020)	41.487 (0.013)	32.624 (0.039)	40.165 (0.018)
Berlin category I $\geq$ 2	39.954 (0.009)	35.246 (0.019)	41.553 (0.013)	36.170 (0.040)	41.265 (0.018)
Fasting plasma glucose (mg/dl)	106.984 (0.102)	103.816 (0.105)	104.040 (0.064)	113.248 (0.261)	114.637 (0.151)
HbA1c (%)	5.786 (0.011)	5.555 (0.008)	5.853 (0.004)	5.529 (0.019)	5.888 (0.006)

**Supplementary Table 4.** Characteristics of study's participants by FPG-HbA1c based on imputed data (continue)

<b>Characteristics</b>	<b>Total N = 3011</b>	<b>FPG 100-109 &amp; HbA1c &lt;5.7 (N=610)</b>	<b>FPG 100-109 &amp; HbA1c 5.7-6.49% (N=1533)</b>	<b>FPG 110-125 &amp; HbA1c &lt;5.7% (N=141)</b>	<b>FPG 110-125 &amp; HbA1c 5.7-6.49% (N=727)</b>
<b>Time varying covariates</b>	<b>Proportion/Mean (SE)</b>				
Body mass index (kg/m <sup>2</sup> )	26.118 (0.096)	25.844 (0.215)	26.253 (0.143)	25.722 (0.384)	26.141 (0.225)
Systolic blood pressure (mmHg)	136.344 (0.431)	133.950 (0.961)	136.560 (0.577)	136.523 (1.747)	137.780 (0.938)
Diastolic blood pressure (mmHg)	77.590 (0.203)	77.633 (0.413)	77.585 (0.253)	78.488 (0.879)	77.389 (0.416)
Serum triglyceride level (mg/dl)	139.317 (1.360)	138.030 (2.973)	137.923 (1.877)	143.657 (6.811)	142.494 (2.793)
Serum uric acid (mg/dl)	5.692 (0.026)	5.783 (0.059)	5.603 (0.035)	5.768 (0.127)	5.790 (0.056)
LDL-cholesterol (mg/dl)	126.994 (0.595)	126.066 (1.290)	127.716 (0.802)	128.170 (2.959)	126.022 (1.307)
HDL-cholesterol (mg/dl)	53.501 (0.248)	52.966 (0.575)	54.016 (0.340)	52.113 (1.225)	53.131 (0.501)