

Variable	No diabetes mellitus (53,350)	Diabetes mellitus (11,777)	<i>p</i> -value
Age, mean ± Standard Deviation	65.7±13.9	64.7±11.0	<0.001
Length of Stay, median (interquartile range)	3(2-5)	3(2-5)	0.002
Post-discharge mortality, N (%)	25633 (48.0)	6099 (51.8)	<0.001
Female, N (%)	23,892 (44.8)	4724 (40.1)	<0.001
Male, N (%)	29,458 (55.2)	7053 (59.9)	
Hypertension, N (%)	18833 (35.3)	8016 (68.1)	<0.001
Heart Failure, N (%)	1113 (2.1)	298 (2.5)	0.003
Atrial Fibrillation, N (%)	2954 (5.5)	398 (3.4)	<0.001
Anaemia, N (%)	2302 (4.3)	855 (7.3)	<0.001
Hyperlipidaemia, N (%)	8912 (16.7)	3952 (33.6)	<0.001
Rheumatic Valve Disease, N (%)	111 (0.2)	12 (0.1)	0.02
Ischaemic Heart Disease, N (%)	1422 (2.7)	542 (4.6)	<0.001
Arrhythmia, N (%)	3373 (6.3)	460 (3.9)	<0.001
Chronic kidney disease, N (%)	2053 (3.8)	1284 (10.9)	<0.001
Liver disease, N (%)	447 (0.8)	132 (1.1)	0.003
Epilepsy, N (%)	690 (1.3)	123 (1.0)	0.03
Chronic Obstructive Pulmonary Disease, N (%)	1105 (2.1)	130 (1.1)	<0.001
Pneumonia, N (%)	2865 (5.4)	673 (5.7)	0.14
Sepsis, N (%)	963 (1.8)	309 (2.6)	<0.001
Urinary tract infection, N (%)	133 (0.2)	54 (0.5)	<0.001
Cardiovascular events, N (%)	433 (0.8)	126 (1.1)	0.01
Acute Kidney Injury, N (%)	1001 (1.9)	362 (3.1)	<0.001
Death, N (%)	3015 (5.7)	598 (5.1)	0.01

**Supplementary Table 1** Baseline characteristics of hospitalized undetermined stroke patients in Thailand

Complication	Diabetes mellitus	
	Odds Ratio (99% Confidence Intervals)	<i>p</i> -value
Pneumonia		
A	<b>1.08 (1.04, 1.12)</b>	<b>&lt;0.001</b>
B	<b>1.18 (1.13, 1.22)</b>	<b>&lt;0.001</b>
C	<b>1.26 (1.21, 1.31)</b>	<b>&lt;0.001</b>
D	<b>1.19 (1.15, 1.24)</b>	<b>&lt;0.001</b>
Sepsis		
A	<b>1.55 (1.47, 1.64)</b>	<b>&lt;0.001</b>
B	<b>1.57 (1.48, 1.66)</b>	<b>&lt;0.001</b>
C	<b>1.63 (1.53, 1.73)</b>	<b>&lt;0.001</b>
D	<b>1.57 (1.47, 1.67)</b>	<b>&lt;0.001</b>
Urinary tract infection		
A	<b>1.62 (1.39, 1.88)</b>	<b>&lt;0.001</b>
B	<b>1.51 (1.30, 1.77)</b>	<b>&lt;0.001</b>
C	<b>1.35 (1.15, 1.59)</b>	<b>&lt;0.001</b>
D	<b>1.34 (1.13, 1.57)</b>	<b>&lt;0.001</b>
Cardiovascular events		
A	<b>1.22 (1.18, 1.26)</b>	<b>&lt;0.001</b>
B	<b>1.21 (1.17, 1.25)</b>	<b>&lt;0.001</b>
C	<b>1.20 (1.16, 1.24)</b>	<b>&lt;0.001</b>
D	<b>1.21 (1.16, 1.25)</b>	<b>&lt;0.001</b>
Acute Kidney Injury		
A	<b>1.74 (1.66, 1.83)</b>	<b>&lt;0.001</b>
B	<b>1.86 (1.77, 1.95)</b>	<b>&lt;0.001</b>
C	<b>1.63 (1.54, 1.72)</b>	<b>&lt;0.001</b>
D	<b>1.53 (1.45, 1.62)</b>	<b>&lt;0.001</b>
In-hospital death		
A	<b>1.09 (1.05, 1.13)</b>	<b>&lt;0.001</b>
B	<b>1.09 (1.05, 1.13)</b>	<b>&lt;0.001</b>
C	<b>1.23 (1.18, 1.28)</b>	<b>&lt;0.001</b>
D	<b>1.13 (1.08, 1.18)</b>	<b>&lt;0.001</b>

**Supplementary Table 2** Odds ratios with 99% CI of developing different stroke complications (pneumonia, sepsis, urinary tract infection, cardiovascular events – cardiac arrest, myocardial infarction and recurrent stroke, acute kidney injury, in-hospital death) in ischaemic stroke patients with diabetes mellitus in Thailand; patients without diabetes mellitus were used as a reference category

Model A – unadjusted

Model B – adjusted for age and sex

Model C – adjusted for age, sex and pre-existing medical conditions (hypertension, heart failure, atrial fibrillation, anaemia, hyperlipidaemia, rheumatic valve disease, ischaemic heart disease, arrhythmia, chronic kidney disease, liver disease, epilepsy, chronic obstructive pulmonary disease)

Model D – adjusted for age, sex, pre-existing medical conditions and other complications

Complication	Diabetes mellitus	
	Odds Ratio (99% Confidence Intervals)	<i>p</i> -value
Pneumonia		
A	<b>1.42 (1.34, 1.50)</b>	<b>&lt;0.001</b>
B	<b>1.43 (1.35, 1.51)</b>	<b>&lt;0.001</b>
C	<b>1.21 (1.14, 1.29)</b>	<b>&lt;0.001</b>
D	<b>1.15 (1.08, 1.23)</b>	<b>&lt;0.001</b>
Sepsis		
A	<b>1.93 (1.76, 2.11)</b>	<b>&lt;0.001</b>
B	<b>1.90 (1.74, 2.08)</b>	<b>&lt;0.001</b>
C	<b>1.60 (1.45, 1.77)</b>	<b>&lt;0.001</b>
D	<b>1.55 (1.40, 1.72)</b>	<b>&lt;0.001</b>
Urinary tract infection		
A	<b>1.88 (1.36, 2.60)</b>	<b>&lt;0.001</b>
B	<b>1.70 (1.23, 2.36)</b>	<b>&lt;0.001</b>
C	1.28 (0.91, 1.81)	0.062
D	1.25 (0.88, 1.76)	0.099
Cardiovascular events		
A	<b>1.17 (1.08, 1.26)</b>	<b>&lt;0.001</b>
B	<b>1.20 (1.11, 1.29)</b>	<b>&lt;0.001</b>
C	<b>1.14 (1.05, 1.24)</b>	<b>&lt;0.001</b>
D	<b>1.14 (1.05, 1.24)</b>	<b>&lt;0.001</b>
Acute Kidney Injury		
A	<b>2.50 (2.29, 2.74)</b>	<b>&lt;0.001</b>
B	<b>2.55 (2.32, 2.79)</b>	<b>&lt;0.001</b>
C	<b>1.86 (1.68, 2.05)</b>	<b>&lt;0.001</b>
D	<b>1.78 (1.60, 1.97)</b>	<b>&lt;0.001</b>
In-hospital death		
A	1.02 (0.97, 1.07)	0.28
B	1.01 (0.97, 1.06)	0.55
C	<b>1.15 (1.10, 1.20)</b>	<b>&lt;0.001</b>
D	<b>1.13 (1.08, 1.19)</b>	<b>&lt;0.001</b>

**Supplementary Table 3** Odds ratios with 99% CI of developing different stroke complications (pneumonia, sepsis, urinary tract infection, cardiovascular events – cardiac arrest, myocardial infarction and recurrent stroke, acute kidney injury, in-hospital death in haemorrhagic stroke patients with diabetes mellitus in Thailand; patients without diabetes mellitus were used as a reference category)

Model A – unadjusted

Model B – adjusted for age and sex

Model C – adjusted for age, sex and pre-existing medical conditions (hypertension, heart failure, atrial fibrillation, anaemia, hyperlipidaemia, rheumatic valve disease, ischaemic heart disease, arrhythmia, chronic kidney disease, liver disease, epilepsy, chronic obstructive pulmonary disease)

Model D – adjusted for age, sex, pre-existing medical conditions and other complications

Complication	Diabetes mellitus	
	Odds Ratio (99% Confidence Intervals)	<i>p</i> -value
Pneumonia		
A	1.07 (0.95, 1.20)	0.14
B	<b>1.18 (1.05, 1.33)</b>	<b>&lt;0.001</b>
C	<b>1.29 (1.14, 1.45)</b>	<b>&lt;0.001</b>
D	<b>1.24 (1.10, 1.41)</b>	<b>&lt;0.001</b>
Sepsis		
A	<b>1.47 (1.24, 1.74)</b>	<b>&lt;0.001</b>
B	<b>1.50 (1.26, 1.78)</b>	<b>&lt;0.001</b>
C	<b>1.50 (1.25, 1.81)</b>	<b>&lt;0.001</b>
D	<b>1.43 (1.18, 1.73)</b>	<b>&lt;0.001</b>
Urinary tract infection		
A	<b>1.84 (1.22, 2.80)</b>	<b>&lt;0.001</b>
B	<b>1.83 (1.20, 2.78)</b>	<b>&lt;0.001</b>
C	<b>1.58 (1.01, 2.47)</b>	<b>0.009</b>
D	1.54 (0.99, 2.42)	0.013
Cardiovascular events		
A	<b>1.32 (1.02, 1.72)</b>	<b>0.006</b>
B	<b>1.31 (1.00, 1.70)</b>	<b>0.009</b>
C	1.19 (0.89, 1.58)	0.12
D	1.16 (0.87, 1.54)	0.186
Acute Kidney Injury		
A	<b>1.66 (1.41, 1.95)</b>	<b>&lt;0.001</b>
B	<b>1.75 (1.49, 2.06)</b>	<b>&lt;0.001</b>
C	<b>1.45 (1.22, 1.73)</b>	<b>&lt;0.001</b>
D	<b>1.41 (1.18, 1.68)</b>	<b>&lt;0.001</b>
In-hospital death		
A	0.89 (0.79, 1.00)	0.014
B	0.91 (0.81, 1.02)	0.04
C	0.99 (0.87, 1.13)	0.867
D	0.93 (0.81, 1.06)	0.13

**Supplementary Table 4** Odds ratios with 99% CI of developing different stroke complications (pneumonia, sepsis, urinary tract infection, cardiovascular events – cardiac arrest, myocardial infarction and recurrent stroke, acute kidney injury, in-hospital death) in undetermined stroke patients with diabetes mellitus in Thailand; patients without diabetes mellitus were used as a reference category

Model A – unadjusted

Model B – adjusted for age and sex

Model C – adjusted for age, sex and pre-existing medical conditions (hypertension, heart failure, atrial fibrillation, anaemia, hyperlipidaemia, rheumatic valve disease, ischaemic heart disease, arrhythmia, chronic kidney disease, liver disease, epilepsy, chronic obstructive pulmonary disease)

Model D – adjusted for age, sex, pre-existing medical conditions and other complications

Pneumonia				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*
Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				
Sepsis				*
Urinary tract infection				*
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				*
Acute kidney injury				*
Sepsis				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*
Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				*
Sepsis				
Urinary tract infection				*
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				*
Acute kidney injury				*
Urinary Tract Infection				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*

Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				*
Sepsis				*
Urinary tract infection				
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				*
Acute kidney injury				*
Cardiovascular events				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*
Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				*
Sepsis				*
Urinary tract infection				*
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				
Acute kidney injury				*
Acute Kidney Injury				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*
Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				*
Sepsis				*

Urinary tract infection				*
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				*
Acute kidney injury				
In-hospital mortality				
Variable	Model A	Model B	Model C	Model D
Sex		*	*	*
Age		*	*	*
Hypertension			*	*
Heart failure			*	*
Atrial fibrillation			*	*
Anaemia			*	*
Hyperlipidaemia			*	*
Rheumatic valve disease			*	*
Ischaemic heart disease			*	*
Arrhythmia			*	*
Chronic kidney disease			*	*
Liver disease			*	*
Epilepsy			*	*
Chronic obstructive pulmonary disease			*	*
Pneumonia				*
Sepsis				*
Urinary tract infection				*
Cardiovascular events (myocardial infarction, cardiac arrest, recurrent stroke†)				*
Acute kidney injury				*

**Supplementary Table 5** Adjusting covariates included in the complications regression models  
†only type-specific recurrent strokes in ischaemic and haemorrhagic groups

Outcome	OR (99%CI)	p-value
In-hospital death	0.97 (0.89-1.06)	0.406
UTI	1.21 (0.84-1.72)	0.174
Sepsis	1.03 (0.91-1.16)	0.525
Pneumonia	0.91 (0.84-0.98)	<b>0.002</b>
Cardiovascular Events	0.83 (0.70-0.99)	<b>0.006</b>
AKI	1.16 (1.04-1.28)	<b>&lt;0.0001</b>

**Supplementary Table 6** Odds ratios, 99% confidence intervals and p-values for the interaction term for sex (female vs male) and diabetes mellitus in in-hospital outcomes.

Outcome	HR (99%CI)	p-value
Ischaemic Stroke Mortality	0.95 (0.92-0.98)	<b>&lt;0.0001</b>
Ischaemic Stroke Recurrence	0.96 (0.90-1.03)	0.166
Haemorrhagic Stroke Mortality	0.97 (0.90-1.05)	0.312
Haemorrhagic Stroke Recurrence	1.01 (0.83-1.22)	0.929

**Supplementary Table 7** Hazard Ratios, 99% confidence intervals and p-values for the interaction term for sex (female vs male) and diabetes mellitus in long-term stroke outcomes.

Ischaemic stroke				
	Type 1 DM		Type 2 DM	
Complications	OR (99% CI)	p-value	OR (99% CI)	p-value
Pneumonia	1.70 (0.95, 3.06)	0.02	<b>1.16 (1.11, 1.20)</b>	<b>&lt;0.0001</b>
Sepsis	2.01 (0.90, 4.48)	0.026	<b>1.50 (1.41, 1.60)</b>	<b>&lt;0.0001</b>
Urinary Tract Infection	-	-	<b>1.33 (1.13, 1.56)</b>	<b>&lt;0.0001</b>
Cardiovascular events	1.21 (0.72, 2.04)	0.35	<b>1.21 (1.17, 1.25)</b>	<b>&lt;0.0001</b>
Acute Kidney Injury	1.05 (0.42, 2.61)	0.9	<b>1.54 (1.45, 1.62)</b>	<b>&lt;0.0001</b>
In-hospital death	0.729 (0.49, 1.08)	0.038	<b>1.10 (1.06, 1.15)</b>	<b>&lt;0.001</b>
Haemorrhagic stroke				
	Type 1 DM		Type 2 DM	
Complications	OR (99% CI)	p-value	OR (99% CI)	p-value
Pneumonia	0.84 (0.36, 1.99)	0.61	<b>1.11 (1.05, 1.19)</b>	<b>&lt;0.0001</b>
Sepsis	1.98 (0.65, 6.03)	0.11	<b>1.47 (1.33, 1.63)</b>	<b>&lt;0.0001</b>
Urinary Tract Infection	-	-	1.23 (0.87, 1.74)	0.12
Cardiovascular events	1.60 (0.69, 3.69)	0.15	<b>1.14 (1.05, 1.23)</b>	<b>&lt;0.0001</b>
Acute Kidney Injury	2.20 (0.75, 6.45)	0.06	<b>1.78 (1.61, 1.97)</b>	<b>&lt;0.0001</b>
In-hospital death	1.15 (0.62, 1.11)	0.563	<b>1.12 (1.07, 1.18)</b>	<b>&lt;0.001</b>
Undetermined stroke				
	Type 1 DM		Type 2 DM	
Complication	OR (99% CI)	p-value	OR (99% CI)	p-value
Pneumonia	0.91 (0.26, 3.18)	0.84	<b>1.23 (1.08, 1.40)</b>	<b>&lt;0.0001</b>
Sepsis	1.74 (0.40, 7.56)	0.33	<b>1.40 (1.15, 1.69)</b>	<b>&lt;0.0001</b>
Urinary Tract Infection	-	-	1.56 (0.99, 2.44)	0.011
Cardiovascular events	0.95 (0.07, 13.02)	0.96	1.14 (0.86, 1.52)	0.23
Acute Kidney Injury	1.63 (0.41, 6.53)	0.36	<b>1.42 (1.19, 1.69)</b>	<b>&lt;0.0001</b>
In-hospital death	1.3 (0.46, 3.64)	0.52	0.91 (0.8, 1.04)	0.08

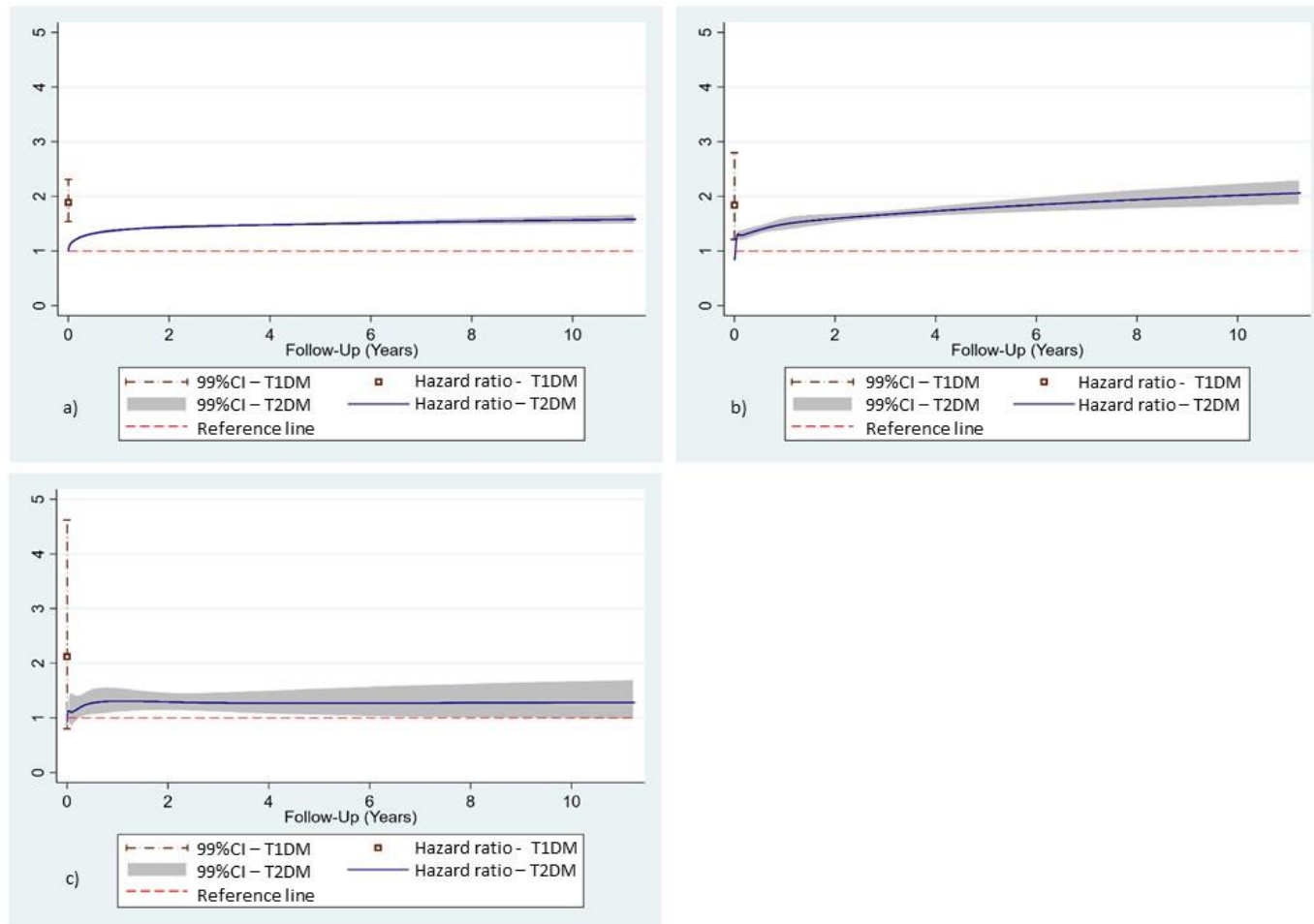
OR – odds ratio, CI – confidence intervals

**Supplementary Table 8** Odds ratios with 99% CI of in-hospital death in patients with type 1 diabetes mellitus and type 2 diabetes mellitus in ischaemic, haemorrhagic and undetermined stroke patients in Thailand; patients without diabetes mellitus were used as a reference category. All the models were adjusted for age, sex, pre-existing medical conditions and complications (sepsis, pneumonia, UTI, cardiovascular events and acute kidney injury).



Ischaemic stroke		
	Type 1 DM	Type 2 DM
Death	<b>1.89 [1.54-2.31]</b>	*
Recurrent stroke	1.06 [0.62-1.79]	<b>1.28 [1.24-1.31]</b>
Haemorrhagic stroke		
	Type 1 DM	Type 2 DM
Death	<b>1.84 [1.21-2.80]</b>	*
Recurrent stroke	2.12 [0.80-4.62]	*

**Supplementary Table 9** Death hazard ratios with 99% confidence intervals for stroke patients with type 1, type 2 and without diabetes mellitus in Thailand; patients without diabetes mellitus were used as a reference category;



**Supplementary Figure 1** Hazard ratio functions plotted against post-discharge follow-up time (days) using RCS modelling with 99% confidence intervals for mortality in ischaemic stroke diabetes mellitus patients (a), mortality in haemorrhagic stroke diabetes mellitus patients (b) and recurrence in haemorrhagic stroke diabetes mellitus patients (c) in Thailand; results in the type 1 patients are represented by the dark red line, results in the type 2 patients are represented by the blue line; the patients without diabetes were used as a reference category. T1DM – type 1 diabetes mellitus, T2DM – type 2 diabetes mellitus, CI – confidence interval