Supplementary Table 1. ICD codes for vasculitis complications

Diseases	ICD-9/10
Hypertension	4019, I10, 4011, I161, 4010
Stroke	V1254, Z8673, 431, 43820, 43811, 4359, V171, 43883, 99702, G459
Heart failure	4280, 42832, 42822, I5032, 42833, I5033, I5022, 42823, I5023, I509, 42830, 42843, 42831, I5030, 42821, 42842, I5021, I5020, 42820, I5031, I5043, I5042, 40491, 40291, 42841, 4289, 42840, I5084, I50810, I5041, I5082, I5040, 4281, I50814, I50811, I50813, I50812, 40201, 40492, I5089, I5083
Myocardial infarction	41000, 41001, 41002, 41010, 41011, 41012 ,41020, 41021, 41022, 41030, 41031, 41032, 41040, 41041, 41042, 41050, 41051, 41052, 41080, 41081, 41082, 41090, 41091, 41092, I21, I219, I230, I231, I232, I233, I234, I235, I236, I238, I210, I2101, I2102, I2109, I211, I2111, I2119, I2121, I2129, I213, I214, I21A1, I21A9, I222
AKI	5849, N179, 5845, N170

ICD: International Classification of Diseases; AKI: acute kidney injury.

Supplementary Table 2. GSNs for drugs used in patients with vasculitis.

Drugs	GSNs
GCs	066110, 006705, 051558, 006704, 007544, 023906, 006696, 006858, 007545, 007543, 006724, 006725, 006753, 007894, 007892, 006786, 006784, 006788, 006776, 006778, 006789, 006721, 067556, 047282, 006745, 060958, 062053, 006780, 013701, 006762, 006758, 006812, 066112, 026721, 006749, 006738, 006742, 006754, 006748, 006750
Immunosuppressants	008765, 016500, 008771, 071489, 021796, 021797, 041832, 047347, 032599, 023724, 041845, 040376, 011682, 011681, 040549, 040550
Monoclonal antibody agent	036870, 065411, 079334, 071056, 071590, 080059
Diuretics	021408, 008209, 008205, 029832, 008163, 006816, 051036, 008151, 021409, 008210, 008213, 006817, 008166, 028915, 008227, 021718, 008217, 008201, 008223, 008182, 021406, 008148, 051037, 008183, 008221, 008224, 021410, 066298, 008206, 021407, 006818, 008149

GSNs: generic sequence numbers; GCs: glucocorticoids.

Supplementary Table 3. Missing values for all included variables in patients with vasculitis.

Variables	Missing
Hemoglobin	7.38%
Platelet	7.81%
White blood cell	7.38%
Anion gap	7.11%
Total calcium	10.65%
Chloride	7.03%
Glucose	7.03%
Potassium	7.03%
Sodium	7.03%
BUN	7.03%
Creatinine	7.03%

BUN: Blood urea nitrogen.

Supplementary Table 4. Hyperparameter of the nine models.

Model	Hyperparameter	Optimal hyperparameter
DT	Random Seed	1
	Splitting Criterion	best
	Loss Function	gini impurity
	Maximum Depth	3
	Minimum Samples for Split	2
	Minimum Samples for Leaf Nodes	1
	Minimum Impurity Decrease Threshold	0
	Random Seed	1

	Random Seed	1
	Number of Trees	100
	Loss Function	gini impurity
RF	Maximum Depth	3
	Minimum Samples for Split	2
	Minimum Samples for Leaf Nodes	1
	Minimum Impurity Decrease Threshold	0
XGBoost	Random Seed	1
	Weak Learner Type	gradient boosted decision tree
	Random Seed	1
SVM	Regularization Parameter	1
	Kernel Function	radial basis function
	Set random seed	1
LightGBM	Weak learner type	gbdt
	Learning rate	0.1
	Set random seed	1
	Regularization parameter	1
Logistic Classification	Penalty type selection	none
	Optimization algorithm selection	lbfgs
	Set tolerance	0.0001
	Set maximum iterations	100
	Weight	uniform
k-Nearest Neighbors	Number of neighbors	5
	Neighbor algorithm	auto

DT: decision tree; RF: random forest; XGBoost: extreme gradient boosting survival learner; SVM: support vector machine.