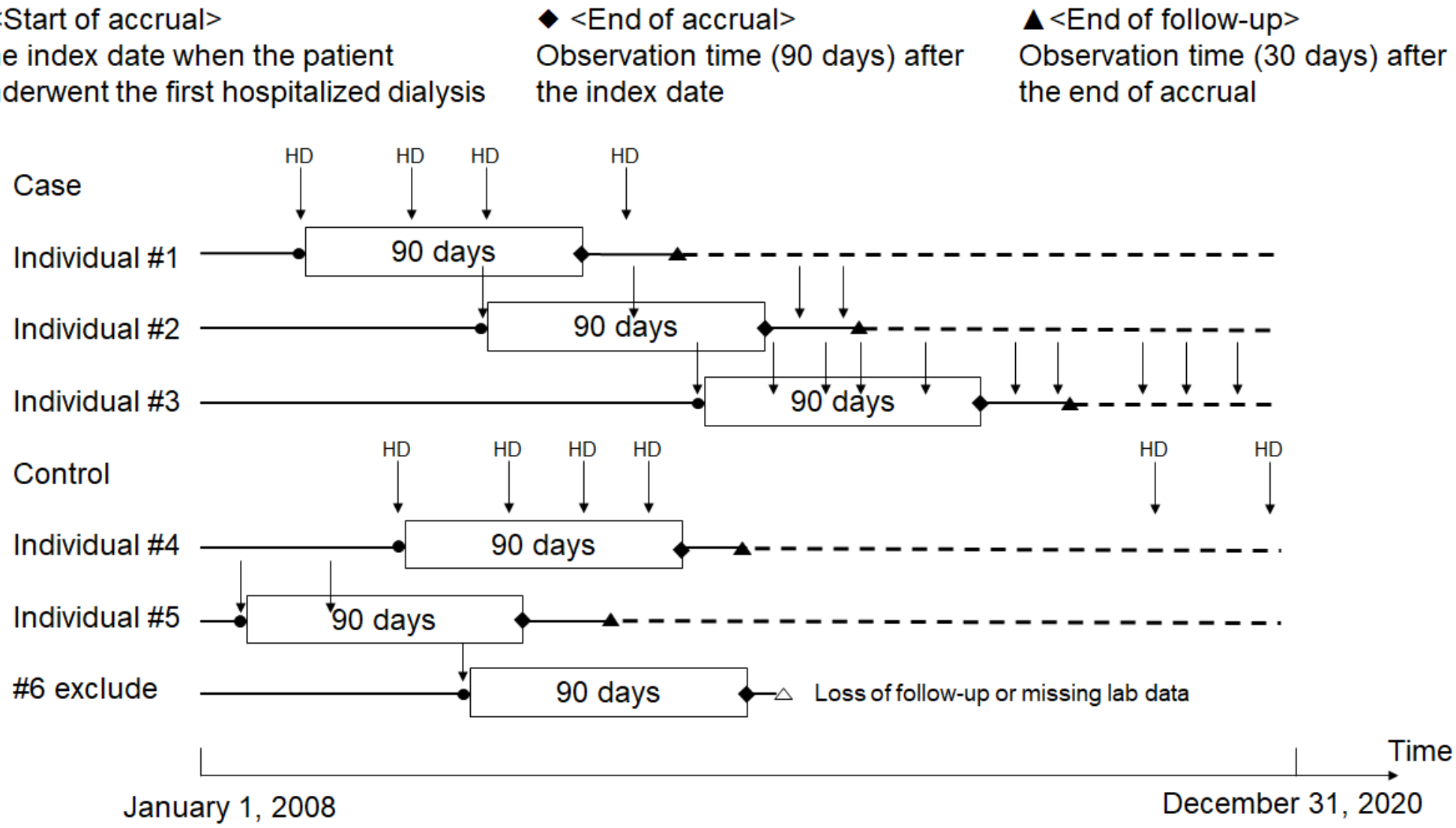
Supplementary 1. Literature reviews on the predictive outcomes of the acute kidney injury requiring dialysis

Title	Sample Size	Input variables	Prediction models	Primary outcomes	Best performance	Reference
Predicting Renal Recovery After Dialysis-Requiring Acute Kidney Injury	2214 patients between 2009/1 and 2015/9	1. baseline eGFR[a] 2. baseline hemoglobin level 3. history of chronic heart and liver disease 4. age 5. Proteinuria 6. Body mass index	1. Logistic regression model 2. Classification and regression tree	90-day dialysis dependence	C-index = 0.64 (logistic regression)	Lee, Hsu et al. 2019 [36]
The Nutritional Risk Index as a Predictor of 90-Day Dialysis Dependence After Acute Renal Failure: A Pilot Study	77 patients between 2015/1 and 2019/1	1. Nutritional Risk Index 2. age 3. serum total protein 4. number of vasopressor days 5. baseline predialysis eGFR[a] 6. SOFA[b] score	Multiple logistic regression model	90-day dialysis dependence	AUROC[j] = 0.889 Sensitivity = 56.3% Specificity = 95%.	Emuron, Thomas et al. 2023 [37]
Outcome Prediction of Acute Kidney Injury Biomarkers at Initiation of Dialysis in Critical Units	257 patients between 2011/8 and 2015/1	Plasma c-terminal FGF[c]-23	Multivariate generalized additive model	90- day RRT[d] dependence and all-cause mortality after discharge	Mortality: AUROC[j] = 0.687	Wu, Shiao et al. 2018 [38]
Comparison of Approaches for Prediction of Renal Replacement Therapy-Free Survival in Patients with Acute Kidney Injury	684 patients between 2001 and 2012	A total of 81 features from hospital admission and up to CRRT[e] initiation were included into machine learning models	1. Logistic regression 2. Support vector machine 3. Adaptive boosting 4. Extreme gradient boosting 5. MLP[f] 6. MLP[f] with LSTM[g] 7. RF[h]	Dialysis independence for 7 days or more prior to hospital discharge	AUROC[j] = 0.70 (MLP[f] + LSTM[g])	Pattharanitima, Vaid et al. 2021 [39]
Predicting successful continuous renal replacement therapy liberation in critically ill patients with acute kidney injury	1135 patients between 2007/1 and 2018/5	1. mean hourly urine output within 12 h before liberation 2. mean serum creatinine value within 24 h before liberation 3. cumulative fluid balance from ICU[i] admission to liberation 4. CRRT[e] duration before liberation 5. the requirement of vasoactive agents within 24 h before liberation.	Multivariate logistic regression models	Successful CRRT[e] liberation: 1. within 72 hours after the first liberation attempt 2. at hospital discharge	First attempt: AUROC[j] = 0.76 Sensitivity = 65.3% Specificity = 78%. At discharge: AUROC[j] = 0.78 Sensitivity = 93%, Specificity = 53%.	Liu, Peng et al. 2021 [40]
Machine learning algorithm to predict mortality in patients undergoing continuous renal replacement therapy	1571 patients between 2010/7 and 2016/12	A total of 30 features including baseline characteristics, vital signs and laboratory data	1. κ-nearest neighbor 2. Support vector machine 3. Multivariate adaptive regression splines 4. RF[h] 5. Extreme gradient boost 6. Artificial neural network	Mortality during: 1. ICU[i] 2. hospital	ICU[i]: AUROC[j] = 0.784 (RF) Hospital: AUROC[j] = 0.768 (RF)	Kang, Kim et al. 2020 [41]
Predicting mortality among critically ill patients with acute kidney injury treated with renal replacement therapy: Development and validation of new prediction models	594 patients between 2007/4 and 2014/12	1. baseline eGFR[a] 2. systolic blood pressure 3. 24h urine output 4. serum creatinine at RRT[d] initiation 5. platelet count 6. cumulative fluid balance at RRT[d] initiation	Least absolute shrinkage and selection operator	90- days RRT[d] dependence and mortality	Mortality: AUROC[j]= 0.61 Dependence: AUROC[j] = 0.64	Li, Wald et al. 2020 [42]

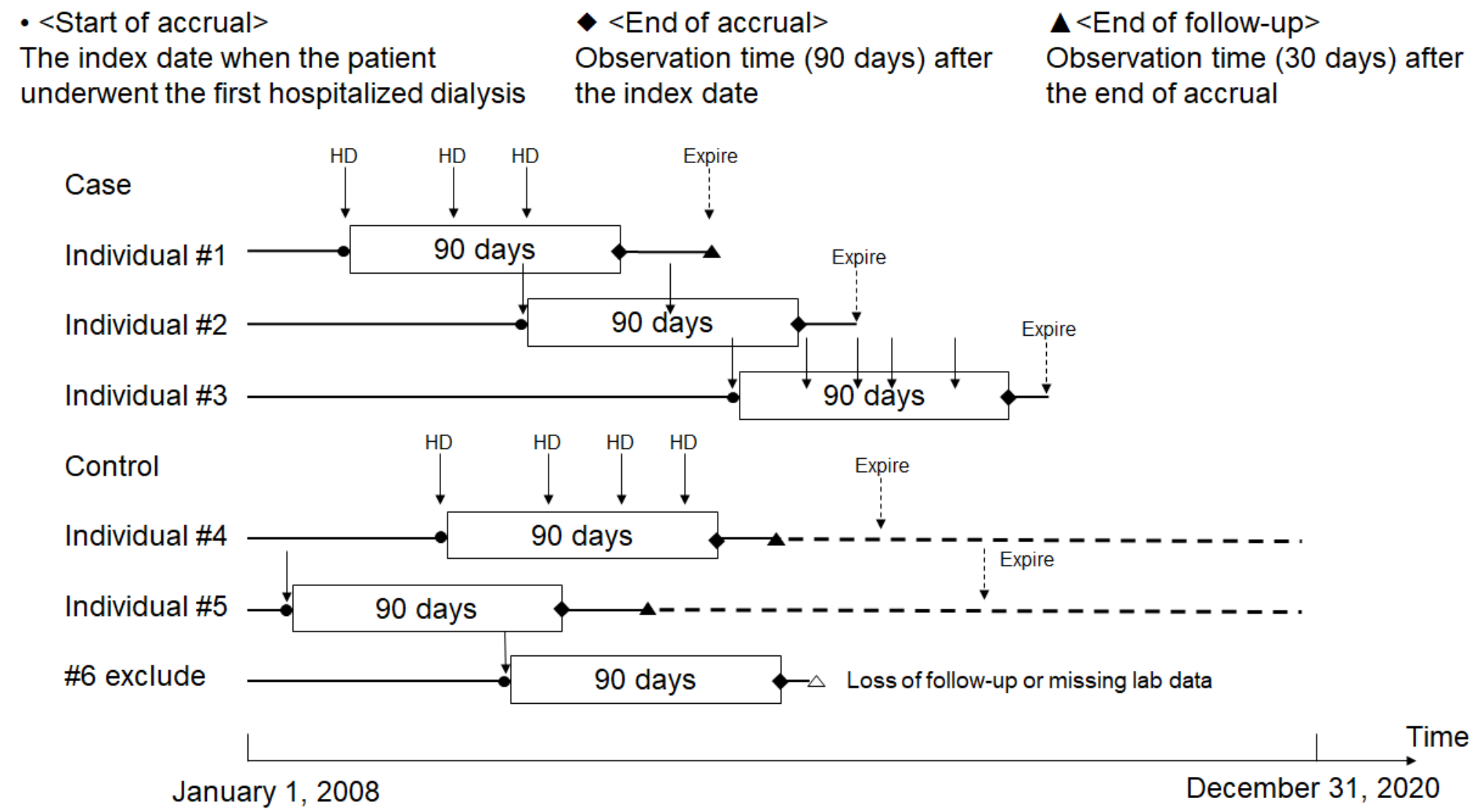
[a]eGFR: estimated glomerular filtration rate. [b]SOFA: sequential organ failure assessment. [c]FGF: fibroblast growth factor. [d]RRT: renal replacement therapy. [e]CRRT: continuous renal replacement therapy. [f]MLP: multilayer perceptron. [g]LSTM: long short-term memory. [h]RF: random forest. [i]ICU: intensive care unit. [j]AUROC: area under the receiver operating characteristic curve.

Supplementary 2. Timeframe of the patient selection in dialysis dependent module



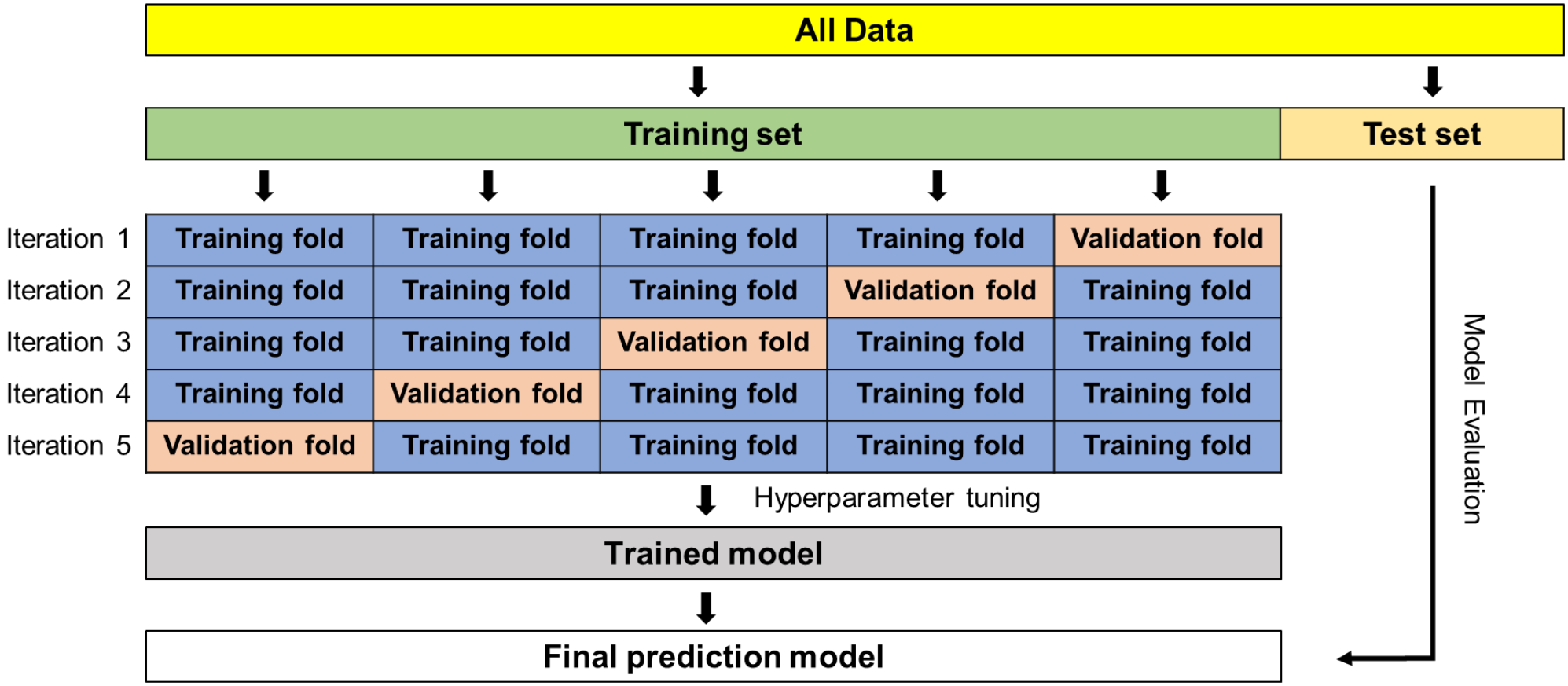
The symbol # indicates the number sign.

Supplementary 3. Timeframe of the patient selection in survival module



The symbol # indicates the number sign.

Supplementary 4. 5-fold cross-validation



The use of the colored indicators is served for better visualization and interpretation.

Supplementary 5. Medication records and laboratory results of the patients with acute kidney injury requiring dialysis in the study

	90-day dialysis dependence			90-day survival		
	Case	Control	*P* -value	Case	Control	*P* -value
No. of patients	616	464		984	1374	
Anatomical Therapeutic Chemical classification system, n (%)						
Stomatological Preparations	28 (4.55)	21 (4.53)	.99	89 (9.04)	57 (4.15)	*P* <.001
Drugs For Acid Related Disorders	384 (62.34)	281 (60.56)	.55	678 (68.90)	818 (59.53)	*P* <.001
Drugs For Functional Gastrointestinal Disorders	313 (50.81)	235 (50.65)	.96	575 (58.43)	694 (50.51)	*P* <.001
Antiemetics And Antinauseants	9 (1.46)	10 (2.16)	.39	54 (5.49)	24 (1.75)	*P* <.001
Bile And Liver Therapy	17 (2.76)	17 (3.66)	.40	89 (9.04)	40 (2.91)	*P* <.001
Drugs For Constipation	357 (57.95)	254 (54.74)	.29	595 (60.47)	759 (55.24)	.009
Antidiarrheals, Intestinal Antiinflammatory/Antiinfective Agents	92 (14.94)	52 (11.21)	.07	171 (17.38)	178 (12.95)	.003
Antiobesity Preparations, Excl. Diet Products	0 (0)	0 (0)		1 (0.10)	0 (0)	.42
Digestives, Incl. Enzymes	36 (5.84)	32 (6.90)	.48	59 (6.00)	77 (5.60)	.68
Drugs Used In Diabetes	410 (66.56)	288 (62.07)	.13	478 (48.58)	883 (64.26)	*P* <.001
Vitamins	170 (27.6)	88 (18.97)	*P* <.001	163 (16.57)	320 (23.29)	*P* <.001
Mineral Supplements	401 (65.1)	273 (58.84)	.04	489 (49.70)	837 (60.92)	*P* <.001
Tonics	0 (0)	0 (0)		0 (0)	0 (0)	
Anabolic Agents For Systemic Use	0 (0)	0 (0)		0 (0)	0 (0)	
Appetite Stimulants	0 (0)	0 (0)		0 (0)	0 (0)	
Other Alimentary Tract And Metabolism Products	1 (0.16)	0 (0)	.99	0 (0)	1 (0.07)	.99
Antithrombotic Agents	395 (64.12)	271 (58.41)	.06	588 (59.76)	845 (61.5)	.44
Antihemorrhagics	65 (10.55)	78 (16.81)	.003	168 (17.07)	166 (12.08)	*P* <.001
Antianemic Preparations	465 (75.49)	201 (43.32)	*P* <.001	315 (32.01)	847 (61.64)	*P* <.001
Blood Substitutes And Perfusion Solutions	446 (72.4)	347 (74.78)	.39	797 (81.00)	1017 (74.02)	*P* <.001
Other Hematological Agents	4 (0.65)	3 (0.65)	.99	8 (0.81)	8 (0.58)	.50
Cardiac Therapy	339 (55.03)	264 (56.9)	.54	529 (53.76)	764 (55.60)	.41
Antihypertensives	229 (37.18)	120 (25.86)	*P* <.001	130 (13.21)	460 (33.48)	*P* <.001
Diuretics	496 (80.52)	330 (71.12)	*P* <.001	635 (64.53)	1050 (76.42)	*P* <.001
Peripheral Vasodilators	324 (52.6)	143 (30.82)	*P* <.001	205 (20.83)	589 (42.87)	*P* <.001
Vasoprotectives	49 (7.95)	39 (8.41)	.79	110 (11.18)	109 (7.93)	.007
Beta Blocking Agents	382 (62.01)	246 (53.02)	.003	415 (42.17)	809 (58.88)	*P* <.001
Calcium Channel Blockers	479 (77.76)	301 (64.87)	*P* <.001	471 (47.87)	988 (71.91)	*P* <.001
Agents Acting On The Renin-Angiotensin System	365 (59.25)	256 (55.17)	.18	409 (41.57)	775 (56.40)	*P* <.001
Lipid Modifying Agents	310 (50.32)	226 (48.71)	.60	309 (31.40)	673 (48.98)	*P* <.001
Antifungals For Dermatological Use	45 (7.31)	29 (6.25)	.50	104 (10.57)	90 (6.55)	*P* <.001
Emollients And Protectives	26 (4.22)	22 (4.74)	.68	67 (6.81)	67 (4.88)	.04
Preparations For Treatment Of Wounds And Ulcers	0 (0)	0 (0)		2 (0.20)	0 (0)	.17
Antipruritics, Incl. Antihistamines, Anesthetics, Etc.	50 (8.12)	25 (5.39)	.08	77 (7.83)	92 (6.70)	.29
Antipsoriatics	3 (0.49)	2 (0.43)	.99	10 (1.02)	7 (0.51)	.15
Antibiotics And Chemotherapeutics For Dermatological Use	125 (20.29)	99 (21.34)	.68	300 (30.49)	281 (20.45)	*P* <.001
Corticosteroids, Dermatological Preparations	139 (22.56)	90 (19.4)	.21	216 (21.95)	287 (20.89)	.51
Antiseptics And Disinfectants	14 (2.27)	9 (1.94)	.71	18 (1.83)	25 (1.82)	.98
Medicated Dressings	11 (1.79)	6 (1.29)	.52	9 (0.91)	26 (1.89)	.05
Anti-Acne Preparations	5 (0.81)	2 (0.43)	.71	8 (0.81)	11 (0.80)	.97
Other Dermatological Preparations	13 (2.11)	2 (0.43)	.02	21 (2.13)	15 (1.09)	.04
Gynecological Antiinfectives And Antiseptics	5 (0.81)	3 (0.65)	.99	4 (0.41)	8 (0.58)	.56
Other Gynecologicals	1 (0.16)	0 (0)	.99	4 (0.41)	1 (0.07)	.17
Sex Hormones And Modulators Of The Genital System	7 (1.14)	6 (1.29)	.82	21 (2.13)	15 (1.09)	.04
Urologicals	129 (20.94)	117 (25.22)	.10	241 (24.49)	303 (22.05)	.16
Pituitary And Hypothalamic Hormones And Analogues	9 (1.46)	24 (5.17)	*P* <.001	31 (3.15)	40 (2.91)	.73
Corticosteroids For Systemic Use	222 (36.04)	153 (32.97)	.29	407 (41.36)	438 (31.88)	*P* <.001
Thyroid Therapy	49 (7.95)	29 (6.25)	.28	71 (7.22)	96 (6.99)	.82
Pancreatic Hormones	0 (0)	0 (0)		1 (0.1)	0 (0)	.42
Calcium Homeostasis	4 (0.65)	1 (0.22)	.40	10 (1.02)	6 (0.44)	.09
Antibacterials For Systemic Use	366 (59.42)	313 (67.46)	.007	811 (82.42)	859 (62.52)	*P* <.001
Antimycotics For Systemic Use	8 (1.3)	11 (2.37)	.18	32 (3.25)	22 (1.60)	.008
Antimycobacterials	4 (0.65)	2 (0.43)	.70	10 (1.02)	6 (0.44)	.09
Antivirals For Systemic Use	30 (4.87)	33 (7.11)	.12	114 (11.59)	77 (5.60)	*P* <.001
Immune Sera And Immunoglobulins	0 (0)	0 (0)		0 (0)	0 (0)	
Vaccines	42 (6.82)	35 (7.54)	.65	85 (8.64)	94 (6.84)	.10
Antineoplastic Agents	26 (4.22)	26 (5.6)	.29	167 (16.97)	58 (4.22)	*P* <.001
Endocrine Therapy	19 (3.08)	27 (5.82)	.03	132 (13.41)	52 (3.78)	*P* <.001
Immunostimulants	2 (0.32)	5 (1.08)	.15	52 (5.28)	7 (0.51)	*P* <.001
Immunosuppressants	21 (3.41)	25 (5.39)	.11	34 (3.46)	48 (3.49)	.97
Antiinflammatory And Antirheumatic Products	146 (23.7)	137 (29.53)	.03	366 (37.20)	346 (25.18)	*P* <.001
Topical Products For Joint And Muscular Pain	102 (16.56)	54 (11.64)	.02	165 (16.77)	200 (14.56)	.14
Muscle Relaxants	84 (13.64)	85 (18.32)	.04	216 (21.95)	223 (16.23)	*P* <.001
Antigout Preparations	292 (47.4)	169 (36.42)	*P* <.001	258 (26.22)	579 (42.14)	*P* <.001
Drugs For Treatment Of Bone Diseases	16 (2.6)	12 (2.59)	.99	60 (6.10)	34 (2.47)	*P* <.001
Other Drugs For Disorders Of The Musculo-Skeletal System	2 (0.32)	1 (0.22)	.99	14 (1.42)	5 (0.36)	.004
Anesthetics	100 (16.23)	62 (13.36)	.19	144 (14.63)	235 (17.1)	.11
Analgesics	378 (61.36)	290 (62.5)	.70	694 (70.53)	850 (61.86)	*P* <.001
Antiepileptics	157 (25.49)	97 (20.91)	.08	200 (20.33)	308 (22.42)	.24
Anti-Parkinson Drugs	33 (5.36)	23 (4.96)	.77	63 (6.40)	68 (4.95)	.13
Psycholeptics	339 (55.03)	233 (50.22)	.12	546 (55.49)	709 (51.60)	.053
Psychoanaleptics	93 (15.1)	85 (18.32)	.16	204 (20.73)	221 (16.08)	.003
Other Nervous System Drugs	106 (17.21)	81 (17.46)	.91	192 (19.51)	245 (17.83)	.29
Antiprotozoals	13 (2.11)	10 (2.16)	.96	31 (3.15)	26 (1.89)	.049
Anthelmintics	0 (0)	1 (0.22)	.43	0 (0)	1 (0.07)	.99
Ectoparasiticides, Incl. Scabicides, Insecticides And Repellents	1 (0.16)	0 (0)	.99	11 (1.12)	1 (0.07)	*P* <.001
Nasal Preparations	56 (9.09)	44 (9.48)	.83	77 (7.83)	119 (8.66)	.48
Throat Preparations	16 (2.6)	17 (3.66)	.31	41 (4.17)	41 (2.98)	.12
Drugs For Obstructive Airway Diseases	184 (29.87)	155 (33.41)	.22	393 (39.94)	409 (29.77)	*P* <.001
Cough And Cold Preparations	270 (43.83)	208 (44.83)	.74	538 (54.67)	588 (42.79)	*P* <.001
Antihistamines For Systemic Use	297 (48.21)	205 (44.18)	.19	440 (44.72)	632 (46.00)	.58
Other Respiratory System Products	2 (0.32)	0 (0)	.51	1 (0.1)	2 (0.15)	.99
Ophthalmologicals	160 (25.97)	113 (24.35)	.54	207 (21.04)	343 (24.96)	.03
Otologicals	10 (1.62)	5 (1.08)	.45	21 (2.13)	16 (1.16)	.06
Ophthalmological And Otological Preparations	0 (0)	0 (0)		0 (0)	0 (0)	
Allergens	0 (0)	0 (0)		0 (0)	0 (0)	
All Other Therapeutic Products	302 (49.03)	166 (35.78)	*P* <.001	302 (30.69)	597 (43.45)	*P* <.001
Diagnostic Agents	0 (0)	1 (0.22)	.43	0 (0)	1 (0.07)	.99
General Nutrients	188 (30.52)	86 (18.53)	*P* <.001	147 (14.94)	348 (25.33)	*P* <.001
All Other Non-Therapeutic Products	0 (0)	0 (0)		0 (0)	0 (0)	
Contrast Media	48 (7.79)	96 (20.69)	*P* <.001	383 (38.92)	171 (12.45)	*P* <.001
Diagnostic Radiopharmaceuticals	0 (0)	0 (0)		0 (0)	0 (0)	
Therapeutic Radiopharmaceuticals	0 (0)	0 (0)		0 (0)	0 (0)	
Surgical Dressings	0 (0)	0 (0)		0 (0)	0 (0)	
Laboratory test, Mean ± SD						
Creatinine_baseline	5.57 ± 2.82	3.12 ± 2.22	*P* <.001	2.01 ± 1.58	4.71 ± 2.83	*P* <.001
Creatinine_pre	9.01 ± 3.71	6.44 ± 3.49	*P* <.001	4.27 ± 2.33	8.07 ± 3.87	*P* <.001
Creatinine_post	6.87 ± 2.85	4.31 ± 2.67	*P* <.001			
Creatinine_pre_baseline_diff[a]	3.44 ± 2.75	3.32 ± 3.05	.19	2.26 ± 1.96	3.37 ± 2.96	*P* <.001
Creatinine_post_baseline_diff[a]	1.29 ± 2.89	1.19 ± 2.21	.20			
Creatinine_post_pre_diff[a]	-2.14 ± 3.12	-2.14 ± 2.98	.90			
eGFR[b]_baseline	14.8 ± 14.92	34.51 ± 28.18	*P* <.001	49.86 ± 29.84	21.91 ± 22.89	*P* <.001
eGFR[b]_pre	6.98 ± 4.71	12.82 ± 12.54	*P* <.001	19.30 ± 15.56	9.34 ± 9.40	*P* <.001
eGFR[b]_post	9.6 ± 6.61	22.47 ± 20.76	*P* <.001			
eGFR[b]_pre_baseline_diff[a]	-7.81 ± 12.94	-21.7 ± 25.61	*P* <.001	-30.56 ± 27.18	-12.57 ± 19.72	*P* <.001
eGFR[b]_post_baseline_diff[a]	-5.2 ± 13.43	-12.05 ± 23.68	*P* <.001			
eGFR[b]_post_pre_diff[a]	2.61 ± 5.71	9.65 ± 18.16	*P* <.001			
BUN[c]_baseline	68.84 ± 29.64	45.46 ± 28.21	*P* <.001	35.09 ± 24.31	60.12 ± 31.43	*P* <.001
BUN[c]_pre	108.79 ± 36.95	93.48 ± 42.6	*P* <.001	89.23 ± 44.09	102.30 ± 40.90	*P* <.001
BUN[c]_post	60.52 ± 34.15	60.4 ± 33.12	.93			
BUN[c]_pre_baseline_diff[a]	39.94 ± 37.35	48.01 ± 41.81	*P* <.001	54.14 ± 42.32	42.18 ± 39.78	*P* <.001
BUN[c]_post_baseline_diff[a]	-8.32 ± 45.73	14.94 ± 39.19	*P* <.001			
BUN[c]_post_pre_diff[a]	-48.27 ± 46.73	-33.08 ± 46.83	*P* <.001			
Albumin_baseline	3.68 ± 0.57	3.66 ± 0.64	.93	3.48 ± 0.63	3.67 ± 0.60	*P* <.001
Albumin_pre	3.39 ± 0.63	3.18 ± 0.65	*P* <.001	2.76 ± 0.60	3.31 ± 0.65	*P* <.001
Albumin_post	3.33 ± 0.55	3.24 ± 0.62	.002			
Albumin_pre_baseline_diff[a]	-0.26 ± 0.53	-0.43 ± 0.67	*P* <.001	-0.67 ± 0.70	-0.31 ± 0.60	*P* <.001
Albumin_post_baseline_diff[a]	-0.33 ± 0.58	-0.43 ± 0.65	.04			
Albumin_post_pre_diff[a]	-0.07 ± 0.52	0.08 ± 0.6	*P* <.001			
Glucose_baseline	132.51 ± 62.07	143.98 ± 76.53	.04	142.34 ± 71.09	136.43 ± 66.8	*P* <.001
Glucose_pre	154.46 ± 77.24	184.15 ± 110.15	*P* <.001	180.25 ± 112.54	165.27 ± 94.78	.004
Glucose_pre_baseline_diff[a]	21.67 ± 85.68	39.78 ± 114.42	.02	36.71 ± 116.09	29.09 ± 100.68	.62
HGB[d]_baseline	9.83 ± 1.58	10.6 ± 2.04	*P* <.001	10.76 ± 2.02	10.13 ± 1.81	*P* <.001
HGB[d]_pre	9.01 ± 1.58	9.53 ± 1.98	*P* <.001	9.38 ± 1.88	9.21 ± 1.78	.02
HGB[d]_post	9.18 ± 1.31	9.44 ± 1.46	.005			
HGB[d]_pre_baseline_diff[a]	-0.82 ± 2.02	-1.11 ± 2.19	.009	-1.39 ± 2.23	-0.93 ± 2.06	*P* <.001
HGB[d]_post_baseline_diff[a]	-0.64 ± 1.91	-1.19 ± 2.16	*P* <.001			
HGB[d]_post_pre_diff[a]	0.17 ± 1.89	-0.09 ± 2.14	.15			
Uric_Acid_baseline	7.65 ± 2.21	7.27 ± 2.42	.003			
CRP[e]_pre				11.56 ± 9.98	6.65 ± 8.21	*P* <.001
Troponin_I_pre				120.23 ± 1300.13	56.98 ± 911.44	*P* <.001
CPK[f]_pre				959.15 ± 4417.24	879.83 ± 9418.54	*P* <.001

[a]Diff:different; [b]eGFR: estimated glomerular filtration rate; [c]BUN: blood urea nitrogen; [d]HGB: hemoglobin; [e]CRP: C-reactive protein; [f]CPK: creatine phosphokinase; Baseline: lab data tested beyond 90 days before index date; Pre: lab data tested within 90 days before the index date; Post: lab data tested within 2-8 weeks after the index date.

Supplementary 6. Number of patients with missing values for laboratory test

	90-day dialysis dependence		90-day survival	
	Case	Control	Case	Control
No. of patients	616	464	984	1374
No. of patients with missing values for each feature				
Creatinine_baseline	0	0	0	0
Creatinine_pre	0	0	0	0
Creatinine_post	0	0	NA	NA
Creatinine_pre_baseline_diff[a]	0	0	0	0
Creatinine_post_baseline_diff[a]	0	0	NA	NA
Creatinine_post_pre_diff[a]	0	0	NA	NA
eGFR[b]_baseline	0	0	0	0
eGFR[b]_pre	0	0	0	0
eGFR[b]_post	0	0	NA	NA
eGFR[b]_pre_baseline_diff[a]	0	0	0	0
eGFR[b] post baseline diff[a]	0	0	NA	NA
eGFR[b] post pre diff[a]	0	0	NA	NA
BUN[c]_baseline	0	0	0	0
BUN[c]_pre	0	0	0	0
BUN[c]_post	0	0	NA	NA
BUN[c]_pre_baseline_diff[a]	0	0	0	0
BUN[c]_post_baseline_diff[a]	0	0	NA	NA
BUN[c]_post_pre_diff[a]	0	0	NA	NA
Albumin_baseline	79	133	348	280
Albumin_pre	52	62	51	168
Albumin_post	40	156	NA	NA
Albumin_pre_baseline_diff[a]	120	165	376	378
Albumin_post_baseline_diff[a]	111	241	NA	NA
Albumin_post_pre_diff[a]	83	194	NA	NA
Glucose_baseline	45	42	113	118
Glucose_pre	47	23	66	94
Glucose_pre_baseline_diff[a]	77	59	160	187
HGB[d]_baseline	24	33	52	71
HGB[d]_pre	2	1	1	4
HGB[d]_post	0	10	NA	NA
HGB[d]_pre_baseline_diff[a]	25	34	53	74
HGB[d]_post_baseline_diff[a]	24	42	NA	NA
HGB[d]_post_pre_diff[a]	2	10	NA	NA
Uric_Acid_baseline	97	147	NA	NA
CRP[e] pre	NA	NA	89	519
Troponin_I_pre	NA	NA	178	510
CPK[f]_pre	NA	NA	183	484

[a]Diff:different; [b]eGFR: estimated glomerular filtration rate; [c]BUN: blood urea nitrogen; [d]HGB: hemoglobin; [e]CRP: C-reactive protein; [f]CPK: creatine phosphokinase; NA: Not applicable (Not collected for model training); Baseline: lab data tested beyond 90 days before index date; Pre: lab data tested within 90 days before the index date; Post: lab data tested within 2-8 weeks after the index date.