Supplemental data

Supplemental Table 1A. Dialysis prediction model: Full (C=0.885)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
Age	1.00	0.98	1.02	0.7266
Male vs. Female	1.01	0.55	1.83	0.9805
White vs. Black	1.01	0.46	2.21	0.9731
Hispanic vs. Black	0.59	0.27	1.26	0.1728
BMI	0.94	0.90	0.98	0.0045
Interstitial Fibrosis	1.04	1.02	1.06	<0.0001
Glomerulosclerosis	1.01	0.99	1.03	0.1937
Creatinine	1.32	1.12	1.55	0.0009
GFR	1.00	0.99	1.01	0.8803
Proteinuria	1.11	1.04	1.19	0.0029
HTN	2.70	1.21	5.98	0.0148
IDDM	1.85	0.76	4.52	0.1764
CAD	1.41	0.64	3.13	0.3942
Nephropathy: DM vs. Autoimmune	1.18	0.31	4.55	0.8073
Nephropathy: IgA vs. Autoimmune	0.93	0.28	3.09	0.9022
Nephropathy: Other vs. Autoimmune	1.28	0.47	3.43	0.6301

Supplemental Table 1B. Dialysis prediction models. Parsimonious 0.5 level (C=0.882)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
BMI	0.94	0.90	0.98	0.0037
Interstitial Fibrosis	1.04	1.02	1.06	<0.0001
Glomerulosclerosis	1.01	0.99	1.02	0.2202
Creatinine	1.33	1.19	1.50	<0.0001
Proteinuria	1.11	1.04	1.18	0.0027
HTN	2.63	1.21	5.70	0.0143
IDDM	2.05	0.87	4.86	0.1024
CAD	1.34	0.64	2.82	0.434
Nephropathy: DM vs. Autoimmune	1.25	0.35	4.45	0.7299
Nephropathy: IgA vs. Autoimmune	0.98	0.31	3.15	0.9791
Nephropathy: Other vs. Autoimmune	1.27	0.49	3.29	0.6228

Supplemental Table 1A-B. Parsimonious prediction model for reaching dialysis. See Methods for a detailed description of the prediction model development.
(BMI, Body Mass Index; GFR, Glomerular Filtration Rate; HTN, hypertension; IDDM, insulin dependent diabetes; CAD, coronary artery disease; DM, diabetes mellitus; IgA, Immunoglobulin A; DM, diabetes mellitus; IgA, Immunoglobulin A)

Supplemental Table 2A. Dialysis prediction model with GFR: Full (C=0.888)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
Age	0.99	0.97	1.01	0.477
Male vs. Female	1.32	0.72	2.43	0.369
White vs. Black	0.91	0.42	1.98	0.809
Hispanic vs. Black	0.54	0.25	1.16	0.114
BMI	0.94	0.90	0.98	0.005
Interstitial Fibrosis	1.04	1.02	1.06	<0.001
Glomerulosclerosis	1.01	0.99	1.02	0.282
GFR: 30-59 vs. 60+	0.83	0.35	1.97	0.673
GFR: 15-29 vs. 60+	2.74	1.18	6.37	0.019
GFR: <15 vs. 60+	5.09	2.00	12.95	0.001
Proteinuria	1.10	1.03	1.18	0.005
HTN	2.70	1.22	5.95	0.014
IDDM	1.72	0.69	4.32	0.248
CAD	1.59	0.71	3.56	0.259
Nephropathy: DM vs. Autoimmune	1.10	0.28	4.37	0.891
Nephropathy: IgA vs. Autoimmune	0.91	0.26	3.16	0.884
Nephropathy: Other vs. Autoimmune	1.21	0.45	3.26	0.71

Supplemental Table 2B. Dialysis prediction model with GFR: Parsimonious 0.5 level (C=0.882)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
Male vs. Female	1.26	0.70	2.25	0.446
BMI	0.94	0.90	0.98	0.003
Interstitial Fibrosis	1.04	1.02	1.06	<0.001
Glomerulosclerosis	1.01	0.99	1.02	0.315
GFR: 30-59 vs. 60+	0.76	0.33	1.75	0.525
GFR: 15-29 vs. 60+	2.66	1.18	6.01	0.019
GFR: <15 vs. 60+	4.59	1.89	11.19	0.001
Proteinuria	1.10	1.03	1.17	0.005
HTN	2.46	1.15	5.26	0.02
IDDM	2.03	0.97	4.25	0.06
CAD	1.42	0.67	3.01	0.355

Supplemental Table 2C. Dialysis prediction model with GFR: Parsimonious 0.2 level (C=0.881)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
BMI	0.94	0.90	0.98	0.002
Interstitial Fibrosis	1.04	1.03	1.06	<0.001
GFR: 30-59 vs. 60+	0.86	0.39	1.92	0.714
GFR: 15-29 vs. 60+	2.90	1.31	6.46	0.009
GFR: <15 vs. 60+	5.23	2.19	12.48	<0.001
Proteinuria	1.09	1.02	1.16	0.011
HTN	2.89	1.40	5.99	0.004
IDDM	2.10	1.02	4.35	0.045

Supplemental Table 2A-C. Parsimonious prediction model for reaching dialysis according to GFR. See Methods for a detailed description of the prediction model development.
(BMI, Body Mass Index; GFR, Glomerular Filtration Rate; HTN, hypertension; IDDM, insulin dependent diabetes mellitus; CAD, coronary artery disease; DM, diabetes mellitus; IgA, Immunoglobulin A)

Supplemental Table 3. Predicted probability of dialysis based on interstitial fibrosis alone model in subgroups of patients

Characteristic	Frequency N(%)	Dialysis (N=136) Mean±SD Median (Range)	No Dialysis (N=298) Mean±SD Median (Range)	p-value
Age				
17-29	88 (20.3%)	0.52±0.28 0.51 (0.08-0.93)	0.16±0.16 0.10 (0.06-0.80)	<0.001
30-49	177 (40.8%)	0.53±0.28 0.57 (0.08-0.94)	0.19±0.17 0.12 (0.06-0.84)	<0.001
50-69	138 (31.8%)	0.54±0.25 0.51 (0.10-0.90)	0.29±0.22 0.23 (0.06-0.84)	<0.001
70+	31 (7.1%)	0.44±0.26 0.37 (0.08-0.84)	0.30±0.23 0.25 (0.07-0.84)	0.127
Gender				
Male	226 (52.1%)	0.55±0.25 0.51 (0.08-0.94)	0.25±0.20 0.16 (0.06-0.84)	<0.001
Female	208 (47.9%)	0.48±0.29 0.37 (0.08-0.90)	0.19±0.18 0.10 (0.06-0.84)	<0.001
Race				
White	96 (22.1%)	0.42±0.24 0.37 (0.13-0.94)	0.18±0.16 0.12 (0.06-0.80)	<0.001
Black	183 (42.2%)	0.53±0.27 0.51 (0.08-0.90)	0.25±0.23 0.16 (0.06-0.84)	<0.001
Hispanic	95 (21.9%)	0.62±0.24 0.76 (0.16-0.93)	0.20±0.18 0.13 (0.06-0.76)	<0.001
Other	60 (13.8%)	0.49±0.28 0.37 (0.08-0.90)	0.21±0.16 0.16 (0.06-0.70)	<0.001
BMI				
Normal (18.5-25)	134 (31.0%)	0.50±0.27 0.51 (0.08-0.93)	0.20±0.17 0.16 (0.06-0.80)	<0.001
Overweight (25-30)	144 (33.3%)	0.57±0.25 0.61 (0.14-0.90)	0.21±0.17 0.16 (0.06-0.84)	<0.001
Obese (>30)	154 (35.6%)	0.51±0.26 0.51 (0.08-0.94)	0.24±0.22 0.14 (0.06-0.84)	<0.001
Nephropathy				
Autoimmune	124 (28.6%)	0.44±0.28 0.37 (0.08-0.84)	0.17±0.14 0.10 (0.06-0.70)	<0.001
IgA	58 (13.4%)	0.58±0.29 0.64 (0.14-0.94)	0.17±0.14 0.13 (0.06-0.76)	<0.001
Diabetic	42 (9.7%)	0.55±0.26 0.51 (0.16-0.90)	0.44±0.30 0.25 (0.10-0.84)	0.202
Other	210 (48.4%)	0.53±0.25 0.57 (0.08-0.90)	0.23±0.20 0.16 (0.06-0.84)	<0.001
HTN				
Yes	298 (68.8%)	0.54±0.26 0.51 (0.08-0.94)	0.26±0.21 0.16 (0.06-0.84)	<0.001
No	135 (31.2%)	0.41±0.30 0.28 (0.08-0.90)	0.15±0.14 0.10 (0.06-0.84)	<0.001
IDDM				
Yes	59 (13.6%)	0.49±0.25 0.51 (0.08-0.90)	0.36±0.27 0.25 (0.08-0.84)	0.062
No	374 (86.4%)	0.53±0.27 0.51 (0.08-0.94)	0.20±0.18 0.14 (0.06-0.84)	<0.001
NIDDM				

Characteristic	Frequency N(%)	Dialysis (N=136) Mean±SD Median (Range)	No Dialysis (N=298) Mean±SD Median (Range)	p-value
Yes	42 (9.7%)	0.57±0.22 0.51 (0.16-0.94)	0.26±0.22 0.20 (0.06-0.84)	<0.001
No	391 (90.3%)	0.52±0.27 0.51 (0.08-0.93)	0.21±0.19 0.14 (0.06-0.84)	<0.001
CAD/PVD/CVA				
Yes	63 (14.6%)	0.51±0.27 0.44 (0.08-0.90)	0.30±0.26 0.16 (0.07-0.84)	0.003
No	369 (85.4%)	0.52±0.26 0.51 (0.08-0.94)	0.21±0.18 0.14 (0.06-0.84)	<0.001
AI disease				
Yes	127 (29.4%)	0.43±0.28 0.37 (0.08-0.84)	0.17±0.14 0.10 (0.06-0.70)	<0.001
No	305 (70.6%)	0.55±0.26 0.64 (0.08-0.94)	0.24±0.21 0.16 (0.06-0.84)	<0.001
GFR				
60+	172 (39.6%)	0.25±0.20 0.16 (0.08-0.84)	0.14±0.12 0.10 (0.06-0.70)	0.001
30-59	105 (24.2%)	0.42±0.21 0.37 (0.13-0.80)	0.30±0.20 0.25 (0.08-0.84)	0.011
15-29	85 (19.6%)	0.56±0.25 0.64 (0.10-0.90)	0.38±0.24 0.31 (0.07-0.84)	0.001
<15	72 (16.6%)	0.63±0.24 0.70 (0.16-0.94)	0.22±0.21 0.13 (0.06-0.84)	<0.001

Supplemental Table 3. Predicted probability of dialysis based on interstitial fibrosis alone model in subgroups of patients. Data presented as Mean ± SD, Median (Range). P<0.05 was considered significant.
(BMI, Body Mass Index; IgA, Immunoglobulin A; GFR, Glomerular Filtration Rate; MDRD, Modification of Diet in Renal Disease; HTN, hypertension; IDDM, insulin dependent diabetes mellitus; NIDDM, non-insulin dependent diabetes mellitus; CAD, coronary artery disease; PVD, peripheral vascular disease; CVA, cerebrovascular accident; AI, autoimmune; SD, standard deviation)

Supplemental Table 4. Dialysis prediction models in non-diabetics and younger than 70 years old

Full (C=0.912)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
Interstitial Fibrosis	1.05	1.03	1.07	<0.0001
Age	1.00	0.97	1.03	0.9272
Male vs. Female	1.17	0.55	2.51	0.6708
White vs. Black	1.13	0.40	3.17	0.8045
Hispanic vs. Black	0.59	0.23	1.53	0.2859
BMI	0.95	0.90	1.01	0.1229
Glomerulosclerosis	1.01	0.99	1.03	0.0834
Creatinine	1.43	1.18	1.73	0.0002
GFR	1.00	0.99	1.01	0.4150
Proteinuria	1.14	1.05	1.25	0.0021
HTN	2.41	0.95	6.06	0.0618
CAD	1.61	0.54	4.85	0.3894
Nephropathy: IgA vs. Autoimmune	1.24	0.40	3.81	0.7063
Nephropathy: Other vs. Autoimmune	0.62	0.27	1.44	0.2740

Parsimonious 0.5 level (C=0.911)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
Interstitial Fibrosis	1.05	1.03	1.07	<0.0001
White vs. Black	1.19	0.44	3.18	0.7271
BMI	0.95	0.90	1.01	0.1083
Glomerulosclerosis	1.01	0.99	1.03	0.0751
Creatinine	1.43	1.19	1.73	0.0001
GFR	1.00	0.993	1.01	0.4072
Proteinuria	1.14	1.057	1.259	0.0022
HTN	2.45	0.99	6.08	0.0516
CAD	1.70	0.61	4.77	0.3086
Nephropathy: IgA vs. Autoimmune	1.29	0.42	3.89	0.6489
Nephropathy: Other vs. Autoimmune	0.65	0.28	1.47	0.3047

Parsimonious 0.2 level (C=0.905)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
Interstitial Fibrosis	1.04	1.02	1.06	<0.0001
BMI	0.94	0.89	1.00	0.0516
Glomerulosclerosis	1.01	0.99	1.03	0.1595
Creatinine	1.35	1.19	1.53	<0.0001
Protein	1.12	1.03	1.22	0.0060
HTN	2.52	1.05	6.04	0.0374

TA alone (C=0.866)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p value
Interstitial Fibrosis	1.06	1.05	1.08	<0.0001

Supplemental Table 4. Parsimonious prediction model for time to initiation of dialysis in non DM patients under 70 years old. See Methods for a detailed description of the prediction model development.
(BMI, Body Mass Index; GFR, Glomerular Filtration Rate; HTN, hypertension; CAD, coronary artery disease; DM, diabetes mellitus; IgA, Immunoglobulin A)

Supplemental Table 5A. Time to event (Dialysis or Death) analysis

Had Events Up to:	Interstitial Fibrosis: 0-24%	Interstitial Fibrosis: 25-49%	Interstitial Fibrosis: 50+%
1 month	1.0 (0.2-3.4)	6.9 (3.2-12.4)	18.7 (12.3-26.2)
6 months	2.1 (0.7-5.0)	10.4 (5.7-16.8)	35.4 (26.8-44.1)
1 year	4.5 (2.1-8.2)	12.4 (7.1-19.2)	46.7 (37.3-55.6)
2 years	7.8 (4.4-12.6)	20.1 (13.0-28.4)	59.3 (49.2-68.0)
5 years	12.3 (7.5-18.4)	36.2 (25.9-46.7)	81.7 (71.3-88.7)
10 years	27.5 (17.0-39.0)	64.2 (47.3-77.0)	90.9 (74.2-97.0)

Supplemental Table 5B. Dialysis or death risk factors analysis

	Adjusted HR	Lower Confidence Limit	Upper Confidence Limit	p-value
Interstitial Fibrosis: 25-49 vs. 0-24	1.99	1.10	3.60	0.023
Interstitial Fibrosis: 50+ vs. 0-24	5.76	3.04	10.91	<0.001
Age	1.01	1.00	1.02	0.164
Male vs. Female	1.22	0.83	1.80	0.318
White vs. Black	1.23	0.73	2.08	0.437
Hispanic vs. Black	0.88	0.54	1.45	0.626
BMI	0.96	0.93	0.99	0.003
Glomerulosclerosis	1.00	1.00	1.01	0.352
GFR: 30-59 vs. 60+	1.05	0.56	1.96	0.874
GFR: 15-29 vs. 60+	2.23	1.22	4.06	0.009
GFR: <15 vs. 60+	7.30	4.03	13.24	<0.001
Proteinuria: 3.5+ vs. <3.5	1.83	1.28	2.62	0.001
HTN	1.82	1.02	3.25	0.045
CAD	1.16	0.74	1.81	0.528
Nephropathy: Diabetic vs. Autoimmune	1.00	0.52	1.92	0.993
Nephropathy: IgA vs. Autoimmune	0.88	0.41	1.90	0.739
Nephropathy: Other vs. Autoimmune	0.68	0.36	1.26	0.219

Supplemental Table 5A. Time to event (dialysis or death) analysis. Life table estimates of dialysis or death for 10-year follow-up from biopsy by severity of fibrosis at biopsy.

Supplemental Table 5B. Dialysis or death risk factor analysis. Cox proportional hazard model for time to dialysis or death.

(BMI, Body Mass Index; GFR, Glomerular Filtration Rate; HTN, hypertension; CAD, coronary artery disease; IgA, Immunoglobulin A)

Supplemental Table 6A. Dialysis prediction model with fibrosis as categorical variable: Full (C=0.878, H-L p=0.399)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
Age	0.997	0.977	1.017	0.772
Male vs. Female	0.961	0.532	1.736	0.895
White vs. Black	1.039	0.483	2.232	0.922
Hispanic vs. Black	0.609	0.292	1.269	0.185
BMI	0.942	0.902	0.983	0.006
TA: 25-49 vs. <25	2.701	1.299	5.616	0.008
TA: 50+ vs. <25	5.976	2.620	13.631	<0.001
FGG	1.015	1.001	1.030	0.038
Creatinine	1.351	1.199	1.522	<0.001
Protein	1.112	1.041	1.189	0.002
HTN	2.674	1.223	5.845	0.014
IDDM	1.824	0.750	4.436	0.185
CAD	1.559	0.709	3.430	0.269
Nephropathy: DM vs. Autoimmune	1.263	0.383	4.171	0.701
Nephropathy: IGA vs. Autoimmune	1.420	0.540	3.737	0.477
Nephropathy: Other vs. Autoimmune	0.890	0.237	3.341	0.862

Supplemental Table 6B. Dialysis prediction model with fibrosis as categorical variable: Parsimonious 0.5 level (C=0.876, H-L p=0.178)

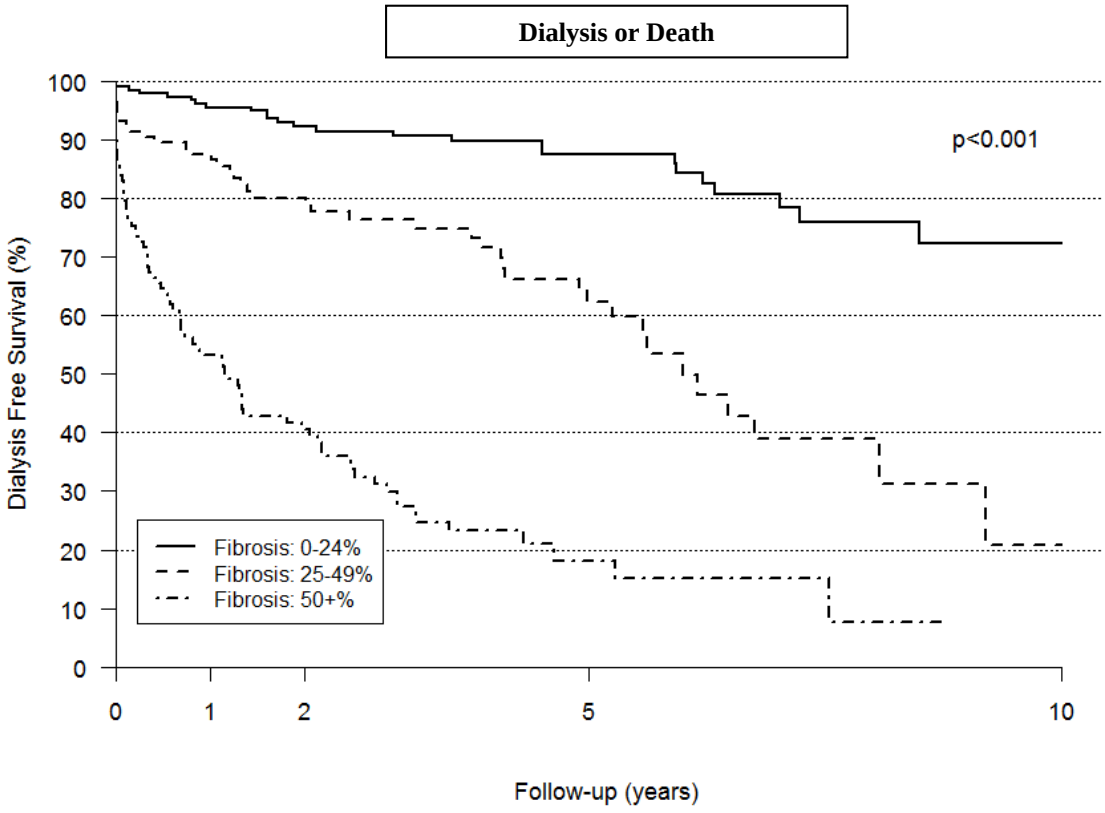
	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
BMI	0.942	0.902	0.983	0.006
TA: 25-49 vs. <25	2.668	1.291	5.512	0.008
TA: 50+ vs. <25	6.001	2.644	13.620	<0.001
FGG	1.014	1.000	1.028	0.051
Creatinine	1.356	1.206	1.525	<0.001
Protein	1.110	1.040	1.185	0.002
HTN	2.612	1.218	5.601	0.014
IDDM	1.972	0.829	4.691	0.125
CAD	1.496	0.718	3.120	0.282
Nephropathy: DM vs. Autoimmune	1.203	0.378	3.824	0.754
Nephropathy: IGA vs. Autoimmune	1.379	0.541	3.514	0.501
Nephropathy: Other vs. Autoimmune	0.872	0.249	3.054	0.831

Supplemental Table 6C. Dialysis prediction model with fibrosis as categorical variable: Parsimonious 0.2 level (C=0.872, H-L p=0.345)

	Adj. Odds Ratio	Lower Confidence Limit	Upper Confidence Limit	p-value
BMI	0.939	0.901	0.980	0.004
TA: 25-49 vs. <25	2.584	1.253	5.330	0.010
TA: 50+ vs. <25	5.661	2.518	12.727	<0.001
FGG	1.013	1.000	1.027	0.056
Creatinine	1.352	1.210	1.511	<0.001
Protein	1.101	1.033	1.173	0.003
HTN	2.773	1.322	5.819	0.007
IDDM	2.417	1.200	4.866	0.013

Supplemental Table 6A-C. Parsimonious prediction model for reaching dialysis using interstitial fibrosis as a categorical variable. (BMI, Body Mass Index; GFR, Glomerular Filtration Rate; HTN, hypertension; IDDM, insulin dependent diabetes mellitus; CAD, coronary artery disease; DM, diabetes mellitus; IgA, Immunoglobulin A)

Supplemental Figure 1. Kaplan-Meier analysis of time-to-dialysis or death according to the level of interstitial fibrosis



Sample					
0-24%	199	153	128	71	3
25-49%	117	85	67	31	1
50+%	118	54	36	6	0

Supplemental Figure 1. Stratified Kaplan-Meier analysis of time-to-dialysis or death according to the level of interstitial fibrosis.