SUPPLEMENTAL MATERIAL

Table S1. Percentage of Patients with Missing Variables.

Variable	Percent Missing
Age	0
Male	0
BMI	26.6
Race	1.3
Portal Hypertension	0
Hepatitis C	0
NASH (non alcoholic steatohepatitis)	0
Alcohol Abuse	0
Primary Liver Cancer	0
Hemodynamic Instability	0
Sleep Apnea	0
Diabetes	0
Hypertension	0
Stroke	0
Ischemic and/or Hemorrhagic Stroke	0
Ischemic Stroke	0
Hemorrhagic Stroke	0
Coronary Artery Disease	0
Severe Valvular Disease	0
Diastolic Dysfunction	0
LV Ejection Fraction	5.8
Reduced LV Ejection Fraction (<50%)	5.8
LA Moderate or Severe Enlargement	0
LA Volume (mL)	33.2
LV hypertrophy	0
CHADS2VASc Score	0
HAS-BLED Score	1.5
MELD Score	1.5
Abnormal TSH	68
Abnormal Potassium/Magnesium	16
Beta Blocker Use	0
Class 1 Anti-arrhythmic Use	0
Amiodarone Use	0
Digoxin	0

BMI: body mass index, LV: left ventricle, LA: left atrium, MELD: Model for End Stage Liver Disease, TSH: thyroid stimulating hormone

Table S2. Univariable Analysis.

Characteristic	Hazard Ratios (95% C.I.)	*P* value
Age	1.05 (1.03, 1.07)	<0.001
Male	1.29 (0.92, 1.8)	0.14
BMI	1.01 (0.99, 1.03)	0.52
White	1.69 (1.23, 2.34)	0.001
Portal Hypertension	1.54 (1.1, 2.18)	0.013
Hepatitis C	0.94 (0.68, 1.32)	0.73
NASH (non-alcoholic steatohepatitis)	1.42 (1.01, 2)	0.042
Alcohol Abuse	1.41 (0.99, 2.01)	0.059
Primary Liver Cancer	1.27 (0.89, 1.83)	0.19
Hemodynamic Instability	3.23 (2.09, 5)	<0.001
Sleep Apnea	3.33 (1.62, 6.84)	0.001
Diabetes	1.65 (1.16, 2.35)	0.005
Hypertension	1.72 (1.22, 2.42)	0.002
Severe Valvular Disease	7.34 (4.13, 13.05)	<0.001
Diastolic Dysfunction	1.35 (0.85, 2.13)	0.21
LV Ejection Fraction	0.004 (0, 0.02)	<0.001
Reduced LV Ejection Fraction (<50%)	2.40 (1.42, 4.04)	0.001
LA Moderate or Severe Enlargement	3.06 (1.89, 4.95)	<0.001
LA Volume (mL)	1.01 (1, 1.02)	0.002
LV hypertrophy	2.54 (1.6, 4.02)	<0.001
MELD Score	1.09 (1.07, 1.11)	<0.001
11-20	2.55 (1.38, 2.97)	<0.001*
21-30	5.68 (5.91, 4.72)	*
>30	13.21 (10.85, 29.5)	*
Abnormal TSH	0.87 (0.48, 1.58)	0.65
Abnormal Potassium/Magnesium	1.02 (0.65, 1.6)	0.95

*p-value for the overall model containing MELD groups 11-20, 21-30, >30 with MELD group 1-10 used as the reference category. BMI: body mass index, LV: left ventricle, LA: left atrium, MELD: Model for End Stage Liver Disease, TSH: thyroid stimulating hormone

Table S3. Patient Characteristics With and Without Atrial Fibrillation.

Characteristic	No AF	AF	*P* value
Age, years	51.8 ± 13.0	55.0 ± 8.9	<0.001
Male	938 (59.4)	96 (64.4)	0.228
BMI	27.81 ± 7.1	29.2 ± 7.7	0.023
White	589 (37.3)	79 (53.0)	<0.001
Portal Hypertension	31.0	33.5	0.56
Hepatitis C	11.2	12.7	0.49
Non-alcoholic steatohepatitis	20.7	19.5	0.79
Alcohol Abuse	0.0	0.0	NA
Primary Liver Cancer	11.4	6.6	0.032
Hemodynamic Instability	15.2	10.4	0.045
Sleep Apnea	1.0	2.3	0.014
Diabetes	12.1	12.2	0.92
Hypertension	16.0	15.4	0.90
Severe Valvular Disease	1.4	3.3	0.006
Diastolic Dysfunction	45.5	57.4	0.12
LV Ejection Fraction	60.9 ± 7.8	59.3 ± 8.1	0.009
Reduced LV Ejection Fraction (<50%)	6.1	5.1	0.64
LA Moderate or Severe Enlargement	8.3	6.1	0.23
LA Volume (mL)	54.5 ± 26.5	61.1 ± 30.4	0.005
LV hypertrophy	8.2	6.9	0.49
CHA$_2$DS$_2$-VASc Score	1.16 ± 1.08	1.06 ± 1	0.16
MELD Score	15.0 ± 6.7	16.1 ± 7.1	0.027
Abnormal TSH	100.6	84.0	0.20
Abnormal Potassium/Magnesium	68.5	54.2	0.045

Values are mean ± SD, n (%), or the number of new events per 100 person-years of follow-up. Continuous variables are time averaged values. BMI: body mass index, LV: left ventricle, LA: left atrium, MELD: Model for End Stage Liver Disease, TSH: thyroid stimulating hormone

Table S4. Multivariable Cox proportional hazard ratios obtained using non-imputed data to evaluate factors associated with new onset AF.

Variable	HR	Lower 95% CI	Upper 95% CI	P-value
Diabetes	0.96	0.64	1.45	0.85
Hypertension	1.01	0.67	1.51	0.97
Age	1.06	1.04	1.08	<0.001
Male	1.1	0.76	1.58	0.62
Portal Hypertension	0.96	0.66	1.41	0.84
LA Enlargement	1.21	0.69	2.13	0.51
LV Hypertrophy	1.2	0.7	2.05	0.51
Hemodynamic Instability	1.8	1.09	2.98	0.02
Sleep Apnea	2.48	1.16	5.33	0.02
Reduced Ejection Fraction (<50%)	2.71	1.5	4.91	0.001
Valvular Heart Disease	2.67	1.26	5.66	0.01
MELD Group 11-20	2.87	1.75	4.7	<0.001
MELD Group 21-30	6.51	3.62	11.72	<0.001
MELD Group >30	11.98	5.1	28.15	<0.001

MELD: Model for End Stage Liver Disease; LA: left atrium; LV: left ventricle; HR: hazard ratio; CI: confidence interval

Table S5. Ischemic Stroke Risk by MELD category.

Characteristic	Hazard Ratios (95% C.I.)	*P* value
MELD Score 11-20	1.25 (0.56, 2.8)	<0.001*
MELD Score 21-30	2.89 (1.26, 6.61)	
MELD Score >30	15.79 (6.12, 40.72)	

*P-value for the overall model containing MELD groups 11-20, 21-30, >30 with MELD group 1-10 used as the reference category.

Table S6. Hemorrhagic Stroke Risk by MELD category.

Characteristic	Hazard Ratios (95% C.I.)	*P* value
MELD Score 11-20	1.90 (0.41, 8.74)	<0.001*
MELD Score 21-30	9.87 (2.32, 42)	
MELD Score >30	65.76 (14.28, 302.88)	

*P-value for the overall model containing MELD groups 11-20, 21-30, >30 with MELD group 1-10 used as the reference category.