

## Supplemental Material

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**Supplemental Table 1.** Characteristics of patients not on hemodialysis in the Mount Sinai Health System in New York City with paired echocardiograms (echo) and electrocardiograms (ECG) between 2003 and 2020.

Total ECG:Echo pairs: 705,075 / Patients: 158,840.

*Atrial rate, ventricular rate, PR interval and QTc interval extracted from .xml files as tabular data.*

	<b>LVEF &lt;= 40% (n=17679)</b>	<b>40 &lt;= LVEF &lt; 50% (n=19440)</b>	<b>LVEF &gt; 50% (n=121721)</b>
<b>ECG:Echo pairs</b>	130323	87654	487098
<b>Age</b>	67 (67 - 67)	67 (67 - 67)	66 (66 - 66)
<b>Female, n (%)</b>	148 (32)	139 (35)	589 (45)
<b>Self-reported Race, n (%)</b>			
American Indian	415 (2)	550 (3)	3073 (3)
Asian	500 (3)	548 (3)	4360 (4)
Black	1844 (10)	1864 (10)	10041 (8)
Pacific Islander	40 (0.2)	23 (0.1)	144 (0.1)
White	4632 (26)	5334 (27)	28734 (24)
Other	1291 (7)	1353 (7)	9000 (7)
Unknown	6990 (40)	7581 (39)	53831 (44)
<b>Ventricular Rate (beats per minute)</b>	80.7 (80.5 - 81.0)	76.3 (76.0 - 76.5)	74.1 (74.0 - 74.2)
<b>Atrial Rate (beats per minute)</b>	92.0 (91.2 - 92.8)	85.6 (84.8 - 86.3)	79.3 (79.1 - 79.5)
<b>PR Interval (milliseconds)</b>	170.6 (167.6 - 173.6)	168.6 (168.0 - 169.1)	163.7 (163.5 - 163.9)
<b>QTc Interval (milliseconds)</b>	470.8 (470.1 - 471.4)	453.6 (453.0 - 454.2)	439.3 (439.2 - 439.5)
<b>Left Ventricular Ejection Fraction (%)</b>	29 (29 - 29)	47 (47 - 47)	62 (62 - 62)

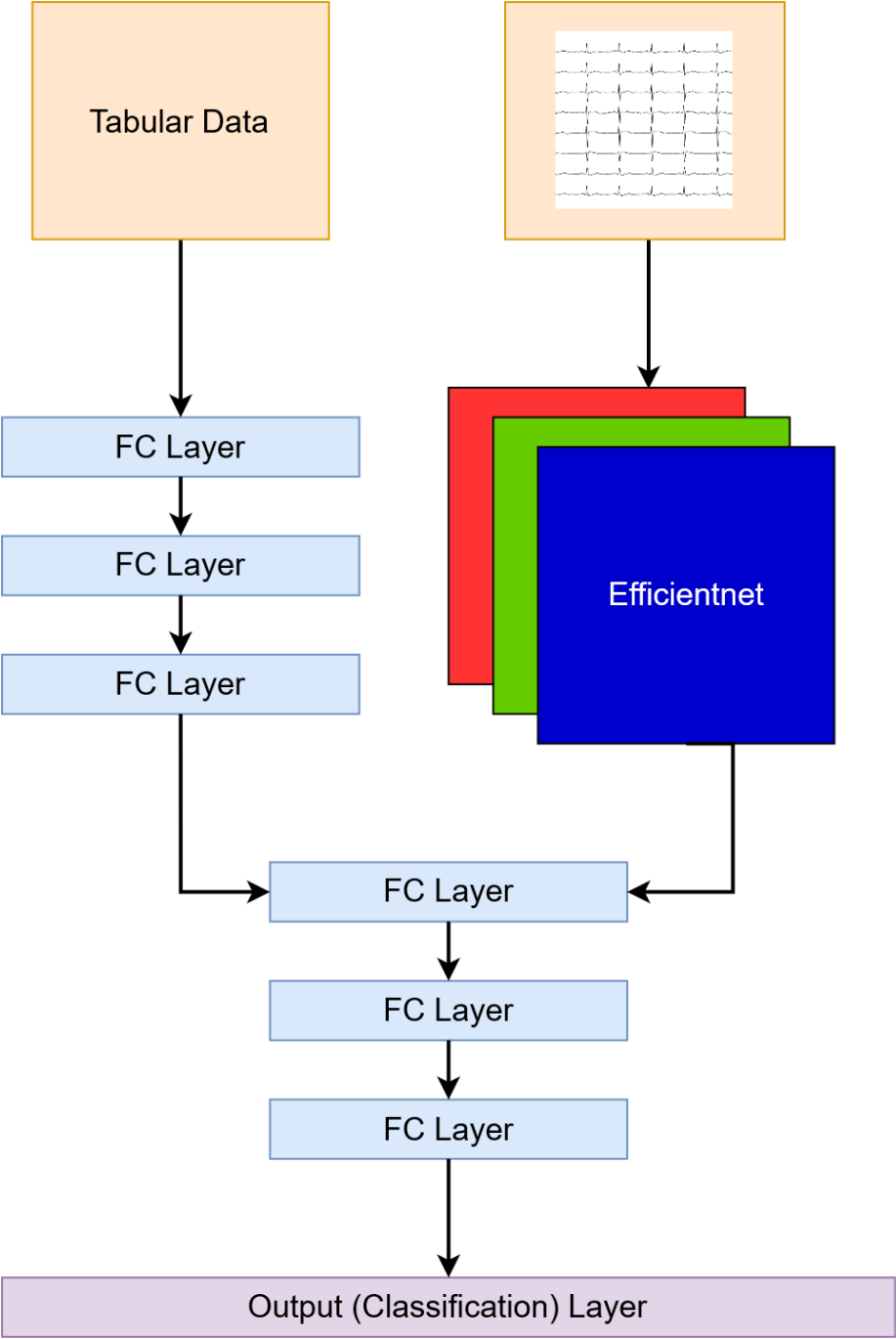
*All Continuous values in Median (Interquartile Range) and Categorical values in N (Column percentages)*

**Supplemental Table 2:** Comparative performance (*Area Under Precision Recall Curve*) of models for left ventricular ejection fraction prediction in patients with hemodialysis.

Training modality	Area Under Precision Recall Curve (AUPRC)		
	LVEF ≤ 40% (95% CI)	40 < LVEF ≤ 50% (95% CI)	LVEF > 50% (95% CI)
Trained from scratch on HD patients	0.44 (0.26-0.61)	0.19 (0.14-0.23)	0.77 (0.75-0.79)
Pretrained on ImageNet and fine-tuned on HD patients	0.40 (0.32-0.47)	0.19 (0.13-0.25)	0.77 (0.73-0.81)
Trained on non-HD patients and tested on HD patients	0.60 (0.53-0.67)	0.18 (0.11-0.24)	0.81 (0.8-0.82)
Pretrained on non-HD patients and fine-tuned on HD patients	0.83 (0.58-0.69)	0.28 (0.21-0.31)	0.88 (0.86-0.9)

*Baseline values of AUPRC are determined by outcome prevalence.*

**Supplemental Figure 1.** Multi-modal neural network architecture.



*FC Layer: Fully Connected Layer, Efficientnet: Convolutional Neural Network for images, Classification Layer: Final output*

**Supplemental Figure 2:** Time difference between ECG and paired TTE vs Time difference between ECG and closest session of dialysis.

## Distribution of time differences in testing data

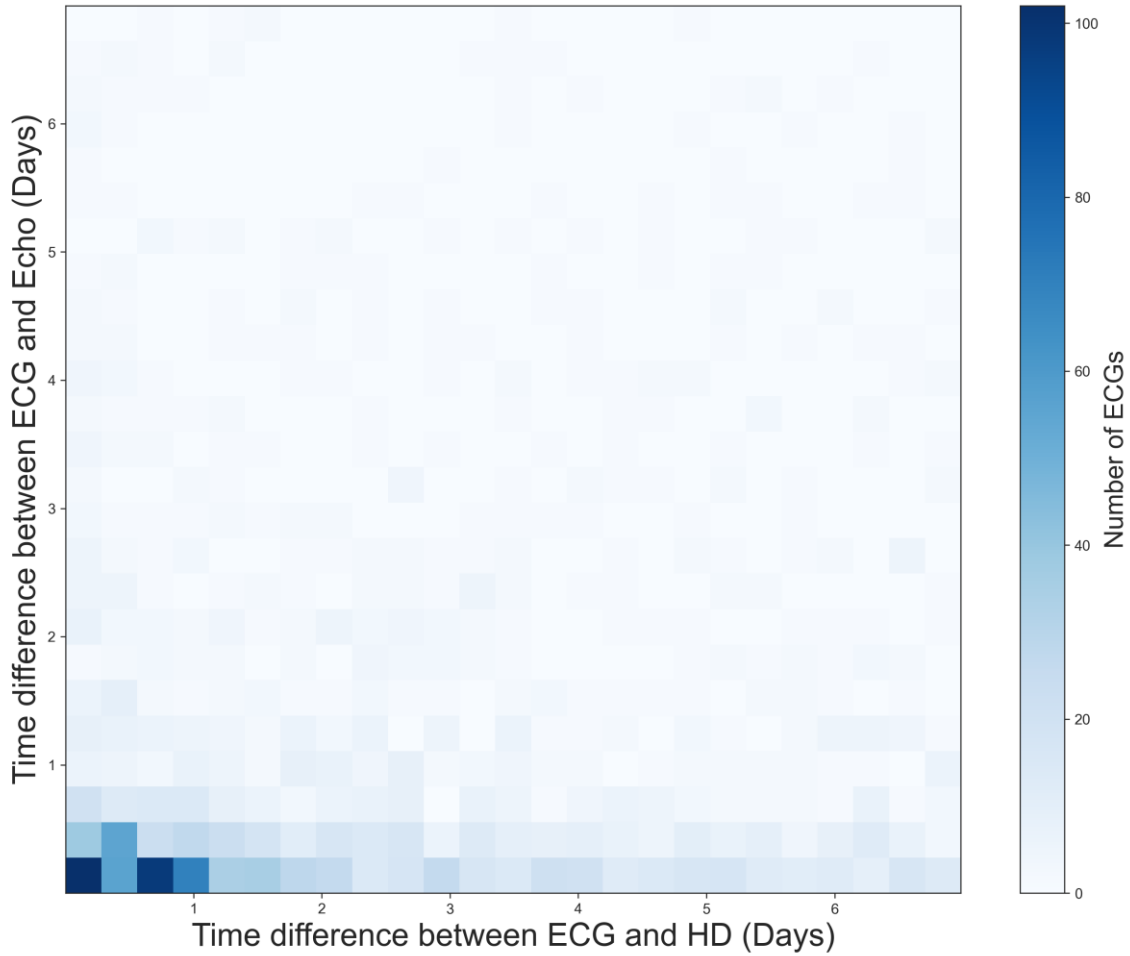
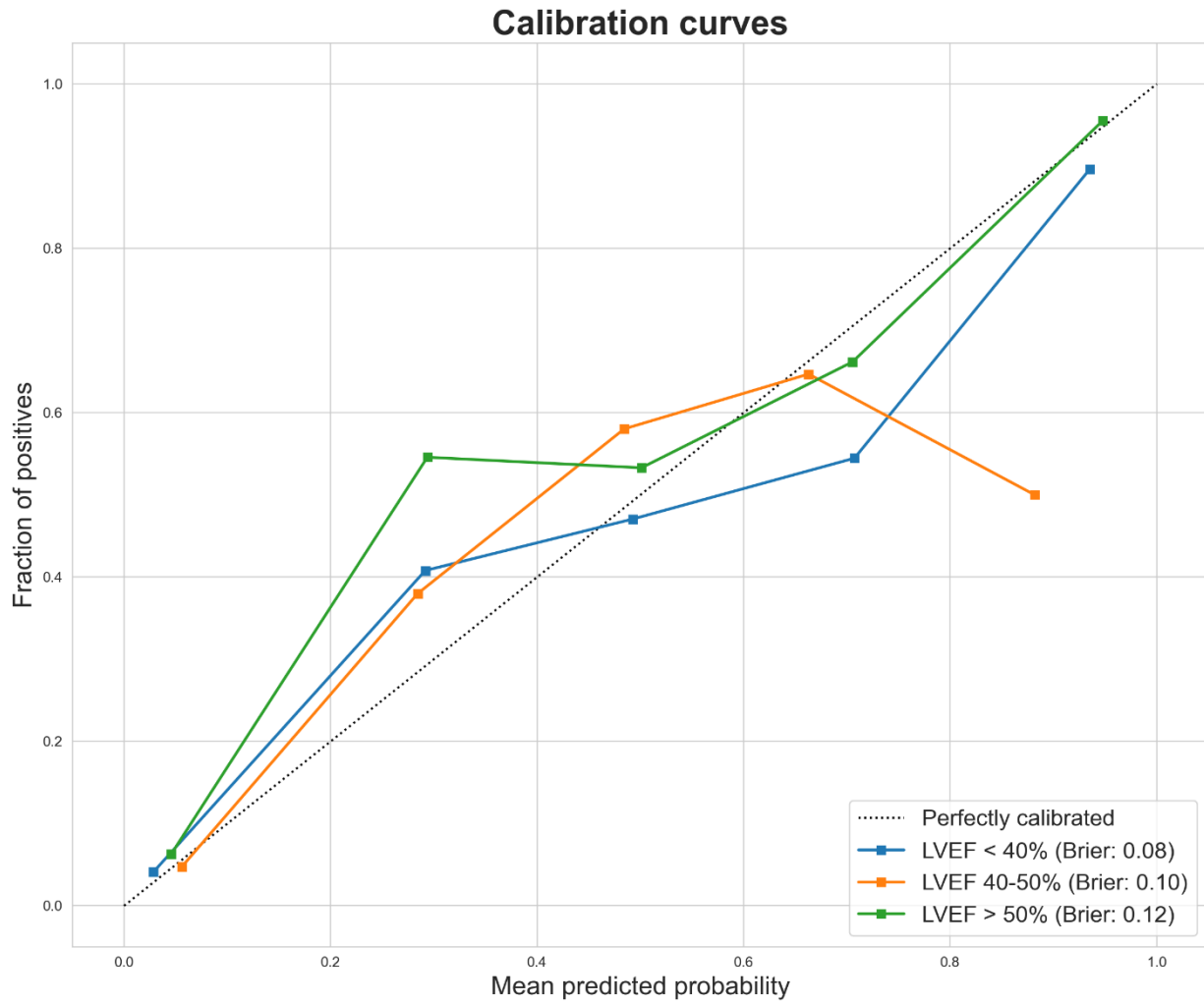


Figure shows the time difference between ECG and echocardiogram in days (Y axis) and ECG and dialysis in days (X axis). The heat map shows that most ECGs and echocardiograms occurred in close proximity to the last dialysis.

**Supplemental Figure 3: Calibration curve for each outcome.**



*Calibration method: Isotonic regression. Brier score loss: Measures accuracy of probabilistic predictions. Ranges between 0-1 – Lower is better.*