Routinely collected clinical variables enable development of **accurate**, **interpretable, predictive models** for Ventilation, Renal Replacement Therapy and Readmission in COVID-19 patients.

**INTRO:**
- Hospitalized COVID-19 patients are susceptible to resource-intensive outcomes such as mechanical ventilation, renal replacement therapy, and readmission.
- Predictive models targeting these outcomes could facilitate triage, resource-allocation, and decision support.

**METHODS**
1. Clinical data for cohort of SARS-CoV-2 positive patients from Columbia University Medical Center (March to May)
2. Features: demographics, smoking status, laboratory values, vital signs and conditions
3. Three different models: XGBoost, Logistic Regression L1, Logistic Regression Elastic Net
4. External validation on community hospital in the same health system.

**RESULTS**
- AUROC/AUPRC Curves
- Feature Importance Value SHAP Plot
- Calibration Plots

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