

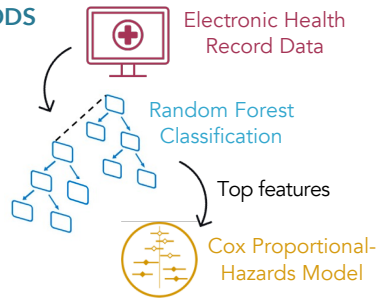
Predicting Linezolid-Induced Hematologic Toxicities in Real-World Patients with Hybrid Modeling



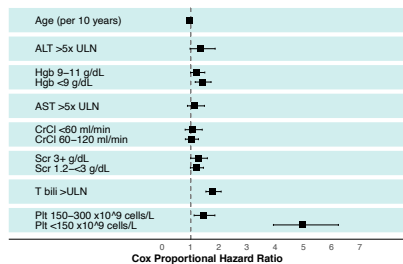
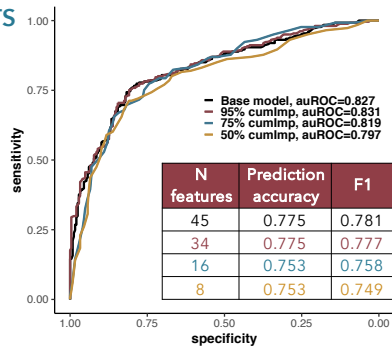
PRESENTER:
Anu Patel
anu.patel@ucsf.edu

BACKGROUND Linezolid is an antibiotic effective in treating drug-resistant infections; however, its use is limited by hematologic toxicities. We evaluate the potential for electronic health record data to characterize the risk of these adverse events in real-world patients.

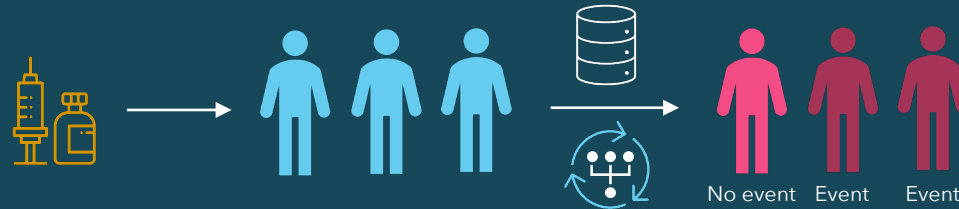
METHODS



RESULTS

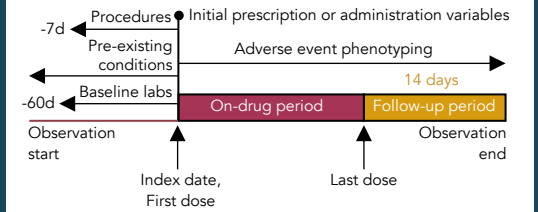


Severe hematologic adverse events with linezolid use can be accurately predicted in real-world patients with 8 measurements routinely collected in EHRs.



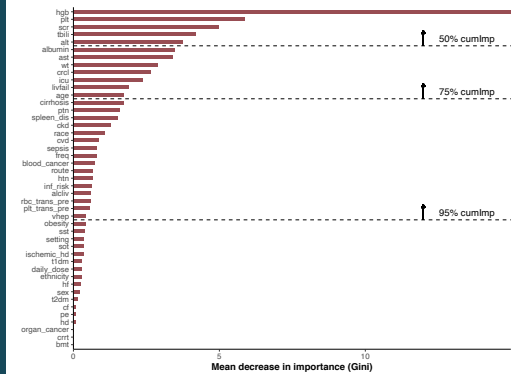
EXTRA FIGURES

Study Design



Severe hematologic adverse event (SHAE)	Incidence
Any SHAE	1019 (49%)
Grade 3+ thrombocytopenia (Platelets <50 x10 ⁹ and ≥25% decrease from baseline)	664 (32%)
Grade 3+ anemia (Hemoglobin <9 (males) or <8.5 (females & children) and ≥25% decrease from baseline)	454 (22%)
Platelet transfusion	461 (22%)
Red blood cell transfusion	586 (28%)

Feature Importance from Base RFC Model



Example Clinical Decision-Making Tool

Patient 1 Platelet count 100 Total bilirubin 1.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 65.0%	Patient 5 Platelet count 200 Total bilirubin 1.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 22.5%	Patient 9 Platelet count 300 Total bilirubin 1.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 33.0%
Patient 2 Platelet count 100 Total bilirubin 1.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 65.5%	Patient 6 Platelet count 200 Total bilirubin 1.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 26.5%	Patient 10 Platelet count 300 Total bilirubin 1.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 34.5%
Patient 3 Platelet count 100 Total bilirubin 4.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 84.0%	Patient 7 Platelet count 200 Total bilirubin 4.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 38.0%	Patient 11 Platelet count 300 Total bilirubin 4.0 Serum Creatinine 1.0 Prediction: Hematologic SAE Risk 26.5%
Patient 4 Platelet count 100 Total bilirubin 4.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 95.5%	Patient 8 Platelet count 200 Total bilirubin 4.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 64.5%	Patient 12 Platelet count 300 Total bilirubin 4.0 Serum Creatinine 3.0 Prediction: Hematologic SAE Risk 31.5%



Take a picture to download the abstract

UCSF Bakar Computational Health Sciences Institute

Anu Patel, Shenghuan Sun, Atul J. Butte, Kendra K. Radtke