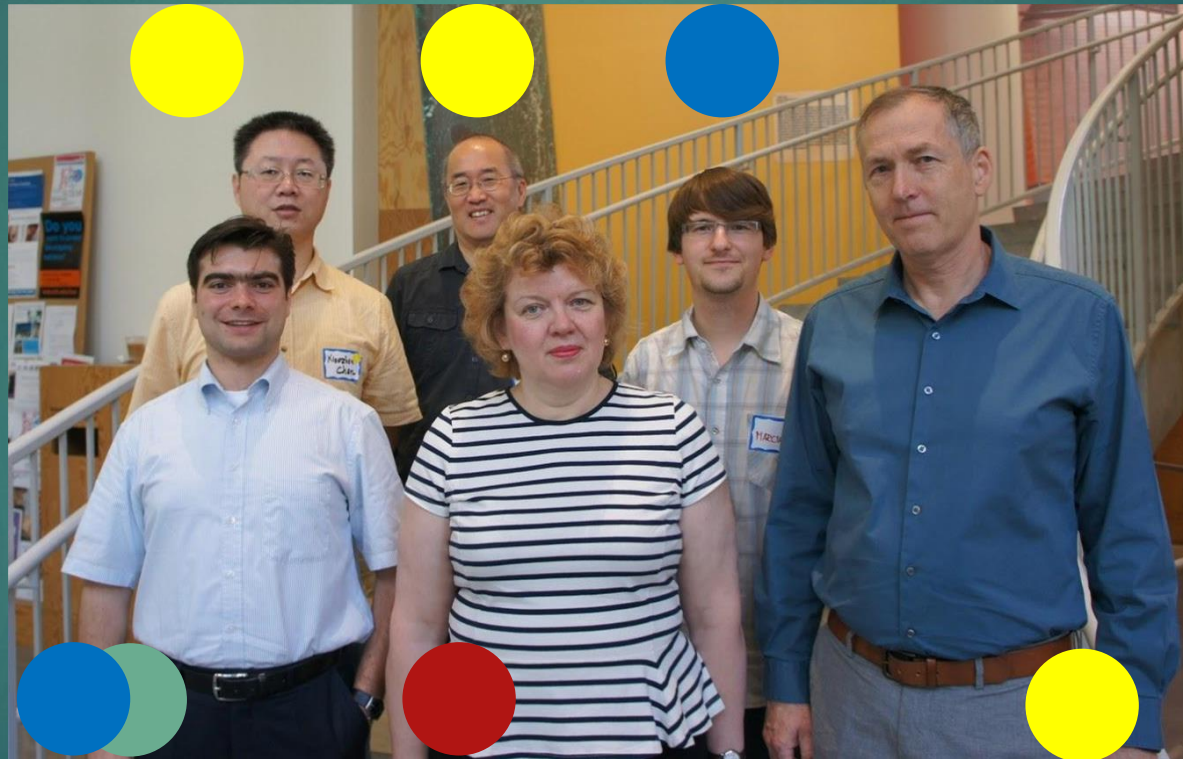


AHMF Team #1



Silviu Dovancescu, Larisa Tereshenko, Jiri Sklenar
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Predictors of Acute Hospitalized Heart Failure Outcomes

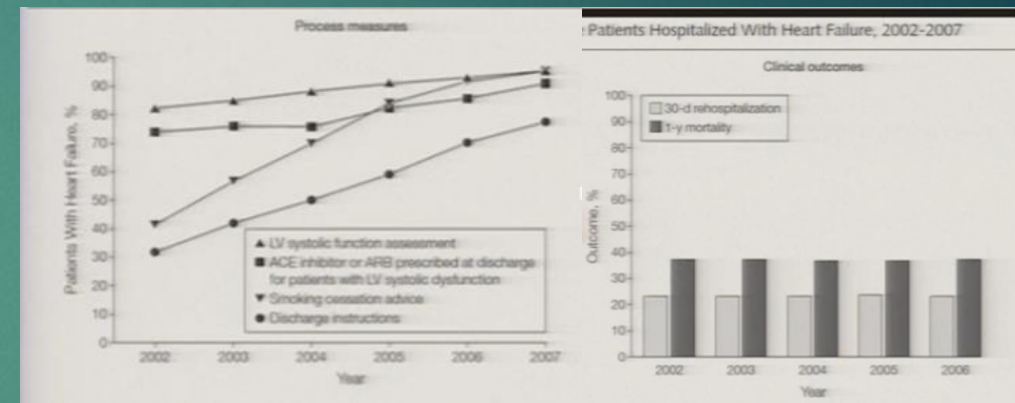
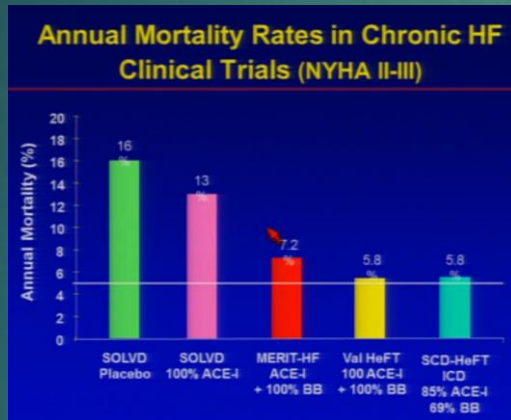
AHHF TEAM:

LARISA TERESHCHENKO, XIAOZHONG CHEN, SILVIU DOVANCESCU,
NIELS OTANI, JIRI SKLENAR, MARCUS VOLLMER, ET AL.

30-day post-discharge re-hospitalizations is hospital performance measure

Large effort was devoted to develop predictors of re-hospitalizations

Zero progress in improvement of mortality



Is re-hospitalization wrong target outcome? Yes! We want to improve survival of patients!

Study goal

- Develop risk stratification of post-discharge mortality

Methods

- **Study Population Inclusion Criteria:**
 - MIMIC-II database search criteria:
 - Admission to CCU **AND**
 - Congestive Heart Failure as admission diagnosis
- **Exclusion Criteria:** none
- **Predictors:** Demographic and clinical characteristics
- **Outcome:** all-cause mortality
- **Analytical approach:** 1. Survival analysis; 2. Lasso logistic regression

Results

- 1198 individuals included in the study (1 patient excluded due to error in time to outcome)
- 1365 CCU hospitalization events
 - 148 pts hospitalized twice
 - 51 pts hospitalized 3 times
 - 8 pts hospitalized 4 times
 - 5 pts hospitalized 5 times
 - 6 pts hospitalized 6 times

Cox Regression Results

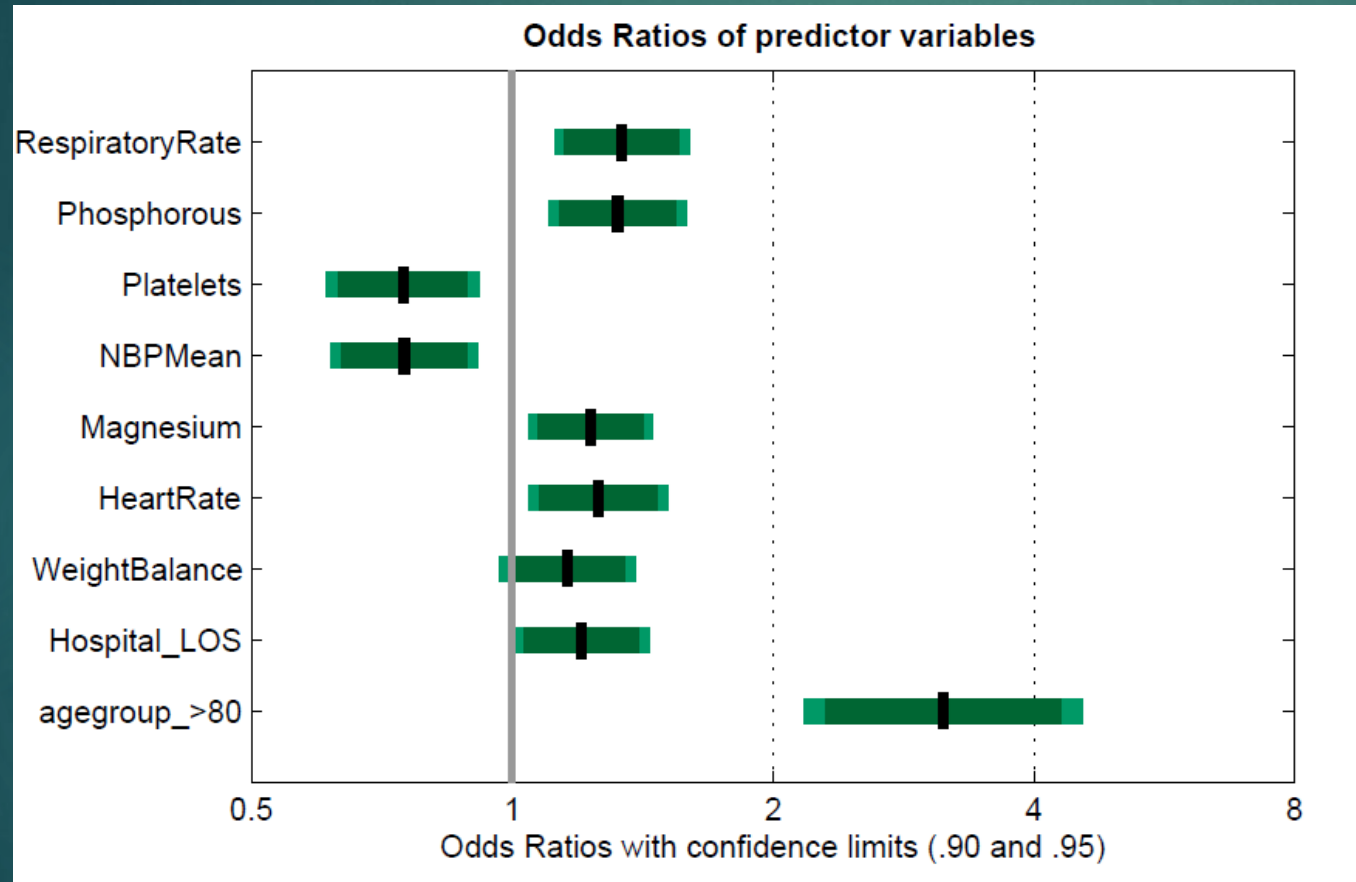
- In univariable and multivariable Cox regression analysis the following predictors were associated with all-cause mortality at 30, 60, 90 days:
 - Heart rate
 - Weight
 - Potassium
 - CPK
 - Duration of CCU stay
- In adjusted by sex, age, IABP use, weight, CPK Cox regression analysis time-updated Potassium was associated with mortality:
 - Time-updated potassium: HR 0.997 (95%CI 0.994-0.995); P=0.019
 - Duration of CCU stay: 1.02(95%CI 1.003 – 1.046); P=0.025

LASSO Regression analysis:

853 admissions with
< 3 missing values
804 patients

15 predictors (at admission):

- Age group
- CCU stay length
- Sex
- Weight balance
(Max-Min)/Min
- Heart rate
- Magnesium level
- Blood pressure mean
- Potassium
- PT
- PTT
- Platelets
- Phosphorus
- Respiration rate
- SPO2



Conclusion

- Aggressive use of diuretics, associated with weight loss during CCU stay is likely the cause of observed decrease in potassium level (over multiple CCU stays) and association with all-cause mortality. Change in management could be recommended after validation.
- Results of Cox regression and LASSO regression are consistent with each other.
- MIMIC II database is a reach database to answer clinically important research question
- Risk score of post-discharge 30-, 60-, 90- day mortality could be developed and has to be validated in future prospective studies