Introduction:
The HAIR-score stratifies the risk for in-hospital mortality after spontaneous subarachnoid hemorrhage (SAH) [1]. Maximal early lactate is associated with increased risk for poor outcome [2]. We investigated whether the combination of both HAIR-score and early abnormal lactate (<24h), gives a better association with mortality after spontaneous SAH.

Methods:
In this retrospective cohort study at a tertiary university hospital, data was collected for all patients with spontaneous SAH during a period of eleven years (2007-2017). Multiple binary logistic regression models were fitted for each outcome (ICU mortality and hospital mortality). The first one included the individual components of the HAIR-score, the second model also included an indicator for abnormal (>18 mg/dl) lactate within the first 24h (La-HAIR-score). In addition, two simple binary logistic regression models were fitted as continuous covariates: The HAIR-score (theoretical range 0-8) and the La-HAIR-score, with one extra point to patients with abnormal lactate concentration (theoretical range 0-9). These models were compared with a likelihood ratio test and Nagelkerke’s $R^2$ test.

Results:
A total of 470 patients were included. In our sample, not all original HAIR components were associated with ICU or hospital mortality. The multiple logistic regression model of the La-HAIR-score had a significantly better fit to the data, compared to the original HAIR-score. The p-value of the likelihood ratio test was 0.01 for ICU mortality and 0.025 for hospital mortality. A score of 8 on the La-HAIR-score had a 100% specificity for both ICU and in-hospital mortality.

Conclusion:
Combination of HAIR-score and abnormal lactate within the first 24h, the La-HAIR-score, significantly improved the model fit for ICU and hospital mortality compared to the model with the original HAIR-score.

References:
1. Lee VH et al. Neurocrit Care 21:14, 2014