Introduction:
Arterial lactate is a routinely measured biomarker that reliably detects tissue hypoxia. High risk patients undergoing major surgery are at risk of developing hyperlactatemia. The aim of this study was to investigate the association between arrival ICU lactate concentration and mortality at 1 year, postoperative complications and 30-day mortality after liver transplantation.

Methods:
We identified all liver transplant patients in Erasme hospital from September 2013 to December 2019. The primary outcome was to determine if early hyperlactatemia was associated with mortality at one year. Other outcomes included the association between increased lactate, postoperative complications and 30-day mortality. A multivariate analysis determined the independent association of lactate on one year mortality. Receiver operating characteristic (ROC) curves were established for one-year mortality, 30-day mortality, and postoperative complications. 95% IC were calculated with the Delong method.

Results:
A total of 228 patients were included from September 21st, 2013, to December 19th, 2019. Lactate on ICU arrival predicted long term mortality at one year with an ROC AUC of 0.80 (95% CI 0.72-0.87). Lactate values greater than 1.75, 3, and 5 mmol/L were associated with a 50%, 75%, and 90% risk of death at 1 year, respectively. Furthermore, lactate on ICU arrival predicted 30-day mortality with an ROC AUC of 0.91 (95% CI 0.84 - 0.97). Lactate values greater than 2, 5, and 6 mmol/L were associated with a 49%, 73%, and 90% risk of mortality at 30 days post-transplant. ROC AUC for predicting complications, however, was only 0.6 (95% CI 0.56 - 0.71).

Conclusion:
In this retrospective study we report an association between early postoperative lactate level and major postoperative complications, 30-day mortality, and 1 year mortality. Lactate concentration on ICU arrival is an easily accessible biomarker that may predict outcome and identify high risk patients.