Investigators:
Erik Schadde, Massimo Malago, Elio Jovine, Eddie Abdalla, Eduardo de Santibanes

Project application
Validation of current models for standardized total liver volume in the ALPPS registry

Background:
The size of the future liver remnant is one important criterion to assess resectability of liver tumors and is generally expressed as a proportion of the total liver volume. Total liver volume may either be measured on crossectional imaging or extrapolated for each individual patient based on their biometric data and is then called "standardized total liver volume". Especially in conditions like steatosis or fibrosis /cirrhosis, standardized total liver volume may better correlate better with the metabolic demands of each patient. Many formulas have been proposed to estimate the standard liver volume mostly based on weight on height. The formula most widely used by surgeons is the Vauthey formula (Liver Transplantation 2002). The ALPPS registry is likely the largest collection of measured total liver volumes from over 70 centres in 48 countries and also accumulates the largest diversity of ethnic backgrounds.

Objectives:
The aim of this study is to validate the most commonly used formulas for total liver volume in 400 patients recorded in the ALPPS registry and determine which best predicts liver volume as measured in the ALPPS registry. If correlation is insufficient our goal will be to develop a new model.

Methods:
1. Validation of 16 current formulas for total volume using the available biometric data and measured liver volumes from the ALPPS registry (correlation analysis)
2. Identification of populations with higher or lower correlations in a multivariate analysis
3. Comparison of the fit between models using receiver-operating curves and AUC analysis.
4. Development of a novel linear or nonlinear model for total liver volume based on the ALPPS registry in case none of the existing models is appropriate.