Utilising repeated measures data to personalise prognosis in heart failure (Jhund)

Heart failure is characterised by a poor prognosis. Patients experience multiple hospitalisations, have a poor quality of life and a significantly reduced life expectancy. Predicting prognosis has been difficult but with the use of large clinical trial datasets in contemporary populations we have developed a new score for predicting prognosis in heart failure (PREDICT-HF [1]). However, this score, as with any other prognostic score in heart failure is designed to use one cross section of measures made at one time point to predict prognosis. However, many of the variables that are used to predict prognosis change over time, both as a consequence of the disease of heart failure itself and as a result of the treatments for heart failure. An example is blood pressure, this falls as the heart fails further but can also be lowered by many of the life saving medications that are used to treat heart failure. Prognostic models do not take into account these longitudinal changes in prognostically important variables. This project will use data gathered in large clinical trials [2,3] to assess the value of adding longitudinal data to the model and whether this improves risk prediction. This project will assess whether there are certain clinical variables e.g. blood pressure or biomarkers e.g. natriuretic peptides that add to prognostic accuracy by being updated over time and whether updating what the optimal frequency of updating these variables is. You will examine these issues in cohorts of patients with heart failure with reduced ejection fraction and heart failure with preserved ejection fraction and a comparison will be made. You will learn to work with clinical trial datasets in heart failure and gain training in epidemiology and statistics.

References:

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