

# Mortality prediction

Predict which patients are most likely to die

## Benefit

Improving the quality of care in hospitals by identifying high risk patients to prioritise their treatment and focus resources on the right patients.



## Context

That patient mix in a hospital group is varied including old and young patients, with various doctors, and various diagnoses. With all these variables involved it is difficult to know which patients are most at risk. The death rate for each of these groups varies. For example, the death rate for patients aged 0-20 is 2%, the death rate for 20-60 year-olds is 3% and the death rate for patients over 60 is 8%. Therefore, when looking to predict mortality a more sophisticated methodology is required.

## Methodology

Initially we built a solution at admission looking at all patients at once. Then it was decided that we should differentiate between patients with various conditions and age and to look at them during their stay in hospital. For differentiation between the conditions we used the letter of the so ICD10 code at admission. We split age into 3 categories (0 to 20, 20 to 60 and older than 60). This resulted in 78 different models being built. For each of these 78 models we looked at each patient each day and considered all data available for the patient at that point in time.

## Results

82.4%

accuracy for the admission model for all conditions and ages

96%

Average accuracy for the 78 in-hospital models