**Proteomic analysis of molecules exchanged using new medium cut-off dialysis membrane**

Dialysis is a life saver for patients with end stage renal disease. Since its invention in 1943 dialysis technology has improved to mimic a functioning kidney more accurately. As well as removing small toxins such as urea and creatinine, modern dialysis also removes medium-sized molecules (such as small proteins) that a functioning kidney would normally remove. A new dialysis technology is about to be introduced with a larger cut-off for the molecules it can remove from the blood. This raises the possibility that the new dialysis technology may either remove more of these medium-sized molecules, or may remove different molecules to existing dialysis. We aim to compare normal dialysis with the new technology to see if there are any differences in the molecules that are removed by taking blood samples before and after dialysis. Traditionally studies will measure these protein changes one at a time. The mass spectrometry technique we will use here can show changes in hundreds of protein levels in one sample. Using this information we may then determine the full range of proteins changed using the new technology compared to existing dialysis. This will allow us to see if changes in these protein levels will be beneficial to patients or whether they may harm patients using the new dialysis method long-term.