What is high-quality healthcare? And how can we distinguish between hospitals that perform well and those that do not?

Over recent years, the urgency of such questions has increased. Only two decades ago, physicians had a social mandate to judge and manage quality of care. But the new quest for transparency means that medical practice is now scrutinised critically by a wide range of stakeholders.

So how should quality of care be evaluated? As better patient outcomes are the ultimate aim of quality-of-care measurements, outcome measures (such as hospital mortality) are attractive. But they are complicated by two major methodological problems: statistical uncertainty and differences in patient population between hospitals.

This thesis presents methods to tackle these problems, applying them to acute neurological diseases, including traumatic brain injury, stroke, Guillain-Barré syndrome, and subarachnoid haemorrhage.