HIPS/22/15 - The Impact Of Artificial Intelligence On Hyperacute Stroke Diagnostic And Treatment Pathways – Implications For Clinicians And The Scottish Healthcare System.

Stroke is one of Scotland's major causes of death and long-term disability (Scottish stroke improvement programme 2021). It is typically caused by a blocked artery in the brain which restricts the blood flow to this vital organ. Computerised brain scans are used to identify the blocked artery and allow clinicians to restore the blood flow within the first few hours, dramatically improving patients' outcomes. Now artificial intelligence (AI) systems are being deployed into the Scottish stroke care workflows and pathways. These are aimed at interpreting the brain scans rapidly and accurately therefore reportedly reducing the critical time interval between stroke onset and treatment. There is, however, an 'AI chasm' between the performance and effects of AI in laboratory and the clinical setting. This means that we do not understand the real-world impacts of AI on clinicians (e.g., their tasks, roles, skills, expertise) and the healthcare system (e.g., diagnostic workflows, care delivery pathways). This project will systematically assess the deployment of stroke AI across Scotland over two years with the aim to: 1- accurately map how AI shapes stroke diagnostic practices and care delivery pathways. 2- highlight gaps and suggest remedies to improve both clinical work performance (e.g., knowledge/skills/roles augmentation, task/decision automation) and healthcare system effectiveness (e.g., clinical teamwork coordination, imaging pathways reconfiguration and optimisation). 3- construct a comprehensive, real-world AI deployment framework which addresses its technological, social and organisational impacts and which can be used by practitioners and policy-makers to inform all future AI-driven healthcare implementations in Scotland and beyond.