Little is known about how doctors deliver out-of-hours care in hospitals, and yet studies have shown drops in healthcare quality at night and on weekends, and significant increases in patient mortality.

James Pinchin, Transitional Assistant Professor in Horizon, talks about his research to use and combine data about hospital doctors' tasks and locations to help the understanding of their workload and what can be done to support them.

What is the background to the Wayward project?

We know that the demands of out-of-hours working lower quality of life for hospital staff and impact the costs of care through absenteeism and over-reliance on locums. However, out-of-hours care remains under-studied, due in part to practicalities of large scale manual studies in the complex, geographically dispersed, and sensitive working environments of hospitals.

The Horizon Wayward Project was set up to measure the amount of work undertaken in the out-of-hours system and understand how the workload is manged by teams and individuals. New technologies such as indoor positioning and tracking were employed alongside data from task management systems to provide an insight into the system at scale.

Can you update us on what's happening in Wayward now?

In collaboration with NUHT, Aintree Hospital, Blackpool Victoria Hospital and Liverpool School of Tropical Medicine, we gained Health Foundation funding to expand research activities across multiple sites.

The different hospital sites have very different ways of working, and we are aiming to get every doctor on every shift carrying one of our location-tracking boxes and adding to our picture of out-of-hours work.

Interviews and focus groups with clinicians and patients are underway to increase our qualitative knowledge of these working environments and to explore the ethics of remotely monitoring activities out-of-hours. In addition structured observations will be carried out, involving shadowing doctors on their shifts and recording in detail what is going on in the hospital.

What outputs and impacts are expected to be achieved by Wayward and how will these be shared?

Data from our activity with Nottingham University Hospital has been shared with the Royal College of Physicians (RCP) Future Hospitals Programme. This initiative is about the design and running of hospitals in the future. We're working in particular with the Safe Medical Staffing working group that looks at hospital staffing and staff/patient ratios.

Whilst there is work being done and toolkits available to identify the minimum safe number of nurses in ratio to patients on a hospital ward, there is very little out there that's the equivalent for the doctor level. We are developing a toolkit with RCP to enable calculation of the number of clinical staff likely to be needed per patient.

We will also contribute to the training of junior doctors about to embark on out-of-hours shifts. By exposing them to some of the non-clinical problems and situations they will be exposed to in this type of work, and providing successful management strategies developed by experienced staff we aim to make their early shifts less stressful and ultimately safer for patients.

Any other observations?

An interesting observation has been the variation in amount of interaction seen between the different staff roles across the hospitals. There is a good amount of inter-hospital networking at senior management level, a fair amount at senior consultant level, however not so much between senior nursing staff. It is important to help build and maintain these links, especially as the nursing staff are the ones that actually implement the out-of-hours programme on the wards.

Our work has enabled us to create links between all ward staff at Nottingham, Aintree and soon to be Blackpool hospitals, and we anticipate more useful links being established throughout the lifecycle of Wayward.

And the future?

I've started to think more about the patient focus and communicating the work of the hospital from a patient's point of view - for example, looking at ways to extract information and communicate it to and for patients (creating a bedside 'digital advocate'). There is scope for the Wayward team to develop support tools to ease the managerial work of members of the out-of-hours teams and allow them to focus on clinical tasks. I think that'd be a really interesting research proposal!