HEALTHCARE

Healthy environments

Dr Lauren Morgan discusses how a human factors perspective has helped to put people at the heart of plans for a new hospital

The UK government has committed £3.7 billion to build 40 new hospitals by 2030; quite the commitment in today's climate. How these hospitals are designed will affect the entire working lives of several hundred thousand healthcare staff.

National reports suggest up to two in five NHS staff have had time off due to work-related stress in the last year. As ergonomists are fully aware, the impact of the work that's done and where that work is done is critical to individuals' health and wellbeing.

Some of the most common ways in which patients are harmed in a hospital setting include falls and missed deteriorations. The ergonomics of a ward environment can have a direct impact on the likelihood of these events occurring.

Teams at West Suffolk NHS Trust have been engaging with human factors and its potential to have an impact in all areas of their healthcare environment. After completing several human factors projects, they realised the potential for human factors involvement in their new hospital build. They provided a case to the head of the programme, who agreed to trial human factors involvement in three areas.

Morgan Human Systems Ltd was chosen to provide the specialist human factors input into the Future Systems Programme (responsible for the new build). The Future Systems team consists of clinical leads, architects and health planners. The focus of the human factors work was to look at the areas that often prove most complex to design well, including the Emergency Department (ED) and both operating departments (the main theatres and day surgery unit).

The approach

The human factors approach places all stakeholders at the heart of the project to identify their needs and ensure these are being met, ultimately to optimise efficiency and safety. With regards to a hospital, this includes not only patients' needs but also those of hospital staff, support workers, volunteers and patients' contacts.

At this site in West Suffolk, the strategy for co-production was set by the Future Systems team. As a starting point, the architect team presented the proposed design during workshops where users could feed back their opinions.

I then worked within the co-design process, combining methods based on workstream need, to gain deeper feedback from staff stakeholders. This was based on some fundamental elements of human factors study:

- **Interviews** – Informal discussions were held with key stakeholders identified by the clinical leads or at my request. These included theatre coordinators, recovery teams, operating department practitioners, stores staff, surgeons, anaesthetists, scrub nurses, receptionists, cleanliness technicians and porters.

- **Task analysis** – Key elements of tasks that needed consideration in the design were outlined. I also reviewed key tasks in theatre, including a difficult airway scenario in recovery.

- **Observation** – This were conducted with walkthroughs of existing spaces, either with a focus on a particular patient, staff journey, task (from the task analysis) or observation of a specific task. I made four visits to the site and observed the current areas, including theatre walkthroughs and a clinical waste journey.

- **Simulation** – Online/tabletop simulated working of a pathway or task to identify needs and potential risks inherent in the design.

- **Physical ergonomics** – Consideration of the physical space requirements for tasks.

Initial findings

I initially had a preconception that the architects and planners would have solutions to all our questions, and that I'd struggle to find the benefit human factors would have in this project – I was so wrong!

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Continued on page 30 >

> **Continued from page 28**

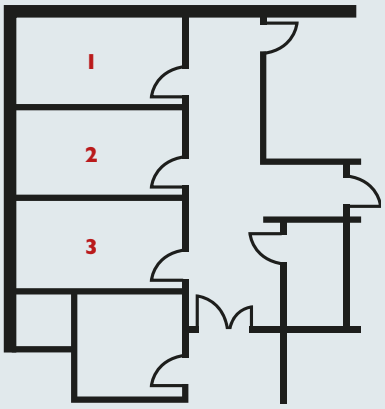
The beauty of human factors in these projects is that we have a breadth of methodologies to shine a light on different areas, question assumptions and, above all, centre the user experience.

For example, observations of the current ED illustrated the pivotal role of the department's coordinator. This person is currently sited in a central position in the 'older' part of the ED. From this base, they can maintain a visual on the high dependency beds, resus bays, the ambulance entrance and aspects of low dependency areas. As a result, their working knowledge of what's happening in the unit is significantly higher in these areas than in those where information is only available electronically (e.g. paediatrics and rapid assessment and treatment areas, which are currently in adjacent sections of the building).

In the design workshops, roles like this that are not directly 'patient facing' and don't form part of a patient flow can be missed in the considerations. Bringing the observational work and interview findings into the workshops around this task allowed the design considerations to reflect the need for maintaining visual oversight of the operational running of the department.

To review the mental health provision in the ED, I considered different patient scenarios: those attending with patients, and those looking after them.

In the initial designs, there was no provision for the working area of any staff caring for the patients in the ED mental health area. Current regulations recommend closed circuit television (CCTV) viewing of the patients in these areas, therefore the staff base is likely to need space for multiple screens. The diagram below left shows the progression of the design of this area. As a result of discussions with the Head of Mental Health, an area was designed that provides better caring opportunities for patients, with increased safety for staff.



1. Interview room
2. Interview room identified for change of use to a waiting area
3. Interview room

Changing an interview room into a waiting area facilitates additional exits to the interview rooms (in line with guidance) and provides a quiet space for patients to wait outside the main ED waiting area. This has additional benefits as somewhere for those attending with patients to sit, such as police, families and advocates.

Analysis

In reviewing the findings from all the workstreams, I found four main themes in the requests from staff: functional spaces, visibility, patient flow and communication between teams. These are important considerations for how the spaces will work for staff and patients when the hospital is built and can be used as prompts for discussion in reviewing future design iterations.

Outcomes

After a review of key tasks in theatre, interviews with key members of staff, observations and simulations of areas and procedures, and consideration of

Key functional requirements

Functional Space

Practical spaces for work beyond those where patients are cared for, such as:

- Adequate space for storage
- Space for note taking/making
- Dirty utilities
- Toilets for staff near clinical area

Visibility

To support situational awareness and patient care

- Be able to see patients from spaces designed for staff to work
- Privacy and dignity need to be balanced with need to monitor patients while in the ward area
- Key areas of monitoring need considering

Patient flow

Consideration of patient flow within and between departments

- Minimise crossover between patient groups
- Flow in/out separated where possible
- Patient flow kept separate from staff/equipment/waste flow

Communication between teams

Communication tasks are critical to patient care, and were frequently observed in the workplace but rarely discussed in co-production workshops

- Spaces for key communication points as teams (e.g. handover, ward round)
- Maintaining a link between clinical staff, and supervisory/support staff