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In the Bag

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New Design Magazine

NHS at Home: the design of mobile treatment environments for use in domestic spaces.

For most of us, we can expect our life expectancy to benefit from the advances in pharmaceuticals, technology and medical practice. Today we are living longer but co-existing with a long-term condition such as diabetes, coronary heart disease or chronic obstructive pulmonary disease. According to statistics, 75% of NHS users are aged 65 and over, accounting for 70% of acute and primary care spend, 58% of all GP appointments and 77% of all in-patient bed days. The number of people living with a long-term condition is set to escalate dramatically largely due lifestyle choices and demographic patterns, studies suggesting that 20% of all working Europeans will be engaged in healthcare by 2020. The financial cost, as well as the human resources required to deliver prolonged care to the masses, represents a significant challenge to healthcare providers throughout the world.

“Due to the scale of numbers, we will need to find new ways of treating people in their own home.”

Sir David Varney, Gordon Brown's advisor on public service transformation

The Department of Health's "Our Health, Our Care, Our Say" report explored opportunities of shifting care away from hospitals and into the community. Analysis of the 45 million outpatient appointments delivered each year suggested that 50% of these could be delivered in the community. The consideration of the home as an alternative healthcare setting has widespread public support. In 2008, a major European survey involving over 27,000 people, across 27 countries reported that 86% of participants recognised a future need for long-term care but stated a preference to be treated from the comfort of their own home. There are many benefits to providers and patients for such a model: it reduces the burden on hospitals, improves the quality of patient outcomes and avoids the perceived risk associated with staying in hospitals. It also provides patients with the freedom to get on with their lives, whilst encouraging them to remain independent for longer. Drugs delivered in a non-hospital setting are VAT exempt while the delivery of planned treatments in the home could potentially increase the strategic capacity of ambulance trusts; as 68% of ALL ambulance journeys transport people to hospitals to receive out-patient appointments. Despite the evidence, the traditional hospital setting continues to attract the attention of the media, researchers and designers.

The PhD is based at the Royal College of Art and pioneers design research in an emerging but overlooked healthcare setting. The primary aim of the research is to co-develop a design intervention that aids service consistency, service quality and patient safety. In addition, with the NHS's increasing focus on productivity a product, which enhances a clinician's efficiency and effectiveness, is highly desirable. The research is supported by NHS East Riding of Yorkshire (NHS ERY) and aided by a dedicated steering group consisting of clinicians, service improvement managers and innovation leads.

In 2006 a successful bid by NHS East Riding of Yorkshire to the Department of Health released funding to enable a new community hospital to be built in Beverley. This new development is core to the PCTs vision to shift care into a community and home based setting. Integral to this is the formation of a new intermediate healthcare tier; bridging the divide between the traditional hospital and GP surgeries. New Neighbourhood Health and Social care Teams (NCTs) now provide an integrated service that responds to the complex needs of older patients. Service evaluations involving the shadowing of community matrons revealed the common practice in using products specifically designed for a non-healthcare application. Whilst new organizational structures were specially developed, no dedicated equipment exists to support clinicians working in this challenging environment. Analysis of the bags used by community matrons to transport diagnostic equipment and patient medication into the patient's home showed a wide variation in the type, design and weight: camera bags, plastic tool boxes and accountant cases. The suitability of these products was questioned further when they were subjected to microbiology testing. A small sample of bags were swabbed, both inside and out to assess their bacteria load: aerobic plate count, enterobacteriaceae, E-Coli and Staphylococcus Aureus. The first two tests provided a general marker of hygiene while the remaining two tests addressed issues of hospital and community acquired infections. To ensure the efficacy of the results, a control test was performed on a brand new bag. The laboratory results provided quantitative data that indicated that these bags were harboring high levels of bacteria; aided by their design, the materials used and the lack of a cleaning regime. Although the test results found no evidence of E-coli, the undesirable presence of Staph Aureus was found inside one bag- a low reading within acceptable levels. The results are not surprising when you consider their back-story. Community matrons can treat up to seventeen patients a day, transporting their bags and equipment to and from a patient's home in the boot of their own car. A patient's home is an extremely challenging environment to work in as every home is different. Service observations captured clinicians setting up treatment fields sandwiched between bedroom furniture, on dining tables cluttered with patient medication and more often than not, on the living room floor.

To gain a deeper insight, a Lego Serious Play (LSP) workshop was organised with NHS professionals to illicit their personal narratives. LSP is widely used as a strategic planning tool by blue-chip companies such as Nokia and Orange but its application in a research context is rare. The decision to use Lego as research tool resulted from the first hand experience of an LSP event held at the University of Huddersfield. During this workshop, LSP proved to be a more effective tool at capturing and articulating an individual's narrative than conventional methodologies such as questionnaires, interviews or focus groups. The beauty of Lego is that it is inherently fun, non-confrontational and requires minimal skill. Indeed, what was most revealing was how these models triggered discussions in between the exercises.

A LSP workshop was organised with a cross-section of NHS professionals with the aim of extracting narratives in greater detail and also to extend the methodology to include the envisioning of the aspirational 'products' needed to support a world-class 'NHS at Home' service. The workshop began with several simple exercises to familiarise participants with the bricks and their capabilities. The concept of metaphors was introduced to the participants through a series of metaphor related questions; if the NHS was a type of bag would it be a suitcase, hand bag or a plastic carrier bag?; if it was a supermarket store would it be a Tesco, Waitrose or a Lidl?; if it was car manufacturer would it be a Ford, VW, Toyota or Jaguar?. The participants perceived the NHS to be a carrier bag, Tesco and Ford. Participants were then

asked to articulate their everyday challenges through the building of an individual model. The workshop concluded with the collective building of an aspirational 'healthcare at home' service model which articulated the desirable hierarchical and operational structures. The participants were asked to elaborate on this model further by constructing metaphor models of aspirational products and vehicles associated with a world-class service. One model in particular built by a community matron highlighted the need for a product that exuded a corporate image and provided a professional, organized and a uniformed working environment. Furthermore, when the group was asked to identify the value propositions of this service they were revealed to be quality, consistency and teamwork.

‘ With any environment we go in, I think we should be having a uninformed approach to give the patient a sense of quality and standards. ’

Community Matron

Empowered by the process, clinicians themselves conceived the product that is needed with the designer acting as a facilitator to make, “ the invisible, visible”. A simple Lego model has provided the direction for a co-design phase to develop a dedicated community matron's bag that has the capability to provide a consistent treatment space in an inconsistent environment. The bag also proposes the use of a delivery system often used in care homes or medical centres, whereby treatment supplies are pre-loaded into a dedicated patient basket, or in this case a drawer system. Through its design and materials, this new bag also addresses the issues of patient safety and will contribute to the reduction of the NHS's carbon footprint through the use of a reusable field.

The design research has now reached an advanced level with the production of a first working prototype. The product development process is being informed by clinical practice and a recent workshop simulated the application of a leg ulcer dressing and the replacement of a catheter; comparing the functionality and usability of the old with the new. Initial findings are encouraging with the product delivering potential improvements in user ergonomics, the containment of clinical materials and definition of a professional work zone. An iterative process of applied research and experimental development with clinicians will continue until Easter to refine the design. To verify the effectiveness of the design intervention, a proof on concept will be evaluated with both clinicians and patients, through the simulation of planned treatments delivered in the home.

David Swann is a PhD candidate based in the Vehicle Design Department at the Royal College of Art and the Subject Area Leader for 3D & Interior Design at the University of Huddersfield.

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