

Inspiring service innovation through co-design in public sector healthcare

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Abstract

How can we inspire service innovation through the co-design of public sector healthcare delivery particularly when facing a large and complex challenge? The design and development of a new prototype food service to address malnutrition in older adult hospital patients is used as a case study. It describes how methods used predominantly by designers have been adapted to empower, train, inspire, facilitate and guide not only the multi-disciplinary research team - including food scientists, nutritionists, medical sociologists, ergonomists, and technologists - but also service users and providers. The co-design process is based on the idea that much innovation comes from creating a blend of ideas from multiple sources and that the design of the research can influence the degree of innovation. This paper describes the approach and process that has provided the research team with valuable findings, insights and ideas crucial to successful service redesign and innovation and which is resulting in a new food service prototype.

Keywords

Co-design, participative methods, healthcare, service innovation.

Introduction

The existing hospital food service for older patients in the UK creates significant problems resulting in unacceptable levels of malnutrition. Previous attempts at addressing hospital mealtimes and nutritional issues have proved problematic, resulting in partial and unsatisfactory solutions. A three-year multi-disciplinary research project funded by the cross-council New Dynamics of Ageing programme has been concerned with addressing this issue by developing a prototype for a new food service for older hospital patients. The **mappal** project focuses on the service provided for three particularly vulnerable groups of older hospital patients, i.e., those suffering from stroke, dementia and hip fracture and benefits from the active involvement of a diverse group of end users called the 'food family' (FF) including food producers/caterers, nursing staff, ward volunteers, dietitians, speech therapists, physicians, carers and older adults, and key stakeholders (KS).

To address the complexity of issues, fully engage and utilise the experience and knowledge of the FF and to help bring together the different specialists within the research team, an overarching design methodology was developed. Methods and tools normally used by designers were redesigned to empower, train, inspire, facilitate and guide all the individuals involved. While some of these approaches have previously been

described in some detail in [1] [2] and [3], this paper discusses these through the lens of a set of particular challenges encountered in service re-design, highlighting key responses to these challenges using a co-design process. The value of both public and patient involvement (PPI) and the co-design process are then discussed in the context of Mulgan, Caulier-Grice & Murray's (2010) definition of social innovation [4] with some of the conditions required for innovation.

Visualisation as a means to empowerment

One of the key design challenges of working with individuals in large public sector organisations such as the NHS is that no matter how positively individuals may desire change they may be daunted by the sheer scale and complexity of the challenge. Either the problem might be perceived as too problematic to begin to think about (“we can't do this because...”), or that it could only be tackled in a reductionist piecemeal fashion.

The team acknowledged the scale and complexity of the challenge and aimed to help manage the complexity to overcome this inertia. The food service ‘status quo’ was visualised in detail through a process of mapping, using interview data collected by the medical sociologists from the KS and FF, and also data on food preparation and ‘food journeys’ obtained from the team’s nutritionists and food scientists. These visual mappings allowed a clear overview and a shared common understanding of the current service where none had existed previously. These visualisations were then used as the basis of a facilitated FF and KS workshop, empowering the FF and KS to see and identify problems and issues as well as strengths within the current service.

From the *patient perspective*

The view of one of the team’s medical sociologists is that the nature of the existing service is one of “*transitory people doing interrupted work ... everybody is in transit all the time doing something on the way to doing something else*”. Consequently, everyone is naturally pressured to deliver – and to be accountable for - their particular niche role and responsibility. Where there are a large number of different healthcare and clinical staff involved in the delivery of the service to acutely ill individuals, it can be difficult to fully appreciate how the total service might be as experienced by the service users themselves. For the design team, this issue was confounded by lack of access to acutely ill patients due to practical and ethical issues.

While it has been common practice for designers to use persona and scenario methods, there is some debate about the validity of these: one charge is that designers create their own limited interpretation, or stereotype, of those for whom they are designing. In the **mappal** case, the approach taken by the designers was to adapt these as tools and templates for use by the FF and KS to develop personas and mealtime scenarios derived from *their* accumulated experiences and insights. The FF and KS were provided with a blank storyboard template structured for describing events and issues pre-meal, during, and post-mealtime together with a comprehensive set of individual storyboard frames comprising typical situations derived from ethnographic data and observational studies and reconstructed through photographed playmobil® vignettes (Figure 1). Speech and thought bubbles were also provided for the FF and KS to complete, intended to encourage them to think about the interactions and feelings of

patients and staff throughout the mealtime scenario to not only highlight problematic issues but also the resulting patient reactions. [2] This storyboarding method was again used in a subsequent workshop to develop ideas for the new food service (Figure 2).



Figure 1; Storyboard of a patient mealtime experience

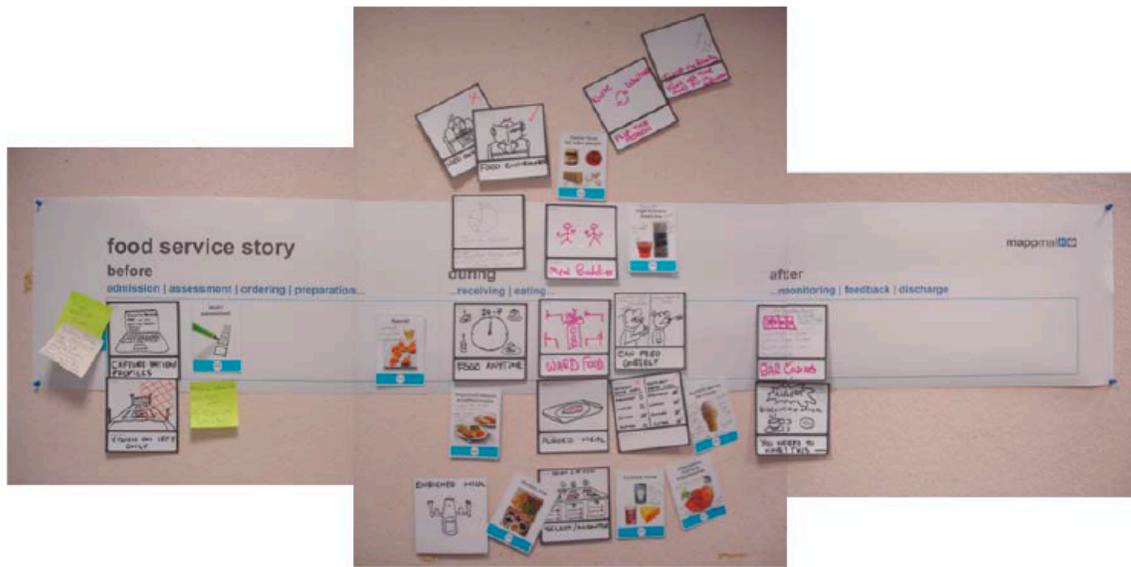


Figure 2; Service storyboarding

Through this process, the FF and KS were trained to actively engage in and use the same imaginative processes and tools used by designers to externalise the issues, behaviours and feelings from their service users' perspectives (including both patients and staff). Through this type of activity, and through interviews conducted by the medical sociologists with the FF, the agenda and priorities emerged. By developing a range of mealtime scenarios for the different patient types (stroke, dementia and hip fracture) and developing these collectively, the designers were able to develop a much richer and comprehensive understanding than had they done this themselves. This approach of developing and adapting specialist design tools for use during facilitated activities with FF, KS and non-design specialists in the team was continued throughout the project, giving these individuals the confidence to use design thinking and creative methods.

How could it be different?

In current healthcare scenarios, the pressured demands of daily routine can habituate attitude and suppress innovative thinking. How could the designers help not only the FF and KS but also the other members of the research team to suspend habitual types of thinking about the current food service in order to think 'outside-the-box' for new ideas and possible solutions? What process would inspire them to develop a new or improved food service? As in the approach to the personas and scenarios described above, the FF, KS and research team were provided with tools and a structured co-design process to inspire them to conceive of other options. Expert facilitation during these workshop activities was crucial to optimise the use of tools, methods and processes.

For inspiration, the FF and KS were asked to consider how an alternative (non-NHS) service organisation might provide and deliver a hospital food service. The organisations selected were: i) an armed services catering corps (as this has to deliver highly nutritious, easily prepared food on demand in challenging environments); ii) a consumer-oriented food retailer (as this is concerned with quality of food, choice and experience as well as a partnership approach to engaging staff); and iii) a popular lifestyle computer systems retailer (as this is about lifestyle media and technology, customer interface presented in a seamless, user-friendly manner). [2] Clear principles by which each of these organisations operate and deliver their service were presented through the medium of prompt cards designed for the FF and KS to use in a workshop activity. Careful facilitation of the workshop helped shape this activity where the FF and KS were also able to re-utilise the persona and storyboarding methods from previous activity.

From an analysis of this and associated activities, key insights into the requirements and ideas for the new service emerged. By guiding the FF and KS into a different conceptual 'space', they were able to suspend their usual modes of thought and judgement, to be inspired by these very tangible and familiar service models and to begin to imagine an improved and tailored quality food service experience for patients. The FF and KS were able to populate these with ideas mobilised from their own experiences, tacit knowledge and understanding.

Shaping ideas

Through facilitated activities such as those described above, a set of 'service principles' emerged which the research team used to guide and shape the findings and ideas into a new food service concept. The service concept was developed by means of a set of 'food service narratives' that reflect the core nutritional goal of ensuring that calorie, protein and fluid intake meets individual daily targets. These narratives (Figure 3) explored the supporting role various service elements and technologies play in responding to individual patient nutritional needs, monitoring intake and prompting appropriate food and drink options. In this way, the requirements of, e.g., smart ordering and monitoring technology, and the role and frequency of delivery of new, specially designed foods and meals (developed by the food scientists in the team) could be specified. From the patient and nursing staff perspectives it was also important to visualise how the service presented itself to the patient in welcoming him/her, in presenting and assisting in the selection of meal options, and in creating a stimulating, attractive, and non-medicalised experience.

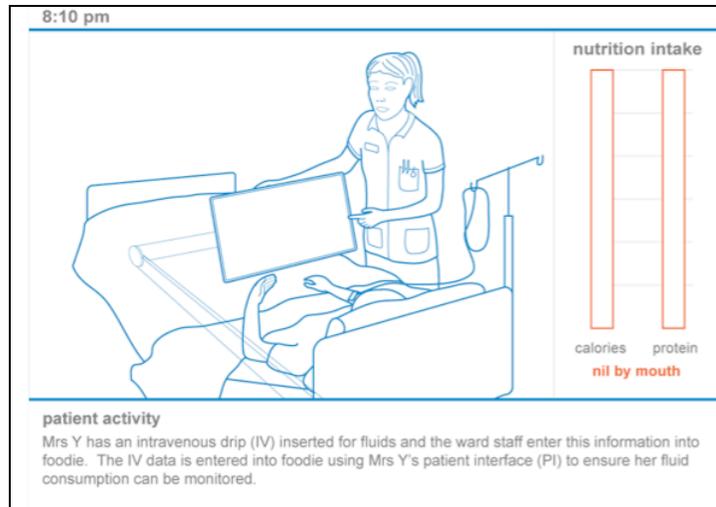


Figure 3; Example slide from the patient narratives

The visualised narratives were created as an adaptable and modular set of PowerPoint storyboards which have helped mediate dialogues, firstly between the designer, nutritionist, and the medical sociologist - often revealing issues not apparent using conventional forms of narrative, and secondly with the FF and KS for their evaluation and feedback. These illustrated to the KS and FF how their earlier comments and ideas had been incorporated into the new food service prototype. They have also helped the wider team understand different ways in which the core food service could be delivered through the different elements of the food service, e.g., new technologies, custom-designed interfaces, tableware and furniture, and new types of foods (Figure 4).

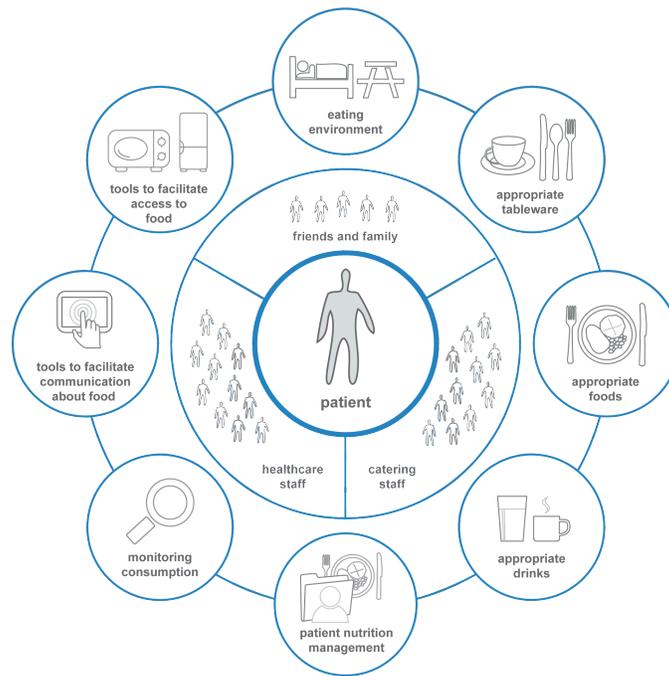


Figure 4; Elements in the new food service prototype

Communicating ideas

These narratives were later evolved into a series of animations used to communicate the new service prototype at a third workshop. In order to reinforce the holistic nature of the solution, the different elements of the system were first introduced in their connected form by the narratives (Figure 3) and a simple diagram (Figure 4). This diagram showed each of the core elements of the service supporting staff and relatives to provide a patient-centred service.

Following this, the designers used visualisation and prototyping to explain the different elements of the new system in order to gain feedback from FF and KS to shape the design and development process. Prototypes of new foods, digital interfaces and product systems were presented and the participants were invited to taste, touch and test each element individually. The prototypes were displayed alongside 'concept boards' which provided simple descriptions and listed the research findings and workshop outputs which led to their development. This approach was successful in communicating the overview and detail of the new service and the feedback received will now be used to develop and detail the next iteration of the service prototype.

Discussion

By means such as those described above, the prototype is developing into a total nutrition provision system that facilitates increased engagement of all types and grades of staff in the process of providing adequate nutrition to older people in hospital thereby raising the profile of food provision as part of total patient care.

Social innovation is defined as '... new ideas (products, services and models) that simultaneously meet social need and create new social relationships or collaborations.' [4] In the context of the **mappmal** project, undoubtedly the most pressing need has been to facilitate a better understanding of how to provide for the individual older patient within the hospital 'machine'. Amongst the whole team there has been the need for an in-depth understanding of the problems and a greater empathy for the needs of the individuals for whom we are designing this new service. The approach described in this paper is based on the premise that innovation comes from creating a blend of ideas from multiple sources. [4] A much greater range of insights and ideas has been achieved by mobilising the KS and FF using co-design methods. This is predicated on the idea that it is not only designers who can use design methods, as articulated by Campbell. [5] A participative co-design process can raise the quality and relevance of the contribution from non-designers. This approach has been facilitated by the mix of research methods used by the team and the degree of overlap of qualitative methods within the different disciplines. Many of the methods used by the team's different disciplines were complementary, and could be adapted to facilitate *inter*-disciplinary collaboration. Although from different disciplines, the team were sympathetic to and predominantly used a 'social' model of research. This process helped create a strong and effective social dynamic within the research team.

Another important element in the social innovation equation is the timing and extent of PPI such as clearly discussed by Savory. [6] In **mappmal** this early (and on-going) involvement of the FF and KS helped set the agenda and enabled the **mappmal** team to identify issues and priorities from the outset. Flexibility was built into the design of the

research to take account of findings emerging from the iterative series of FF and KS workshops held throughout the project's life, to detail subsequent activities.

It is the hope that the model offered by the emerging food service prototype will help to create a better informed and managed relationship between the patients, clinical, healthcare and catering staff. The new service prototype is a total nutrition system supported by new technology applications and associated interfaces, new foods, products, procedures and eating environments. It facilitates recording and using patient preferences, monitoring nutritional intake, and prompting staff to help patients meet individual nutritional targets with the help of more flexible access to appropriate food. Rather than a 'one-size-fits-all' food system this aspires to recognise the nature, needs and preferences of each patient, helping to establish new empowering social relationships between the system and each patient, as individuals and as people.

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