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SMART HOSPITAL LIVING LAB

Abstracts

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CONVERTING AN IDEA INTO A PRACTICAL APPLICATION - THE INNOVATION PROCESS RESULTING IN LÄÄKETABLETTI™

This article describes the LääkeTabletti subproject, which was carried out as part of the Smart Hospital Living Lab project. The aim of LääkeTabletti was to make the process of pharmacological treatment smoother and safer. The palliative care ward of the City of Vantaa Hospital Services served as the ward responsible for the project. The development work was carried out in cooperation with Ciegus Oy, the palliative care ward of the City of Vantaa, actors of the Smart Hospital Living Lab project and the students in Laurea's health care and business management programmes.

As a result of the development work, pharmacological treatment processes in the palliative care ward were changed so that all nurses (including practical nurses) doing patient work now take part in the processes. Previously, there had been tasks that were the sole responsibility of the nurses. Analysing the safety and effectiveness of the pharmacological treatment processes gave rise to an idea of a technological

application that would meet the pharmaceutical identification needs of the palliative care ward. The idea was developed and tested in collaboration with Ciegus Oy and LääkeTablettiTM was the technological end result of the work.

In this article the project is examined as a product development process that takes place as an open innovation process in the Living Lab environment. Living Lab brings together a broad range of different actors and organisations each of which is able to make use of its own strengths in the process. The term "open innovation process" refers to the product development process resulting in LääkeTabletti, the technological application in the focus of the article. The article discusses the development of pharmacological treatment processes, usability of LääkeTabletti and the challenges of an innovation process partnership from the perspective of communications, objective and risk taking.

Kirsi Ronkainen

USER-ORIENTED DEVELOPMENT OF HEALTH CHAIR IN GERIATRIC WARD

The purpose of the Health Chair subproject was to support the development of health chair by producing usability-based evaluation information in a ward of a geriatric rehabilitation hospital. The nursing staff in the ward, researchers of the Aalto University Department of Electrical Engineering and Automation and the nursing students at Laurea University of Applied Sciences were the main actors in the project. The health chair was used by a core team of three nurses and they also played an important role in the carrying out of the usability evaluations. The evaluation of the health chair was a four-stage process, consisting of the collection of nursing feedback, observations made during practical use, assessment of the time spent on using the chair, and user interviews. The evaluation data formed the basis for improvements aimed at making the health chair better suited for the ward's needs. The health chair proved to be quicker and easier to use than traditional methods for measuring vital functions. The chair measurands were considered appropriate and there was positive feedback on the integration of the measurement results in a single display. Ergonomic qualities and usability with patients in poor health are the main challenges concerning the development of the health chair.

Sari Viitala, Ville Kivisalmi & Kirsi Ronkainen

NEW WAYS OF IMPROVING SURFACE HYGIENE IN HOSPITAL WARDS

Treatment-related infections (formerly called hospital infections) spreading through physical contacts lead to higher morbidity, make treatment periods longer and increase costs. Contamination of surfaces (contamination = entry of microbes into the body and lifeless surfaces without the microbes multiplying or causing a disease) by mechanical impurities and microbes provides pathogenic microbes with one route through which they can reach the care environment through contact surfaces. Modern technology offers new ways of improving surface hygiene. New ways of antimicrobial surface protection and self-monitoring were tested in the pilot study described in this article. Finnish hospitals have not yet made any large-scale use of antimicrobial surface protection and self-monitoring.

In this pilot study, the focus was on the cleanliness level of textile surfaces (patient curtains, workwear) and patient aids (wheelchairs). In the pilot study, a wheelchair and the curtain between beds in a patient ward were protected with surface protectants supplied by Uudenmaan Pintasuojaus Oy and Claeris Oy. Two different methods were tested: titanium oxide coating sprayed on large surfaces and a Bacopan towel. The surfaces from which the samples were taken were determined on the basis of observations of the work of the nursing staff in a ward of the City of Vantaa Hospital Services. Orion Diagnostican Clean Card Pro and Hygicult TBC samples were taken from the protected surfaces before and after the protective treatment. Microbiological contact samples were grown and the findings were analysed in the Laboratory of Hygiene and Microbiology of the Hjelt Institute of the University Of Helsinki.

Improved knowledge in the field of surface hygiene and protection and more extensive sharing of the knowledge were the main benefits of the pilot project. However, before new surface protection methods can be extensively introduced, we need testing jointly planned by the parties responsible for hospital hygiene and more extensive and systematic sample taking. The project also produced new information on the cleanliness levels of the surfaces concerned and variation in them and thus it challenges us to examine the hygienic practices connected with them. Samples were taken from a broad range of different surfaces and it was found out that microbes grew faster on the surfaces that were mostly touched by nurses.

Anne Eskelinen & Carita Saarikivi

MULTIDISCIPLINARY COOPERATION BETWEEN STUDENTS IN THE DEVELOPMENT OF A CARE ENVIRONMENT PROMOTING WELL-BEING

Developing a care environment promoting well-being in a geriatric rehabilitation hospital became one of the development themes in the Smart Hospital Living Lab project. The aim of the theme was to support the development of the care environment in such a manner that the acoustics, lighting, visual aspects, functional stimuli, colours and furniture would promote the well-being of the patients and the personnel and make the patient rehabilitation and the discharge process easier.

The development of the care environment was carried out the basis of the multidisciplinary teams of social services and health care students. The students were able to play a concrete role in development work in the hospital and were part of the Living Lab development environment. Feedback collected from the students showed that multidisciplinary work was considered a positive experience. Students were able to strengthen their professional skills and multidisciplinary project work was seen as part of working life skills required in today's world. Scheduling problems and overlaps with other studies were seen as challenges in multidisciplinary project work. In their feedback, the students emphasised that the project-related learning exercises and the amount of project work should be commensurate with other studies with similar workload. Project integration made it possible for the students to develop their skills so that the targets set for the study unit were exceeded.

Piia Silvennoinen

EVALUATION OF THE SMART HOSPITAL LIVING LAB PROJECT

The article describes the final evaluation of the Smart Hospital project. The purpose of the study was to evaluate the success of the Living Lab operating model. The study was carried out as a qualitative survey (thematic interviews), and a total 12 persons playing a central role in the project ecosystem (hospital, companies and the education institution) took part. The results were interpreted in relation to successful Living Lab criteria (Bergvall-Kårenbom & Ståhlbröst 2009), which are openness, realism and empowerment of users. The results show that while the first two criteria were mostly met, the project did not fully succeed in empowering the actors. For this reason, more consideration should be given to the planning of similar projects in the future and the manner in which they are provided with comprehensive resources (funding and personnel).

SMART HOSPITAL LIVING LAB

As health care organisations are facing a multitude of challenges, such as the ageing of the population, technological innovations and efficient use of them can help the organisations to improve productivity, provide better services and ensure the well-being of municipal residents. However, results can only be achieved if training, research and service system structures are integrated into a stronger development ecosystem. Living Lab development environments have been created as a response to this requirement. Smart Hospital Living Lab project served as a development platform for primary health care, making use of interface expertise in development and innovation by bringing together hospital services personnel, representatives of companies, researchers, teaching staff and students.

The purpose of this publication is to describe and assess how the Living Lab solutions created in the Smart Hospital Living Lab project can be used in a primary health care environment. The publication analyses the theoretical and practical basis of the project and describes four development projects, each with different partnership networks, target areas and objectives. Distinctive features of Living Lab activities in sub-projects and their development context are also highlighted. The publication discusses the experiences gathered from Living Lab, analysing its nature, practices, successes and challenges. The parties interested in Living Lab can thus use them in health care, business operations and training activities.