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Logistics robots to support care: a Finnish study

How to introduce robotics into a healthcare setting for a smooth transition

Study shows that Change Management can make or break success of robotics implementation in a hospital setting.

Lucie Robson
Senior Editor
HealthManagement.org, Cyprus

lr@healthmanagement.org

@ehealthmgmt

healthmanagement.org

Key areas in which innovative technology is contributing to healthcare include improving efficiency and productivity. Hospital hallways often become congested, which can hinder the transportation of supplies as well as the fluid movement of staff. In a busy hospital setting, this may be expected, but a recent study in Finland has focused on making improvements in this area with the use of robots.

VTT Technical Research Centre of Finland has implemented a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia, with the aim of reducing transportation costs, improving the availability of supplies and alleviating congestion in hospital hallways by running deliveries around the clock on every day of the week. The study forms part of the preliminary steps being taken to introduce automated delivery systems in hospitals throughout Finland. Seinäjoki Central Hospital's robot system will include a total of five to eight automated delivery robots, two of which were deployed during the study.

> "TRANSPORT PERSONNEL EXPENSES AND THE PHYSICAL STRAIN OF TRANSPORT WORK HAVE BEEN REDUCED AND VIEWS ON THE DELIVERY ROBOTS HAVE DEVELOPED FAVOURABLY"

Impact on Safety, Care Quality and Jobs

Although adopting new technology to support care and nursing work is important in the transition to a hospital design that responds to modern needs, autonomous service robots and robotic systems raise questions about safety as well as about their impact on care quality and jobs, among other issues. Joint planning and dialogue between various occupational groups and stakeholders is therefore paramount to a successful change process. The VTT study involved personnel across the board and this is considered to have facilitated a smooth transition.

Experiences gained during the first six months of the study show that transport personnel expenses and the physical strain of transport work have been reduced in the hospital. Meanwhile, the personnel's views on the delivery robots have developed favourably. In terms of other occupational groups, the study has found that adoption of the system has had a varied effect on staff's perceived level of sense of control and appreciation of their work, as well as competence requirements.

By employing this forward-thinking research approach together with a systems-oriented view, this study by VTT highlights the importance of taking the interdependencies between various players into account in this kind of change process. This includes considering how the transformation affects their roles in the hospital's core task of providing high quality care.

Wider-Scale Implementation

In light of positive results from the study, other hospitals have shown plenty of interest in Seinäjoki

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hospital's experiences. When considering the need for robotic services on a wide scale, careful planning, piloting and implementation are required to ensure that the adoption of new robots runs smoothly as a whole. "As the system is expanded with new robots and types of deliveries, even more guidance, communication and dialogue is needed. Joint planning that brings various players to the same table ensures that the system's implementation goes as smoothly as possible, making it easier to achieve the desired overall benefits", says Senior Scientist Inka Lappalainen of the ROSE project.

> "AUTONOMOUS SERVICE ROBOTS AND ROBOTIC SYSTEMS RAISE QUESTIONS ABOUT SAFETY AS WELL AS ABOUT THEIR IMPACT ON CARE QUALITY AND JOBS"

VTT's study is part of the Robots and the Future of Welfare Services project (ROSE), running from 2015 to 2020. The project investigates Finland's opportunities for adopting assisting robotics to support the ageing population's independent living, wellbeing and care. There is also a blog post on the topic: **http://roseproject.aalto.fi/fi/blog/32-blog8**.

Intermediate results of the project are presented in the publication Robotics in Care Services: A Finnish Roadmap, providing recommendations for both policy making and research. The roadmap is available on the ROSE project website, at **http://roseproject.aalto.fi/** or **http://roseproject.aalto.fi/fi/blog/29-roadmap-blog-fi**.

The roadmap has been compiled by the project consortium comprising Aalto University, the project's coordinator, and research organisations Laurea University of Applied Sciences, Lappeenranta University of Technology, Tampere University of Technology, University of Tampere and VTT. ■

Hospital transport robot

KEY POINTS

- ✓ Technology is improving healthcare efficiency and productivity
- ✓ VTT Technical Research Centre of Finland has developed robotics system for hallway transport in Seinäjoki Central Hospital
- ✓ The system includes five to eight automated delivery robots
- ✓ Robotic systems bring up safety concerns as well as impact on jobs and care quality
- ✓ The VTT study featured input from occupational groups and stakeholders which helped facilitate a smooth transition
- ✓ Transport personnel expenses and physical toll of transport work have been cut and personnel views on robots are favourable
- ✓ Study success has led to interest from other hospitals

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