



Healthcare Logistician: A New Profession Needs a New Education

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Abstract

This paper is a description of the new competency-based education needed by the new profession of Healthcare Logistician. Healthcare Logistician education is based on the results of the Healthcare Logistician Project funded by Tekes (the Finnish Funding Agency for Technology and Innovation) as a part of their innovations in social and healthcare services programme. The aim of the Tekes programme is to renew health and social services and increase business opportunities through innovative activities by supporting the creation of effective, customer-oriented health and social services, more extensive preventive actions and diversified partnership and cooperation. The project is an example of a new type of cooperation with private and public sector organisations in healthcare services. It is implemented in cooperation with a private supplier of transport and logistics services Uudenmaan Pikakuljetus Oy as a part of the global DSV group, two regional hospital districts, and Lahti University of Applied Sciences (LUAS).

The aim of The Healthcare Logistician Project was to create a new profession, Healthcare Logistician (job descriptions and service concepts) parallel to the actual professional healthcare operations and logistics systems concerned. These job descriptions bring the professionalism of a logistician to the local micro level healthcare situations and in these cases the new logistician releases the real healthcare professionals from logistics tasks to fully concentrate on the actual nursing or caring treatments needed. At the same time, a just-in-time and rationalized way to carry out the handling of inbound and inhouse logistics will be achieved as well as correctly dimensioned stocks, supporting different healthcare situations concerned.

Due to the particularly demanding working environments, existing logistics education as a part of business or technology education does not meet the high standards and requirements of healthcare, but a special competency based healthcare logistician education which is a mix of logistics and social and health care education is required. The new education is primarily intended, on the other hand, for young professionals in logistics interested in working in the healthcare services, and on the other hand for those who have worked at social and health care tasks but who have to change for one reason or another (e.g. health reasons) to other tasks. At the same time, the new education programme offers an opportunity for specialization to students of business logistics as well as students of health and social care.

1. Introduction

The logistics discipline has changed and grown over the last decades. This has also meant changes in skills, competencies, and knowledge needed in different logistics functions [1; 2; 3]. However, the logistics in public healthcare has only recently attracted the attention of state authorities [4]. Because of decreasing financial and human resources in the healthcare sector, the existing resources have to be reallocated and the old modes of action have to be changed. Logistics is one of the biggest cost factors in hospitals [5] and therefore changes and innovative working practices have to be looked for.

The purpose of this paper is to analyze the skills and competency requirements in a new healthcare logistician (HL) profession and based on these requirements define a curriculum for HL. The idea of the HL profession is based on the findings of Keskiäli's [6] study, indicating that the organization of logistics functions and the descriptions of functions are insufficient, education of the personnel is inadequate, and there is a need to employ a full-time person who is educated in logistics.

2. Characteristics of healthcare logistics in hospitals

A hospital is a complex system of actions, structures, material flows and people where logistics contribute a lot to the quality of operations [7]. The characteristics and the greatest challenges of healthcare logistics are discussed here briefly.

The first challenge is concerned with **efficient use of human resources**. Responsibility for ordering supplies fall on multiple persons: nurses, practical nurses, instrument technicians, etc. At the moment too many persons are involved and distribution of work is often unclear, instructions are insufficient



and systems too complicated. Also, orientation and training for inventory and materials management is often inadequate. [6] Hospitals should reconsider what tasks are done by which employees, especially nurses' tasks need re-definition. Nurses' time cannot be wasted by having them do logistics tasks [9]. Today, approximately 25 % of the nurses' tasks are purely support-service based [8].

The second challenge is related to the **inventories and availability frequency**. Patient procedures are the defining factors in healthcare, and inventory placement is defined by how quickly supplies and equipment need to be available. In surgical wards, some supplies need to be readily available within hours and some within minutes or immediately. Due to different availability demands there are too many, too small and badly located stores, the shelf system and the use of space are impractical [6].

3. Operational model and profession of healthcare logistician

HL can be seen as a facilitator for multitasked professionals from numerous fields of professions, interpreting the status differences of these professionals and mutualizing the common goals which traditionally have been a challenge for co-operation. The HL is a logistician who supports locally the work of the healthcare professionals and who knows the everyday life of nursing and speaks the same professional language as the nursing staff on the one hand and on the other hand, the same language as in logistics. He or she takes care of all variety of goods needed in healthcare operations so that all the goods are precisely in the right places and at the right time where and when they are needed. HL is also a developer who critically analyses logistics processes and functions and develops them, for example installing new signage to ease the way to find, organize and label supplies, materials and equipment, remove unnecessary items, develop layouts, physical environment, so that the space is well utilized.

In an operation room environment, HL's priority task is to ensure the access of hour, minute and second availability based medical supplies. It also important to keep in mind that HLs are not allowed participate in nursing or handling medicines. During elective care situations, HL's duty is to deliver the service equipment to operation units and remain in a state of emergency readiness for any unexpected needs. In ad-hoc (special) care situations, healthcare logisticians reserve all predictable equipment and supplies ready in immediate proximity. The job description of HL also includes close co-operation with other hospital logistics operations when planning order-delivery processes and creating preparedness of components and stock buffering.

The new job description brings the professionalism of a logistician to the local micro level healthcare situations, improving flows of supply and equipment, reducing travel and search times and making space more usable. At the same time teamwork and ownership of logistics functions are improved and workload balanced. The benefits of the new role and job description of HL can be summarized as follows: keeping the right supplies and inventory on hand ensures that suitable patient care can be delivered, while reducing costs and waste for the hospital, also improving quality and patient safety. The expected benefits include reduced travel and search times, improved supply and equipment flows, efficient teamwork, clearly defined process ownership, balanced work load, and better space solutions.

4. Competence based education development

In a job-related competence definition, job competences describe characteristics of an employee that are required to perform a job effectively [10; 11; 12; 13; 14]. It includes both an individual and a collective level of competences. In the case of HL the focus is on individual competences which consist of individual knowledge, skills, attitudes and behaviors [15] but also organizational capabilities [15] are recognized.

The competence identification in the HL project is based on the empirical data collected by interviewing and observing logistics operations in two regional hospital districts. This empirical data was compared and completed to competence-based qualifications of warehouse maintenance and instrument technicians. The empirical data collected as a part of the ESLogC project [16] as well as ELA Standards of Competence on the Supervisory/Operational Management Level [17] were also utilized.

The biggest weakness in competence identification is normally related to time orientation. Competences are defined most often as being retrospective rather than proactive with respect to strategy and organizational change. [18; 19] In the HL project, the challenge is that all experiences are based on current and previous practices. There is a danger that the competence chart is based on the current job descriptions and practices and does not adequately recognize the new operational model.



5. Skills and competence requirements of healthcare logistician

Twelve occupational competence areas were identified. The large number of competence areas describes the challenging content of the new profession. HL's future tasks can be versatile healthcare environments such as operation rooms, care units, warehouses and the required competences are defined according to care situations. The main competences can be divided into three types: 1) operational task-based competencies, 2) supervisory management based competencies, and 3) interpersonal as well as personal skills. . Table 1. Skills and competences of HL by competence areas.

Operational task based competencies	<ul style="list-style-type: none"> • can plan, realize, follow up and develop warehouse operations • is familiar with duties connected to goods collection process • is familiar with duties and systems involved in storage control • is familiar with duties connected to handling of dangerous goods and chemicals • can to fight infections based on laws, regulations and quality system • is familiar with lean thinking
Supervisory management based competencies	<ul style="list-style-type: none"> • can plan, guide, evaluate and develop operations and economy in own area of responsibility • can plan, direct, evaluate and develop subordinates' work and competence • can maintain and enhance customer and stakeholder relations • can guide and initiate others to the tasks of HL and take care of the work of guidance • can plan and develop healthcare logistics, work of HL and understand the importance of the role of HL as a part of nursing process • is familiar with applicable laws, regulations and guidelines
Interpersonal and personal skills	<ul style="list-style-type: none"> • working with different kinds of people • handling work-related documentation • taking care of well-being • knowledge of languages and IT-systems • customer-oriented way of working • team working • learning capabilities • etc.

Competencies requirements are a combination of logistics and social and healthcare skills. This will require deep co-operation between healthcare organizations and education providers and between different sectors of education. The HL curriculum described below is developed by healthcare organizations participating in the project and lecturers of business and social and healthcare sciences at LUAS.

Table 2. Curriculum of HL studies.

Title of module	Ects	Description of content
Orientation	2	learning environment, guidance and planning of studies, evaluation of current competence
Social and healthcare	8	health and social law, patient safety, infection control and asepsis, service and quality, command of products
Logistics	8	lean thinking, logistics, procurement, information technology and systems, financial management
Team and interpersonal skills	2	interaction, communication, cooperation, problem-solving skills
Project work	5	project management, development and implementation plan of healthcare logistics services
Practical training/ Elective studies	5	practical training as a HL or elective studies



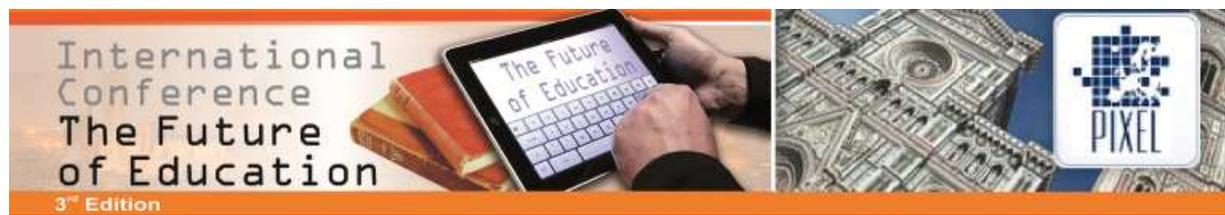
The above described HL education programme is Bachelor level education (level 6 in the European Qualifications Framework, EQF). In the first phase, the education will be gone through as further education and will be aimed towards nursing auxiliaries, practical nurses as well as to warehouse employees, warehouse maintenance and instrument technicians who would like to develop their careers. In the future, the education programme can offer specialization opportunities to students of nursing, logistics etc.

6. Discussion

There are clear needs for HLs. One challenge is in setting criteria for student selection. The target group consists of candidates from various backgrounds with strong logistics competences as a minimum requirement. Tailoring curricula to meet existing competence levels of the target audience can be challenging. From the educational perspective, this new professional training programme will create challenges for business as well as social and healthcare teachers to share core competences. Future research is needed from different types of healthcare organizations. In addition, there is a need to benchmark healthcare logistics education internationally (e.g. UK and Netherlands).

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