

Production Management in the Elderly Care Services

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INTRODUCTION

In western countries, the so-called demographic time bomb, that is, the ageing of the baby-boom generation, has become one of the most challenging issues. Although it has become almost clichéd in health care planning, its effects are being felt rather acutely in reality. The situation in Finland, as in many other western countries, is compounded by the fact that as demand for *elderly care* is increasing, the service systems are suffering from severe labor and tax funding shortages. In fact, population in Finland is aging faster than any other OECD country (Antolin, Oxley, & Suyker, 2001). Elderly care centers have difficulties in hiring qualified professional staff. Nursing staff are also burdened by heavy workloads. The situation will worsen by time as the number of elderly people in our population increases further, leading to increased strain on health care resources. The present service structure is not going to be able to respond to this demand. Yet health care funding, which depends on public financing, will decrease as the number of taxpayers declines due to the aging of our workforce. "Elderly dependence ratio," a key demographic indicator, will approximately double over the next two decades (Eurostat, 2005).

We have approached this problem described above from a *production management* point of view. Some ideas from this concept can be implemented to improve elderly care, such as work-in-progress. This article reports on the findings of a case study using this approach in the field of elderly care in Helsinki City, 2004. A previous version of this article has appeared in the HCTM 2005 Conference proceedings.

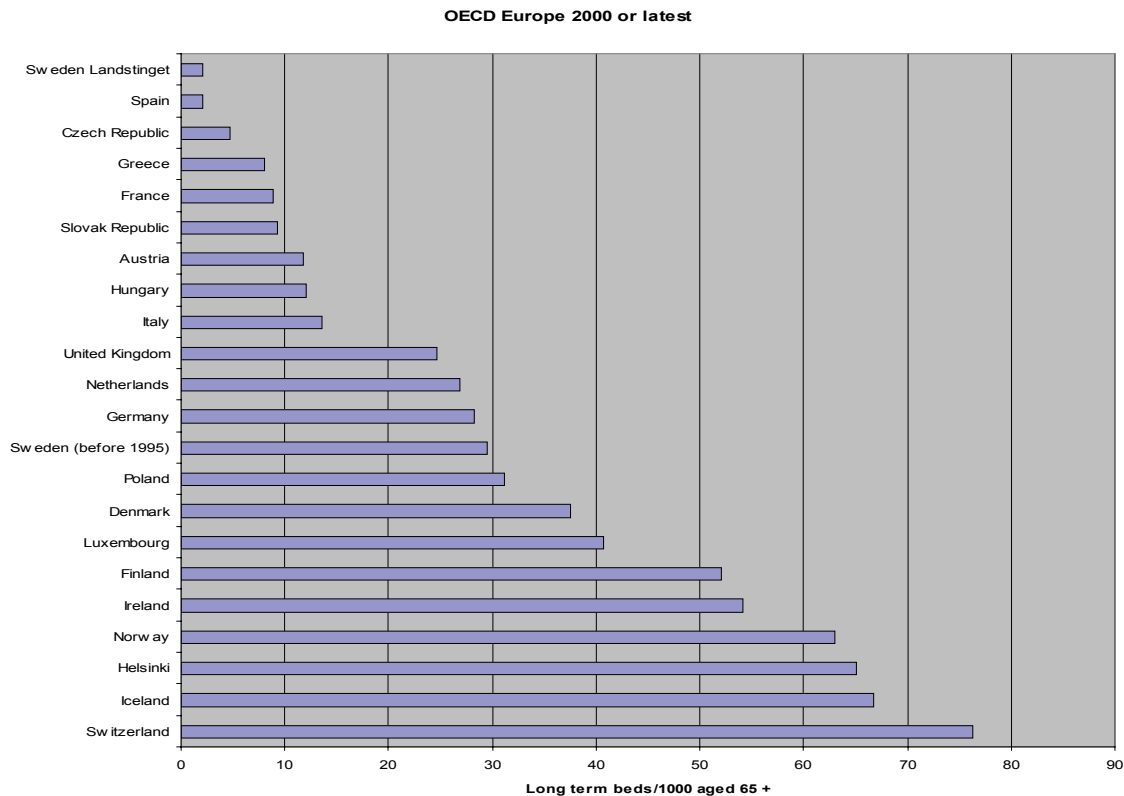
BACKGROUND

In the Finnish care system, the municipalities are responsible for providing health and social care services for all inhabitants including the elderly. This care is financed by local municipal taxation, although this can be supplemented by additional funding from central government.

The amount of long-term beds is relatively high in Finland (see Figure 1). In 2002, 5 % of the over 75s lived in service housing, 5 % in nursing homes, and 3 % were in-patients at health center long-term wards. In Sweden, the health care reform has accomplished a radical reduction in institutional care. Most of the Swedish elderly (96%) live in a single room with their own kitchen and toilet.

A shift towards the deinstitution of the elderly can be observed (Coleman, 1995; Eng, Pedulla, Eleazer, McCann, & Fox, 1997). A study performed in Italy (Tibaldi et al., 2004) suggests that severely demented elderly patients at home can benefit from the same level of care provided by a hospital ward. Stable support from family members of demented subjects can delay their admission to nursing home. Maintaining independence remains central to the quality of life of elderly persons with disabling chronic conditions (Ball, Perkins, Whittington, Hollingsworth, King, & Combs, 2004). A study performed in Australia (Allen, Glasziou, & Del Mar, 1999) reported that bed rest is not only used in the management of patients who are not mobile, but is also prescribed as a treatment for a large number of medical conditions. The researchers (Allen et al., 1999) reviewed available long-term care studies and concluded that bed rest does not help to treat any illness, but on the contrary actually worsens the

Figure 1. Long-term beds/1000 aged 65+ in Europe 2000 or later (OECD, 2000)



condition of the patient. Those who stay in the hospital for a very long time are usually those that consume the largest amount of hospital resources (Marshall, McClean, & Millard, 2004). In addition to the expense of long-term institutional care, it is also an inherently dependent way of living.

PRODUCTION MANAGEMENT IN HEALTH CARE

Health care has been perceived as different from any other type of service. The present requirement to improve efficiency is putting pressure on finding new approaches to service delivery. This has been given increased priority as a result of the increasing pressure on elderly care services in particular.

In recent years there has been increased interest in applying *production management* thinking to health care (Lillrank, Kujala, Kämäräinen, & Kronström, 2003; Thompson, Wolf, & Spear, 2003). The lessons learned from the industrial environment have guided innovations in health care service processes. With this

in mind, the Department of Industrial Engineering and Management at Helsinki University of Technology has compiled a health care research team designed to transfer industrial engineering principles to the domain of health care.

The work-in-progress (WIP) measure in manufacturing has been introduced to health care through the patient-in-process concept (PIP) (Kujala et al., 2004). The focus in studying PIP is on patient episodes. In industry, process time has been divided into value-adding and nonvalue-adding components, but for health care the categorization needs to be more sophisticated. The proposal (Kujala et al., 2004) is to divide the duration of patient episode into three major components: diagnostic and care time, administrative time, and waiting time. The distinction between time categories is based on the expected change in a patient's medical condition, information management, the types of services provided and resource consumption. Cutting off nonvalue-adding time can lead to a remarkable improvement in a patient's condition and consequently provide savings for municipalities, other employers, and insurance companies.

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