Editorial

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Biographical notes: Harry Boer is Professor of Organisation Design and Change at the Center for Industrial Production, Aalborg University, Denmark, where he teaches in the areas of organisation theory and innovation management. Furthermore, he is Visiting Professor at Stavanger University, Norway. He also teaches at TSM Business School, Enschede, The Netherlands and Politecnico di Milano, Italy. He has written numerous articles and co-authored seven books in the fields of Organisation Theory, Operations Management and Strategy, Continuous Improvement and Innovation Management. He is one of the founders of the Continuous Innovation Network (CINet) and has chaired that network between 2000 and 2006. He has also been a board member of the European Operations Management Association (EurOMA) since its inception in 1995. Furthermore he serves on the editorial board of three international management journals. His main research interest concerns the interaction between day-to-day operations, incremental improvement and radical innovation.

Jeannette Visser-Groeneveld is the Executive Secretary of the Continuous Innovation Network (CINet) and the Association for Healthcare Technology and Management (HCTM). She has been responsible for the organisation of the CINet workshops, seminars and conferences since 1998, and the HCTM conferences since 2001.

Koos Krabbendam is Professor of Operations Management in the School of Management and Governance at the University of Twente, the Netherlands. He has been a visiting professor at Hunan University, China since 2000. From 1993 until 1999 he served as dean of the School of Management Studies. In that period he set up new teaching and research programmes on healthcare technology and management. He is one of the initiators of the Association for Healthcare Technology and Management (HCTM), associate editor of the *International Journal of Health Care Technology and Management* and member of the editorial board of the *International Journal of Electronic Healthcare*. He also serves on the editorial board of the *International Journal of Manufacturing*

Technology and Management. He has a wide interest in education, especially e-learning, which has led to various published cases for e-learning purposes. His main research interest is the management of manufacturing and healthcare innovation.

This Special Issue of IJHTM contains four articles, based on papers presented at the fourth International Conference on the Management of Healthcare & Medical Technology held in Aalborg, 25–26 August 2005. The conference was organised jointly by the Association for Healthcare Technology and Management (HCTM) and the Center for Industrial Production (CIP) at Aalborg University.

In many countries, healthcare managers today face the same problems and challenges:

- performance: pressure to reduce cost and waiting times (both outside and within healthcare systems) and, at the same time, to increase quality
- technology: accelerating technology development, pushed by professionals always wanting to adopt and implement the latest technology, while budgets are only getting (relatively) smaller
- society: rapidly increasing numbers of senior citizens, who are entitled to receive excellent care and are very aware of that
- politics: ever-changing institutional conditions.

The first two articles present and discuss solutions to operational/performance problems; the other two deal with the implementation of new healthcare technology.

Paul Walley (Warwick Business School, UK) focuses on the possibilities of reducing the effects of variety. According to many, variety is a natural phenomenon. Walley maintains that this is only partially true, and his approach towards reducing variety is based on that – standardisation through systems and process redesign. The 'few simple steps that can be taken to start to manage variation, such as a focus on managing elective demand variation, redesigning processes to absorb natural variation and streaming demand into effective processes', have been developed and tested using a small number of pilot studies and a longitudinal case study. The studies showed that the development of determinate, stable healthcare processes is at least partially achievable, refuting suggestions in the literature that healthcare is unsuitable for process redesign. The effects of such efforts include reduced length and variation of patient journey times.

Henriette Ravn (Copenhagen Hospital Corporation and Copenhagen County, Denmark) and Lars Petersen (Danish Institute for Health Services Research, Denmark) present a study aimed at improving the use of surgical capacity in a hospital. Using dynamic simulation, they identified both bottlenecks and organisational slack in the hospital, and showed that:

- the surgical activity (number of referrals) could be increased by 36%
- length of stay in recovery could be reduced by 30%
- a 40% reduction in the total hours spent on shifts and late starts during day time could be achieved. The hospital management has started the system adjustments needed to achieve this potential increase in productivity
- the length of stay in the bed ward could be reduced by 25%.

These are figures that managers, healthcare insurers and, not least, patients love to hear. The whole exercise (modelling, analysis, re-design) was conducted by a team consisting of representatives from the surgical departments, anaesthetics, the operating theatres, and the administration, assisted by an external consultant. A small group of secretaries prepared the information for clarification in the working group and other specific tasks during the process, such as data processing, mapping and computer modelling. This suggests that a multi-disciplinary approach, involving all the key stakeholders, is a major factor contributing to the success of this kind of relatively radical improvement activities.

Katsma, Spil and Wassenaar (Twente University, The Netherlands) and Ligt (Oracle, The Netherlands) describe their research on the implementation of electronic health records (EHRs). The article starts with the observation that using EHRs may save millions of dollars and thousands of lives. However, they are often not implemented at all, and the authors wonder why: why do (these) IT-based innovations not result in improvements of healthcare performance? In order to develop an answer to this question, the authors conducted four case studies and concluded that two factors need to be in place:

- Relevance: in the case of EHRs this means: how useful and necessary is it to have information available any time and at any place?
- Participation: participation from the start can help to leverage the diffusion of EHRs.

These factors reinforce each other: participation increases the relevance of EHRs – the more stakeholders there are participating, the higher (their) awareness and the more EHRs will be used. The other way around, higher (perceived) relevance also increases participation. A careful balance is, therefore, needed to avoid a deadlock situation (no relevance, no participation).

Finally, focusing on the introduction of Digital Picture Archiving and Communicating Systems (PACS), Parvinen (TKK, Finland), investigates different stakeholder management settings in four different phases of the technology adoption process: introduction, acquisition, implementation and use. The interviews-based case study produced a couple of significant results. Firstly, new healthcare technology is subject to the dynamic nature of two parallel processes: technology adoption and stakeholder governance. Owing to these dynamics and the fact that different stakeholders are involved in different stages of the process, management and co-ordination of the stakeholders is a critical success factor. Then, in many cases, the feasibility of new technology investments depends on the extent to which it is possible to replace labour with technology, which may be quite limited in public or semi-public organisations. Healthcare organisations are well-advised to adopt a conservative approach regarding this aspect.

If there is one common theme in the four articles it is the role of the stakeholders. Involvement (at the right time), management and co-ordination of stakeholders seem to be critical to the success, or failure, of healthcare innovation. In that respect, there are no differences between the transfer and adaptation of operations management concepts (supporting improvement in cost, time, capacity use) to healthcare settings, and the development and implementation of new healthcare technologies (providing improved functionalities and quality).

There is nothing new about this – the stakeholder situation in healthcare is very complex and often perceived and portrayed as the major bottleneck to effective change in the sector. Appreciating (which is not the same as accepting) that complexity, and taking

it seriously, provides the way out. Scientifically, this requires an integration of operations and technology management with innovation, change management and decision-making theory (including the role of politics and conflict). This is not a simple task – see Parvinen's article for some issues on combining stakeholder (decision-making, politics), technological innovation and operations management theory in healthcare settings. However, assuming that theories and concepts, whose value has clearly been shown in industrial environments can simply be transferred to healthcare environments is leading to disaster in practice, and will stop the development of the deeper understanding and scientifically robust support needed to boost the effectiveness of healthcare innovation efforts.