



**Karolinska
Institutet**

**Medical Management Centre
Institutionen för Lärande, Informatik, Management och Etik**

UNPACKING PROCESS IMPROVEMENT

**In-Depth Studies on How Lean and Clinical Pathways
Contribute to the Timeliness of Care**

AKADEMISK AVHANDLING

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ABSTRACT

Introduction: Lean thinking and Clinical Pathways are two process improvement strategies that have gained popularity in health care. They both have the potential to improve the timeliness of care, which is an important goal shared by decisions makers, practitioners, and patients alike. Accounts of both approaches report success in terms of improved process performance but seldom explain how and why they work.

Aim: To clarify how contemporary process improvement efforts, in this case lean thinking and clinical pathways, work in practice and how they relate to performance, particularly the timeliness of care.

Method: The main research strategies were organizational case studies and realistic evaluation, drawing on multiple data collection methods and sources. Study I is a realist review of empirical studies of lean applications in health care. Study II and IV investigate a lean-inspired intervention in seven emergency care services at the Karolinska University Hospital. Study III examines a clinical pathways intervention for hip-fracture care patients at the Danderyd Hospital.

Findings: All articles reviewed in Study I reported positive results from lean interventions, explained by how they enabled staff to: understand processes, organize and design for effectiveness and efficiency, improve error detection, and collaborate to solve problems. Studies II and IV found initial improvement in the timeliness of care across all seven emergency services studied. The most common changes involved matching capacity with demand through modifications in staffing, scheduling and competency levels. Differences were observed regarding the degree of improvement, performance levels, and the sustainability of results. These differences were related to how the services adapted the intervention to the degree of complexity of their care processes and their educational commitments. Learning from daily practice proved a challenge. Study III found that extending improvement efforts beyond the hip-fracture care process resulted in a net reduction in lead time to surgery for all acute surgical orthopaedic patients. Two key improvement mechanisms were involved: more active and centralized planning of surgery and restructuring of how resources were allocated among patient groups.

Discussion: Lean and clinical pathway improvement efforts make inconsistent and inefficient practices in health care visible. Care providers can then use a number of planning activities to address those problems. This can yield improvement in the timeliness of care delivery. While these changes are not unique to lean or clinical pathways, they are triggered by these two approaches. The ability to sustain and continually improve performance depends on adapting the process improvement efforts to the specific context of application and on routines that support learning from daily practice.

Conclusion: Practitioners, managers, and researchers should become aware of the specific characteristics of their particular health care delivery systems when they develop, implement, and evaluate process improvements. Practices that foster learning from daily work, including data-driven improvement, timely feedback loops, and the involvement of managers in problem identification and problem solving may support adaptation and continual improvement.