

A model for controlling the patient care process – the challenges and opportunities of electronization

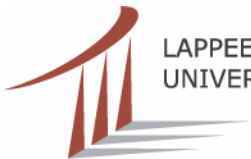
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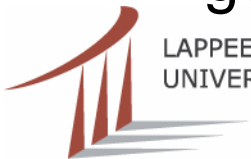
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Background 1/2

- Hospitals are in a great pressure between cost savings and a growing need for patient care
 - essential to measure, follow up and develop the processes in order to make them more efficient
 - requires new managerial tools and also new ways of storing the data in hospitals
 - There is a need for the electronization of patient care data
 - patients' security could improve
 - information would be more real-time
 - care process could be shortened
 - number of overlapping activities would decrease
 - activities would become more efficient
- ⇒ more patients with less costs

Background 2/2

- Management models of hospital: profitable patient - project
 - model for controlling the patient care process
 - activity-based costing model of a day-surgery unit
 - model for managing equipment investments of a hospital
 - model for calculating quality costs of a hospital
- All these models require electronization in order to get the full benefits



Objectives

- This study introduces a model developed for measuring the costs, quality and time of the patient care process in one case hospital
- On the basis of this modelling process, the opportunities and challenges of electronization in hospitals are evaluated
 - the information needed for the modelling and the need for electronization are discussed
 - the benefits of the electronization of patient information and modelling the patient care processes are considered
 - the visibility of time and cost information and the efficiency achieved through electronization



CASE: Modelling the patient care process

1/2

- The caring process of lung cancer patients is used as data in the modelling process
 - model was tested with 22 lung cancer patient cases
- The building of the model started by defining the optimal treatment process
- The model was developed with a spreadsheet
- The model needs information about
 - patient's occupation (working or retired/unemployed/student)
 - date of the referral
 - tests made for the patient
 - time spent at bed rest in hospital
 - date of the treatment decision
 - date of starting the treatment or ending the tests



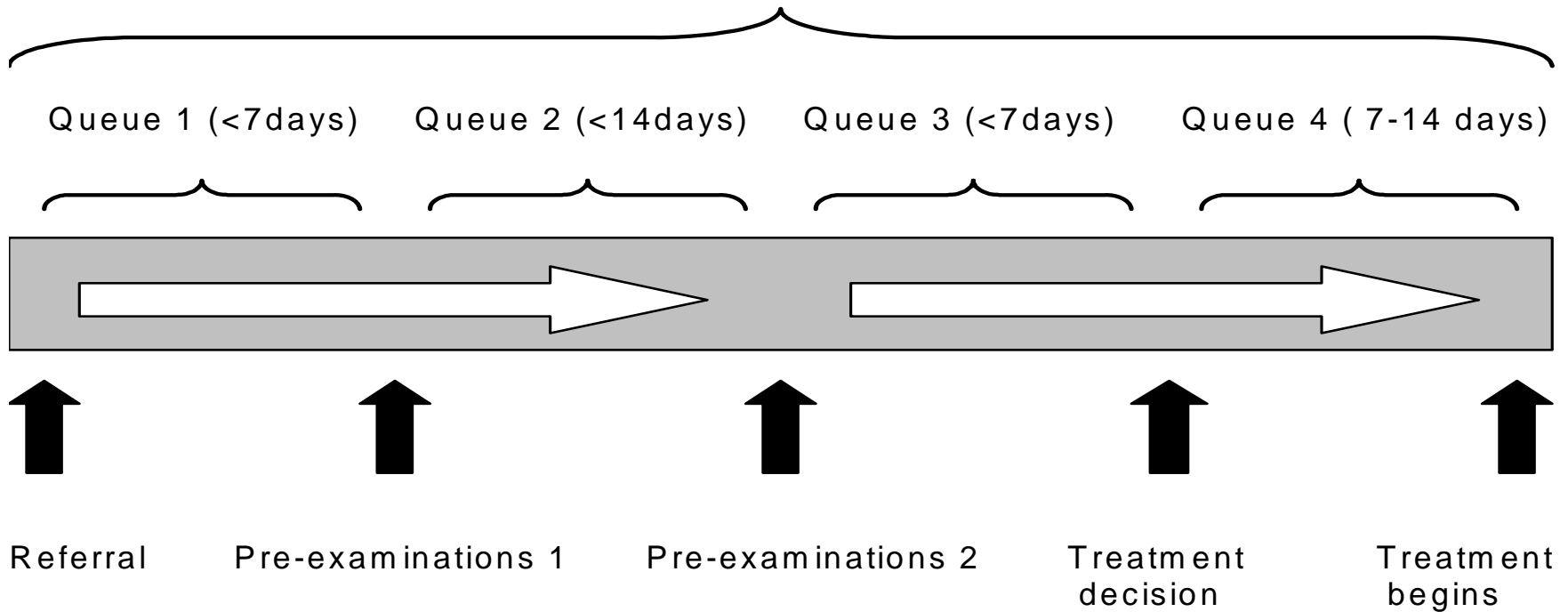
CASE: Modelling the patient care process

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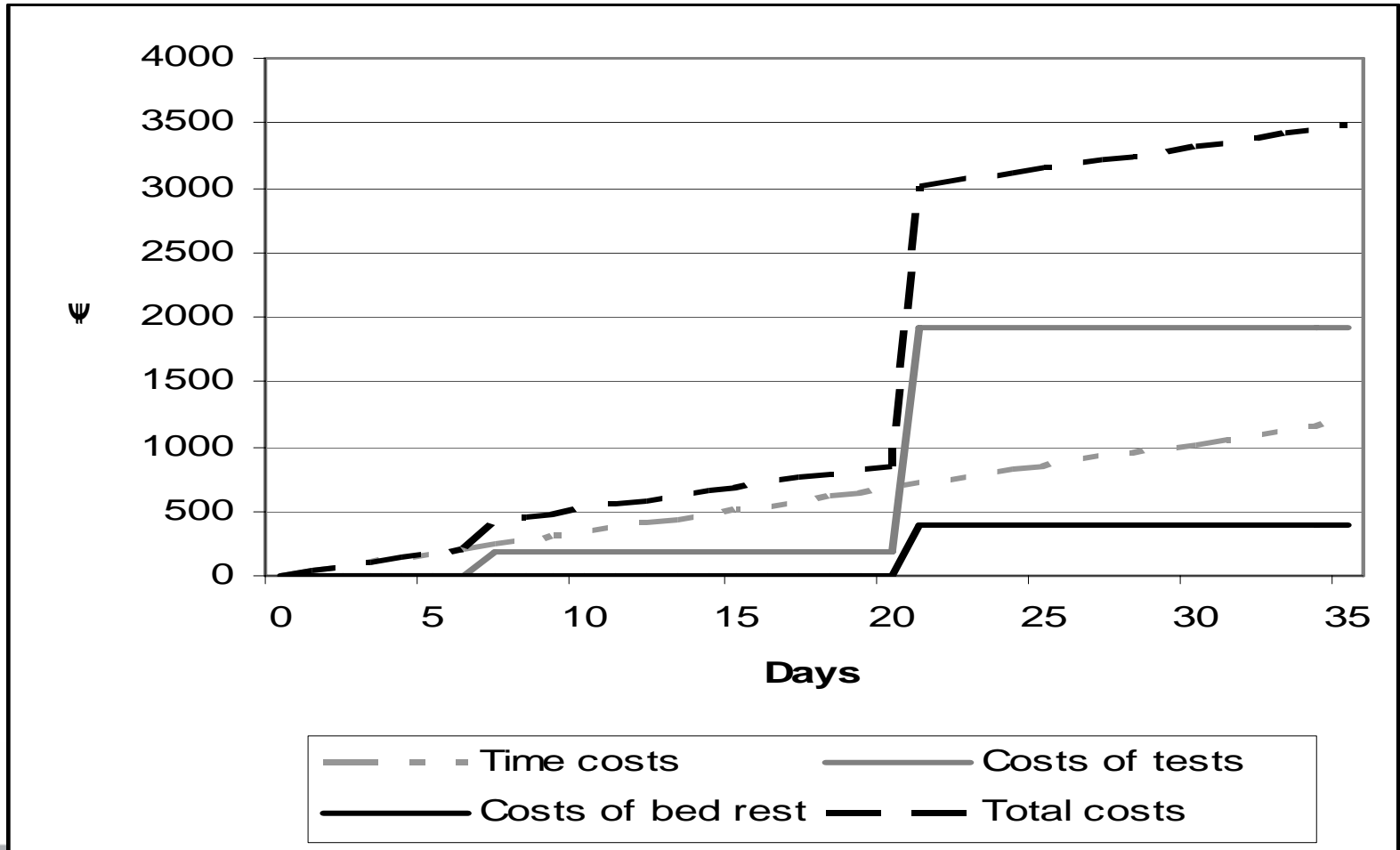
- As a result the model gives
 - the cost information of each patient
 - the graphics of cost accumulation
 - The model also calculates various key ratios
 - time ratio (throughput time of the diagnosis process / target time)
 - cost ratio (actual costs of the diagnosis process/ target costs)
 - diagnosis quality (fulfilled tests / targeted tests)
- ⇒ total grade (success of the diagnosis process)

Optimal diagnosis process

Duration of the diagnosis process (less than 36 days)



Cost accumulation graph of the optimal diagnosis process



Patients	Working=W,	Time	Cost	Diagnosis	Total	Assessment
	Retired=R	Ratio (%)	Ratio (%)	quality (%)	Grade (%)	
1	R	83	63	57	68	excellent
2	W	386	533	114	344	poor
3	R	149	210	71	143	satisfying
4	R	229	216	86	177	tolerable
5	R	723	940	200	621	poor
6	R	143	296	100	180	tolerable
7	R	140	81	43	88	good
8	R	166	174	57	132	satisfying
9	R	103	59	57	73	excellent
10	R	154	149	29	111	good
11	W	80	169	57	102	good
12	R	231	201	57	163	tolerable
13	R	474	474	143	364	poor
14	R	129	106	71	102	good
15	R	200	299	71	190	tolerable
16	R	223	209	71	168	tolerable
17	R	134	178	86	133	satisfying
18	W	177	155	100	144	satisfying
19	R	46	88	100	78	excellent
20	R	300	155	114	190	tolerable
21	R	66	94	114	91	good
22	R	140	190	100	143	satisfying
Average		203	229	86	173	tolerable
Target		<100	<100	<100	<100	

Benefits of the modelling

- More information about the phases and costs of the caring process
 - supports process management
 - Increases the visibility of the problems
 - Definition of the optimal process
 - Possibility to compare the processes
 - development of the critical factors
 - allocation of the resources
- = more health with same amount of work



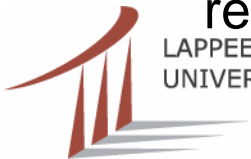
Challenges of electronization

- Much information is gathered in hospitals, but
 - this data is hard to get
 - using the data is difficult
- Compatibility with other information systems
 - acquisition of computer systems is done in pieces
 - some information is already in the electronic form but some is not
- Change of organizational culture
- Although all data were available, modelling the processes requires competent staff who are familiar with the medical aspects



Opportunities of electronization

- If the information was available on time
 - the throughput time would be shortened
 - which would lower the costs
 - and also improve the quality that the patient experiences
 - Statistics and reports would be easy to make and these could be used in managing the hospitals
 - results and ratios received from the reports should be understood correctly
 - Electronization could help the organization in process management
- ⇒ If the information gathered would be used instead of just collecting it, the efficiency of health care organizations could be remarkably better than it has been



Conclusions

- Modelling enables the modification of the processes of patient care and making them more streamlined
 - with some adjustments the model could also be used in comparing the results of different hospitals
 - The information systems used in health care are not designed to produce information for controlling the activities
 - The future challenge is to create a system which enables diverse information collection and handling across organizations
- ⇒ The modelling, collecting the information and using the information to manage the operations could lead the health care sector towards better process management

