Siemens Healthcare Consulting –
Case Study: Ruppin Hospitals Corporation

**Process optimization and cost benchmarking
in the cardiac cath lab**

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Background

Ruppin Hospitals Corporation, a tertiary care center with 700 beds, is the largest hospital in North Brandenburg, Germany.

As with all hospitals in Germany, the introduction of Diagnostic Related Groups (DRG) has posed a significant challenge for the organization. To ensure a secure future for the hospital, management has focused on continually improving the quality of medical care while at the same time building controlling mechanisms to monitor costs and revenues at the DRG level. A main focus, then, is on transparency of the cost drivers in the performance of service.

Task

Ruppin Hospitals Corporation contracted a consulting team from Siemens Healthcare to analyze the cardiac cath lab (CCL), the most cost and revenue-intensive area in the hospital.

The following questions needed to be answered:
• Which costs are associated with the primary services in the CCL?
• How are costs structured compared to other hospitals?
• What potential is there for optimization with respect to process flows and the organizational structure, and how can they be realized?

Methodology and results for process optimization

Process documentation

Through interviews with physicians and nurses both in the CCL and the wards, the process flows in and at the interfaces to the cardiac cath lab were analyzed and documented in detail for three primary services.

Data acquisition sheet

In addition, physicians and nurses provided detailed data on more than 100 examinations over a period of three weeks by completing a jointly-developed data sheet.
The objective was to identify problems and delays in the workflow as well as the underlying reasons. The data sheets provided the following information:
• Referring physician (internal and external)
• Type of examination
• Completeness of the documentation from the physician's and nurse's point of view
• Reasons for possible delays before, during, or after the intervention

An additional objective was to identify potential for optimization within the process by measuring times at the sub-process level.

Through a comparison with Best Practice projects, the results were evaluated, enabling interpretation of the data in conjunction with the hospital physicians.

Optimization workshop

Both the processes and associated process barriers were documented during the interviews. The focus was placed on barriers in the organizational structure; in workflows within the lab itself, as well as on delays at the interfaces to other

| Time of request from ward: ——:—— o'clock |
| [Time request made in SAP] |
| Arrival in cardiac cath lab ——:—— o'clock |
| Start preparation ——:—— o'clock |
| [Collect patient from waiting area] |
| End preparation ——:—— o'clock |
| [Patient on table under sterile cover] |
| **Start* of examination:** ——:—— o'clock |
| **End** of examination:** ——:—— o'clock |
| End of post-procedure ——:—— o'clock |
| process: |
| [Patient can be picked up] |
| Patient is picked up: ——:—— o'clock |

* Start of examination = start of puncture
**End of examination = end of wound dressing application in CCL

The data acquisition sheet shows the time periods that make up the duration for various processes

areas of the hospital and to external referring physicians. Additional topics included space, infrastructure, and technology issues.

The consultants organized the documented problem areas and prepared them for the next project step: roundtable discussions for developing solutions.

In these interdisciplinary meetings, representatives from the physicians, nursing management, lab and ward nurses, and transport services jointly developed solutions and prioritized them based on required implementation effort and effectiveness.
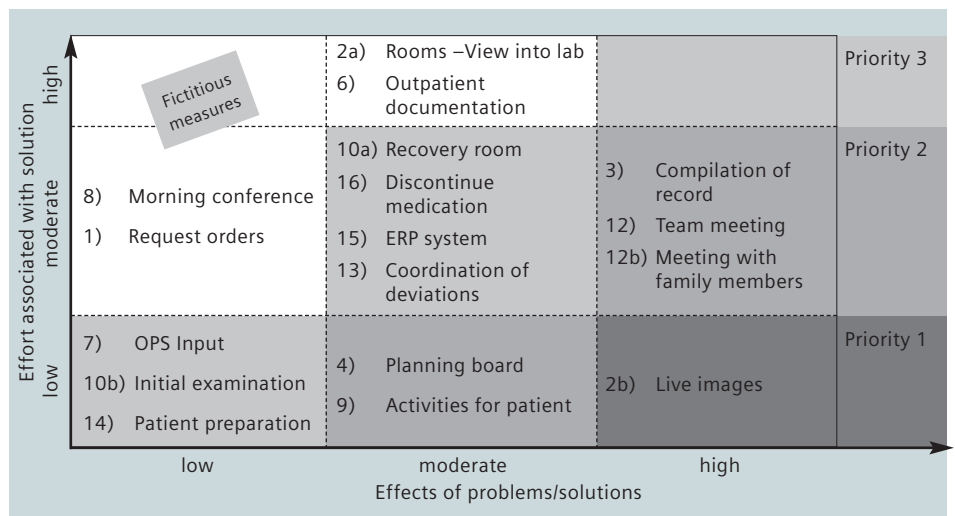
The priority matrix clearly identifies the order in which the recommendations are to be implemented.

Personnel and material cost benchmarking compared to the InEK database

	Personnel costs:			Material costs:					Pers. and material costs:		
	Physicians	Nursing staff	Medical technology saff	Medications		implants/ transplants	Other medical needs		Medical infra-structure	Non-medical infra-structure	
Cost Area	1	2	3	4a	4b	5	6a	6b	7	8	Total
01. Normal ward	243,8	503,9	63,0	65,3	6,1	0,0	73,6	20,1	82,7	320,6	1.379,1
02. Intensive care	211,6	548,6	25,9	128,4	11,7	0,2	111,0	5,3	56,4	178,5	1.277,5
04. OR-Area	1,9	0,0	1,7	0,2	0,0	25,5	3,8	2,4	0,8	1,4	37,8
05. Anesthesiology	1,6	0,0	0,9	0,3	0,0	0,0	0,6	0,0	0,2	0,4	3,9
07. Cardiological diagnostics/therapy	187,5	0,0	212,5	36,4	16,2	353,4	362,9	293,5	92,5	132,2	1.687,0
08. Endoscopic diagnostics/therapy	2,8	0,1	3,1	0,2	0,0	0,1	1,3	0,1	1,1	1,3	10,1
09. Radiology	22,2	0,0	25,6	1,5	0,1	2,2	9,7	2,3	12,8	16,1	92,6
10. Laboratories	19,7	0,1	95,8	4,1	4,4	0,0	67,9	4,6	10,2	27,1	233,8
11. Other diagnostic and therapeutic	51,2	2,2	94,3	1,0	0,1	0,0	14,5	0,6	9,2	22,6	195,7
12. Base cost center	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	394,5	394,5
Total:	742,4	1054,8	522,8	237,3	38,6	381,4	645,3	328,8	265,8	1.094,8	5312,0
Average length of stay: 9.4 days											

Caption: Cost type benchmarking compared to the DRG Report Browser InEK database

Methodology and results for cost benchmarking

Process cost analysis

With the help of the physicians and nursing staff, time estimates for all participating job groups were assigned to the documented work processes at the work step level. With the support of Personnel Controlling, personnel costs were also assigned to these steps. The last layer of costs - material, infrastructure, and maintenance – were assigned based on input from Purchasing and Controlling, as well as through database analyses.

Benchmarking

Subsequently, benchmarking against the database of the Institute for Hospital Reimbursement (InEK) was performed for several key Caht Lab DRGs.

Through this work, the hospital received a measurement that accurately depicted the cost relationships between the various DRGs.
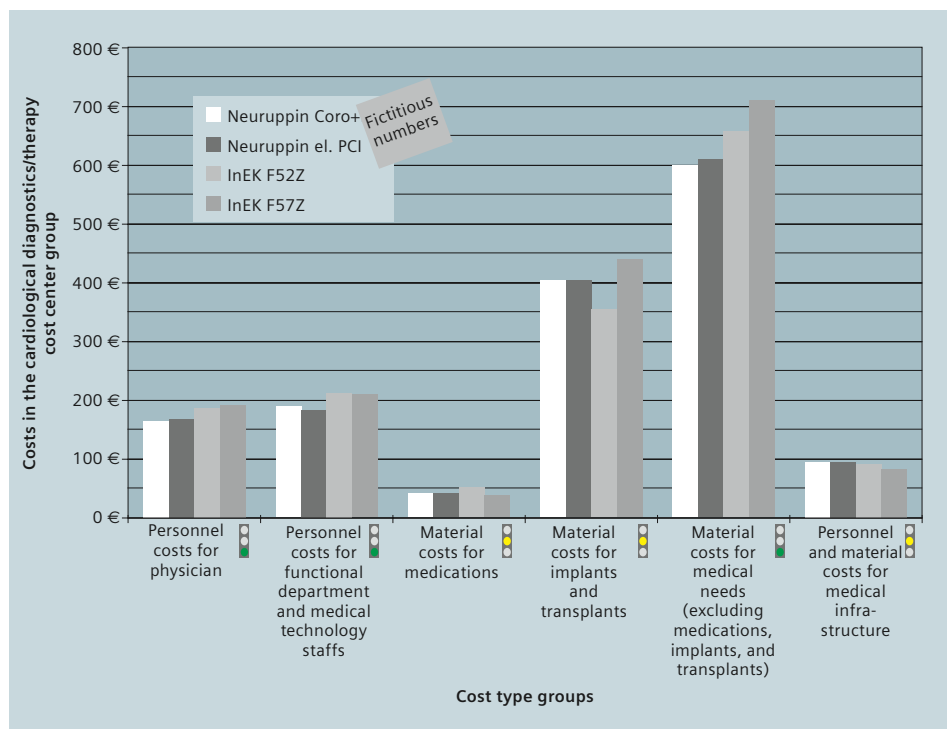
Caption: Personnel and material cost benchmarking compared to the InEK database – in this case DRGs F52Z and F57Z from 2005

Value of the consulting project

The results produced by Siemens Healthcare Consulting provided the following benefits for the customer:

- Through cost analysis and benchmarking of three primary activities in the CCL, a higher degree of transparency with respect to efficiency was established in a core area of the hospital
- A neutral party was able to confirm that an experienced, well-coordinated team works together efficiently in the CCL with a strong patient orientation
- Potential for optimization was identified and concrete recommendations for actions were derived for the process flows, which could then be implemented by the hospital.

RUPPINER **K** LINIKEN GMBH
Akademisches Lehrkrankenhaus der Charité Berlin

"The depth of the analyses in this project far exceeded my expectations."

**Prof. Dr. Dr.
Kurt J.G. Schmailzl
(Chief Physician at
Medical Clinic A)**

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