

Process Mining in Hospital

Alexianer—a reliable partner.

Alexianer runs 27 hospitals of all levels of care. The association also includes 44 nursing homes. With 1 billion Euro total turnover and 27,900 employees the Alexianer Group works as a non-profit organization, not profit-oriented, but effective and efficient. With an organizational structure with nine regions throughout Germany from Aachen to Saxony-Anhalt the services are always oriented to the people on site.

Data and people.

Digital transformation in healthcare.

In the age of digital transformation, it is increasingly important to consider the impact of data on the quality of life in society.

How is the digitalization and automation of companies and business processes changing the lives of our fellow citizens?

In a pilot project of data-based process optimization in hospital operations, the Alexianer GmbH proves the importance of digital transformation for the quality of care of its patients.

In hospitals, process optimization does not simply mean Increase of abstract performance values. In emergencies, efficient processes are crucial for the rapid care of patients in critical states. At the same time, greater process transparency also offers added value for the company itself. A more effective billing process ensures both less bureaucratic effort and improved competitiveness of the healthcare provider.

Alexianer prove the importance of digital process analysis in health care. With Appian Process Mining, they have created a data-based basis for optimizing critical hospital processes such as the central emergency room and the billing process.

The path to complete process transparency.

The ongoing digitalization of the healthcare system has led to significant upheavals in hospital management. A complex IT landscape of information systems and process data now forms the basis for many business processes in healthcare facilities.

In order to exploit the full potential of these newly emerging data volumes the analysis tool Appian Process Mining is the ideal solution. As part of the TIP HCe Business Intelligence Platform, Alexianer GmbH uses the versatile visualization and analysis functions of Appian to achieve complete transparency in the digital processes in the hospital for the first time and to strategically optimize them on this basis.



Alexianer

Core business:

Nursing, health promotion,
senior citizens' aid

Number of employees:

27,900

Processes:

Central emergency room,
billing process

Data source:

Various hospital information
systems, collected in the
centralized data warehouse

Period:

2018

However, the IT system landscape in the hospitals was very heterogeneous.

To analyze the data sustainably Alexianer first developed a central data warehouse. In this virtual database, all relevant process data is stored from a wide variety of data sources. This allows Alexianer process experts to view the processes in a structured and holistic way.

With its open interfaces Appian Process Mining can process the data from the data warehouse directly. This enables Alexianer to carry out strategic target-performance comparisons and performance measurements and to identify optimization potentials.

Processes and objectives.

Alexianer initially focused the process mining analysis on two core processes: the central emergency room and the billing process. Both processes initially seem to have relatively simple structures and straightforward procedures. However, in order to be able to compare these ideal states with the real processes in the hospital, the data analysis with Appian Process Mining was required.

Process performance played a central role in both processes. The difference lay in the objective. The optimization of the emergency room represents a direct improvement of the service quality in Alexian hospitals, a clear added value for patients. Fast billing processes in turn help Alexianer to increase internal performance and competitiveness.

Process 1: Central emergency room.

For the central emergency room, there are clear process sequences: After patients reach the emergency room, they are registered and after a waiting period, they are treated by specialist staff. However, not all patient complaints are equally critical. During triage, patients are classified according to the severity of their complaints. This is intended to reduce the waiting time as much as possible for people who need immediate help or are even in danger of dying (see figure). In Appian Process Mining these triage categories can be displayed as process attributes and compared with real waiting times.

This form of data-based target- performance comparison allows Alexianer to identify and strategically realize possible optimization potentials in the processes. The more effectively the central emergency room works, the more the care of the patients is better. This in turn increases patients' confidence in hospitals.

Optimized process flows are therefore a clear quality feature for care and health service providers.

Key results:

- The actual process in the central emergency room is already close to the ideal target state.
- High complexity and interdepartmental procedures increase the process variance in billing.
- Optimization potential in the billing process through case-related allocation of costs and utilization of better communication channels between departments.

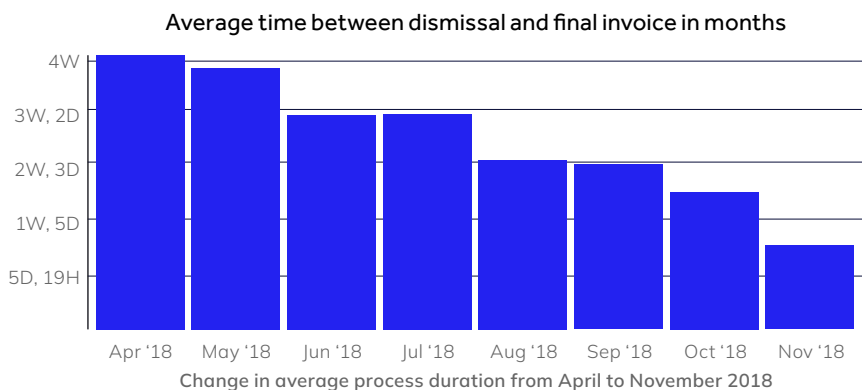
Benefits:

- Optimization of the central emergency room offers **improved quality of care** for patients.
- Waiting time between patient discharge and final invoice could be reduced **by about 80%**.
- Improved **communication across departments** for optimized documentation.

Process 2: Account process.

The core of the billing process in hospitals is the invoicing of patients. To analyze the efficiency of this process, however, various intermediate steps must be considered before the final invoice is issued. This includes both formal procedures, such as the admission and discharge of the patient, and internal activities, such as the documentation of the treatment. The process thus extends over several different work areas with different responsibilities and procedures. The result: an unexpectedly high complexity and strong variance in the process flows. Even the first analysis insights showed that a large part of the steps relevant for billing are only carried out after the patient has been discharged. This leads to inefficient processes and longer waiting times before the final invoice is issued.

Alexianer was able to get to the bottom of these bottlenecks through targeted performance analysis and the machine learning supported root cause analysis in Appian. By charging the hospital already during the treatment of the patient, the waiting time until the final invoice could be shortened considerably. At the same time, the data-based process transparency provided a basis for improved, cross-departmental communication. Alexianer was thus able to optimize the billing process sustainably and reduce the average process duration from one month to less than six days.



Conclusion for the company.

With the combination of its own central data warehouse and the holistic automated process analysis with Appian Process Mining, the Alexianer GmbH defines the Cutting Edge of profitable digital transformation in the health sector. The data-based transparency in even complex, multidisciplinary workflows provides an ideal factual basis for sustainable excellence in internal performance and patient-related care services. After the successful optimization of the central emergency room and the billing process, Alexianer GmbH has all options open to it to optimize further processes in its hospitals. For example, the analysis of long-term care processes would be a logical next step for the company.



Doctors, patients and nursing staff give every day their best, but our process sequences still had significant potential for optimization. The data showed: we were already good. With Appian Process Mining we became even better.

Gerrit Krause
Head of Unit Care and Process Management, Alexianer GmbH

