

# Pentaho for Healthcare

## Healthcare Industry Challenges

Healthcare providers operate within highly specialized business processes. Rising costs, long revenue cycles, growing patient populations, and changing regulatory demands create very complex financial, clinical, and operational environments. The industry's shift from a "fee for service" reimbursement system to Evidence-Based Medicine (EBM) and Pay for Performance (P4P) has changed how healthcare organizations operate. Now they not only need access to accurate information about patient medical history and diagnoses to deliver the best medical care, but also need tools to report on the organization's performance and quality metrics.

## Pentaho Healthcare Solution

Pentaho gives healthcare providers the answers they need to improve quality of care, streamline operations and enhance financial performance. With Pentaho, healthcare providers can:

- Develop and track metrics to measure quality of care
- Improve patient safety and reduce medical errors
- Comply with HIPAA and HL7 standards
- Reduce operational costs and better utilize resources
- Shorten revenue cycles and monitor reimbursement
- Meet "meaningful use" criteria for governmental incentives

## Customer Use Case Overview

St. Antonius Ziekenhuis Hospital in the Netherlands wanted to improve patient care and reduce its facilities' operating costs. The healthcare organization needed better analysis to measure emergency room wait times and operating room occupation. Separate stores of patient and research data for each hospital department did not allow for high-level trending or organization wide visibility. The organization needed to comply with the international HL7 standards for data exchange to satisfy government reporting and improve data sharing.

- Pentaho Data Integration provided the framework to implement and comply with HL7 standards with a custom developed solution.
- 20% reduction in emergency room turnaround times: St. Antonius has leveraged Pentaho reporting to reduce emergency room turnaround times for patients at two locations by optimizing patient flow and scheduling processing.
- Data Mining: Since Pentaho provides access to the hospital's existing R System statistical tool, users can select data and do analysis on issues such as lung patient survival rates.
- Lower costs and fewer resources: By leveraging Pentaho, the three-person IT department can support delivery of BI capabilities to users throughout the hospital.



*"Pentaho's HL7 support gives us a fast and easy way to retrieve, exchange, and share information across all our internal and external data sources. Our contributions to Pentaho's open source project for HL7 will also enable other hospitals and healthcare organizations to use it for their data integration and compliance requirements."*

GERRIT KREDIET, CTO

ZIEKENHUIS  
**ST ANTONIUS**

## Quality of Care and Patient Care Management

Quick and accurate diagnosis can be a matter of life or death in some situations. In efforts to improve the safety and quality of patient care, reduce medical errors, and provide higher levels of transparency to comply with regulatory mandates, healthcare providers are using Pentaho to:

- Visualize patient health history, treatments and prescriptions
- Monitor a patient's health and track treatments over a period of time
- Show how electronic health records (EHR) improve quality of care
- Perform analysis and report on clinical outcomes and EBM processes

## Resource Planning and Operations

Healthcare facilities experience fluctuating capacity. This can affect the availability of patient care as well as revenue opportunities. Underestimating demand for appointments and procedures can leave patients waiting, reducing satisfaction of care. Overestimating demand under utilizes clinical staff and increases costs. On the other hand, supply chain deficiencies of medical supplies and pharmaceuticals impact budgets and performance measurements. Pentaho BI helps medical resource planners and operational managers to:

- Align material replenishment with actual usage
- Improve utilization of facilities, testing rooms and equipment
- Reduce staffing costs by matching staff schedules to patient census
- Improve patient flow and efficiency of admissions and discharges

## Finance, Billing, and Regulations

Rising operational costs and changing reimbursement methods, such as P4P, increase the urgency to improve revenue cycles. To optimize cost allocation, eliminate waste, and manage complex billing and regulatory requirements, healthcare financial and accounting professionals use Pentaho BI to:

- Create an organization-wide view of spending and cash flow
- Track actual vs. budget by department, physician and procedure
- Reduce the cost of medical supplies and physician preference items
- Ensure timely reimbursements from patients and insurance agencies
- Track clinical and operational metrics for performance-based funding
- Comply with HIPAA by using HL7 standards for information exchange

### HEALTHCARE CUSTOMER USE CASE HIGHLIGHTS

Data warehouse optimization via Pentaho Data Integration, sourcing data from SQL Server and SyteLine ERP Progress database and archiving in Microsoft SQL Server.



Enables business users from multiple departments to extract data from different sources and turn into reports without relying on IT by leveraging Pentaho Analysis Olap Server (Mondrian).



Enables hospitals that use Intelligent InSites software with Pentaho to perform extensive analysis on radio-frequency identity (RFID) and real-time location systems (RTLs) data.



Enables medical students to track vital stats for chronically ill patients such as blood sugar, blood pressure, and cholesterol levels using customized Pentaho reports.

