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adopting a data-driven approach to underpayment recovery

Presbyterian Healthcare Services used data-mining technology to help curb revenue loss and recover millions of dollars in underpayments.

AT A GLANCE

Using a data-mining tool to improve its underpayment recovery process, Presbyterian Health Services in Albuquerque, N.M., achieved the following results:

- > Recovered \$8.21 million in less than eight months of implementation and an additional \$17 million in the 12 months that followed
- > Increased staff productivity by 100 percent in less than six months, allowing auditors to resolve 40 to 50 claims per day versus 20 per day prior to implementation

Current regulatory and financial pressures require hospitals to operate with greater transparency, accountability, and efficiency. To remain competitive and help address these pressures, Presbyterian Healthcare Services, a 1,150-bed system in Albuquerque, N.M., recently overhauled its procedures for underpayment recovery.

The system's underpayment recovery process had long been a source of significant revenue leakage that drained cash flow and costly resources. To address the problem of lost revenue, Presbyterian created sustainable efficiencies using data mining and automation to recoup greater revenue and increase staff productivity.

Within the first six months of implementing a new data-mining tool, Presbyterian identified \$20 million in underpaid claims. After eight months, the system reclaimed more than one-third of that amount. In addition, auditor productivity increased by 100 percent, doubling the number of claims resolved on a daily basis.

By implementing the solution, Presbyterian was also able to gain access to real-time data that

allowed administrators to prioritize resources and stem revenue leaks before they could impact the bottom line.

Getting at the Root of the Problem

In 2008, Presbyterian was automating how it resolved credit balances when administrators discovered a problem: a significant percentage of underpaid claims were going unnoticed.

Administrators suspected the contract management system was not accurately flagging errant claims—those claims with a payment variance per the terms of the payer contract. Over a three-month period, auditors discovered a significant disparity between the number of errant claims identified manually and those identified by the contract management system. Auditors estimated that the system failed to flag errant claims 40 to 50 percent of the time.

Having identified the problem, hospital leaders at Presbyterian still struggled to gain a clear understanding of both the scope and the root cause of the payment variances. To do so, they needed to assess the quality of raw data that was going into the contract management system and to review current contract terms to identify underpayments. However, the health system lacked the means to analyze the patient account, billing, and financial data necessary

to understand where the failures in the process occurred and why.

To solve the problem, leaders looked to a data analytics solution that would involve creation of a data warehouse optimized for business intelligence. This solution was developed, in part, using information and a data warehouse that had already been in place as part of the process for automating credit balance resolution. The data warehouse integrated all historical patient account information, such as procedure and diagnosis codes, charges and payments associated with these services, and contractual terms with third-party payers.

Such historical account data had been stored in the health information system in a fragmented, unorganized manner. Presbyterian's leaders believed gathering these disparate data into a single repository, the data warehouse, would expose the severity of the underpayment problem.

First, the data were cleansed—special software scoured the data points to ensure they were not corrupted or contained user input errors.

Then, to establish the data warehouse, administrators used a proprietary algorithm that linked each piece of data stored in the repository to a patient using a unique identifier, such as a medical record number. Confirming that these data sources would be properly joined together ensured the viability and accuracy of the data.

Once the data were validated and linked to specific patients, they could be configured into the warehouse for analysis. The software serves as both an underpayment and contract management system. The data mining algorithms scour the claims to flag those that had a payment variance. The algorithm is a customized statistical method that calculates the terms of each contract and compares it, looking at all relevant data points, with the associated claim. Customizable reporting and dashboards are then applied on top of the new data set to provide root-cause analysis and other critical information.

Along with flagging errant claims, the data-mining application at Presbyterian automatically calculates payment variance and expected payment.

Within a few days of the assessment, administrators' suspicions were confirmed: Presbyterian's contract management system was not flagging payment variances effectively. They determined that the system could not handle the increasing complexity of contracts, nor could it retroactively process high-value claims, such as "carve outs." The contract management system also lacked the capability to ensure that complex contract terms, which change on regular basis, were consistently up-to-date. In addition, the system could not validate and manipulate the data to mitigate data-entry errors that create false payment variances.

Finding a Solution

Based upon the assessment, it was clear that Presbyterian needed to become more effective at detecting underpaid claims. Hospital leaders realized the same technology used to uncover the underpayment problem could also help drive improvements.

Along with flagging errant claims, the data-mining application at Presbyterian automatically calculates payment variance and expected payment. As soon as the claim is billed through the health information system, the application reviews the billing data immediately, at the original source of the data input, against the terms of the contract. New claims data are continuously loaded into the payment validation system, and the algorithms are run to identify payment variances.

Flagged accounts are then placed in a *work driver*, a web-based follow-up tool that lists all the necessary patient account information that payment review analysts use to make payment variance appeals to payers. Previously, analysts had to pull

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up and review claims information generated from four different computer systems to access all the relevant data points. Now the information is integrated and available in one page view. Specifically, the following content is included:

- > All patient information (contact information/insurer information)
- > Errant claim information (account number, date of claim)
- > Root cause of error (Contract term that created error)
- > Time/date when error occurred
- > Categorization of claims by value, with highest-value claims presented first
- > Notation of trends in billing behavior associated with specific departments.

The software sorts flagged claims by net revenue and nearness of filing to the filing deadline so staff can set priorities for appeals.

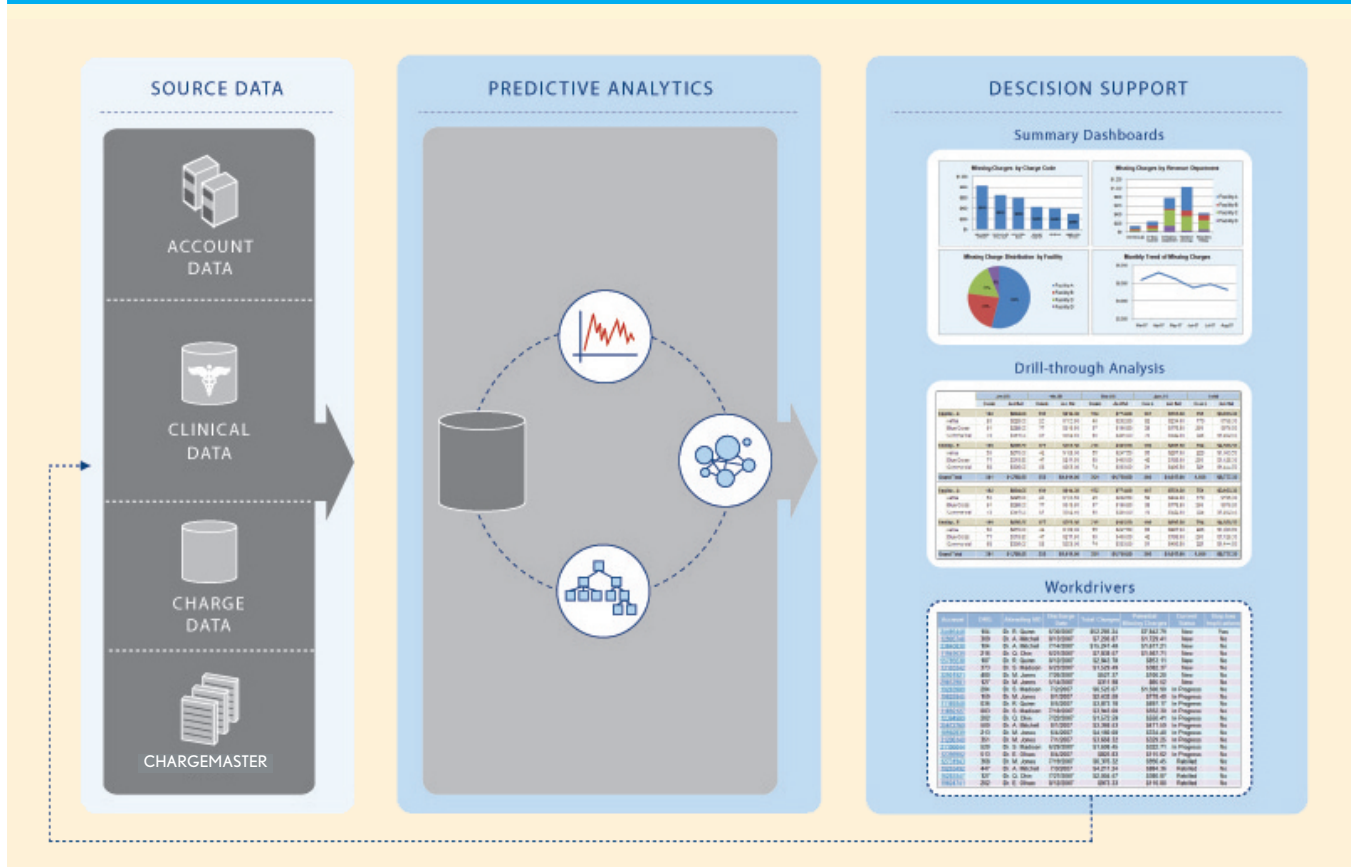
Because the data mining software automatically links with data from the original health information system, it can constantly “rescore” the expected payment of a claim to reflect the most recent data. This capability eliminates the need for additional systems, such as third-party billing editors.

Measurable Results

The new solution, which was fully integrated into Presbyterian’s existing health IT system, was completely implemented in less than six months. During that time, the data-mining tool recovered \$8.21 million in underpaid claims, representing lost revenue from the prior two years.

Today, the system continues to identify \$1.03 million in underpaid claims every month. Presbyterian recouped a total of \$25.21 million in the first 18 months. Total ROI for the solution was 1,150 percent.

USING DATA MINING TECHNOLOGY: AN OVERVIEW OF THE PROCESS



Because the new underpayment recovery solution identifies and calculates all payment variances, there is no need for a separate contract management system. As a result, Presbyterian avoids a licensing fee for such a system. Such fees for contract management systems can range from several hundred thousand dollars to more than a million dollars.

Moreover, the data-mining tool is a software-as-a-service application, which means Presbyterian accesses the application online and, therefore, was able to avoid hardware expenses and costs associated with hiring additional IT staff to maintain and support the software.

Finally, along with improving the ability to detect underpayments, the technology also has improved staff productivity. Presbyterian's original workflow was cumbersome and costly because the contract management system offered no explanation of the payment variance. To appeal an account, auditors had to cobble together claim details from various IT systems, which required switching back and forth among multiple computer screens. To determine the root cause of each payment variance, auditors often spent 40 minutes per claim in a four-step process to verify whether an insurer underpaid a claim. Relying on this approach, auditors could resolve only about 20 claims per day—leaving another 20 errant claims unresolved each day.

The work driver tool, on the other hand, saves time and effort by presenting relevant claims and contracting data on one screen. Such data include:

- > Patient contact and insurer information
- > Errant claim information, such as an inaccurate account number or date of claim
- > The cause of the payment variance, such as an incorrect contract term
- > Time and date when the error occurred

Claims are also categorized by value, with the highest valued claims given priority.

Having such data displayed on one screen means payment review analysts can easily navigate the information. The tool eliminates the need for manual interpretation and validation because it provides a straightforward explanation, which means payment review analysts can work with payers more quickly and easily to resolve payment variances. Eliminating the interpretation and verification step has cut the claims resolution time in half and doubled the number of claims that payment review analysts can resolve each day.

The analysts were fully trained on the tool in three days. Within the first week of training, they were using the software to assist with claims resolution. Within two months of learning the system, productivity improved to the point that Presbyterian was able to quickly achieve the results cited previously.

Enhanced Analytical Capabilities

In addition to improving accuracy and efficiency within Presbyterian's underpayment recovery process, the data-mining tool has given business managers the data necessary to identify problem areas, determine causes, and make proactive improvements to reduce underpayments. For

Steps Used by Business Office Staff to Resolve Payment Variance Accounts

1. Review accounts in the work driver prioritized based on collection opportunity.
2. Review the expected reimbursement and payment variance values.
3. Confirm contract violation description stated within the work driver.
4. Contact the payer, using a web interface when available, to communicate the payment error.
5. If payer confirms that the claim will be reprocessed, follow up on recovery within 14 days.
6. If payer cannot reprocess the claim, submit a manual appeal leveraging calculations provided in the work driver along with the necessary documentation.
7. Contact payer within seven days to confirm receipt of manual appeal, and again in 14 days to confirm resolution.
8. When identifying consistent patterns, use escalated channels for batch appeals, leveraging strategic account groupings of similar contract violations.

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one, finance managers are able to more accurately project net revenue. And because the solution also provides real-time data through dashboards and reports that include both summary statistics and detailed claims information, managers can isolate the root cause of each payment variance. Managers have used the tools, for example, to determine which departments account for the greatest volume of underpaid claims.

In one instance, managers found that 10 percent of underpaid claims for a specific payer could be traced to errors made by the admitting staff within several key departments, including radiology. For an entire year, staff had continuously billed services to an invalid insurance code that had not been updated in the admitting process. Each department was presented with data showing the impact of errors on underpaid claims and payment projections. Later, admitting staff took part in additional training for properly coding services, reducing the number of false payment variances by 71 percent.

In another instance, Presbyterian learned that, over a period of six months, a commercial insurer had reimbursed the health system for all of its patients at a medical per diem rate, including surgical patients, who are associated with a higher payment. Presbyterian's contract manager used the data to prove that the payer was in error. Within one week, the health system received full reimbursement. Contract managers also used the data to renegotiate more favorable contract terms with the payer, resulting in an estimated 3 percent increase in inpatient payment.

Using the new tool, Presbyterian's leaders now can quantify payment errors, understand the scope of payer contract violations, and measure the system's efficiency in recovering underpaid accounts. Now, finance managers review the following data on a weekly basis:

- > Number of underpaid claims
- > Number of claims that have been recovered and resolved each week
- > Amount of recovered underpayments attributable to each revenue cycle FTE

- > Explanation of contract violation for each underpaid claim
- > Comparison of payment performance across payers

Lessons Learned

Without access to data, Presbyterian didn't have a way to understand the source of its underpayment issue. Aggregating disparate patient claims data into one repository enabled the health system to learn the scope of its underpayment problem and pinpoint what was going wrong.

Automated processes, such as underpayment verification and validation, have given staff more time to focus on recovering underpayment. Real-time access to data has also helped Presbyterian quickly identify areas for improvement in specific departments to avoid severe impacts to the bottom line. Finally, having reliable data that offer proof of payer error has given Presbyterian leverage in negotiating more favorable contracts with payers.

Hoping to duplicate its success in underpayment recovery, Presbyterian is now leveraging data-mining technology to improve efficiencies across the revenue cycle. The next target? Charge-capture compliance. ●

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