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Data Analytics in Healthcare Internal Audit: A New Level of Value

Guidance for Healthcare Internal Auditors

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Audit | Tax | Advisory | Risk | Performance

Data analytics has been one of the primary drivers of the healthcare internal audit profession's progress over the past decade. As audit and compliance risks and control and governance issues in the healthcare industry become more complex, healthcare internal auditors can take advantage of data analytics to expand the coverage of scarce audit resources. This paper highlights the benefits of data analytics and provides insights into the preparation and implementation of data analytics in important aspects of internal audit and compliance audit processes.

In the past, the term "computer-assisted audit techniques" (CAAT) has been used primarily to describe testing using data analytic software. The term "data analytics" (and sometimes "data mining") now is used to describe the process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful audit information, providing insights, delivering actionable information, improving decision-making, and promoting effective risk management.

Data analytic approaches include everything from simple sorts and filters in spreadsheets to complex data combinations (or joins) and analyses using data analytic software. The processes allow auditors to perform more efficient and effective audits and provide valuable information that offers an enhanced understanding of audit findings and more informed decision-making.

Benefits of Data Analytics in Internal Audit

Many benefits come from augmenting a traditional internal audit methodology with data analytics. Chief among these benefits is an approach that is more risk focused, more efficient, and likely to produce more meaningful results.

- More risk focused:
 - Provides a quantified data-driven risk assessment for both periodic high-level audit plans and individual audit planning
 - Encourages deploying resources to high-risk areas by more quickly identifying potential issues across a population
 - Expedites fraud detection
- More efficient:
 - Provides repeatable audit testing that can be used for follow-up audits, future audits, and other special audit projects

- Reduces time spent on lower-risk areas by providing for earlier identification of issues that may escalate into higher-risk areas
- Automates manual testing activities
- Improves audit planning for all or most audits by automating collection of background data and analyses, such as financial statistics and ratios
- Improves the overall impact of resources spent understanding disparate systems after implementation by automating and standardizing data routines such as data joins and multitable stratifications
- Enables cost-effective auditing across disparate systems
- More meaningful:
 - Allows for full population analysis and testing to reduce sampling bias, extrapolation errors, and risk miscalculations
 - Offers quantified results
 - Provides more comprehensive insight into operations by identifying actual error rates and trends across entire populations
 - Helps identify outliers, patterns, and trends not otherwise identifiable through more traditional audit procedures
 - Encourages partnerships between the internal audit function and management to continuously monitor or audit controls and high-risk areas

Given the complex healthcare risk environment, adopting innovative methods for assessing and managing risks is critical. Data analytics can respond to the fast-paced business environment and to the increased expectations of stakeholders. It also can bolster management's control structure, the organization's compliance function, and internal audit's effectiveness. Harnessing the power of available tools and skills and accessing the enormous amount of new data will benefit internal auditors and their clients now and in the future. Thus, healthcare internal audit must move toward an environment using more sophisticated tools and skills to continue to add value and satisfy stakeholders.

Challenges in Preparing for Data Analytics in Internal Audit

The primary purpose of data analytics in healthcare internal audit is to assist in identifying potential internal control and system issues and breakdowns. Ultimately, data analytics supports improvements in the internal control structure by improving decision-making through offering a more complete understanding of the related information. Improved internal controls result in improved processes designed to meet business objectives. Yet obstacles exist to acquiring the deep-data analytic specialization that is required to provide high-quality audit services. These include strategic buy-in, talent acquisition and development, data access and storage, data understanding, training costs, selection of hardware and software, time to identify and understand false exceptions, and implementation.

Strategic buy-in. The first challenge is getting management to consider data analytics as strategically important and to invest in the technology, tools, and knowledge management needed to acquire a deep understanding of the data. Each organization is different, but in general, large internal audit shops may need to develop internal audit management buy-in and strategy development only if it does not already exist. Smaller internal audit functions may need to work even more closely with management and may need to get buy-in for data analytics at the senior management level as well as at the internal audit management level.

Talent identification or acquisition. Another challenge is identifying current staff or hiring new staff with the aptitude for data analytics. The requisite technical skills need to be combined with the ability and desire to understand what the data requirements and sources are, what meaningful queries can be made of the data, and how best to summarize and display query results. However, even with this talent, other auditors must be trained to understand how data can be used to meet audit objectives so that data analytic personnel are properly directed in their supporting role.

Adequate data access and storage. Access to data may be limited for a variety of reasons, including these:

- Data stored with a third-party vendor
- Lack of understanding of where data is stored
- Stakeholder unwillingness to share data
- Lack of direct access

Space for storage also may be of concern, especially as data analytics matures. Large population analysis can result in large data files and may require additional servers or storage for internal audit.

Sufficient training budget. The initial and ongoing training costs necessary to develop and maintain a data analytic skill set require an organizational commitment. However, the cost of acquiring this deep specialization is small considering the opportunities data analytics can create. Additional resources or training also may be required in the area being audited. For instance, the audit may relate to clinical coding, compliance, IT, charge capture, or supply chain. In these situations, the data analyst will need to acquire a certain level of specialized knowledge in the area or be supported by specialists in that area.

Powerful hardware and software. In addition to the human resource (data analyst), computer hardware and data analytic software are the cornerstones of a data analytic strategy. When choosing hardware, it is important to select a computer system that has the fastest processors and can accommodate large data sets. Many data analytic tools are available to support the audit function. Choosing a computer that meets or exceeds the minimum processor and storage requirements of the software chosen is critical to the success of the program. Equally important is using software that has a wide array of analytic and statistical functions, the ability to log procedures performed, and the ability to easily rerun analyses with minor changes.

Minimization of false exceptions. Another challenge in the ongoing pursuit of data analytics is identifying and reducing the number of false exceptions resulting from the analyses. False exceptions can be time-consuming, so avoiding them in the first place is important to improving return on investment. Strategies to reduce false exceptions lie in acquiring or efficiently using specialized knowledge in the area of focus and in scripting or programming analysis syntax that can be tweaked and rerun as false exception patterns are identified.

The success of the effort is greatly improved when data analytics is mission critical to the organization and audit staff is granted access to and has a thorough understanding of available data. An audit staff that has the commitment to data analytics, has appropriate tools, has current training, and is adept at critical thinking should have the expertise and knowledge to keep false exceptions to a minimum.

Often, test criteria are refined based on feedback from auditors and clients in the normal course of the audits. However, healthcare data analytic tools developed for repeated use must be evaluated frequently to address changes in coding and billing guidance obtained from various sources, such as the Centers for Medicare & Medicaid Services (CMS) and the American Medical Association. Each tool also should be subject to periodic quality reviews by an auditor who is independent of the subject-matter expert responsible for developing and maintaining the respective tool.

Data analytics implementation. Once an organization's management team has decided to move forward with a data analytic strategy, it must perform a thorough analysis of the organization's audit needs, the types of data available, skill sets possessed and required, and the organization's commitment to data analytics. Based on this analysis, organization management can make decisions about having a centralized, dedicated data analytic resource; selecting hardware and software; and determining what initial and ongoing training is required. In addition, procedures will need to be developed to define roles for the data analyst(s) and audit team. Similarly, standards will need to be established for data request preparation, data validation requirements, exception reporting, and follow-up expectations. Additional procedures must be developed to address how the organization will document the procedures performed, syntax used, and supervisory review.

Effect on the Healthcare Risk Assessment and Audit Processes

Incorporating data analytics into the risk assessment process has the potential to add tremendous value. Analyzing large amounts of high-level clinical, operational, and financial data can help identify potential risk areas that might otherwise go undetected. Data analytics in risk assessment and audit plan development provides knowledge and insight into operations, facilitates and encourages conversations, increases auditor confidence, and offers quantifiable information.

Risk Assessment

Analysis of key performance indicators (KPIs) is useful during the risk assessment process. Comparing KPIs from year to year to find variances and areas of high risk also is a risk assessment best practice that can help bolster the entire risk assessment process.

Common quality analytics for risk assessment include tracking and benchmarking of:

- CMS core measures
- Readmission rates
- 30-day readmissions
- Hospital-acquired conditions
- “Never events” (preventable adverse events)
- One-day stays

Common financial and operational analytics for risk assessment include tracking and benchmarking of:

- Patient registrations by month and year
- Average length of stay
- Cost per discharge
- Days in accounts receivable (AR)
- Denial rates
- Days cash on hand
- Charges summarized by revenue code
- Charges by financial class and patient type
- Late charges
- Implant charges as a percentage of surgery charges
- Managed care carve-out opportunities
- Point-of-service payments as a percentage of total payments
- Reimbursement percentages by payer
- Credit balances
- Billing delays

Many of these quality and financial measures can be benchmarked against national quality standards published at the CMS Hospital Compare website (www.hospitalcompare.hhs.gov), through the Healthcare Financial Management Association’s MAP (measure, apply, perform) initiative (<http://www.hfma.org/map/home/>), and associated with the CMS Program for Evaluating Payment Patterns Electronic Report (PEPPER) (www.pepperresources.org/).

Data analytic testing using payroll, accounts payable (AP), or supply chain data can help identify facilities, departments, or divisions that have accumulated transactions that are statistical outliers.

Sometimes organizations desire more focused risk-assessment activities, which can include accessing a six-month patient account data set and performing charge capture or compliance testing across a number of operational areas. The results can be used to identify the areas of highest risk.

Audit Planning

The use of data analytics in audit planning offers a variety of benefits. Most notably it provides a more specific focus on high-risk areas, enhanced audit efficiency, and improved insight regarding operations.

An example of the use of data analytics in audit planning would be a risk area identified in the area of managed care contract reimbursement where the auditee is uncertain of which payers and contracts are most at risk. Data analytics can be employed to suggest the payers and contracts to focus on based on a series of analyses such as:

- Payments as a percentage of charges by primary payer
- Payments as a percentage of charges by hospital service and further classified by primary payer
- Volume of patient accounts where charges equal payments by payer
- Volume of patient accounts where charges equal adjustments (contractual or other) by payer

Analytics also can be performed to address physician evaluation and management (E&M) coding patterns and identify outliers from national averages and the norms of practice peers. This can aid audit planning by providing judgmental samples that meet certain criteria that can be reviewed to determine if there are any concerns regarding potential upcoding when a physician's mix tends to skew toward higher visit levels compared to the norm.

As an alternative, if a physician's mix tends to skew toward lower visit levels compared to the norm, there may be an opportunity for education regarding more appropriate coding that would result in higher reimbursement. It should be noted that analytics in this regard should be viewed only as an objective tool for determining scope and that the actual E&M coding audits always should be performed by staff with specific expertise in coding compliance to ensure professional competence.

Another example of data analytics in audit planning could be applied to an audit initially based on general charge capture concerns expressed by management without reference to specific departments or charges. This often is a concern following a billing system conversion, and in this case audit planning and determination of scope can target specific departments or charge items for further analysis. For instance, simple analytics can generate basic departmental volume analyses and recommend areas of focus. More sophisticated analytics could be performed by generating charge capture analyses using established data analytic tools based on predictive indicators and charge pairs. To further refine the focus area, preliminary charge capture results could be examined to determine the scope of the testing that ultimately will be performed. For example, preliminary surgery charge capture results could lead to excluding all but surgical implant testing charges.

When testing 100 percent of the population is not preferred or samples are needed, data analytics can facilitate the identification of testing samples. By filtering data based on auditor or client-specified characteristics, judgmental testing samples that meet certain criteria can be identified to facilitate more efficient testing for particular areas of risk.

Audit Fieldwork

Data analytics uses scarce audit resources effectively and efficiently. It allows for the analysis of 100 percent of a population and provides quantified results of the analysis performed. Fraud detection and the quantification of suspected or known fraud schemes can be expedited with the use of data analytics. Also, data analytics can have a practical impact on audit areas including the revenue cycle, compliance, and financial services.

Audit Follow-Up

Using data analytics can improve the efficiency of the audit follow-up process and verify that agreed-upon action plans have been implemented and tested. The primary benefits of using data analytics during follow-up procedures include:

- Efficient audit follow-up
- Simplified data access
- More streamlined initial data validation
- Ability to use the original programming syntax
- Identification of patterns, outliers, and trends

Continuous Auditing and Monitoring

Both continuous auditing and continuous monitoring identify and assess the effectiveness of processes and controls. However, process managers own continuous monitoring, and auditors own continuous auditing. This difference underlies another significant benefit of continuous auditing. In continuous monitoring, oversight can be subjected to the bias and interpretation of process owners, who are operationally invested. With continuous auditing, because auditors maintain ownership, they can offer independent, objective analyses of processes and remediation as well as analyses of management's continuous monitoring activities.

Data analytic tools are valuable for managing risks and enhancing controls in the audit process. In today's highly complex, ever-changing healthcare environment, hospitals need monitoring solutions to make processes more efficient and to enable management to address risks, errors, and potential process breakdowns as early as possible. Data can be accessed through automated interfaces on a scheduled basis to perform these tests and provide management with ongoing information about the effectiveness of controls.

An emerging trend in data analytics is the inclusion of data visualization to communicate results of auditing and monitoring. Data visualization describes methods and formats used to convey data or information by presenting it in a visual format such as graphs, "stoplight reports," and "dashboards." The objective is to communicate information clearly and efficiently to audiences.

Management Assistance

Countless opportunities exist to assist management while using data analytics. Some limited examples are included in the table.

Examples of Practical Data Analytic Applications

Routine	Description
Revenue Cycle	
Patient Access	Analysis can identify front-end data entry errors and omissions that occur during the patient admission or registration process. Specifically, reports can include demographic data errors and omissions; patient accounts with missing, duplicate, or multiple medical record numbers assigned; patients older than 65 years of age without Medicare; and patient accounts missing an admitting diagnosis code.
Charge Description Master (CDM)	Analysis can address areas such as coding compliance related to Current Procedural Terminology (CPT) codes, Healthcare Common Procedure Coding System (HCPCS) codes, revenue codes, and drug dosages. In addition, data analytics can evaluate CDM pricing versus reimbursement rates as well as the completeness of CPT and HCPCS codes.
Charge Capture	<p>Audits in this area often help by revealing:</p> <ul style="list-style-type: none"> ■ Failure to identify payment rule changes ■ Lack of coordination among departments ■ Information technology and interface failures ■ Lack of effective charge capture policies and procedures <p>Charge capture data analytics can be developed based on various clinical coding elements and some hospital-specific information. A practical example would be identifying an emergency department patient account with a fracture diagnosis that lacks an imaging charge associated with the assessment and treatment of the fracture.</p> <p>Charge capture testing can be developed for a broad spectrum of clinical and operational areas that would apply to many hospital departments including emergency, surgery, cardiac catheterization and electrophysiology lab, interventional radiology, diagnostic radiology, pharmacy, oncology, reference and pathology lab, maternity, and respiratory therapy.</p>
Late Charges	Data analytics can address the overall timeliness of the charge entry process throughout the hospital. Departments with a high volume of late charges can be identified, which may assist in root-cause analysis.
Managed-Care Contract Compliance	Payment compliance can be determined by modeling the contract terms to calculate expected reimbursement and then comparing the results to actual payments received.
Accounts Receivable (AR) Valuation	Retrospective analysis using actual historical payment, adjustment, and write-off activity for a given period can be compared to the reserves recorded against the same AR to determine if the reserves were stated appropriately. The analysis can be performed for both bad-debt write-offs and contractual allowances. Matrices of percentages classified by payer and aging category can be generated and applied prospectively as a basis to record current reserves.

Routine	Description
Compliance	
Patient Credit Balances	Analysis can assist in determining the timeliness of credit balance refunds and developing process improvements to facilitate compliance with related rules and regulations.
One-Day Patient Stays	Data analytics can isolate inpatient accounts with one-day hospital stays and provide additional analysis to determine the diagnosis-related groups (DRGs) with the highest related volumes.
Same-Day Readmissions	Analysis can find patient accounts discharged and readmitted on the same day whose records should be further scrutinized by reviewing the discharge status codes and the related DRGs. These instances may highlight increased risk related to quality of care and may have negative financial implications.
Three-Day Rule	Medicare patients who have both inpatient and outpatient charges as well as Medicare patients who have only inpatient charges can be isolated. Sampling of the results can validate that billing for outpatient services is being appropriately included on the inpatient bill.
Transfers in Lieu of Discharges	Patient accounts that may have been coded incorrectly as discharges rather than as transfers can be marked for further review to determine if they were overpaid.
30-Day Readmissions	Medicare patients ages 65 and older with specific diagnoses who had an unplanned readmission within 30 days of discharge from the indexed admission can be highlighted. Excess readmissions can lead to CMS dictating reduced payments.
Two-Midnight Rule	Use analytics to segregate Medicare inpatient accounts with a length of stay of one day (spanning fewer than two midnights) that should be reviewed to confirm inpatient status. Alternatively, Medicare outpatient observation accounts can be flagged and reviewed to determine if inpatient status would be more appropriate.
340B Drug Pricing Program	Analyze 340B drug activity to detect potential diversion of 340B discounted drugs to ineligible patients as well as potential missed or lost discounts for qualified drug dispensations not recognized.
Meaningful Use Attestation	Use analytic tools in developing queries to extract data and conduct statistical analyses to validate achievement of expected meaningful use metrics and improved patient care.
Excluded Provider Screening	<p>All healthcare organizations are obligated to screen employees, contractors, and vendors to find those excluded from participation in federal healthcare programs. Meeting this obligation promotes regulatory compliance, helps hospitals avoid sanctions, and – most important – keeps patients safe.</p> <p>Data analytic tools can be used to accomplish excluded provider screening by reviewing a facility’s employee master, physician master, and vendor master against the Office of Inspector General (OIG), General Services Administration (GSA), and state Medicaid files of excluded providers. Employee, physician, and vendor master files also can be compared to the Death Master File, which lists all U.S. deaths since 1935 by Social Security number and name; this could highlight erroneous or fraudulent records and potential cases of identity theft.</p>

Routine	Description
Financial/Operational	
Payroll	<p>To identify control weaknesses and potential instances of fraud, payroll tests can be developed to flag exceptions regarding:</p> <ul style="list-style-type: none"> ■ Duplicate employee master file records ■ Duplicate payroll register payments ■ Excessive or unexpected overtime ■ Unreasonable on-call and callback pay ■ Exempt employees with unexpected premium pay ■ Outlier payments for full- and part-time employees (transactions with payroll amounts greater than two standard deviations from the mean of the population)
Accounts Payable (AP)	<p>Addressing similar risks to payroll data analytics, common AP tests can be designed to detect:</p> <ul style="list-style-type: none"> ■ Duplicate vendor master records ■ Duplicate payments ■ Lost discounts, invoices paid early, and invoices paid late ■ Payments made exceeding certain approval limits ■ Potential matches between the AP and payroll master file ■ AP vendors with no payment activity ■ Outlier payments (transactions with check or invoice amounts greater than two standard deviations from the mean of the population)
General Ledger	<p>Data errors, unique transactions, and weaknesses affecting internal controls in operating environments can be identified by analysis of a facility's journal entries and general ledger trial balance.</p> <p>Raw journal entry data can be analyzed to generate a variety of reports highlighting:</p> <ul style="list-style-type: none"> ■ Round-dollar journal entries ■ Entries to retained earnings/changes in net assets ■ The last journal entry posted each period ■ Journal entries posted by executive staff ■ Manual journal entries to AP and AR ■ A summary of journal entries by user and journal entries with no descriptions or with "red flag" descriptions
Trial Balance	<p>Trial balance data analytics can address the percentage change from beginning to ending balance for each general ledger account and identification of accounts that do not have a "normal" or "expected" balance (for example, asset accounts with negative balances).</p>
Employee Expenses	<p>Facility expense reporting data, credit card transactions, and payroll data can be subjected to a series of data analytic tests in an effort to uncover errors, leakage, fraud, and abuse in the employee expense reimbursement process. In addition, reviews can help identify data errors, unique transactions, and weaknesses in internal controls.</p>

Routine	Description
Supply Chain	To address significant supply costs, analyses can provide feedback regarding spending controls and compliance with vendor contracts. An example would be the analysis of pharmaceutical pricing to determine whether or not the amount a hospital is being charged complies with contracted pricing.
Fraud	A comprehensive data analytic fraud suite can employ AP, payroll, and employee expense reimbursement tools as well as digital analysis, Benford’s law analysis, the identification of invalid Social Security numbers, and a comparison of Social Security numbers to the Death Master File.
Audit Follow-Up	
340B Drug Pricing Program	<p>Data analytics can be the driving force behind successful 340B Drug Pricing Program audits and their related follow-up procedures to verify that action plans have been completed. Using data analytics during follow-up can help the audit team identify:</p> <ul style="list-style-type: none"> ■ Noncompliance with regulations and policies ■ Financial opportunities related to missed 340B accumulations ■ Ineligible physicians ■ Ineligible inpatient dispensing ■ Ineligible outpatient sites ■ Both the inappropriate inclusion and exclusion of Medicaid activity contrary to the facilities’ registration with the Health Resources and Services Administration Office of Pharmacy Affairs website ■ Drug purchases in excess of eligible dispensing records
Charge Capture	Charge capture audits historically have used data analytics to test 100 percent of a testing area’s population. So it is natural to run the same data analytic tests during follow-up procedures for charge capture audits. Direct comparisons can be made between the two reviews by comparing exception percentages from the baseline audit results to the follow-up results. The determination that an action plan was or was not completed or effective will be completely data driven.
Continuous Auditing	
Three-Day Payment Window Testing	<p>For patients with Medicare Part A coverage, nonprofessional outpatient services provided to a beneficiary within three days prior to the date of an admission should be included in the inpatient claim. When healthcare organizations provide services in locations beyond the hospital campus, they are challenged to link outpatient services to inpatient claims.</p> <p>Through continuous auditing, compliance risks can be mitigated. Patient names, dates of birth, and Social Security numbers can be matched via data analytic tools with clinic and hospital charge files. This process is especially effective because the risk of billing errors is covered on an ongoing basis. Even with management turnover, continuous auditing can provide assurance that controls remain robust.</p>
Duplicate Payment Testing	<p>Duplicate payment errors are preventable losses that deplete scarce resources. Whereas most new AP systems have some edits to control duplicate payments, most are not sophisticated enough to catch “fuzzy” or near duplicates. Continuous auditing can be employed to screen for true duplicates, thus supporting an organization’s goal to recoup past payments and improve controls to prevent similar errors in the future.</p> <p>For example, using data analytic software, auditors can access AP data, conduct an assessment for duplicates, and generate exception reports. The errors identified in those reports are remediated by the process owners.</p>

Routine	Description
Unusual Journal Entries	<p>Data errors, unique transactions, and weaknesses affecting internal controls in operating environments can be identified with a continuous analysis of a facility’s journal entries and general ledger trial balance.</p> <p>Using data analytics on a continuous basis on journal entries provides a variety of reports, including round-dollar journal entries, entries to retained earnings, the last journal entry posted each period, journal entries posted by executive staff, manual journal entries to AP and AR, a summary of journal entries by user, and journal entries with no description or “red flag” descriptions.</p> <p>Trial-balance data analytics addresses the percentage change from the beginning to the ending balance for each general ledger account and identifies accounts without a “normal” or “expected” balance, such as asset accounts with negative balances.</p>
Credit Card and Purchasing Card Transactions	<p>In addition to identifying data errors, unique transactions, and weaknesses in internal controls, a sequence of data analytic tests can be used on an ongoing basis to uncover errors, leakage, fraud, and abuse in the employee expense reimbursement process. The tests compare facility-expense reporting data, credit card transactions, and payroll data.</p> <p>Purchasing cards can be risky, and they can challenge internal controls of company assets. Specific tests related to purchasing cards include identifying:</p> <ul style="list-style-type: none"> ■ Cards issued to nonexistent employees ■ Transactions with unauthorized merchants ■ Transaction amounts beyond approval limits ■ Duplicate transactions ■ Purchasing card transactions that were also reimbursed to employees <p>By continuously monitoring 100 percent of these transactions, data analytics can help identify questionable expenses, duplicate transactions, and inappropriate transactions and can provide the basis for better insight for procurement policies and internal controls.</p>
Continuous Monitoring	
Excluded Provider Review	<p>Excluded provider monitoring is a critical compliance area that all healthcare organizations must address. A continuous exclusion monitoring solution makes it simple to upload employee, vendor, contractor, and physician data for testing each month and to compare it against the most recent agency exclusion lists. This continuous monitoring process also can result in more efficient reporting and storage of automated matching results as well as investigation and resolution activity.</p>
Vendor Master Maintenance	<p>Healthcare facilities should constantly be cleaning and monitoring their vendor master. It is the first step to preventing the creation of duplicate, ghost, or inactive vendors.</p> <p>Management can use continuous monitoring to screen for incorrect or fictitious vendors. Data analytics can be performed to identify duplicate vendors before they can trigger a duplicate payment. Identifying vendors without activity or new vendors with blank fields or erroneous data on a regular basis can help the stakeholder develop controls to prevent payments to ghost or fraudulent vendors.</p> <p>Management can use analytics to immediately identify issues such as vendors who are current active employees, vendors with no tax identification number, vendors with multiple addresses, and vendors with inaccurate or erroneous data in important fields.</p>

Routine	Description
Continuous Auditing and Monitoring	
AR Hindsight	<p>Data analytic tools can examine historical AR valuation activities and compare actual payment, adjustment, and write-off transactions for a given period to the reserves booked against the same AR.</p> <p>Typically performed on monthly AR “snapshots” and monthly extracts of detailed transactions, the continuous auditing process helps to identify trends, generate bad-debt matrices, and allow the audit team to evaluate current AR reserve estimates.</p> <p>Continuous auditing performed annually for entities can mitigate historical under-reserves for bad debt, charity, and contractual allowances. Under-reserves in the allowances result in an overall overstatement of net AR balances. As management responds to the continuous auditing results by increasing reserves, the net AR will come in line with projected receipts.</p>
Management Assistance	
Paid Time Off (PTO) Fraud Scheme	<p>Data analytic tools can be a vital component of management assistance procedures for a PTO investigation. For example, data analytic tools could be used during a baseline review to quantify a PTO fraud scheme that involves PTO diversion. Quantifying the problem during this process would enable the company to quickly reimburse employees for related tax implications and to issue appropriate replacement W-2 forms as necessary.</p>
Evaluating Vendor Performance	<p>Data analytics can also help management by evaluating vendor performance. The process to evaluate vendors typically has a survey component, and the results of these surveys can be analyzed using data analytic tools to identify outliers and poor performers. Other tests include calculating the time between date of order and delivery of order, date of return and date of refund, and date of complaint and date of resolution. Once these calculations are performed, summary data analytics can be completed to again determine outliers and poor performers.</p>
CDM	<p>Data analytics can be instrumental in helping a hospital build its CDM after a major system conversion. Analytics could be used to review the hospital’s inventory item master and CDM to determine which supply items need to have associated charges built in the CDM. The data analytic reviews can be performed on an ongoing basis after the conversion and can be critical in helping the hospital verify that all chargeable supply items have a charge assigned to them in the CDM.</p>

What's Next

Ever-increasing financial and regulatory pressures in the healthcare industry call for organizations to maximize the efficiency of their scarce audit resources. Given this, healthcare auditing is on the cusp of significant change, with data analytics serving as one of the foundational building blocks of the next generation of internal audit. When data analytics is injected into important business process areas, the impact on the control environment can be significant, and it can extend the risk coverage and influence of the internal audit function.

Data analytics is most successful when it is engrained in an organization's way of thinking and working. Its demonstrated impact can help change the mindset of the organization's management and employees and aid in transitioning to a culture where internal audit truly is embraced. And although it is useful in traditional areas, data analytics can have even more impact in new and emerging areas such as complying with complex regulatory and clinical quality requirements.

Matching a data analytic specialist with an operational specialist can be powerful. And organizations should not limit themselves to considering data analytics as only an ad hoc option. Software tools exist in AR valuation, CDM, compliance, coding, and various revenue cycle areas. Incorporating robust data analytic routines and monitoring programs to cover traditional transactional testing can free up scarce audit resources. The newly available resources can then be deployed elsewhere to perform other critical assurance activities in areas that may otherwise be unaddressed.



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