

# Fraud Detection Using Data Analytics in the Healthcare Industry

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## Table of Contents

WHAT IS FRAUD? .....	3
WHO IS RESPONSIBLE FOR FRAUD DETECTION? .....	3
WHY USE DATA ANALYSIS FOR FRAUD DETECTION? .....	4
ANALYTICAL TECHNIQUES FOR FRAUD DETECTION .....	5
FRAUD DETECTION PROGRAM STRATEGIES .....	5
TIME AND ATTENDANCE ANALYSIS UNCOVERS FRAUD .....	6
HEALTHCARE.....	6
HEALTHCARE RELATED FRAUD SCHEMES.....	6
OTHER RESOURCES.....	7
ABOUT ACL .....	8

# Fraud Detection Using Data Analytics in the Healthcare Industry

## What is Fraud?

Fraud encompasses a wide range of illicit practices and illegal acts involving intentional deception or misrepresentation. The Institute of Internal Auditors' *International Professional Practices Framework* (IPPF) defines fraud as:

"... any illegal act characterized by deceit, concealment, or violation of trust. These acts are not dependent upon the threat of violence or physical force. Frauds are perpetrated by parties and organizations to obtain money, property, or services; to avoid payment or loss of services; or to secure personal or business advantage."

Fraud impacts organizations in several areas including financial, operational, and psychological. While the monetary loss owing to fraud is significant, the full impact of fraud on an organization can be staggering. The losses to reputation, goodwill, and customer relations can be devastating. As fraud can be perpetrated by any employee within an organization or by those from the outside, it is important to have an effective fraud management program in place to safeguard your organization's assets and reputation.

## Who is Responsible for Fraud Detection?

While senior management and the board are ultimately responsible for a fraud management program, internal audit can be a key player in helping address fraud. By providing an evaluation on the potential for the occurrence of fraud, internal audit can show an organization how it is prepared for and is managing these fraud risks.

In today's automated world, many business processes depend on the use of technology. This allows for people committing fraud to exploit weaknesses in security, controls or oversight in business applications to perpetrate their crimes. However, the good news is that technology can also be a means of combating fraud. Internal audit needs to view technology as a necessary part of their toolkit that can help prevent and detect fraud. Leveraging technology to implement continuous fraud prevention programs helps safeguard organizations from the risk of fraud and reduce the time it takes to uncover fraudulent activity. This helps both catch it faster and reduce the impact it can have on organizations.

*The International Professional Practices Framework (IPPF) contains the following Standards on fraud and internal audit's role:*

### 1200 – Proficiency and Due Professional Care

1210-A2 – Internal auditors must have sufficient knowledge to evaluate the risk of fraud and the manner in which it is managed by the organization, but are not expected to have the expertise of a person whose primary responsibility is detecting and investigating fraud.

### 1220 – Due Professional Care

1220.A1 – Internal auditors must exercise due professional care by considering the following:

- Extent of work needed to achieve the engagement's objectives;
- Related complexity, materiality, or significance of matters to which assurance procedures are applied;
- Adequacy and effectiveness of governance, risk management, and control processes;
- Probability of significant errors, fraud, or noncompliance; and
- Cost of assurance in relation to potential benefits.

### 2060 – Reporting to Senior Management and the Board

The chief audit executive must report periodically to senior management and the board on the internal audit activity's purpose, authority, responsibility, and performance relative to its plan. Reporting must also include significant risk exposures and control issues, including fraud risks, governance issues, and other matters needed or requested by senior management and the board.

### 2120 – Risk Management

2120.A2 – The internal audit activity must evaluate the potential for the occurrence of fraud and how the organization manages fraud risks.

### 2210 – Engagement Objectives

2210.A2 – Internal auditors must consider the probability of significant errors, fraud, noncompliance, and other exposures when developing the engagement objectives.

## Why Use Data Analysis for Fraud Detection?

Data analysis software enables auditors and fraud examiners to analyze an organization's business data to gain insight into how well internal controls are operating and to identify transactions that indicate fraudulent activity or the heightened risk of fraud. Data analysis can be applied to just about anywhere in an organization where electronic transactions are recorded and stored.

Data analysis also provides an effective way to be more proactive in the fight against fraud. Whistleblower hotlines provide the means for people to report suspected fraudulent behavior but hotlines alone are not enough. Why be only reactive and wait for a whistleblower to finally come forward? Why not seek out indicators of fraud in the data? That way, organizations can detect indicators of fraudulent activity much sooner and stop it before it becomes material and creates financial damage.

To effectively test for fraud, all relevant transactions must be tested across all applicable business systems and applications. Analyzing business transactions at the source level helps auditors provide better insight and a more complete view as to the likelihood of fraud occurring. It helps focus investigative action to those transactions that are suspicious or illustrate control weaknesses that could be exploited by fraudsters. Follow-on tests should be performed to further that auditor's understanding of the data and to search for symptoms of fraud in the data.<sup>1</sup>

There is a spectrum of analysis that can be deployed to detect fraud. It ranges from point-in-time analysis conducted in an ad hoc context for one-off fraud investigation or exploration, through to repetitive analysis of business processes where fraudulent activity is likely to more likely to occur. Ultimately, where the risk of fraud is high and the likelihood is as well, organizations can employ an "always on" or continuous approach to fraud detection – especially in those areas where preventative controls are not possible or effective.

Once an organization gets started with data analysis, they usually find that they want to do more and dig deeper into the data. Modern organizations have increased management demands for information and the audit paradigm is shifting from the traditional cyclical approach to a continuous and risk-based model. Technology therefore offers a range of solutions, varying by the size and sophistication of the audit organization. From ad hoc analysis, through to repeatable automated procedures, and continuous auditing and monitoring, analytics provide insight into the integrity of financial and business operations through transactional analysis. Technology provides more accurate audit reports and better insight into the internal controls framework, and improves the ability to access and manage business risk.

The National Health Care Anti-Fraud Association (NHCAA) estimates conservatively that 3% of all health care spending—or **\$68 billion**—is lost to health care fraud.

[www.nhcaa.org](http://www.nhcaa.org)

*"ACL Analytics Exchange leverages ACL's proven analytical strengths to provide auditors with a means to perform data analyses and help effectively detect and prevent fraud." | David Coderre, leading author of books such as "Computer-Aided Fraud Detection & Prevention: A Step-by-Step Guide"*

<sup>1</sup> Coderre, David G., *Fraud Analysis Techniques Using ACL*, John Wiley & Sons, 2009.

## Analytical Techniques for Fraud Detection

Getting started requires an understanding of:

- ✓ The areas in which fraud can occur
- ✓ What fraudulent activity would look like in the data
- ✓ What data sources are required to test for indicators of fraud

The following analytical techniques are effective in detecting fraud:

- **Calculation of statistical parameters** (e.g., averages, standard deviations, high/low values) – to identify outliers that could indicate fraud.
- **Classification** – to find patterns amongst data elements.
- **Stratification of numbers** – to identify unusual (i.e., excessively high or low) entries.
- **Digital analysis using Benford's Law** – to identify unexpected occurrences of digits in naturally occurring data sets.
- **Joining different diverse sources** – to identify matching values (such as names, addresses, and account numbers) where they shouldn't exist.
- **Duplicate testing** – to identify duplicate transactions such as payments, claims, or expense report items.
- **Gap testing** – to identify missing values in sequential data where there should be none.
- **Summing of numeric values** – to identify control totals that may have been falsified.
- **Validating entry dates** – to identify suspicious or inappropriate times for postings or data entry.<sup>2</sup>

Please note that random sampling is not listed as an effective fraud detection technique. While sampling is an effective data analysis technique for analyzing data values that are consistent throughout the data population, the very nature of fraud is different as it tends not to occur randomly.

## Fraud Detection Program Strategies

Instead of relying on reactive measures like whistleblowers, organizations can and should take a more hands-on approach to fraud detection. A fraud detection and prevention program should include a range of approaches – from point-in-time to recurring and, ultimately, continually for those areas where the risk of fraud warrants. Based on key risk indicators, point-in-time (or ad hoc) testing will help identify transactions to be investigated. If that testing reveals indicators of fraud, recurring testing or continuous analysis should be considered.

A KPMG Forensics' *Fraud Risk Management* report states, "unlike retrospective analyses, continuous transaction monitoring allows an organization to identify potentially fraudulent transactions on, for example, a daily, weekly, or monthly basis. Organizations frequently use continuous monitoring efforts to focus on narrow bands of transactions or areas that pose particularly strong risks."<sup>3</sup>

By leveraging the power of data analysis software organizations can detect fraud sooner and reduce the negative impact of significant losses owing to fraud.

<sup>2</sup> Global Technology Audit Guide: Fraud Prevention and Detection in an Automated World. The Institute of Internal Auditors, 2009.

<sup>3</sup> "Fraud Risk Management: Developing a Strategy for Prevention, Detection and Response." KPMG International, 2006

## Time and attendance analysis uncovers fraud

“When I was working in the health care industry, we developed a technology-based project to monitor staff time and attendance data. Health care professionals (such as physicians, nurses and specialists) are paid in different ways, depending on the nature of their positions, the work, and the facility. All the pay rates have unique electronic codes, so my team began by pulling the code for staff members working on-call. We looked at typical on-call data and learned what would comprise accurate coding. We then set up constraints and exception conditions, such as a maximum number of consecutive hours spent on-call. We used audit analytics to pull the files and quickly ran the data through our script.

Immediately, we found staff members who had supposedly worked on-call 24 hours a day, seven days a week (an impossibility) or were paid for on-call time while they were away on vacation. It was an extremely fast, straightforward data analysis project that quickly highlighted potential time and attendance fraud.”

**Penny Borjas**, CFE, CIA, B.A., Certified Fraud Examiner and Internal Auditor

## Healthcare

Healthcare fraud is a serious financial drain on the healthcare systems in many jurisdictions. It represents a serious drain on the effectiveness of providing healthcare to those in need.

Owing to the large numbers of cases reported, investigated and prosecuted, it has been identified as a “high-risk” area in many regions.

## Healthcare Related Fraud Schemes

Here are a few typical fraud schemes encountered in healthcare and some examples of the way data analysis can be applied to detect and prevent them:

- Match OIG-excluded providers list with vendor, employee master files.
- Find kickbacks paid in exchange for referring business.
- Identify charges posted outside of proper GL period.
- Highlight “upcoding” of procedures: Statistically outlying numbers.
- Match vendor names/addresses/tax IDs to payroll records for employees.
- Summarize large invoices without purchase orders, by amount, vendor, etc.
- Compare list of valid signed-up employees to list of people actually receiving health benefits from insurance company.
- Highlight billing for medically unnecessary tests.
- Identify false/invalid/duplicate Social Security numbers.
- Highlight excessive use of high risk DRGs (“Diagnosis-Related Groups”)
- Identify excessive billing by a single physician
- Identify employee overtime abuses.
- Report entries against authorization records for new or terminated employees.
- Identify multiple payroll deposits to the same bank account.

Healthcare - 107 Cases		
Scheme	Number of Cases	Percent of Cases
Corruption	31	29.0%
Skimming	24	22.4%
Billing	23	21.5%
Non-Cash	21	19.6%
Check Tampering	13	12.1%
Expense Reimbursements	12	11.2%
Payroll	10	9.3%
Cash on Hand	9	8.4%
Larceny	8	7.5%
Financial Statement Fraud	4	3.7%
Register Disbursements	1	0.9%

Distribution of Fraud Schemes in Healthcare<sup>4</sup>

## Other Resources

- **Association of Certified Fraud Examiners (ACFE):** the world's largest anti-fraud organization and premier provider of anti-fraud training and education. [www.acfe.org](http://www.acfe.org)
- **The Institute of Internal Auditors (The IIA):** [www.theiia.org](http://www.theiia.org)
  - ♦ *International Standards for the Professional Practice of Internal Auditing* (Standards): The Standards are mandatory requirements – principle-focused and providing a framework for performing and promoting internal auditing.
  - ♦ *Internal Auditing and Fraud Practice Guide*: guidance on how to comply with the International Standards for the Professional Practice of Internal Auditing.
  - ♦ *GTAG 13: Fraud Prevention and Detection Techniques in an Automated World*: step-by-step process guide for auditing a fraud prevention program, including an explanation of the various types of data analysis to use in detecting fraud, and a technology fraud risk assessment template.
- **ACL Detecting Fraud resource page:** anti-fraud materials including industry reports, case studies and on-demand webinars. [www.acl.com/fraud](http://www.acl.com/fraud)



## About ACL

ACL delivers technology solutions that are transforming audit and risk management. Through a combination of software and expert content, ACL enables powerful internal controls that identify and mitigate risk, protect profits, and accelerate performance.

Driven by a desire to expand the horizons of audit and risk management so they can deliver greater strategic business value, we develop and advocate technology that strengthens results, simplifies adoption, and improves usability. ACL's integrated family of products—including our cloud-based governance, risk management and compliance (GRC) solution and flagship data analytics products—combine all vital components of audit and risk, and are used seamlessly at all levels of the organization, from the C-suite to front line audit and risk professionals and the business managers they interface with. Enhanced reporting and dashboards provide transparency and business context that allows organizations to focus on what matters.

And, thanks to 25 years of experience and our consultative approach, we ensure fast, effective implementation, so customers realize concrete business results fast at low risk. Our actively engaged community of more than 14,000 customers around the globe—including 89% of the Fortune 500—tells our story best. [Here are just a few.](#)

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