Predictive Modeling and Analytics for Health Care Provider Audits

Sixth National Medicare RAC Summit
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Predictive Modeling and Analytics for Health Care Provider Audits

Agenda

- Objectives

- Improper Payments & Recovery

- Data Mining & Predictive Modeling Defined

- CMS Ventures Into Predictive Modeling

- Pre-payment Predictive Modeling of Claims

- Detecting Fraud Before Paying a Claim

- Impact on Provider Audits

- Qs & As

Objectives

Understand the work that is being done to uncover and eliminate overpayments in healthcare billing

- Transitioning from the "pay and chase" model to a more proactive, preventative approach that scrutinizes claims before they are paid

Learn the process of using Predictive Modeling by Medicare, Medicaid and other commercial and public payers to uncover patterns of overpayments (not necessarily fraud)

- What it is, how it is done, and how it is applicable to provider audits

Improper Payments & Recovery

The primary goal of each CMS contractor is to "Pay it Right"

- Pay the right amount
- …to the right provider
- …for covered and correctly coded services

Improper Payment Elimination and Recovery Act (IPERA) - Signed by President Obama on July 20, 2010

- Defines "improper payment" as:
  - Payments that should not have been made, or payments made in an incorrect amount (including overpayments and underpayments)
  - Payment to an ineligible recipient
  - Payment for an ineligible service
  - Any duplicate payment
  - Payment for services not received
  - Payments for an incorrect amount
- Although not in the Act, "improper payment" also typically includes:
  - Payments for services that should not have been performed (i.e., must be medically necessary)

Improper Payments & Recovery

Improper payments for health care are estimated to range between 3% and 10% of total healthcare expenditures nationally[1]

- For Medicare and Medicaid, the HHS estimated improper payments for fiscal year 2008 to represent[2]:
  - $10.4 billion in Medicare Fee-for-Service
  - $6.8 billion in Medicare Advantage
  - $18.6 billion for the Federal share of Medicaid expenditures
  - $14.1 billion for the State share of Medicaid expenditures

The FY 2010 Health Care Fraud and Abuse Control Program Report (OIG - January 24, 2011)

- The federal government recovered more than $4 billion in FY 2010 as a result of health care fraud prevention and enforcement efforts
- $2.5 billion represented recoveries under the False Claims Act, the largest amount in the history of the DOJ

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Improper Payments & Recovery

Under the Patient Protection and Affordable Act (PPACA) Medicare is taking action to reduce payment errors, waste, fraud, and abuse in Medicare.

- Pres. Obama wants to reduce Medicare fraud by 50% (from 2009) by 2012

Comprehensive Error Rate Testing (CERT)
National Medicare Fee–for Service Error Rates by Year
1996 – 2010

Year	Error Rate	Total Dollars Paid	Total Improper Payments
1996	14.2%	$168.1 B	$23.8 B
1997	11.8%	$177.9 B	$20.9 B
1998	8.4%	$177.0 B	$14.9 B
1999	8.6%	$168.9 B	$14.5 B
2000	9.4%	$174.6 B	$16.4 B
2001	8.8%	$191.3 B	$16.8 B
2002	8.0%	$212.8 B	$17.1 B
2003	6.4%*	$199.1 B	$12.7 B*
2004	10.1%	$213.5 B	$21.7 B
2005	5.2%	$234.1 B	$12.1 B
2006	4.4%	$246.8 B	$10.8 B
2007	3.9%	$276.2 B	$10.8 B
2008	3.6%	$288.2 B	$10.4 B
2009	12.4%	$308.4 B	$35.4 B
2010	10.5%	$326.4 B	$34.3 B

* These entries have been adjusted to account for the high provider non-response rate in 2003. Had the adjustment not been made, the improper payments would have been $21.5 B and the national paid claims error rate would have been 10.8%.

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Improper Payments & Recovery

OIG FY2012 Work Plan

- **Medicare Inpatient and Outpatient Payments to Acute Care Hospitals (New)** (OAS; W-00-11-35538; various reviews; expected issue date: FY 2012; work in progress; and OEI; 00-00-00000; expected issue date: FY 2012; new start)

  - The OIG will review Medicare payments to hospitals to determine compliance with selected billing requirements

    » They will use the results of these reviews to recommend recovery of overpayments and identify providers that routinely submit improper claims

    » Prior OIG audits, investigations, and inspections have identified areas that are at risk for noncompliance with Medicare billing requirements

  - **Based on computer matching and data mining techniques**, they will select hospitals for focused reviews of claims that may be at risk for overpayments

    » Using data analysis techniques, they will identify hospitals that broadly rank as **least risky** across compliance areas and those that broadly rank as **most risky**

    » They will review the hospitals' policies and procedures to compare the compliance practices of these two groups

    » They will survey/interview hospitals' leadership and compliance officers to obtain contextual information related to hospitals' compliance programs

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Overview of Predictive Modeling and Pre-payment Analysis

Data Mining Defined

CMS is using advanced data mining and predictive modeling to find fraudulent payment patterns - and is helping States do so in the Medicaid RACs

- Data Mining defined[3]
  - The process of finding previously unknown patterns and trends in databases and using that information to build predictive models
  - The process of data selection and exploration and building models using vast data stores to uncover previously unknown patterns
  - A fairly recent (1994) methodology and technology and considered the offspring of database management, statistics, and computer science

- Data Mining Techniques[3]
  - Description and Visualization – provides an understanding of the data set and detecting hidden patterns
  - Association and Clustering – helps to determine which variables go together (for example grouping data related to readmitted patients)
  - Classification and Estimation (predictive modeling) – predicts fraud vs non-fraud (classifying) and estimates things such as LOS or resource utilization

Predictive Modeling and Pre-payment Analysis

Predictive analytics or predictive modeling represents statistical techniques that use historical data to predict future behaviors

- Captures relationships between explanatory variables and the predicted variables from past occurrences, and exploiting it to predict future behaviors

- Generally, predictive analytics is used to mean predictive modeling, "scoring" data with predictive models, and forecasting

- In healthcare anti-fraud, waste, abuse and error efforts, it means scoring claims, providers, or members on the likelihood that they are improper

- Differs from traditional healthcare anti-fraud, waste, abuse, and error analytics primarily in terms of the complexity and number of variables used

- Used pre-payment to identify "suspect" claims to stop for review or post-payment to identify providers, members, or claims to review for possible recovery or other action

Predictive Modeling and Pre-payment Analysis

Pre-payment anti-fraud, waste, abuse and error identification approaches vary substantially

- Includes professional, pharmacy, and facility claims editing—checking for possible hard denials based on industry or payer-specific requirements
- Can include review of all claims of a certain type, above a certain dollar amount, from specific providers, or from specific members
- Can include claims identified by predictive models to identify "suspect" claims that are generally manually reviewed or pended for medical records to be reviewed

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Challenges to Using Predictive Models

Predictive models for fraud started with credit cards, other financial services, and telecommunications. Challenges arise using predictive models for improper claim identification[4]

- There are historical "answer keys" for credit card fraud, but not for healthcare fraud —*which fundamentally changes the models that can be used*
  - Customers report credit card charges that are not theirs
  - Patients may not read or understand their Explanation of Benefits (EOBs) or care if they are wrong
- Higher false positives are more acceptable in other industries
  - Credit card holders feel good when their companies call them for "aberrant" charges, even if they were correct
  - Requesting significant numbers of medical records from providers for proper claims places an inappropriate burden on providers
- Dramatic changes in customer behavior are far more frequent in healthcare
  - In healthcare, people with very low utilization will start incurring high costs and frequent services when diagnosed with certain conditions
- Extensive cross-provider billing for the same set of patients is frequent, even in large metro areas with lots of options
  - In healthcare, most of these are perfectly fine, but some are not legal
  - In other industries, these are all legal

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CMS Ventures into Predictive Modeling/ Pre-payment Review

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Predictive Modeling and Analytics for Health Care Provider Audits

CMS Ventures into Predictive Modeling/Pre-payment Review

CMS is under increasing pressure to move away from the "pay and chase" model to a more proactive, preventative approach that scrutinizes claims before they are paid.

- U.S. Department of Health and Human Services (HHS) Strategic Plan Fiscal Years 2010-2015[5]
  - Strategic Goal #4: Increase efficiency, transparency and accountability of HHS programs
  - Objective B: Fight fraud and work to eliminate improper payments
    - » Combat healthcare fraud, waste and abuse including provider education, data analysis, audits, investigations and enforcement
    - » Use data to develop better predictive indicators
    - » Restructure automated edits
    - » Enhance medical record review efforts
    - » Increase coordination among federal departments
- CMS realigned the Medicare and Medicaid Program Integrity groups in 2010 under a unified Center for Program Integrity (CPI)

CMS Ventures into Predictive Modeling/Pre-payment Review

2005-2006 Special Study explored feasibility of predictive modeling

- A special study was performed by Livanta (LLC)[6]
  - A current CERT Documentation Contractor (CDC) in Annapolis Junction, MD who is responsible for obtaining documentation from providers
- Goals of the study were to explore the feasibility and identify possible application to detect improper Medicare payments
  - Produce a predictive model capable of scoring all Medicare fee for service (FFS) claims
    » Implement in real-time claims processing system
    » Detect payment anomalies in a pre-pay editing environment
    » Analyze DME, Part A and Part B claim types
  - Provide CMS with enhanced capabilities to analyze and display claims error information
- Outcome of the study based on CERT claims (limited claim volume) determined that none of the predictive models reviewed demonstrated an accuracy rate at the claim line level above the methods that were in use at the Contractors

CMS Ventures into Predictive Modeling/Pre-payment Review

CMS received $100 million through the Small Business Jobs Act of 2010[7] to further its experiment in predictive modeling

- Beginning in FY 2011 phase-in the implementation of predictive analytics in Medicare FFS, Medicaid, and CHIP over four years
  - Contract with private companies to conduct predictive modeling and other analytics to identify and prevent improper payment of claims submitted under Parts A and B of Medicare
  - Identify 10states that have the highest risk of waste, fraud and abuse in the Medicare program; for one year, use predictive modeling and other analytics technologies to stop fraudulent claims in these states
    » Start using predictive analytics technologies on July 1, 2011
  - After the initial year, the Inspector General of the Department of HHS (HHS OIG) reports to Congress on actual savings to the Medicare FFS for the prior year, projected future savings from the use of these technologies, and the return on investments as a result of the predictive analytics technologies.
    » Expand the use of predictive analytics technologies on October 1, 2012, to apply to 10 more States as having the highest risk of waste, fraud, or abuse in the Medicare fee-for-service program

CMS Ventures into Predictive Modeling/Pre-payment Review

The Affordable Care Act provides $350 million over 10 years to bolster anti-fraud efforts, including predictive modeling programs[8]

- Provides funding for the Health Care Fraud and Abuse Control (HCFAC) Program account, the Medicare Integrity Program, and the Medicaid Integrity Program
    - The three-year average ROI (2008-2010) for all HCFAC activities is $6.8-to-$1
    - The ROI for Medicare Integrity Program activities is 14-to-1
- Strengthens cooperative efforts across the Federal government and with the private sector
- Increases data sharing between Federal entities to monitor and assess high risk program areas and better identify potential sources of fraud
    - CMS is expanding its Integrated Data Repository (IDR) which is currently populated with five years of historical Part A, Part B and Part D paid claims, to include near real time pre-payment stage claims data; this additional data will provide the opportunity to analyze previously undetected indicators of aberrant activity throughout the claims processing cycle.
    - Robust State data set will be harmonized with Medicare claims data in the IDR to detect potential fraud, waste and abuse across multiple payers

CMS Ventures into Predictive Modeling/Pre-payment Review

The Affordable Care Act provides $350 million over 10 years to bolster anti-fraud efforts, including predictive modeling programs[9]

- Implements an innovative risk scoring technology that applies effective predictive models to Medicare

- Redesigns the Medicare payment systems and institutes delivery system reforms that will realign Medicare payments in line with market prices

CMS Ventures into Predictive Modeling/Pre-payment Review

In August 2010 CMS solicited Predictive Modeling Solutions for FFS Medicare Claims

- Looking for capabilities that will allow them to
  - Manage near real-time
  - Integrate into the current Medicare FFS claims flow
  - Screen, score and select claims that have a high probability of payment error
  - Identify high-risk claims in both pre/post pay environment
  - Be able to deny after claim review

- CMS contracted with Northrop Grumman, a global security firm, and IBM to lead teams to develop a predictive modeling system (Northrop Grumman) and models (Northrop Grumman and IBM) to identify high-risk claims
  - Northrop Grumman is working with National Government Services (NGS) and Federal Network Systems, a Verizon company
  - IBM teams includes Health Integrity
  - Contracts represent a 4-year task order
  - The technology will deploy algorithms and analytical processes that look at CMS claims by beneficiary, provider, service origin and other patterns to identify and assign an alert and risk score and allow CMS to prioritize claims for additional review
  - There have been implementation concerns

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Pre-payment Predictive Modeling of Claims

Pre-payment Predictive Modeling of Claims

The process of predictive modeling involves gathering relevant data, performing exploratory data analysis, choosing a model, and testing the predictions of the model on other data

- Multiple anomaly factors used to identify suspect claims
  - Uses a weighted approach and a deviation from expected mean approach
  - Continually updated by payer experience

- Most core variable/equations unchanged
  - Unbundling different based on Medicare rules

- "Peer" Grouping is critical
  - Does not use declared specialty
  - Data-driven peer groups determined through advanced analytical techniques and novel use of data
  - Start by looking for approximately 300 peer groups
  - Work down to 100 to 200 groups to ensure each has sufficient size

Pre-payment Predictive Modeling of Claims

Determining Which Claims to Flag

- The predictive model provides a score for each claim, which can be used to focus attention on the claims which have the most suspicious patterns

  - A threshold is set to determine which claims are scored by the predictive model and ultimately get flagged for review.

  - The threshold is composed of the following parameters:

    - Predictive Model Score

    - Claim Charged Amount

  - Models can be set to pend all claims for medical records or to do manual review on certain claims before finalizing pay, pend, or (if reviewed) deny decision

  - An analysis of sample data, run using the Predictive Model, is performed to determine the initial threshold setting

    - The goal is to strike a balance between maximizing potential savings and minimizing false positives

Types of Factors Impacting Claims' Scores

| Provider Factors[10]	
• Historical rates of inappropriate claims	• Referral or prescribing patterns
• Historical rates of inappropriate claims for specific types of services	• Patterns of treatment of same patients
• Changes in behavior (spikes, etc.)	• Historical rates of stopped claims that were, in fact, valid
• Outlier for ordering certain tests or treatments	• Disconnect between professional and facility claims
Patient-Specific Factors[10]	
• Historical indication of overuse of services	• Unlikely or infrequent relationships between procedures from different claims for the same patient
• Likelihood that certain claims should have been grouped	
Claim Specific	
• Codes that can be used to bypass conventional claims edits	• Unlikely or infrequent relationships between diagnosis and procedures within a claim

[10] *Providers and patients will not know their "scores," which can be service type specific and changes constantly.*

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The Challenge of Improper Claim Detection

Flagged accounts are never denied outright and fraud alerts are always vetted by a human being due to the incidence of false positives

- A **false positive** is a legitimate, valid claim that is flagged as potential fraud
  - May delay payment to the health provider while it is being vetted
- The space below[11] represents the universe of claims
  - Manual clinical review is impossible for entire space
  - **Goal:** Stop as many reds (improper) for review as possible while keeping the number of blues (proper) identified to a minimum
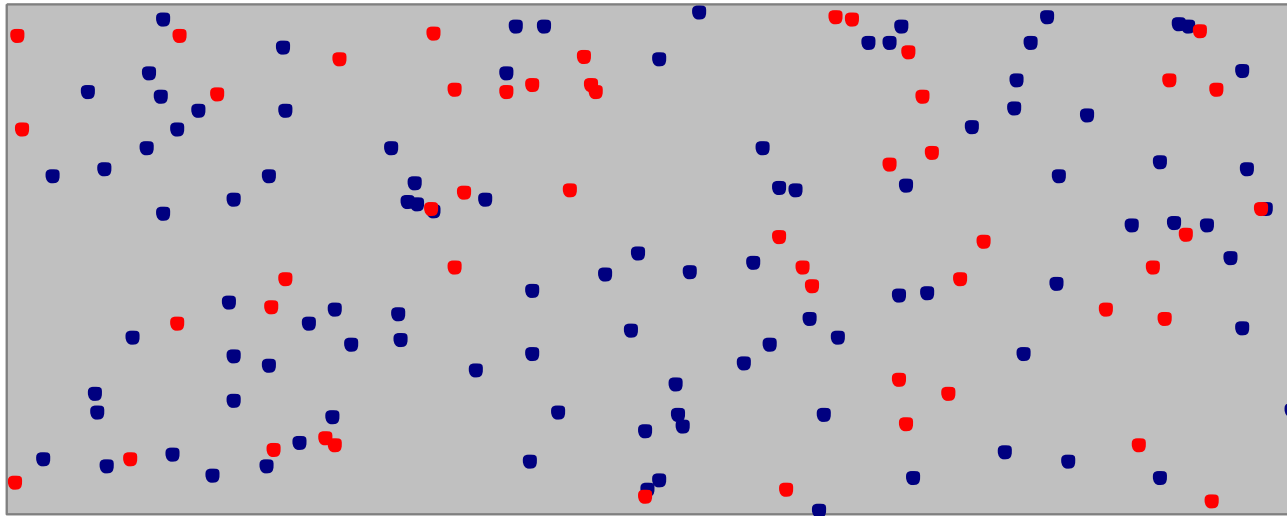
Predictive Modeling and Impact on Provider Audits

Predictive Modeling and Impact on Provider Audits

Implications for health care provider audits

- Providers can actually benefit from predictive/pre-payment processes
  - Claim accuracy can improve based on information gleaned from current false positive rates
  - More claims may be denied upfront which would reduce back-end retractions and repayments
- There is little industry experience with hospital claims today, but predictive models are coming
  - Focus has been on professional claims
- Professional claims are needed to evaluate hospital claims on a pre-payment basis, but often arrive after facility claims
- Like the Medicare RAC program, over time there will probably be a strong focus on hospitals
  - Hospital claims are more complex and unintentional errors can easily occur
  - Dollar value of each hospital claim is generally larger than for other claims
- **Per CMS FAQ:** The use of ICD-10-CM and ICD-10-PCS may help improve fraud detection capabilities
  - ICD-10's greater specificity and improved logic facilitates the development of sophisticated edit tools for detecting questionable patterns and suspected fraud
  - Comes into play Oct. 1, 2013 and beyond

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Preventing Adverse Findings

Steps you can take to prevent **future** adverse findings

- Conduct your own data analysis and select claims that are likely to come under RAC or other regulatory review

- Internally conduct or hire an external party to perform an audit to identify coding, documentation, medical necessity, and billing compliance issues

- Consider conducting audits subject to attorney client privilege

- Provide audit education to management, coding, billing, case management staff to help remediate root causes identified by the audit review

- Implement corrective actions and revise policies and procedures to prevent future overpayment recoveries

- Focus physician education on documentation to support medical necessity decisions

- For Medicaid, perform medical necessity reviews on pediatric as well as adult cases

- Provide complete, legible records in a timely manner

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Thank You.

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