Data Mining and Statistically Significant Sampling Methodologies

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Objectives

- Specify what data is needed for an audit
- Discuss how to select a statistically significant sample
- Identify easy methods for data analysis and trend identification
- Establish effective scoring methods
Data Needed

- What is being audited?
- What is the goal of the audit?
  - Compliance / Risk
  - Education
- What types of providers / specialties will be included?
- Paper or Electronic?
- Is the payment method a factor?
  - What payment method(s) are being reviewed?

Standard Data to Include

- Date of Service
- Patient Name and / or MRN
- Patient Date of Birth
- Provider Name (including Credentials)
- Provider Specialty
- CPT® / HCPCS Codes Reported (including Modifiers)
- ICD-9-CM Codes Reported
- Insurance Carrier (if applicable)

Additional Data Depending on Audit Objectives

- Both Rendering Provider & Billing Provider
- Related Providers (eg, Surgeon + Anesthesiologist for Anesthesia Services)
- Electronic Authentication Date and Time (for EHR notes)
- ICD-10-CM Codes?
What Role Does Payment Method Play?

- Physician Fee Schedule
- Outpatient Prospective Payment System
- Ambulatory Surgery Centers
- Medicare Risk Plans

Statistically Significant (SS)

- Involves the random selection of a number of items for inspection
- Required for some ‘privilege’ audits and for certain carriers
- Endorsed by the Office of the Inspector General
- CMS uses to extrapolate overpayments, etc

Advantages of SS Samples

- Objective and defensible
- Provides a means of advance estimation of sample size on an objective basis
- Provides an estimate of error
- May be combined and evaluated even if completed by different auditors
Basics of Determining a SS Sample Size

- Select the provider(s)
- Select the time period
- Define the universe, sampling unit, and sampling frame
- Design the sample plan and select the sample
- Review each of the sampling units
- Analyze the data

Other Ways of Determining SS Sample Size

- Statistician
- RAT-STATS Statistical Software

Data Analysis

- Often performed in Excel, Access, or via another electronic resource
- Should be performed at various stages
  - Pre-audit
    - Identify high-risk concerns
    - Identify provider coding patterns outside of the “norm”
  - Post-audit
    - Validate pre-audit concerns
    - Reveal other risk areas only discernable through record review
Trend Recognition

• Pre-Audit Example 1:

Trend Recognition (cont.)

• Pre-Audit Example 2:

Trend Recognition (cont.)

• Post-Audit Example 1:
Trend Recognition (cont.)

• Post-Audit Example 2:

Scoring Methodologies

• CRABEL
• STAR

• Some states / carriers have their own rules:
  http://www.dhcs.ca.gov/provgovpart/Documents/Medical%20Record%20Review%20Guidelines.pdf

What Factors Should Affect Scoring Methods?

• Audit type
• Purpose of the scoring method
  – How will the score be used?
  – What will the consequences of the score be?
  – Ensure scoring is applied consistently and fairly
• Payment method
• Audit scope