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The Analysis of Variation In Cost of Care – An Episode of Care Methodology

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Physician Cost-Efficiency Methodology - Overview

- Agenda
  - Preface – The Analysis of Variation in Cost Of Care
  - Ingenix/Symmetry Episode Treatment Group Methodology
  - WellPoint Cost-Efficiency Methodology – Goals
  - WellPoint Cost-Efficiency Methodology – Step By Step
  - Reliability and A Statistical Basis for Classifying Cost-Efficiency
  - Questions and Discussion

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The Analysis Of Cost Variation

- The method is really an approach to the measurement and categorization of variation in cost of care
  - We can analyze variation by condition (episode of care), by physician, by specialty, by place of treatment (inpatient/outpatient), and by cost component (management, surgery, facility, ancillary, and pharmacy)
- Originally developed for the analysis of physician “cost-efficiency”
  - But, not really “efficiency” in the Economic sense – we do not have outcome data
  - “Quality” measurement not part of this methodology (handled separately in network development)
  - Methodology yields an “efficiency score”, but it cannot be used effectively without understanding the underlying variation and uncertainty

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Episode Of Care Models

- We use the Ingenix/Symmetry Episode Treatment Groups (ETG) methodology
- ETG model is complicated, but not a “Black Box”
- Fully documented in http://www.ingenix.com/transparency/
- Model being developed and enhanced continuously
  - Updated clinical model
  - Risk-Adjusted ETGs
  - Improved reporting files (e.g., provider attribution)
- Not the only model in use in the Health Care Industry
  - Thompson: Medstat Episode Groups (MEG)
  - Cave Consulting: Cave Episode Groups

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ETG Methodology

- ETGs are an illness classification methodology
- ETGs create episodes by collecting all inpatient, outpatient, pharmacy and ancillary services for a patient into clinically homogeneous, mutually exclusive and exhaustive categories
- ETGs assign a unique classification (an Episode Treatment Group) and severity level to these episodes reflecting the primary clinical condition for the episode and the complications and comorbidities that impact treatment
- ETGs identify the start date and end date of episodes
  - Acute episodes may recur over time
  - Chronic episodes are assumed to last forever and are annualized for analysis
  - Individual patients may have multiple active episodes at the same time

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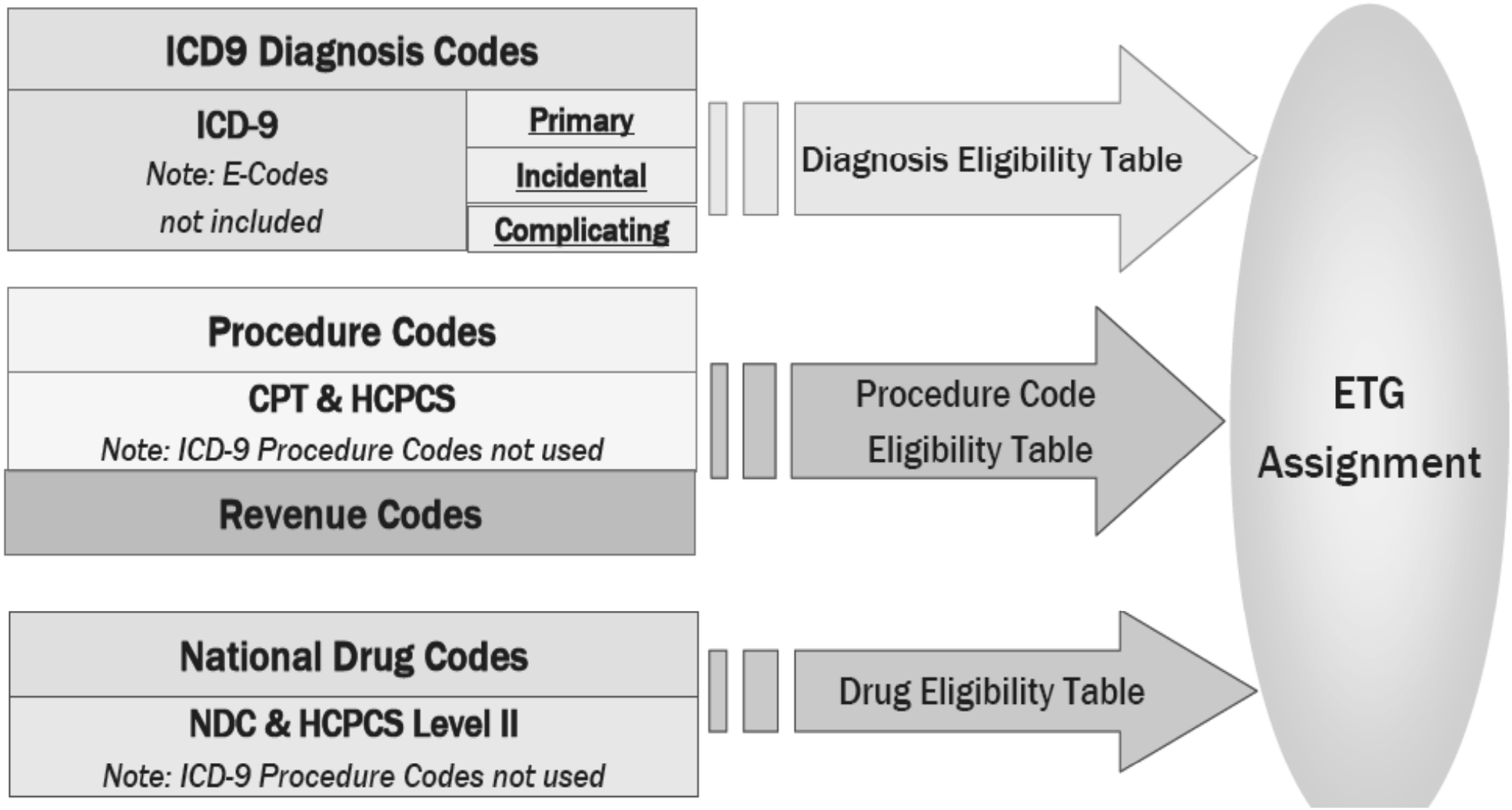
ETG Methodology



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Clean Period Methodology – When Does An Episode Start and End?

- Defined dynamically – from the claim data – based on service dates and member eligibility – not fixed
- Clean period requirements are specified for each ETG
  - Acute ETGs generally have clean periods of 90 days or less
  - Chronic EGGs generally have clean periods of 365 days (hence, these types of episodes are generally annualized for analysis)
- To determine the start date, when the grouper finds a defining Dx, it looks backward in time to make sure this Dx has not occurred within the defined clean period
- Once an episode starts, the claim records are tracked through time until the defining Dx disappears for the defined clean period; the last defining Dx marks the end of the episode

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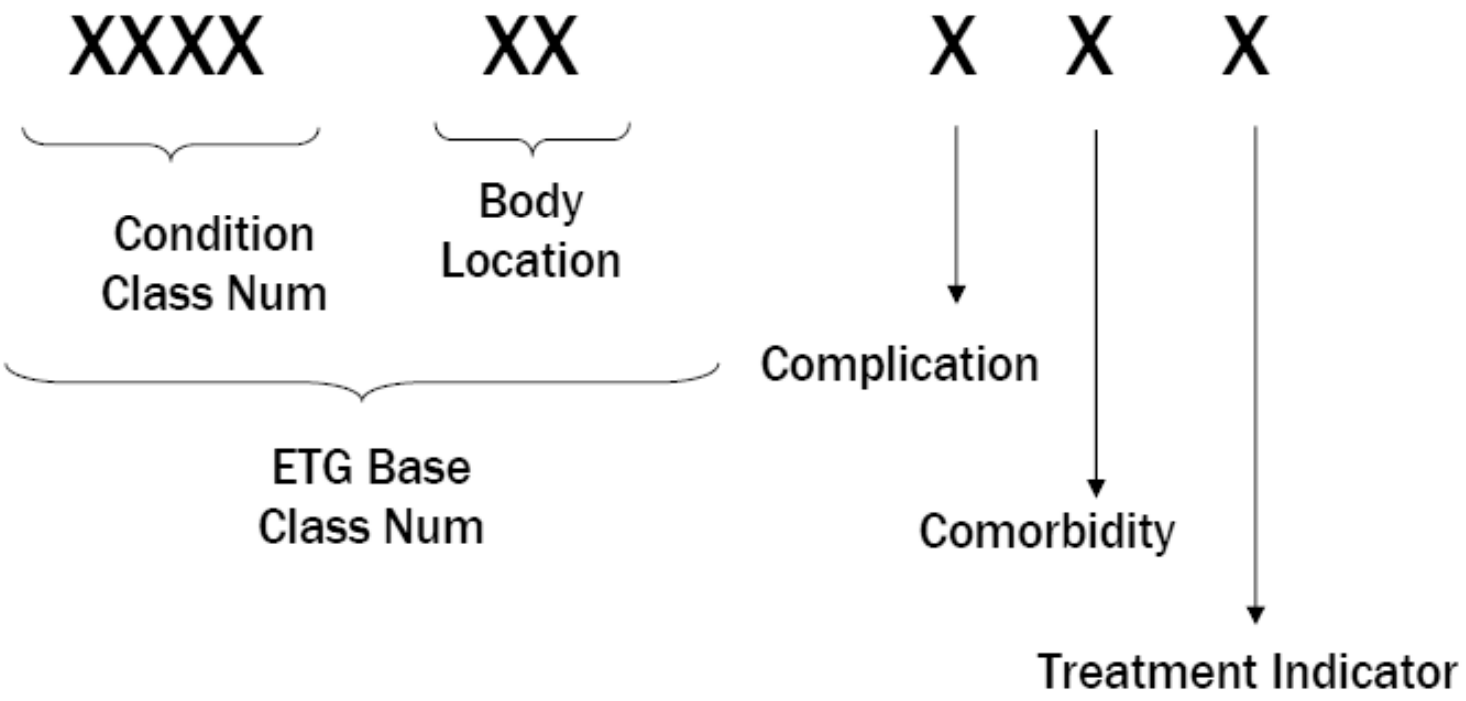
Complete and Incomplete Episodes

- Depends on both claim dates and patient eligibility
- Complete Episode
  - True start/finish dates known
  - Claim period and patient eligibility encompasses the clean period defined for the ETG
- Incomplete Episode - Unknown start and/or finish dates
  - Assume claim analysis and member eligibility period is January 1, 2009 through December 31, 2010
  - Acute Bronchitis has a defined clean period of 30 days
  - First Acute Bronchitis Dx observed on January 15, 2009 – unknown start
  - First Acute Bronchitis Dx observed on December 15, 2010 – unknown finish

ETG Number Format

ETG Number (XXXX XX X X X) Nine Digit Number



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ETG Number Example

ETG Base Class Number	ETG Base Class Description	ETG Number	Full Description
163000	Diabetes	163000000	Diabetes w/o complication, w/o comorbidity, w/o surgery
		163000001	Diabetes w/o complication, w/o comorbidity, w/ surgery
		163000010	Diabetes w/o complication, w/ comorbidity, w/o surgery
		163000011	Diabetes w/o complication, w/ comorbidity, w/ surgery
		163000100	Diabetes w/ complication, w/o comorbidity, w/o surgery
		163000101	Diabetes w/ complication, w/o comorbidity, w/ surgery
		163000110	Diabetes w/ complication, w/ comorbidity, w/o surgery
		163000111	Diabetes w/ complication, w/ comorbidity, w/ surgery

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ETG Severity

- Many (not all) ETGs are classified into severity levels
- Severity is specific to the ETG – *this is not a patient risk score and cannot be averaged across episodes for a patient*
- Severity level is directly related to episode costs
- Diabetes has four levels of severity ($ from Ingenix Norms)
  - Diabetes Severity Level 1 - $1,519
  - Diabetes Severity Level 2 - $2,274
  - Diabetes Severity Level 3 - $2,923
  - Diabetes Severity Level 4 - $4,382
- Risk adjusted ETGs are used in the cost-efficiency analyses

Types Of Episodes

- Episodic
  - Acute Conditions
  - Chronic Conditions
- Non-Episodic
  - Screening & Immunizations
  - Ongoing drug therapy without provider intervention
- Ungroupable
  - Invalid Diagnosis and Procedure Codes
  - “Orphan” records

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Episode Cost Components

- ETG Grouper decomposes total episode costs
  - (Professional) Management Costs
  - (Professional) Surgical Costs
  - Facility (Hospital/Facility Costs)
  - Inpatient Ancillary Services (Lab, Radiology, Pathology, etc.)
  - Outpatient Ancillary Services (Lab, Radiology, Pathology, etc.)
  - Pharmacy
- We use Discounted Covered Charges – Eligible charges after applying provider discounts, but before applying member co-payments and deductibles – also known as "Gross Charges"

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ETGs As A Foundation Methodology

- Advantages
  - Clinical validity and homogeneity – particularly when severity levels are used
  - Encompasses all types of utilization (inpatient, outpatient, professional, ancillary, Rx)
  - Related to total treatment costs for a specific condition
- Disadvantages
  - Complex methodology
  - Dependent on administrative claim data
  - Patient eligibility gaps can affect validity
  - Need high claim volume for increased validity

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Analysis Goals

1. Encompass all cost of care – Professional, Institutional Inpatient, Institutional Outpatient, and Drugs
2. Exclude non-specific, routine, and preventive care episodes from the analysis
3. Risk adjust ETGs where variation in patient risk influences episode cost (“My Patients are Sicker”)
4. Calculate expected episode costs based on state-wide, specialty-specific averages
5. Assign a “responsible” provider for each episode
6. Calculate the cost-efficiency ratio for each physician based on specialty-specific ETG case mix adjusted cost per episode
7. Account for potential variation in the cost-efficiency ratio via statistical analysis (confidence intervals) that take into account both volume and variability
8. Perform analysis at both the physician (License Number) and Group (TaxID) levels

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Encompass All Costs of Care

- All types of administrative claim data is used – professional, institutional inpatient, institutional outpatient, ancillary, and pharmacy
  - Note: Outpatient Rx data may be missing for some members, and episodes for these members are analyzed separately
- Inpatient hospital costs are included
  - Some have argued that these costs should be excluded because the physician can't directly control these costs
  - We have analyzed the data both including and excluding these costs, and the differences are minor
  - Physician hospital admission choice is an important part of cost-efficiency

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Inclusions and Exclusions

- Incomplete acute episodes are excluded from the analysis
- All chronic episodes are included – but episode costs are annualized based on the member eligibility when less than 365 days per year
- We exclude all non-specific ETGs (e.g., Isolated Signs, Symptoms & Non-Specific Diagnoses or conditions) which have highly variable average costs
- We exclude preventive care ETGs (e.g., Routine Inoculation) because do not want to penalize physicians for purely preventive services
- We exclude all episodes where we could not identify a responsible physician (missing or invalid license number or when a hospital was the only provider involved in the episode) or for Rx maintenance episodes that do not involve a physician
- We exclude all episodes flagged as cost outliers (based on Ingenix normative database)
- We exclude all episodes with zero cost

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Volume Considerations

- Having a sufficient volume of data for analysis is important
  - Efficiency comparisons are made episode by episode
  - Some have argued for a minimum of 30 episodes for every norm and every comparison
- Applying exclusions (for theoretical reasons – previous slide) reduces volume
- For a recent analysis, these exclusions reduced the episode volume by 47% (from 19 million episodes to 10 million episodes)
- Anthem Blue Cross has the largest PPO membership volume in California (over 6 million members) – and we still have low episode volume for some comparisons
- We have over 50,000 contracting network physicians – and 30% of these physicians account for about 80% of claim volume

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Assign Responsible Physician

- We assign responsibility for the episode to a single physician
  - Based on highest physician cost for surgical episodes
  - Based on highest physician-patient visit count (direct contact) for medical episodes
- Must account for at least 30% of the cost or visits in the episode
- A number of other alternatives are available in the current ETG model
  - Time: first visit in the episode, latest visit in the episode, etc.
  - Specific physician specialty
  - Multiple physicians can be assigned to the episode (one per specialty)
- Note that about 70% of all episodes involve only a single provider – so this assignment is unambiguous in those cases

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Peer Cost Comparisons

- Average episode cost (ETG Base + Severity Level) are calculated for state-wide data – separately by medical specialty
- Analysis is performed separately for patients with and without Rx benefits
- Physicians have insisted on “peer” comparisons – to other physicians with the same medical specialty
- Using same-specialty peer comparisons also (partially) adjusts for patient severity
  - Diabetic patients being treated by Endocrinologists are likely more seriously ill than those treatment by Family Practitioners or General Practitioners
  - Average normative costs for many ETGs vary significantly by specialty – even after adjusting for ETG severity category
- However – if there is a “best practice” standard of care, and patient severity is accounted for, why would episode costs vary by specialty?

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Physician Specialty

- It is important that we correctly classify medical specialty
  - Our provider database can hold up to four specialties for each physician, and often the first-listed specialty does not represent the physician's actual practice
    - Sub-specialties like Rheumatology or Pulmonology or Cardiology often list Internal Medicine as their primary specialty
  - Misclassifications of provider specialty can bias cost-efficiency comparisons
- We choose the first listed Board certified specialty if available
- We are investigating methods that can be used to impute specialty based on practice patterns (from the episode data)
- *Or, we could ask physicians to assign themselves – "What specialty do you want to be compared to?*

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Reliability Issues

- We calculate an Observed (Physician) to Expected (Specialty Norm) Ratio – used to evaluate cost-efficiency
  - Based on a normative case-mix matching that of the specific physician
  - Ratio greater than 1.0 is “cost-inefficient”
  - Ratio less than 1.0 is “cost-efficient”
- Point estimate (ratio) may be unreliable
  - Small sample sizes
  - Natural variability in physician performance
  - Unmeasured patient characteristics (incomplete risk adjustment)
- We use statistical measures to control for this variability (e.g., confidence intervals)

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Confidence Intervals

- We calculate 95% confidence intervals around Observed to Expected ratios
- Confidence intervals take into consideration both volume (episode count) and variability (variation in ETG costs)
- Better than a static volume criterion (e.g., minimum of 30 episodes)
- Statistically, we have a 95% confidence that the “true” ratio falls between the lower and upper CI points
- If the Upper CI is less than 1.0, we say the physician is “cost-efficient”
- If the Lower CI is greater than 1.0, we say the physician is “cost-inefficient”
- Otherwise, we say we “Don’t Know” if the physician is efficient or inefficient
  - A substantial proportion of physicians fall into the “Don’t Know” category
- *The Efficiency classification cannot be interpreted and used without understanding of the underlying variation in costs*

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Summary

- Method is complex
- Data quality (and completeness) is important!
- High variability by disease (ETG), Patient and Cost Component
- Quality measurement (outcome data) is needed for a complete picture – true economic efficiency
- Interpret with caution!

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Questions and Discussion

- Questions

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