Defining the Denominator in Maine's Oral Health Return-on-Investment Project: HEDIS or ETGs?

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Insurance claims are commonly mined to support care management decisions. Maine collects claims from all payers, and several groups are exploring how this data can support population health decisions. The Maine Oral Health return-on-investment (MeOHROI) project seeks to advance adult access to oral health services as a means of reducing the overall cost of health care, replicating work on oral-systemic connections for persons with diabetes using Maine private dental and medical claims. We serendipitously extracted two different sets of person-year records for privately insured persons with diabetes between 2005-2007, using two commonly used methodologies: the Episode-of-Treatment Group (ETG) approach, and a modified HEDIS approach to define persons with diabetes. Looking at the combined 106,544 person-year records, we anticipated that one would subsume the other. Instead, almost a third of the person-year records did not overlap at all, with the difference being split about 2:1 (10,096 HEDIS-only; 20,541 ETG-only; 43,668 both; 32,239 neither). To further explore the implications of the two approaches, we conducted planned analyses of periodontal care, costs, diabetes and complications of diabetes, four ways: ETG-definition; HEDIS-definition; both HEDIS and ETG; and either HEDIS or ETG. Some findings held across groups, but some differed not only in size but in the direction of the association. Our findings underscore the difficulty in relying on claims data to track chronic conditions for population health studies. A well-managed chronic condition may not appear in insurance records, particularly if it can be managed without drugs. Conversely, routine testing to rule out a condition can lead to over-counting. Our result underscores the need to get inside the black box of protocols used to extract health data from insurance claims when seeking to extrapolate to population health

The Maine Oral Health Return-on-Investment Project

- Replicates studies of oral-systemic connection using Maine population (mostly rural, low income, older, very few minorities)
- Created a Maine-specific database linking dental and medical claims
- Engaged stakeholders to define key elements and assumptions for ROI by consensus
- Estimated impacts of oral health services in Maine for people with diabetes.
- Funded by MeHAF

OnPoint Health Data

(was the Maine Health Information Center-MHIC)

- Onpoint Health Data (OHD) develops/works with healthcare claims and utilization databases
- All-payer claims database since 1994
- Collects, warehouses, and maintains complete data systems.
- Builds customized databases
- Performs edits and logic checking on received data, removes duplicates and reviews records for quality and accuracy.
- ICD-9, CPT and other codes

OnPoint Analytic Tools

Commercial and public tools to manage data and use for quality and program improvement

- Analytic SW: Arcview ESRI; Oracle SQL; SAS
- Grouping SW: 3M, CMS, Ingenix, Little Blue and Red books
- AHRQ reference tools-clinical classification and quality
- NCQA tools

Who has Diabetes? Defining the Denominator

- Modified HEDIS:
  - Pharmacy data: insulin or oral hypoglycemic/antihyperglycemics current or previous year, and/or
  - 2 face-to-face encounters , different dates, outpatient or nonacute inpatient setting; or
  - 1 face-to-face encounter acute inpatient setting or ED setting
    - from the measurement year [or one year earlier]
  - Dx code of diabetes—ICD9 codes 250.xx, 357.2x, 362.0x, 366.41, 648.0x (1)

Who has Diabetes? Defining the Denominator

- Ingenix Episode Treatment Groups (ETG) ™ 29, 30 (Type II Diabetes w/wo comorbidity)
  - Black box
  - Illness classification and episode building methodology defines clinically homogenous episodes of care, regardless of treatment location or duration.
  - ambulatory, inpatient, and pharmacy claims to build a treatment episode from onset of symptoms until treatment is complete.
  - ETG illness classification and episode building system nearly 600 clinically homogeneous and statistically stable groups (r^2=.56).

Some Other Approaches

- Other groupers: proprietary methodologies
  - Thompson-Reuters MEG
  - 3M APR-DRG
  - Less restrictive versions of HEDIS
    - VA study-Jones et al*
- Elements of coding and grouping
  - Define /classify condition
- Stage severity and risk
  - Clinical risk adjusters (was this treatment necessary)
  - Resource-based adjusters (what should this cost)
- Chronic disease registry

JONES D, HENDRICKS A, COMSTOCK C, ROSEN A, CHANG B, ROTHENDLER J, HANKIN C, PRASHKER M. Eye examinations for VA patients with diabetes: standardizing performance measures. International Journal for Quality in Health Care 2000;12(2):97.

Serendipity

- Two sets of person-year records 2005-2007 privately insured with diabetes
- 106,544 person-year records using either definition
  - Episode-of-Treatment Group (ETG) only 20,541
  - Modified HEDIS approach only 10,096
  - 43,668 both; 32,239 neither (years without flag for persons flagged in other years).

HEDIS vs ETG coding

			HEDIS medical definition		
			N	Y	Total
ETG definition Type II diabetes (29,30)	N	Count	32,239	10,096	42,335
		% of Total	30%	9%	40%
	Y	Count	20,541	43,668	64,209
		% of Total	19%	41%	60%
Total		Count	52,780	53,764	106,544
		% of Total	50%	50%	100%

WHY?

- Measure different things
  - Type II only (ETG), or Type I as well (HEDIS)
  - Alternative reasons for procedures
  - Rule-out visits and pre-diabetes
- Issues with the data
  - Poor Rx coding/linkage
  - No lab or clinical measures
  - No Medicaid
- Purpose of grouping
  - Payment or clinical
  - Mutually exclusive categories?
- Characteristics of chronic disease
  - If controlled, not treated every year

Impact of different extract on findings

- GEE estimates of expenditures, controlling for person-level and care factors, comparing effect of periodontal care on expenditure (marginal means).
  - Dependent variable: Spending by site of care
  - Dependent variable: Spending by complication
- Re-ran series 4 ways:
  - HEDIS definition
  - ETG definition
  - Both
  - Either

Statistically Significant Periodontal Treatment Parameter Estimates for 11 Dependent variables by Coding Approach and Direction of Effect

Periodontal treatment categories: 1=1 or 2 visits; 2=3 or more visits

Red indicates significant but not in expected direction

	dependent variable										
Coding Approach	Total	ETG definition diabetes	Emergency Department	Inpatient	Outpatient	Outpatient primary care	Cardiovascular disease	Coronary heart disease	Congestive heart failure	STROKE	Chronic kidney disease
OVERALL significance											
HEDIS			1,2	1,2	2,-1		1,2		1,-2		1,-2
ETG&HEDIS		-1,-2	1,2	1,2	2,-1		1,2	1,2			
ETGS or HEDIS	-1,-2	1,-2	1,2	1,2	-1,-2	-1,-2	1,2	1,2	1,-2	1,-2	1,-2
ETGs		-1, -2	1,2	1,2	-1, -2	-1	1,2	1,2			1,-2

Number of person-year records

By Diabetes Coding Approach and Dependent Variable

	dependent variable										
Coding Approach	Total	ETG definition diabetes	Emergency Department	Inpatient	Outpatient	Outpatient primary care	Cardiovascular disease	Coronary heart disease	Congestive heart failure	STROKE	Chronic kidney disease
HEDIS	10443	10442	10443	10443	10443	10443	7952	1869	256	215	1001
ETGs	10197	10196	10197	10197	10197	10197	7550	1683	211	200	740
ETG&HEDIS	9265	9264	9265	9265	9265	9265	7161	1609	201	193	731
ETGS or HEDIS	14552	14551	14552	14552	14552	14552	9917	2304	292	257	1106
% with one definition but not both	36%	36%	36%	36%	36%	36%	28%	30%	31%	25%	34%

Lessons Learned

- NOT all alike
  - Different extractors for different reasons: may be gamed
    - Quality measurement
    - Resource allocation/incentives
  - Developed and used for different data sets, payers or care settings
- Need to pry open the black box
  - Review validity studies
  - Compare alternative approaches and explore variation and reasons
  - Identify concerns from other clients
- Clinical data and disease registries may be best way to define denominators

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