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2007 Joint Meeting

Valuing Disease Management Programs

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Agenda

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- Overview of valuing Disease Management (DM) programs
- Review newly released DMAA guidelines
- Walk through example based on implementation of guidelines by Solucia
- Validation and interpretation of results
  - Reconciliation and calculation verification
  - Bias
  - Chance
  - Reasonability

DM Program Evaluation

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- **Claims-based savings**
- Quality/ adherence to evidence based standards
- Functional health status
- Satisfaction
- Operational metrics
  - Call volume and engagement rates
  - Targeting effectiveness
- Absenteeism and Presenteeism
- Employee/member/account retention

Early History

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- Epidemiologists and others always favored randomized controls but this was difficult to do in health plan populations.
- DM companies used a method that compared managed vs. unmanaged member experience. Eventually the shortcomings were recognized
  - Regression to the mean (RTM)
  - Selection bias
- This led to the development of the "population" methods prevalent today. Overcomes selection bias and RTM (somewhat). Introduces new issues: comparability of population between periods, and the need for a trend adjuster.

DMAA Guidelines

- Population-based or cross-sectional design
- Intent-to-treat using claims-based identification algorithms
- Pre-post study design with equivalence between measurement and reference groups
- Trended from non-chronic population
- Risk-adjustment suggested

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Conditions Measured

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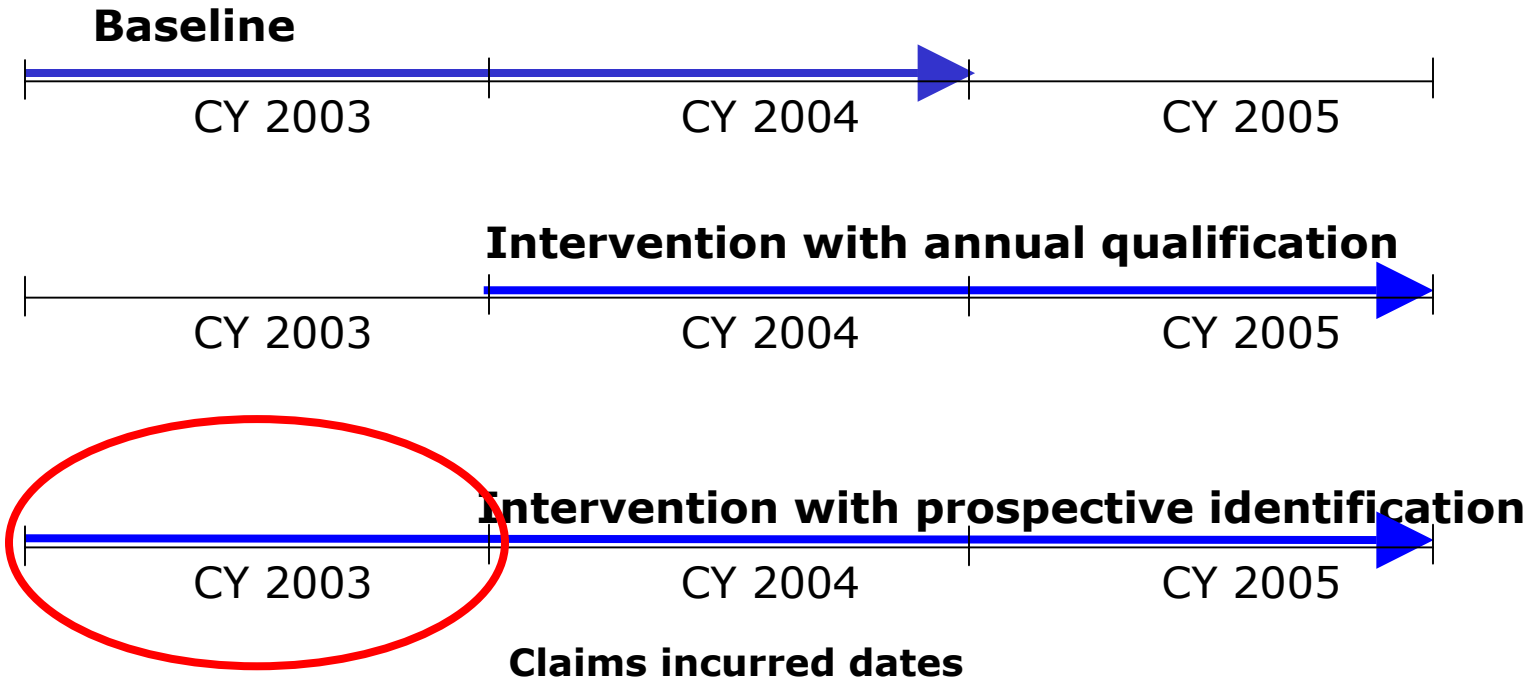
- Guidelines developed with the following conditions in mind:
  - Asthma
  - Chronic obstructive pulmonary disease
  - Congestive heart failure
  - Coronary artery disease
  - Diabetes
- All chronic conditions identified exclusively from medical and pharmacy claims

Timing of Condition Identification

- DMAA just updated guidelines to require annual qualification. Prior guidelines permitted prospective identification.



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Exclusions

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- Members not meeting eligibility requirement. DMAA Guidelines require six months for commercial population
- Members identified with conditions outside the scope of the program who are likely to distort trends should be excluded:
  - ESRD, HIV/AIDS, Transplants, Cancer
- Claims likely to create "noise" may be excluded:
  - Trauma, Maternity
- Outliers or high cost claimants can significantly distort findings. Claims should be capped or truncated.

Claims Service Categories

- Separate service categories help control for the differences in utilization patterns of chronic and non-chronic populations
- Claims categorized into four service categories:
  - Inpatient facility
  - Outpatient facility
  - Professional
  - Pharmacy

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Key Assumptions

- The non-chronic trend is a reasonable proxy for the chronic trend absent a program.
- Other exogenous factors such as benefit designs, provider contracts, or clinical practice patterns are not accounting for the differences in trends

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Example: Calculation Specifications

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- Large commercial sample from Solucia warehouse
- Time periods
  - Baseline: Jan 04 through Dec 04
  - Intervention: Jan 05 through Dec 05
- Claims look-back to Jan 03
- Chronic members identified using moderately strict definition
- Six months continuous eligibility for measurement
- Members with ESRD, HIV/AIDS, Organ Transplants excluded
- Stop-loss applied at $100,000 for each period
- Runout limited to 6 months for each period

Example: Population Summary

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Distribution of Member Months

	Baseline	Intervention	Change
Chronic	9.5%	10.0%	5.1%
Non-Chronic	79.7%	79.6%	-0.2%
Excluded	10.7%	10.4%	-3.3%
TOTAL	100%	100%	

Example: Population Trends*

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	Baseline	Intervention	Trend
IP PMPM	$45.94	$50.30	9.5%
OP PMPM	$32.29	$37.95	17.6%
PROF PMPM	$60.57	$65.24	7.7%
RX PMPM	$33.22	$34.75	4.6%
TOTAL	$172.02	$188.25	9.4%

* Includes chronic, non-chronic and excluded members

Example: Non-Chronic Trends

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	Period 1	Period 2	Trend
IP PMPM	$24.35	$26.87	10.3%
OP PMPM	$25.45	$30.13	18.4%
PROF PMPM	$45.97	$49.51	7.7%
RX PMPM	$22.97	$23.69	3.2%
TOTAL	$118.74	$130.20	9.7%

Example: Chronic Projected Baseline

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	Chronic Baseline	Non-chronic Trend	Projected Baseline
IP PMPM	$208.46	10.3%	$229.93
OP PMPM	$88.84	18.4%	$105.19
PROF PMPM	$180.69	7.7%	$194.60
RX PMPM	$126.02	3.2%	$130.05
TOTAL	$604.00		$659.77

Example: Savings Per Chronic MM

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	Projected Baseline	Inter-vention	Savings (Loss)
IP PMPM	$229.93	$216.49	$13.44
OP PMPM	$105.19	$99.17	$6.02
PROF PMPM	$194.60	$188.58	$6.02
RX PMPM	$130.05	$129.95	$0.10
TOTAL	$659.77	$634.18	$25.59

Example: Savings Summary

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Chronic member months	100.3
Savings PDMPM	$25.59
Total Savings	$2,566.68
Overall member months	1,000
Savings PMPM	$2.57

Prospective vs Annual Qualification

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- Prospective identification creates a selection bias and overstates savings

	All Prospective	Did Requalify	Did Not Requalify
Member Months	116	100	16
IP PMPM	$192.89	$216.49	$45.39
OP PMPM	$92.56	$99.17	$51.25
PROF PMPM	$174.51	$188.58	$86.57
RX PMPM	$119.26	$129.95	$52.45
TOTAL	$579.22	$634.18	$235.72

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Verify the Savings Calculation

- Reconcile data underlying calculation to external data source
  - Population counts
  - Total paid claims
  - PMPM trends
- Check the actual calculation
  - Formula and cell reference errors are common

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Identifying Biases

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- Is the non-chronic trend reasonably similar to the population trend?
- Has the benefit structure changed?
- Is the population stable? Have large groups been added or terminated?
- Is the chronic population consistent over time? Have there been changes in prevalence or condition mix?
- Are data consistently available over time (carve-outs, capitation, completion, data warehouse systems)?
- Is risk-adjustment required? If so, is the risk-adjustment methodology appropriate?

Chance and Small Populations

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- Research is demonstrating the population size necessary for measurement may be larger than expected. This table shows variance in chronic trend based on 100 extracts of varying sample sizes:

Sample Size	100	500	1,000	5,000	10,000
Mean	11.4%	8.2%	6.9%	6.7%	6.8%
Standard Deviation	38.2%	16.1%	11.9%	5.1%	3.4%
10th Percentile	-33.1%	-11.0%	-7.0%	0.3%	2.7%
Median	5.5%	6.2%	6.0%	6.3%	6.5%
90th Percentile	61.8%	29.8%	23.6%	13.6%	10.8%

- Measuring changes in utilization may be more appropriate for smaller population sizes

Assess Reasonability

- What proportion of savings are related to hospitalizations?
- Which conditions have the highest savings?
- How do savings correspond to activity levels?
- Are savings associated with improvements in quality?

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Back of the Envelope Calculation

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- Example
  - Population: 100K commercial members
  - Fees: $2 PMPM, $2.4M Total annual
  - Chronics: 8% prevalence, 250 admits per 1000
- Goal: ROI of 2:1
  - Assume 70% of savings attributable to avoided hospitalizations
  - Must avert 336 admissions (assuming $10K/per admit) or 17% of all chronic admissions
- Questions
  - How many members must be engaged?
  - What proportion of admissions must be avoided for engaged members?

Questions?

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