

# Adherence Measurement

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## Adherence Measurement Options

- Drug claims data
  - Efficient and generally accurate
- Interviews
  - Generally not accurate but efficient
- Surveys
  - Accurate but labor-intensive
- Pill Counts
  - Accurate but labor-intensive and burdensome
- Drug Assays
  - Not practical for most drugs

## Adherence measures from Rx claims

- Adherence can be estimated accurately from Rx claims although it is not a perfect representation of how a person actually takes the medication
- Claims-based adherence estimates are generally as accurate as survey-based estimates, and are more accurate than clinician guess-timates
- Most common “measures” are MPR and PDC

## Adherence measures from Rx claims

- Medication Possession Ratio (MPR)  
$$\frac{\text{Sum of days supply for all fills in period}}{\text{Number of days in period}}$$
- Numerous derivations on MPR have been used in prior studies (e.g., denominator sometimes defined as interval between first and last fills, and sometimes as interval between first fill and fixed date)
- MPR is prone to inflation due to overlapping fills from switches or dual-drug therapy
- Very simple to calculate

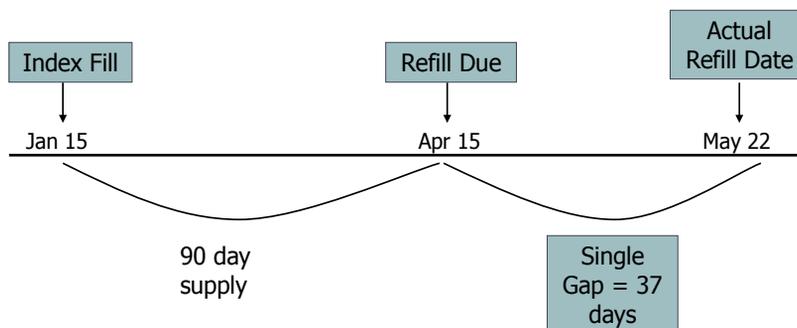
## Adherence measures from Rx claims

- Proportion of Days Covered (PDC)

$$\frac{\text{Number of days in period "covered" by medication}}{\text{Number of days in period}}$$

- Examines each day in period to determine if the patient has the drug on hand
- Provides more conservative estimate of adherence compared to MPR when patients are switching drugs or using dual-therapy in a class
- More complex to calculate than MPR

## Single Gap In Therapy



## Adherence measures from Rx claims

- Which measure is best ?
  - Growing evidence supports the PDC as the preferred measure in situations where the patients incur switches and/or dual therapy. PDC=MPR when measuring just 1 drug with no switches.
  - PDC can be used for roll-up measures across drug classes
- Single-gap measures
  - These measures may be a useful supplement to PDC to identify patients who were without medication for a significant period of time.

## PQA Adherence Measures

- Proportion of Days Covered (PDC)
  - Beta-blocker medications
  - Calcium-channel blockers
  - Antiretroviral HIV medications
  - ACEI/ARB medications\*
  - Cholesterol medications (statins)\*
  - Diabetes Oral Medications\*
    - Sulfonylureas, Biguanides, TZDs
    - DPP-IV may be added soon

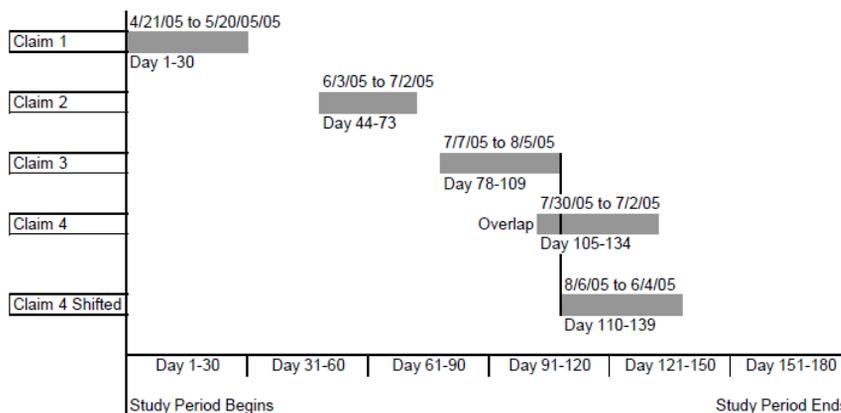
\*NQF-endorsed  
& Part D display

## PDC Calculations

- Determine the patient's measurement period, defined as the index prescription date to the end of the calendar year, disenrollment, or death.
- Within the measurement period, count the days the patient was covered by at least one drug in the class based on the prescription fill date and days of supply. If prescriptions for the same drug (GCN) overlap, then adjust the prescription start date to be the day after the previous fill has ended.
- Divide the number of covered days found in Step 2 by the number of days found in Step 1. Multiply this number by 100 to obtain the PDC (as a percentage) for each patient.
- Count the number of patients who had a PDC greater than 80% and then divide by the total number of eligible patients.
- *An example of SAS code for steps 1-3 is available from PQA upon request, and is also available at the URL:*  
<http://www2.sas.com/proceedings/forum2007/043-2007.pdf>

## PQA recommends adjusting for overlapping fills

Figure 2: Medication Coverage with Overlapping Days Supply



## PDC adoption by CMS

- CMS uses the PDC measures within the Part D display measures, and the 2011 results are available at: [http://www.cms.gov/PrescriptionDrugCovGenIn/06\\_PerformanceData.asp#TopOfPage](http://www.cms.gov/PrescriptionDrugCovGenIn/06_PerformanceData.asp#TopOfPage)
- The PDC measures will be moved into the plan ratings (aka- star ratings) for 2012 ratings (available Fall 2011)
- The CMS Office of Clinical Standards & Quality has also begun to adopt the PDC measure for use with QIOs. Testing of PDC measures by the CMS vendor (FMQAI) has concluded and the expert panel recommended adoption of the PDC method for adherence measures.

## PDC categories in Medicare Part D

- Angiotensin-converting enzyme inhibitors & Angiotensin II receptor blockers (ACEI/ARB)
- Cholesterol (HMG-CoA inhibitors [statins])
- Diabetes oral medications
  - Sulfonylureas
  - Biguanides
  - Thiazolidinediones
  - Others may be added in future

## PDC Composite for Part D Plans in 2011 Display Measures

### All Beneficiaries

Contract Type	Members for Target Drug Classes		
	Member-Years of Enrolled Beneficiaries	Member-Years of Adherent Beneficiaries	Overall Adherence Rate
All Contracts	15,066,387	9,547,057	63.4%
MAPDs	5,508,727	3,440,818	62.5%
Hxxxx	167,922	96,901	57.7%

### Key Issues with Adherence Measures

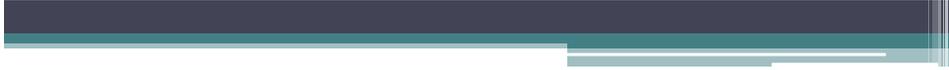
- Should we adjust for hospitalization days?
- Should we split the sample into “new users” vs “continuous users” ?

## Should we adjust for inpatient hospitalization days?

- Drug claims do not include hospital-supplied medication during an inpatient stay.
- One could adjust the a patient's PDC to account for the number of hospital days, or remove the patient from the analyses
- Recent studies indicate that the PDC for a population will be affected minimally by adjustment for hospitalization:
  - Adjustment for number of hospital days may raise the average PDC by about one percentage point (e.g., 72% vs 73%)
  - Removal of patients with a hospitalization raises the PDC by about three percent; however, you may be excluding the patients that are most relevant to adherence monitoring
- PQA does NOT recommend adjustment for hospitalization

## Should we split the sample into new or continuous users?

- New users tend to have a lower PDC than do continuous users since most discontinuation occurs early in therapy.
- Identification of new users requires claims data from the pre-measurement period (usually > 1 yr of data)
- Recent studies indicate that new users represent about 10% of all users.
- Splitting sample leads to a decrease in sample size, and minimally affects the PDC for continuous users
- The new users may have a PDC that is about 10% less than the continuous users.
- PQA does NOT recommend splitting the sample



## Key questions for future research

- How are adherence measures affected by \$4 cash payments for generic medications ?
- For patients using multiple drugs across multiple classes, how best do we measure adherence across the entire medication regimen ?
- When adherence measures are used to evaluate provider performance, is there a need for case-mix adjustment or risk adjustment?