



Advising the Congress on Medicare issues

Effects of adherence to Part D-covered drugs on Parts A and B spending

Shinobu Suzuki and Joan Sokolovsky

March 7, 2013

Motivation for the study

- Understand the relationship between medication adherence and health care spending for the Medicare population.
- Understand how the Part D benefit affects Parts A and B spending.
- Inform our thinking on the LIS cost-sharing policy.
- Understand the relationship between medication adherence and inappropriate use of medications.

Research questions

- What is the relationship between medication adherence and medical service use for the Medicare population?
- Does the relationship between medication adherence and medical service use vary by condition and/or medication regimen?

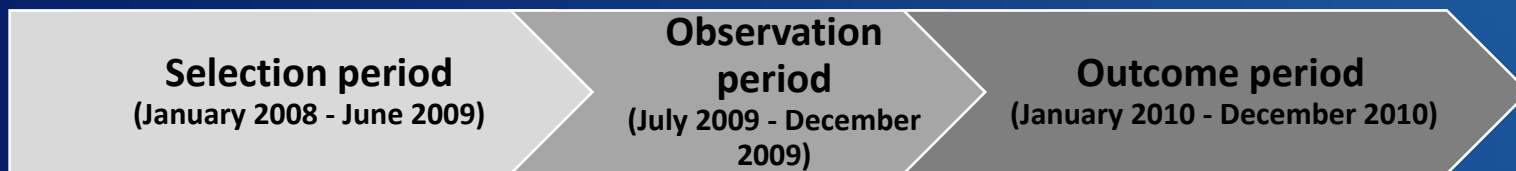
Study cohorts identified by condition and drug regimen

- CHF / COPD: Better adherence expected to improve health outcomes and reduce spending
 - Severe & non-severe CHF (6 condition/drug regimen cohorts)
 - ACE inhibitors (ACEi)/ARBs only
 - Beta-blockers only
 - Combination (ACEi/ARBs & beta-blockers)
 - Severe COPD (3 condition/drug regimen cohorts)
 - Long-acting beta-adrenergics (LABAs)
 - Long-acting anticholinergics (LAACs)
 - Combination (LABAs & LAACs)
- Depression: Not clear how better adherence would affect health outcomes and spending
 - antidepressants (1 condition/drug regimen cohort)

Framework for study periods

- Selection period: study cohorts identified based on diagnostic codes on claims and use of designated drug therapies
- Observation period: identify the level of adherence to study medication(s)
- Outcome period: measure outcome variables (Medicare spending)

Study periods: 2008 - 2010



Measuring medication adherence

- Proportion of days covered (PDC) metric
 - Defined as the # of days covered by a prescription for a given drug divided by total # of days in a measurement period
 - Ranges between 0 and 1
- PDC categories as a proxy for the level of adherence:
 - $PDC \leq 0.3$ (least adherent)
 - 0.3 – 0.5
 - 0.5 – 0.8
 - $PDC > 0.8$ (most adherent)
- PDC metric is an imperfect measure of medication adherence
 - Only observe Rx fills, not adherence, in Part D claims

Analytic approach

- Regression analysis used to estimate the effect of improved adherence on medical spending
 - Adjust for demographic characteristics, health status (RxHCC), and other health histories
 - Separate analysis by LIS status for each condition/drug regimen cohort
 - Outcome variables:
 - Medicare Parts A and B spending
 - Medicare spending by service category
- Effect of improved adherence is the difference between:
 - Predicted spending at the highest level of adherence (PDC > 0.8), and
 - Predicted spending at a lower level of adherence (e.g., PDC ≤ 0.3)
- Net effect = effect on medical spending + increase in drug costs

Preliminary findings

- Medication adherence across cohorts and over time
- Effects of improved adherence on Medicare spending
- Relationship between medication adherence and Medicare spending

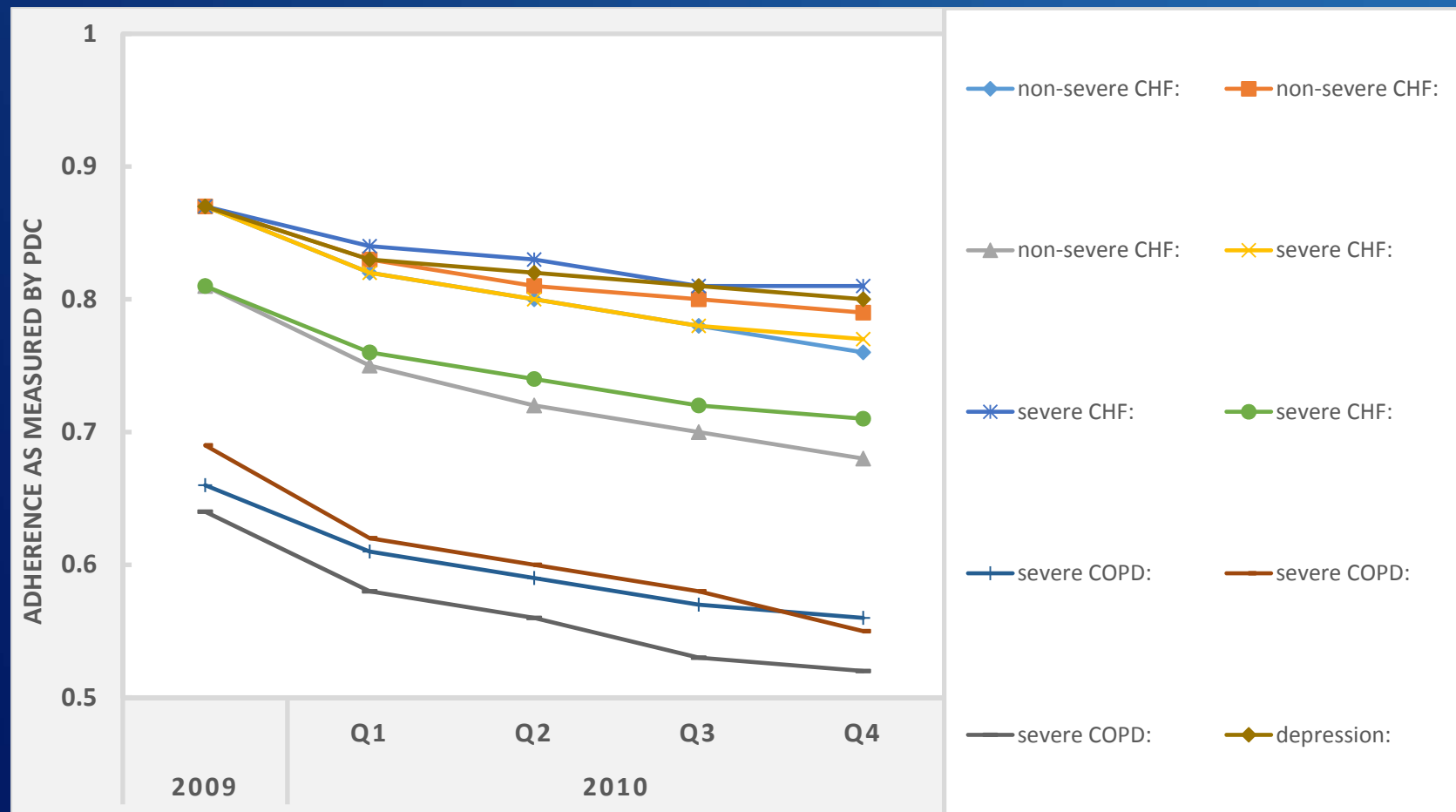
Adherence varies by condition

*** Data are preliminary and subject to change ***

	Non-severe CHF	Severe CHF	Severe COPD	Depression
# of beneficiaries	823,758	176,042	158,870	1,295,733
% receiving LIS	54%	41%	62%	66%
Distribution by PDC category				
≤ 0.3	5%	5%	16%	4%
> 0.3 and ≤ 0.5	6	6	15	4
> 0.5 and ≤ 0.8	15	16	25	13
> 0.8	74	73	44	78
Mean PDC by LIS status				
Non-LIS	0.84	0.84	0.61	0.85
LIS	0.85	0.84	0.69	0.88

Adherence to all study medications decline over time

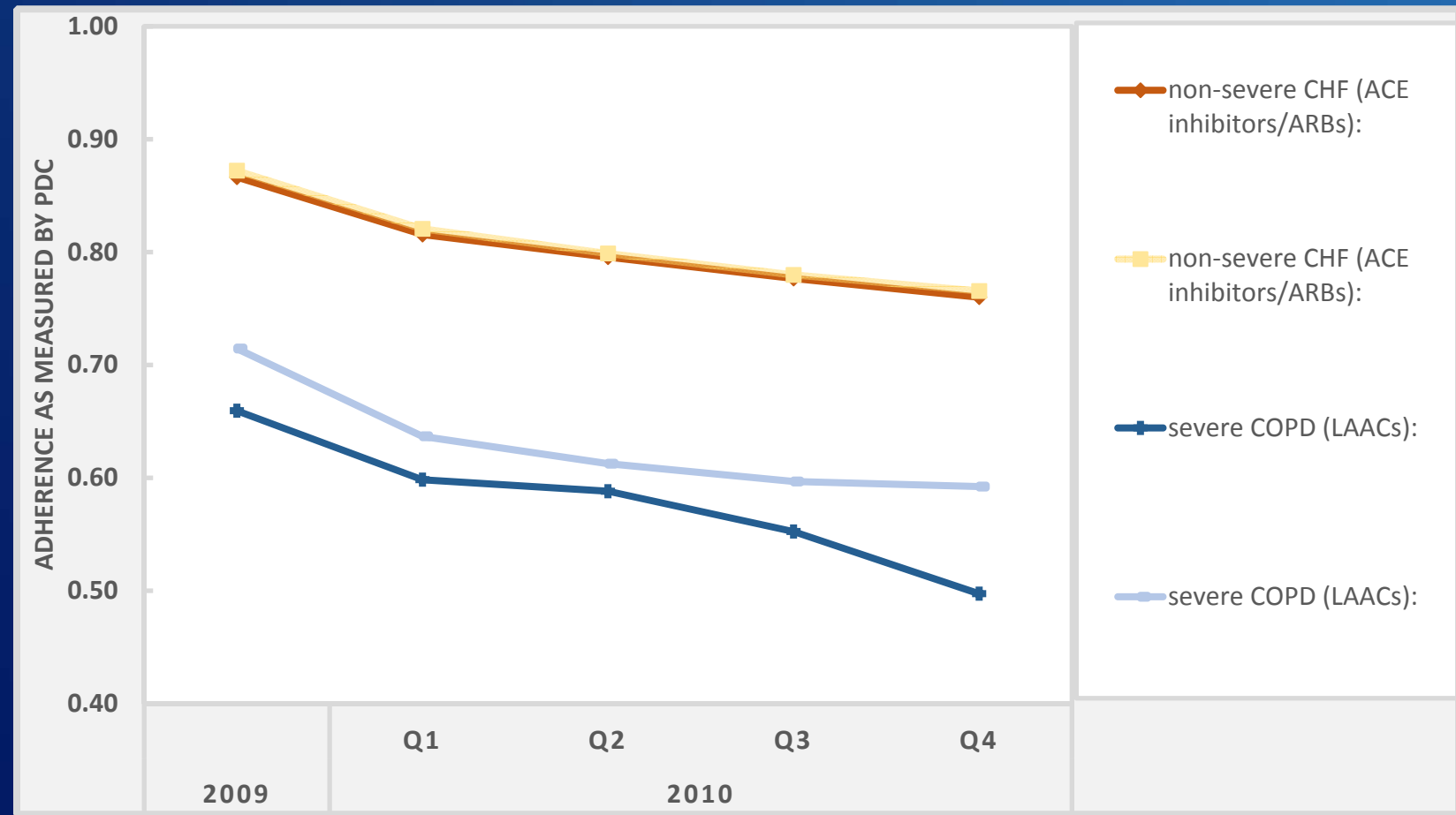
*** Data are preliminary and subject to change ***



Note: CHF (congestive heart failure), ACE (angiotensin converting enzyme), ARBs (angiotensin receptor blockers), COPD (chronic obstructive pulmonary disease), LABAs (long-acting beta-adrenergics), LAACs (long-acting anticholinergics), PDC (proportion of days covered).
 Source: Acumen, LLC, analysis for MedPAC.

Adherence decline similar for LIS and non-LIS, but steeper decline for non-LIS w/ COPD

*** Data are preliminary and subject to change ***



Estimated effects of improved adherence: from lowest (PDC≤0.3) to highest (PDC>0.8) level

*** Data are preliminary and subject to change ***

	Total Parts A & B spending	Part D spending	Net effect on Medicare spending
Non-severe CHF (ACE inhibitors/ARBs)			
Non-LIS	-\$1,046	\$136	-\$911 *
LIS	-1,919	340	-1,579 *
Severe CHF (Beta-blockers)			
Non-LIS	-1,712	92	-1,620
LIS	684	211	905
Severe COPD (LABAs)			
Non-LIS	-1,602	789	-813
LIS	-1,314	1,963	649
Depression (antidepressants)			
Non-LIS	119	246	365 *
LIS	-46	813	768 *

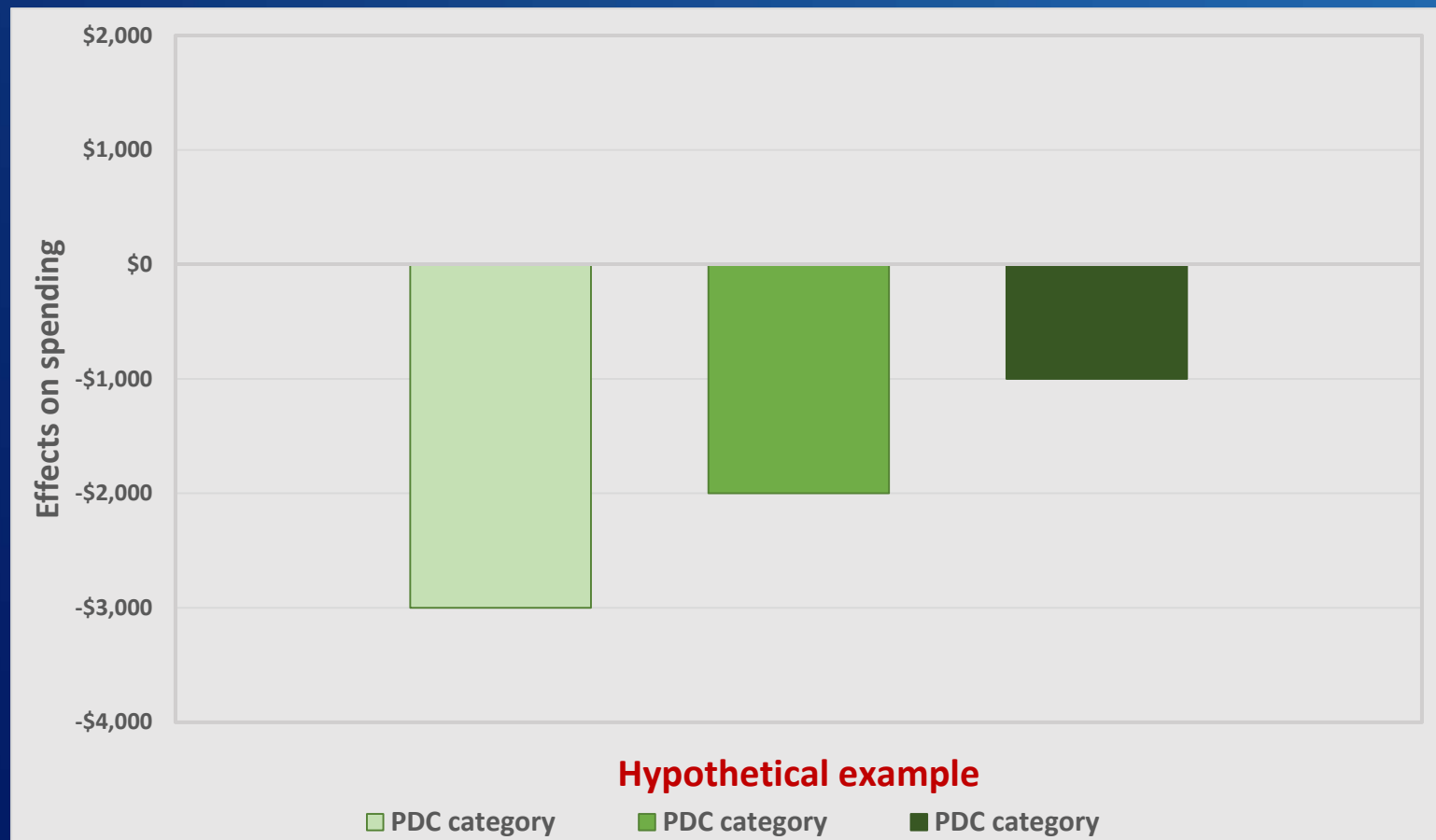
Reductions in spending not always accounted for by effects on condition-specific costs

- CHF-specific costs accounted for over 60% of the overall effects of improved adherence for many severe CHF cohorts
- For other cohorts, condition-specific effects accounted for relatively small shares of overall effect:
 - CHF-specific costs accounted for less than 25% of the overall effects for many non-severe CHF cohorts
 - COPD-specific costs accounted for less than 1/3 of the overall effects for most COPD cohorts

Differing effects of improved adherence by health care setting

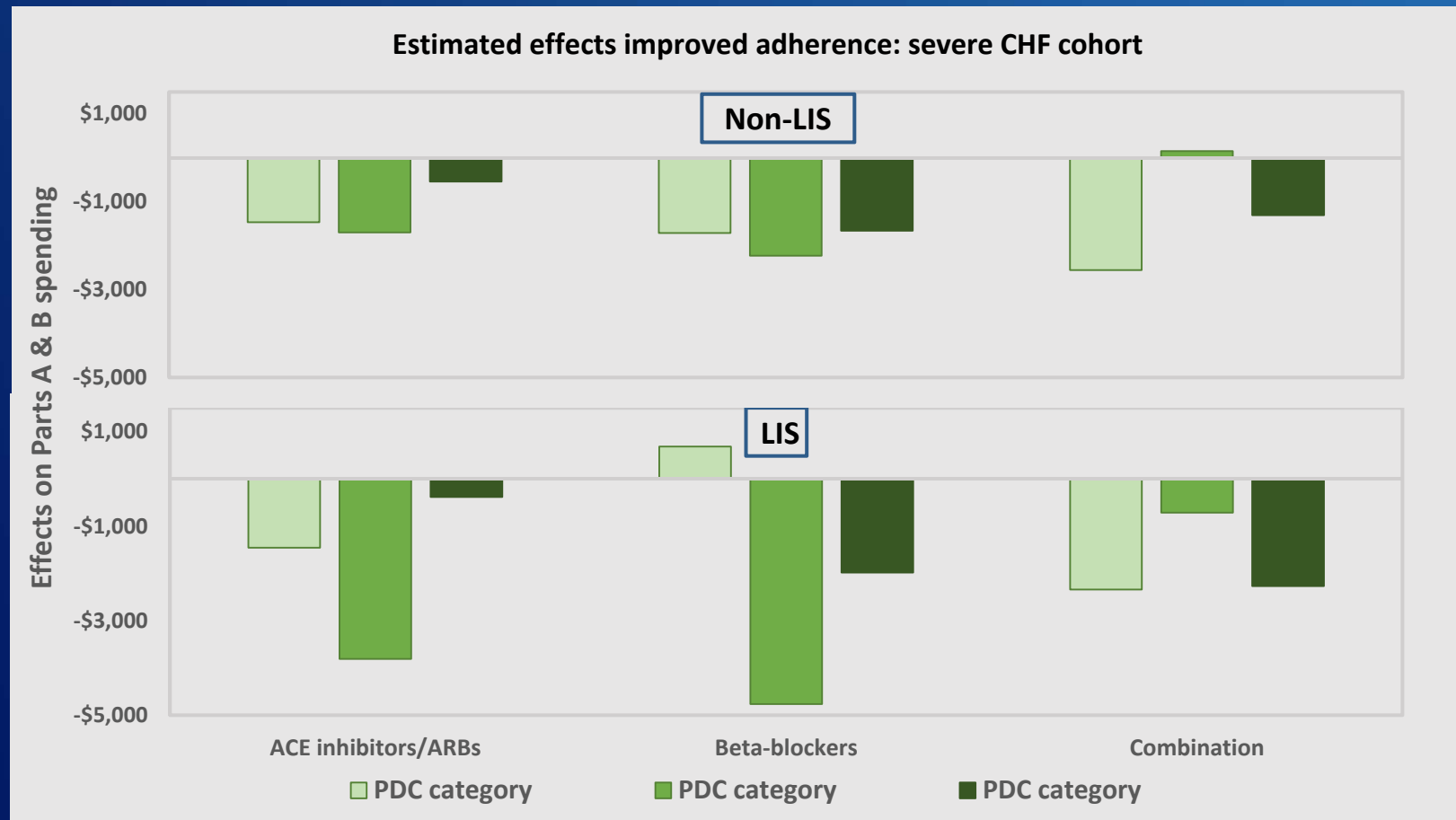
- Reductions in inpatient hospital spending accounted for the largest share of the reduction in spending in the majority of the cohorts
- Reductions in physician services and ER visits in many cohorts
- Mixed results for other health care settings

Do greater improvements in adherence result in larger effects on spending?



A greater improvement in adherence doesn't always result in a larger reduction in spending

*** Data are preliminary and subject to change ***



Summary of findings

- Adherence to study medications:
 - Varied across conditions and drug regimen
 - Declined over time for all cohorts
- Effects of improved adherence:
 - Effects on Medicare spending varied by condition, medication regimen, and by LIS status
 - Reductions in spending were typically largest for inpatient hospital; mixed results for other services
 - Effects on condition-specific costs varied
 - A greater improvement in adherence did not always result in a larger reduction in spending

Next step

- Limitations:
 - Our study focused on specific conditions/drug regimens, so the findings are not generalizable
 - Non-drug costs associated with improving medication adherence not factored in our analysis
 - The PDC metric is an imperfect measure of medication adherence
 - Study period not long enough to observe longer-term effects
- Future direction:
 - Analyze other conditions
 - Observe longer time period to see if effects are sustained

Discussion questions

- Questions / comments?
- Comments on how to take this research forward?