Advising the Congress on Medicare issues

Measuring the effects of medication adherence in the Medicare population

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Research context

- Interest in policy interventions to improve medication adherence
  - Many studies find that adhering to evidence-based medication therapy reduces the use of other medical services
  - CBO plans to include medical spending offsets for future policies that increase the use of drugs covered under Part D while they continue to review new evidence
- Effects of improved adherence on Medicare still uncertain
  - Methodological issues in measuring effects of better medication adherence
  - Long-term health and cost implications
  - Concerns about polypharmacy and adverse drug events in population with multiple chronic conditions

Overview of the presentation

- Summary of our previous analysis
- Methodological considerations in our current analysis
  - Selection of the study cohort
  - Assignment of adherence levels
  - Analytical approach
- Results
- Summary of key findings
- Conclusions

Preliminary findings from our previous analysis

- Effects of better adherence differ by medical condition, characteristics of the patient population, and drug regimen
- Estimated spending effects may be confounded by other factors
  - Observed spending effects often unrelated to condition being treated
  - Greater improvement in adherence does not necessarily result in larger reductions in spending
- Adherence to medications decay over time

Selection of the study cohort

- Identify study cohort based on Medicare claims
  - Part A/B claims and Part D drug claims
    - Pros: Include only individuals prescribed study medication(s)
    - Cons: Exclude individuals with no study medication(s)
  - Part A/B claims only
    - Pros: Include individuals with and without claims for study medication(s)
    - Cons: Diagnosis on the claim may represent screening/diagnostic events
  - Both methods capture individuals at varying stages of a progressive disease

Selection of CHF cohort for this study

- Beneficiaries with Congestive Heart Failure (CHF)
- Newly diagnosed with CHF (no prior CHF diagnosis)
  - Likely to capture individuals at similar stage of the disease
  - Likely candidates for starting on CHF medication therapy
- Additional restrictions for the initial cohort
  - Not on CHF medications before the CHF event
  - Received CHF diagnosis in an inpatient setting

Assignment of adherence levels

- "Adherence" defined as possessing any of the study medications based on Part D prescription drug event data
- High adherence
  - Start on CHF medication(s) within 3 months of a CHF event
  - Continue on CHF medication(s) for at least 6 months
- Low adherence
  - Start on CHF medication(s) within 3 months of a CHF event
  - Discontinue all CHF medication(s) in less than 6 months
- Non-adherent
  - Do not start on CHF medications or start on CHF medication(s) after more than 3 months have passed since the CHF event
  - Nearly 90% did not start on CHF medication

Note: ACE (angiotensin converting enzyme), ARBs (angiotensin receptor blockers), CHF (congestive heart failure).

Analytical approach

- OLS regression model used to estimate effects of adherence on Parts A and B spending
  - Spending effects for 2 outcome periods:
    - Months 1 – 6 after the CHF event
    - Months 7 – 12 after the CHF event
  - Spending effects for high/low adherence groups are relative to the non-adherent group
- Initial CHF cohort
  - CHF event in inpatient setting
  - No prior CHF medication use
- 6 model specifications
- Subgroup analysis
- Vary cohort selection criteria

Non-adherent vs. adherent beneficiaries

- Compared with beneficiaries in the adherent groups, beneficiaries in the non-adherent group tended to be:
  - Older (more beneficiaries over 80 years old)
  - Sicker (higher illness burden)
  - Have higher health care use / spending
  - Higher short-term mortality and higher long-term mortality, though, to a lesser extent

Regression results

	High adherence		Low adherence	
	months	months	months	months
Model specification	1 - 6	7 - 12	1 – 6	7 - 12
1: adherence indicator	-$5,142 **	-$839 **	-$4,178 **	$326 **
2: model 1 + socio-demographic characteristics (excluding race)	-5,058 **	-804 **	-4,313 **	244
3: model 1 + socio-demographic characteristics (including race)	-5,062 **	-803 **	-4,337 **	219
4: model 2 + comorbidities + drug use pattern at baseline	-4,869 **	-485 **	-4,185 **	459 **
5: model 4 + medical spending at baseline	-4,783 **	-387 **	-4,128 **	500 **
6: model 5 + survival status indicators	-2,620 **	-124	-2,270 **	391 **

Note: CHF (congestive heart failure). Months 1 – 6 refers to the first six months after the qualifying CHF event, and months 7 – 12 refers to the second six months after the qualifying CHF event. **Denotes statistical significance at the 5 percent level.

Source: Acumen, LLC, analysis for MedPAC

Regression results by subgroups

- Two subgroup analyses using specification 6
  - By age (≤ 80 years of age vs. > 80 years of age)
  - By low-income subsidy status (LIS vs. non-LIS)
- Findings show effects vary by subgroups:
  - Larger spending effects during months 1-6 for > 80 and LIS beneficiaries
  - Spending effects during months 7-12 small and not statistically significant in most cases
  - > 80 beneficiaries and LIS beneficiaries with low adherence had higher spending compared to the non-adherent groups

Summary of key findings

- Better adherence to CHF medications associated with lower medical spending
  - But study findings not generalizable to other conditions
  - Effects vary by beneficiary characteristics (e.g., LIS)
- Estimated spending effects sensitive to methodology used, such as
  - Model specifications
  - Criteria used to select the study cohort
- Adjusting for survival status reduced estimated spending effects by nearly half
- Estimated spending effects diminish over time

Conclusions

- We need a better understanding of:
  - How effects of medication adherence vary by condition, model used, population analyzed, and how study cohorts are selected
  - How health status affects adherence and vice versa
  - Why adherence decays within a relatively short period of time
  - Why estimated spending effects of medication adherence decay over time