Beta-blocker Drug Use in Medicare Part D Beneficiaries with Congestive Heart Failure

Christopher Powers, Pharm.D.

Centers for Medicare and Medicaid Services,
Center for Strategic Planning

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Presenter Disclosures

Christopher Powers, Pharm.D.

(1)   The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

Contributing Authors

Anita Varghese-Thomas, Pharm.D

Susannah Cafardi, MSW, LCSW, MPH

Background

- Congestive heart failure (CHF) affects approximately 17% of traditional fee-for-service Medicare beneficiaries.
- The Medicare Part D prescription drug program provides increased access to medications to treat this condition, including beta-adrenergic blocking agents (beta blockers).

Objectives

- The purpose of this study was to describe beta-blocker drug cost and use patterns among Medicare Part D enrollees with CHF.

- In addition, adherence to beta-blockers was examined, including the relationship of adherence to health outcomes (all-cause hospitalizations and emergency department (ED) use).

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Methods

- Data source:
  - 20% sample of 2008 Medicare:
    - Enrollment data
    - Part D Prescription Drug Event (PDE) data
    - Inpatient data
    - Outpatient data (base and revenue)
- Study Subjects:
  - Beneficiaries ≥65 years old
  - Chronic condition flag of CHF[1]
  - 12 months of fee-for-service Medicare Parts A & B
  - 12 months of Part D coverage
  - Alive at the end of the study year

[1] See APPENDIX A for CHF identification algorithm.

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Methods (cont.)

- Beneficiary distributions and beta-blocker[1] usage rates were calculated over all and by demographics, including:
  - Age
  - Gender
  - Race
  - Low income subsidy status (LIS)
- The average per member per month (PMPM) prescription drug fills (30-day adjusted), out of pocket costs, and gross drug costs were calculated overall and by demographics.

[1] See APPENDIX B for beta blockers included in analysis.

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Methods (cont.)

- Adherence to beta-blockers was examined using the proportion of days covered (PDC) methodology.

- Beneficiaries were classified as adherent based on a PDC >=0.80.

- The risk of all-cause inpatient hospitalization and ED use within the study year was then compared for adherent and non-adherent beta blocker users.

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Methods (cont)

- Adherence was examined in relation to:
  - Out-of-pocket drug costs for medications other than beta blockers
  - Overall pill burden
    - Distinct number of drugs taken
  - Number of other chronic conditions
    - Using the Medicare Chronic Condition Warehouse definitions
    - Number other than CHF
  - Part D benefit phase reached
    - Coverage gap
    - Catastrophic coverage

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Results:
Demographics of CHF Beneficiaries

	Beneficiaries with CHF		Beta-Blocker Users	
	N*	%	N*	Usage Rate
OVERALL	**2,123,560**	**100.0%**	**1,305,750**	**61.5%**
Age				
65-74	630,430	29.7%	400,415	63.5%
75-84	833,800	39.3%	523,770	62.8%
85+	659,330	31.0%	381,565	57.9%
Beneficiary Sex				
Male	754,875	35.5%	478,180	63.3%
Female	1,368,685	64.5%	827,570	60.5%
Race				
Non-Hispanic White	1,667,850	78.5%	1,034,775	62.0%
Black (or African American)	222,715	10.5%	134,925	60.6%
Hispanic	155,410	7.3%	90,205	58.0%
Asian/Pacific Islander	53,635	2.5%	31,095	58.0%
American Indian/Alaska Native	9,245	0.4%	5,410	58.5%
Other/Unknown	14,705	0.7%	9,340	63.5%
Low Income Subsidy				
No	1,104,070	52.0%	700,195	63.4%
Yes	1,019,490	48.0%	605,555	59.4%

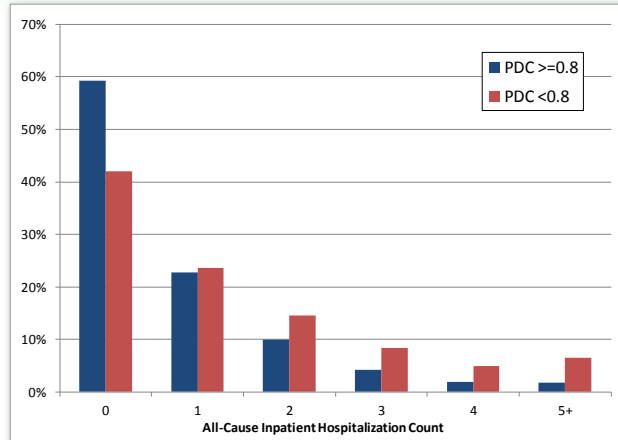* Sample counts weighted to reflect population-level estimates.

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Results:
Drug Cost & Use

GROUP	Beta-Blockers			All Drugs		
	Fills PMPM	Out of Pocket Costs PMPM	Gross Drug Costs PMPM	Fills PMPM	Out of Pocket Costs PMPM	Gross Drug Costs PMPM
OVERALL	**0.49**	**$2.17**	**$8.87**	**6.73**	**$59.34**	**$342.09**
Age						
65-74	0.49	$2.07	$9.25	6.89	$56.98	$381.61
75-84	0.50	$2.28	$9.16	6.77	$61.46	$343.31
85+	0.47	$2.12	$8.14	6.52	$58.92	$302.77
Beneficiary Sex						
Male	0.49	$2.48	$9.10	6.27	$66.74	$326.54
Female	0.49	$1.99	$8.75	6.98	$55.26	$350.67
Race						
Non-Hispanic White	0.50	$2.49	$8.92	6.80	$69.09	$334.56
Black (or African American)	0.45	$1.01	$8.37	6.43	$23.33	$348.13
Hispanic	0.43	$0.91	$8.57	6.51	$22.68	$382.04
Asian/Pacific Islander	0.46	$1.04	$9.93	6.44	$22.78	$412.25
American Indian/Alaska Native	0.42	$1.05	$7.90	6.47	$27.55	$314.15
Other/Unknown	0.52	$1.71	$11.16	6.93	$39.77	$444.17
Low Income Subsidy						
No	0.50	$3.73	$8.99	5.84	$103.82	$262.41
Yes	0.48	$0.47	$8.74	7.69	$11.18	$428.38

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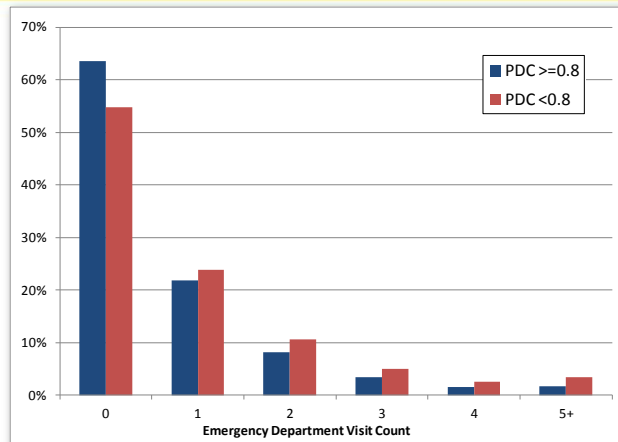STRATEGIC PLANNING

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Results:
Adherence Rates

- 1,233,960 (58.1%) CHF beneficiaries had 2 or more fills for beta blockers.
- Mean PDC among CHF patients with 2 or more beta blocker fills was 0.81.
  - Mean number of days covered was 258.3 days.
- 61.5% of CHF patients with 2 or more beta blocker fills were adherent as defined by a PDC ≥0.80.

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Results:
All-Cause Hospitalization Distribution

Chart: All-Cause Inpatient Hospitalization Count, comparing PDC >=0.8 and PDC <0.8

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Results:
Emergency Department Visit Distribution

Chart: Emergency Department Visit Count, comparing PDC >=0.8 and PDC <0.8

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Results:
Any Hospitalizations or ED Visits
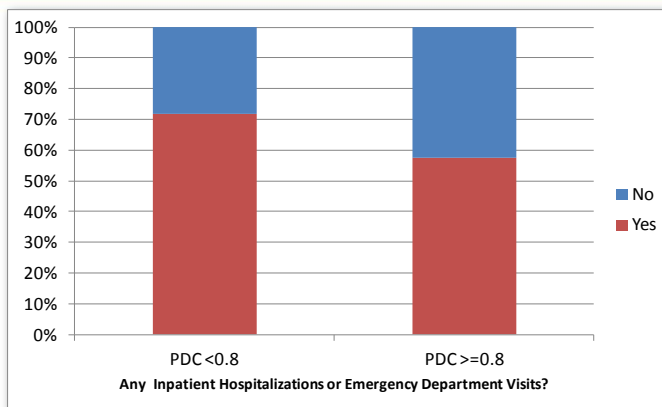
Results:
Inpatient Hospitalization or ED Visit
Logistic Regression Model Odds Ratios
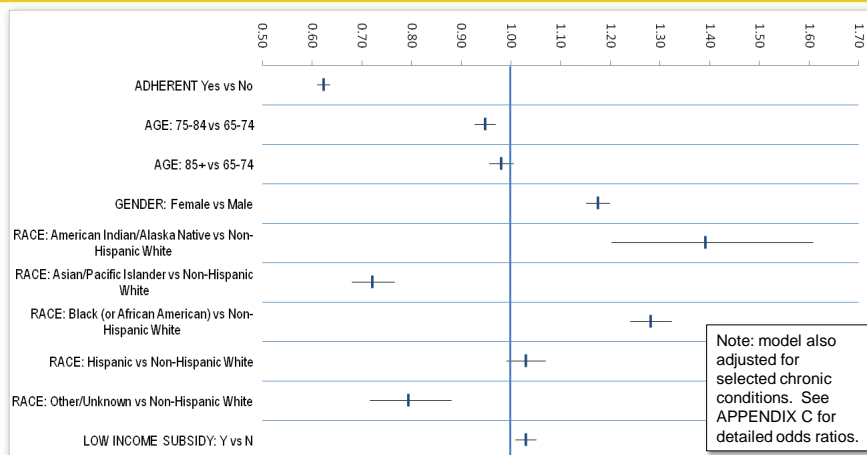
Results:
Predictors of Beta Blocker Adherence

		Parameter Estimate	Standard Error	Pr > χ^2
Intercept		1.35	0.02	<.0001
Age	65-74	Ref.	-	-
	75-84	0.08	0.01	<.0001
	85+	0.13	0.01	<.0001
Gender	Male	Ref.	-	-
	Female	0.09	0.01	<.0001
Race	Non-Hispanic White	Ref.	-	-
	American Indian/Alaska Native	-0.42	0.07	<.0001
	Asian/Pacific Islander	-0.16	0.03	<.0001
	Black (or African American)	-0.50	0.01	<.0001
	Hispanic	-0.36	0.02	<.0001
	Other/Unknown	-0.09	0.05	0.098
Low Income subsidy	No	Ref.	-	-
	Yes	-0.03	0.01	0.010
Years with CHF		0.02	0.00	<.0001
Total Out of Pocket Costs for Other Drugs		-0.00001	0.00001	0.041
Distinct Drug Count		-0.03	0.00	<.0001
Other Condition Count		-0.16	0.00	<.0001
Reached Gap	No	Ref.	-	-
	Yes	0.37	0.01	<.0001
Reached Catastrophic	No	Ref.	-	-
	Yes	0.67	0.01	<.0001

Conclusions

- A large proportion of Medicare Part D beneficiaries with CHF utilize beta blockers.
- The gross drug cost of beta blockers is generally small in comparison to the total for all drugs taken by these beneficiaries.
- Part D beneficiaries with CHF who adhered to beta blocker therapy had fewer all-cause inpatient admissions and ED use.
- Adjusting for other factors, CHF beneficiaries who were adherent to beta blocker therapy had a 38% lower likelihood of having an all-cause inpatient admission or ED visit.

Conclusions

- Factors found to be associated with beta blocker non-adherence included higher out of pocket costs for other drugs, a greater number of distinct drugs taken, and a greater number of other conditions present.
- In Medicare Part D beneficiaries with CHF, successfully managing other conditions and associated drug therapy regimens may help them be more adherent to their CHF treatment and ultimately improve medical outcomes.

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APPENDIX A:
Heart Failure Chronic Condition Algorithm

- 2 year reference period
- At least 1 inpatient, hospital outpatient or Carrier claim during the 2-yr period of any of the following ICD-9 diagnosis codes:
  - 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93, 428.0, 428.1, 428.20, 428.21, 428.22, 428.23, 428.30, 428.31, 428.32, 428.33, 428.40, 428.41, 428.42, 428.43, 428.9 (any DX on the claim)
- Reference: Rector TS, Wickstrom SL, Shah M, et al. Specificity and sensitivity of claims-based algorithms for identifying members of Medicare+Choice health plans that have chronic medical conditions. Health Serv Res. Dec 2004;39(6 Pt 1):1839-1857.
- http://www.ccwdata.org/chronic-conditions/index.htm

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APPENDIX B:
Beta Blockers included in analysis

Generic Name
CARVEDILOL
CARVEDILOL PHOSPHATE
LABETALOL HCL
ACEBUTOLOL HCL
CARTEOLOL HCL
PENBUTOLOL SULFATE
PINDOLOL
NADOLOL
PROPRANOLOL HCL
TIMOLOL MALEATE
ATENOLOL
BETAXOLOL HCL
BISOPROLOL FUMARATE
METOPROLOL SUCCINATE
METOPROLOL TARTRATE
NEBIVOLOL HCL
METOPROLOL/DIETARY SUPPL.CMB10

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APPENDIX C:
Inpatient Hospitalization or ED Visit
Logistic Regression Model Odds Ratios

	Odds Ratio	
	Point Estimate	95% Wald Confidence Limits
ADHERENT Yes vs No	0.62	0.61	0.64
AGE: 75-84 vs 65-74	0.95	0.93	0.97
AGE: 85+ vs 65-74	0.98	0.96	1.01
GENDER: Female vs Male	1.18	1.15	1.20
RACE: American Indian/Alaska Native vs Non-Hispanic White	1.39	1.20	1.61
RACE: Asian/Pacific Islander vs Non-Hispanic White	0.72	0.68	0.77
RACE: Black (or African American) vs Non-Hispanic White	1.28	1.24	1.32
RACE: Hispanic vs Non-Hispanic White	1.03	0.99	1.07
RACE: Other/Unknown vs Non-Hispanic White	0.79	0.72	0.88
LOW INCOME SUBSIDY: Y vs N	1.03	1.01	1.05
ACUTE MYOCARDIAL INFARCTION: Yes vs No	34.04	28.96	40.01
ALZHEIMERS AND DEMENTIA: Yes vs No	1.25	1.22	1.28
ATRIAL FIB: Yes vs No	1.80	1.77	1.84
CATARACT: Yes vs No	0.95	0.93	0.97
CHRONIC KIDNEY DISEASE: Yes vs No	2.10	2.06	2.14
COPD: Yes vs No	2.56	2.50	2.62
DEPRESSION: Yes vs No	1.81	1.77	1.86
DIABETES: Yes vs No	1.16	1.14	1.18
GLAUCOMA Yes vs No	0.94	0.92	0.97
HIP FRACTURE: Yes vs No	40.84	30.94	53.91
ISCHEMIC HEART DISEASE: Yes vs No	1.55	1.52	1.59
OSTEOPOROSIS: Yes vs No	1.26	1.23	1.29
RHEUMATOID / OSTEOARTHRITIS: Yes vs No	1.33	1.30	1.35
STROKE / TIA: Yes vs No	2.61	2.52	2.71
CANCER: Yes vs No	1.33	1.28	1.38