Total 2014 and 2015 Claims Expense by Drug, Diagnosis and Procedure Codes: 250,000 Commercially Insured Members with Diabetes Compared with 1,000,000 Matched Members without Diabetes

PRIME THERAPEUTICS®

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Background

- When making diabetes mellitus (DM) drug therapy assessments, health plans need to understand which categories of claims expense occur in excess for members with DM and, of these, which account for the largest fractions of excess expense and are potentially modifiable by improved drug therapy.
- Because antihyperglycemic drugs have been a leading pharmacy benefit cost driver for most commercially insured populations, there is intense scrutiny of individuals' diabetes expense with a need to understand the potential medical cost offsets associated with antihyperglycemic therapy.
- For individuals with diabetes, there is limited comprehensive detailed integrated medical and pharmacy benefits data examining the excess expense individuals with diabetes incur within a large commercially insured population.

Objective

- To compare all pharmacy and medical claims expense for commercially insured members with DM with that for matched members without DM in order to quantify major categories of excess expense associated with DM.

Table 1. Mean Pharmacy and Medical Claims Expense Per Member Per Year (PMPY) for Members with Diabetes Versus Members without Diabetes

Claims expense category	Mean Claims Expense PMPY: Members with diabetes (N=250,000)	Members without diabetes* (N=1,000,000)	Excess diabetes expense†	% of total excess diabetes expense†
Pharmacy benefit	**$4,689**	**$1,383**	**$3,306**	**35.2%**
Medical benefit	**$11,082**	**$5,001**	**$6,080**	**64.8%**
Inpatient	$3,928	$1,281	$2,647	28.2%
Outpatient	$7,154	$3,720	$3,434	36.6%
Total medical benefit plus pharmacy benefit	**$15,771**	**$6,385**	**$9,386**	**100%**

PMPY = per member per year, expense defined as member plus plan amount

*Matched to members with diabetes by sex, one year age group, Blue Cross and Blue Shield client and state of residence.

† Excess diabetes expense defined as the mean PMPY extra expense per member with diabetes compared to matched members without diabetes.

Expense = allowed amount paid to the provider including the member share and the plan paid.

Methods

- Using a Health Insurance Portability and Accountability Act of 1996 (HIPPA) compliant limited dataset from five Midwest and five Southern Blue Cross and Blue Shield clients with comprehensive integrated medical and pharmacy claims data, Prime identified all members who were continuously enrolled from 2014 to 2015, younger than 65 years and resided in the client's primary service area.
- All members who had, in 2014 to 2015, either: 1) any antihyperglycemic drug claim other than single agent metformin or 2) one inpatient or two outpatient medical claims for evaluation and management services that had a DM diagnosis code were categorized as members with DM. All other members were categorized as members without DM.
- A random sample of 250,000 was selected from the members with DM then randomly matched four to one to members without DM by sex, one year age group, insurer and state of residence to select a matched comparison group of 1,000,000 members without DM.
- Allowed expense per member per year (PMPY) was defined as the sum of insurer and member payments for all claims incurred in 2014 and 2015, without adjustment for rebates or coupons.
- All pharmacy claims were categorized by national drug codes.
- All medical claims were categorized by their first line ICD-9 or ICD-10 diagnosis code, grouped as in the Clinical Classification Software maintained by the Agency for Health Care Research and Quality[1] with some modifications. Medical claims were subcategorized by revenue codes and ICD-9, ICD-10 and Healthcare Common Procedure Coding System (HCPCS) procedure codes.

Results

- Out of an average of 13.8 million members per month, there were 5.5 million continuously enrolled members who met analysis criteria of which 281,221 (5.1 percent) were categorized as members with DM.
  - 250,000 of the 281,221 members with DM were randomly selected (mean age 52.2 years).
  - 1,000,000 members (mean age 52.2 years), of the 5.25 million members (mean age 35.6 years), without DM were matched to the 250,000 with DM.
- Mean PMPY total medical plus pharmacy expense was $15,771 for members with DM, compared to:
  - $4,585 (DM 3.44 x higher) for all 5.25 million members without DM, and
  - $6,385 (DM 2.47 x higher) for the 1 million matched members without DM.
  - The PMPY $1,800 difference between all 5.25 million without DM and the matched 1 million without DM is interpreted as showing that about 19 percent of the cost difference from members without DM was due to the older age distribution of the members with DM.
- **Table 1** shows claims expense PMPY. Of the $9,386 excess PMPY expense among DM members compared to matched non-DM members:
  - $3,306 (35.2 percent) was pharmacy benefit excess expense,
  - $2,647 (28.2 percent) inpatient medical benefit excess expense, and
  - $3,434 (36.6 percent) was outpatient medical benefit expense.
- **Table 2** shows categories of excess pharmacy expense PMPY for members with DM compared with matched members without DM. Diabetes drugs and supplies accounted for $2,386 (71.9 percent) of the excess expense and lipid regulators and antihypertensives $322 (9.3 percent).
- **Table 3** shows categories of excess medical expense PMPY, for members with DM compared with matched members without DM, subcategorized by inpatient versus outpatient.

Four categories accounted for $3,112 (51.2 percent) of the $6,080 excess medical benefit expense:

- $943 (15.5 percent) from atherosclerotic cardiovascular disease (ASCVD) and conditions commonly due to ASCVD,
- $859 (14.1 percent) diabetes,
- $830 (13.7 percent) chronic kidney disease, and
- $480 (7.9 percent) infection.

Table 2. Pharmacy Claims Categories: Mean Per Member Per Year (PMPY) Excess Expense for Members with Diabetes Versus Members without Diabetes

Pharmacy claims category	Excess diabetes expense†	
Total pharmacy claims	**$3,306**	**100%**
Diabetes drugs & supplies	**$2,386**	**72.2%**
Insulins	$1,111	33.6%
Non-insulin diabetes agents	$1,049	31.7%
Antihypoglycemics	$7	0.2%
Diabetes supplies	$218	6.6%
Lipid regulators	**$208**	**6.3%**
Statins	$106	3.2%
Fibrates	$38	1.2%
Omega-3	$21	0.6%
Absorption inhibitors (ezetimibe)	$20	0.6%
Bile acid sequestrants	$14	0.4%
Other lipid regulators	$10	0.3%
Antihypertensives	**$114**	**3.4%**
ACEi & A2RBs	$69	2.1%
Other antihypertensive agents	$45	1.4%
Anti-infectives (selected categories)	**$88**	**2.7%**
Antibacterials	$25	0.8%
Antifungals	$6	0.2%
Antiviral: Hepatitis C	$56	1.7%
Pain (selected categories)	**$81**	**2.4%**
Pregabalin & gabapentin	$35	1.1%
Narcotic analgesics	$29	0.9%
Non-steroidal anti-inflammatory	$16	0.5%
End-stage renal disease & transplant	**$42**	**1.3%**
Phosphate binders	$12	0.4%
Immunosuppressive agents	$30	0.9%
Antidepressants	**$23**	**0.7%**
Antipsychotics, 2nd generation	**$22**	**0.7%**
Pancreatic enzymes	**$15**	**0.5%**
Cystic fibrosis specific	**$15**	**0.5%**
Platelet aggregation inhibitors	**$13**	**0.4%**
Erectile dysfunction	**$12**	**0.4%**
All other pharmacy claims	**$288**	**8.7%**

ACEi = angiotensin converting enzyme inhibitors, A2RB = angiotensin 2 receptor blockers, Cystic fibrosis specific = Ivacaftor and Ivacaftor/Lumafactor, ASCVD = atherosclerotic cardiovascular disease.

Expense = allowed amount paid to the provider including the member share and the plan paid.

† Excess diabetes expense defined as the mean PMPY extra expense per member with diabetes compared to matched members without diabetes.

* Claims were re-assigned to categories based on procedure codes.

Conclusions

- Commercial members with diabetes had two and a half times higher, $9,386 excess PMPY, integrated medical and pharmacy benefits claims cost than members without diabetes after matching for sex, age, insurer and state of residence.
- With slightly more than one-third of the excess expense for an individual with diabetes coming through the pharmacy benefit, $3,306 excess PMPY, and the diabetes drugs and supplies accounting for nearly three-fourths of the excess pharmacy benefit costs, medical benefit cost offsets from antihyperglycemic drug therapy will need to be substantial.
- Categories of potentially avoidable medical claims cost from reduction of diabetes complications accounted for half, $3,112 PMPY, of the medical benefit excess PMPY. Atherosclerotic cardiovascular and kidney disease accounted for the largest diabetes complications attributable cost.
- The excess expense associated with members who have diabetes identified in this analysis allows insurers to identify potential cost containment areas and focus interventions with known impact on excess expense categories. High priority goals might include optimal use of statins to lower risk of cardiovascular events and antihypertensives to lower risk or progression of diabetic nephropathy.

Limitations

- These results are from a large population of commercially insured individuals and cannot be extrapolated to other populations such as Medicare or Medicaid. Caution should also be used when comparing these findings to other commercially insured populations.
- Categorization of conditions by first line diagnosis code is likely to result in some misclassification.
- The study measures only claims cost rather than the total cost burden of DM on members and their families, employers and communities.

References

1. US Department of Health and Human Services, Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project (HCUP). https://www.ahrq.gov/research/data/hcup.

Table 3. Medical Claims Categories: Mean Per Member Per Year (PMPY) Excess Expense for Members with Diabetes Versus Members without Diabetes

Medical claims category (Grouped by first diagnosis code*)	Total Excess Diabetes Expense†		Inpatient Excess Diabetes Expense		Outpatient Excess Diabetes Expense†	
Total medical claims	**$6,080**	**100%**	**$2,647**	**100%**	**$3,434**	**100%**
Atherosclerosis, ASCVD & conditions commonly due to ASCVD	**$943**	**15.5%**	**$621**	**23.4%**	**$322**	**9.4%**
Coronary atherosclerosis	$281	4.6%	$145	5.5%	$136	4.0%
Acute myocardial infarction	$148	2.4%	$143	5.4%	$5	0.1%
Congestive heart failure, nonhypertensive	$119	2.0%	$92	3.5%	$27	0.8%
Cardiac dysrhythmias	$69	1.1%	$39	1.5%	$30	0.9%
Ischemic stroke	$59	1.0%	$51	1.9%	$8	0.2%
Atherosclerosis of peripheral arteries	$56	0.9%	$21	0.8%	$35	1.0%
Complications of cardiovascular device/transplant	$46	0.7%	$34	1.3%	$12	0.3%
Stable or unstable angina	$39	0.6%	$18	0.7%	$21	0.6%
Other	$127	2.1%	$78	2.9%	$49	1.4%
Diabetes	**$859**	**14.1%**	**$209**	**7.9%**	**$650**	**18.9%**
Without mention of complication	$477	7.8%	$21	0.8%	$456	13.3%
Ketoacidosis	$65	1.1%	$61	2.3%	$5	0.1%
Ophthalmic manifestations	$53	0.9%	$1	0.0%	$52	1.5%
Neurological manifestations	$43	0.7%	$19	0.7%	$24	0.7%
Amputation of lower extremity*	$30	0.5%	$30	1.1%	$0	0.0%
Renal manifestations	$30	0.5%	$19	0.7%	$11	0.3%
Hyperglycemia	$27	0.5%	$2	0.1%	$25	0.7%
Other	$134	2.2%	$57	2.1%	$77	2.3%
Chronic kidney disease	**$830**	**13.7%**	**$45**	**1.7%**	**$785**	**22.9%**
Dialysis*	$679	11.2%	$22	0.8%	$656	19.1%
Infection	**$480**	**7.9%**	**$383**	**14.5%**	**$97**	**2.8%**
Septicemia	$194	3.2%	$191	7.2%	$3	0.1%
Skin and subcutaneous tissue	$78	1.3%	$52	2.0%	$26	0.8%
Pneumonia	$52	0.8%	$47	1.8%	$5	0.1%
Infective arthritis and osteomyelitis	$40	0.7%	$22	0.8%	$17	0.5%
Urinary tract	$31	0.5%	$17	0.6%	$14	0.4%
Other	$86	1.4%	$54	2.0%	$32	0.9%
Spondylosis, disc, other back problems	**$164**	**2.7%**	**$80**	**3.0%**	**$84**	**2.4%**
Nonspecific chest pain	**$123**	**2.0%**	**$21**	**0.8%**	**$101**	**3.0%**
Exocrine pancreatic disorders	**$109**	**1.8%**	**$77**	**2.9%**	**$31**	**0.9%**
Osteoarthritis	**$104**	**1.7%**	**$84**	**3.2%**	**$20**	**0.6%**
Knee replacement*	$66	1.1%	$65	2.4%	$1	0.0%
Hip replacement*	$3	0.0%	$4	0.1%	$(1)	0.0%
Other*	$35	0.6%	$16	0.6%	$19	0.6%
Hypertension	**$91**	**1.5%**	**$38**	**1.5%**	**$53**	**1.5%**
Obesity	**$69**	**1.1%**	**$56**	**2.1%**	**$14**	**0.4%**
Gastric restriction (bariatric) surgery*	$59	1.0%	$55	2.1%	$4	0.1%
Liver diseases (other than viral hepatitis)	**$61**	**1.0%**	**$38**	**1.4%**	**$23**	**0.7%**
Calculus of urinary tract	**$60**	**1.0%**	**$13**	**0.5%**	**$46**	**1.4%**
Biliary tract disease (gallstones)	**$52**	**0.9%**	**$28**	**1.0%**	**$24**	**0.7%**
Cataract	**$38**	**0.6%**	**$1**	**0.0%**	**$37**	**1.1%**
Depression	**$27**	**0.4%**	**$12**	**0.5%**	**$14**	**0.4%**
All other medical claims	**$2,070**	**34.1%**	**$940**	**35.5%**	**$1,130**	**32.9%**

ACEi = angiotensin converting enzyme inhibitors, A2RB = angiotensin 2 receptor blockers, Cystic fibrosis specific = Ivacaftor and Ivacaftor/Lumafactor, ASCVD = atherosclerotic cardiovascular disease.

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