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Why the Increase? Drilling Down on Increases in Prescribed Medication Expenditures in the US between 2011 and 2020: Findings from the Medical Expenditures Panel Survey (MEPS)

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BACKGROUND

Global prescription drugs expenditure in 2020 was projected to be $1.3 trillion, with the US accounting for approximately $350 billion of that amount and predicted to increase annually by 3-6%. [1]

The objective of this cross-sectional analysis was to identify determinants of increasing medicine expenditures in the US between 2011 and 2020.

METHODS

Data / Study sample

- Data from all household respondents were pooled from MEPS Prescription Medicines files 2011-2020.
- Payment categories include Out-Of-Pocket, Medicare, Medicaid, private insurance, TRICARE / Veterans Administration / CHAMPVA (TVAC), other government sources, and other sources.[2]
- Drugs were categorized by Multum Lexicon therapeutic classification, focusing on antidiabetic agents.[3]

Statistical analysis

- The annual expenditure of prescribed medicines was calculated for each payment category. Totals were weighted to account for MEPS design elements, and ordinary linear regression, stratified by payer type, was performed to estimate trends.
- The annual total expenditure for each drug category was calculated to estimate the trend. The class with the highest level of expenditures was identified and further analyzed at the sub-category and sub-sub-category levels. Simple linear regression analysis was applied to assess the statistical significance of overall trends. The outcome in each regression model was the estimated, weighted annual total cost of treatment for each therapeutic category and the sole predictor was the year.
- Costs were adjusted to 2020 USD with the consumer price index.
- A P-value <.05 was considered statistically significant. SAS version 9.4 (SAS Institute, Cary, North Carolina) was used for data and statistical analysis.

RESULTS

Figure 1. Prescription Medicine Expenditures Trend by Payment Category, 2011-2020

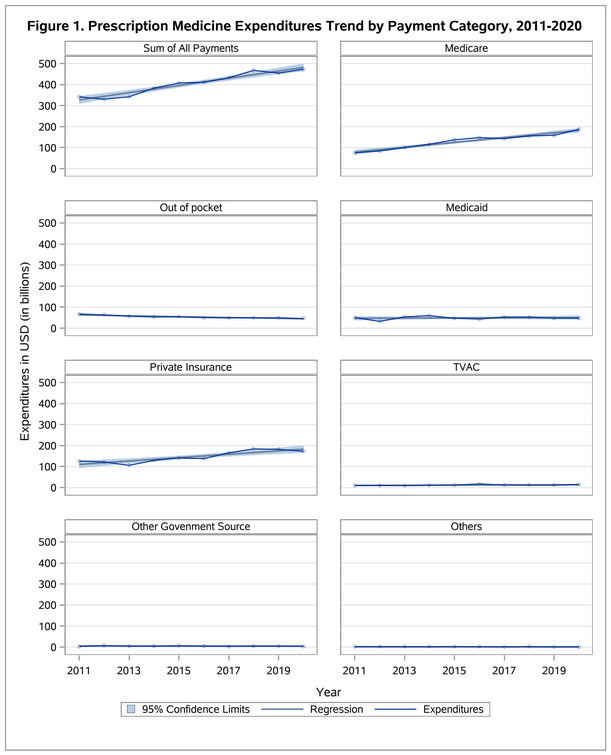

Table 1. Antidiabetic agents' expenditures trend by drug sub-sub-category (in billions)

	Drug sub-sub-category							
Year	Insulin	Incretin mimetics	DPP4 inhibitors	SGLT2 inhibitors	Antidiabetic combi	Biguanides	Sulfonyl-ureas	Thiazolidinediones
2011	13.93	1.18	2.90	.	1.75	1.56	0.81	3.72
2012	17.90	1.24	3.44	.	2.03	2.01	0.70	2.63
2013	18.28	2.89	4.41	.	1.63	2.49	0.97	1.74
2014	28.98	2.74	4.50	0.65	2.50	2.38	0.72	0.98
2015	34.77	4.43	6.82	3.02	4.53	4.00	1.02	0.80
2016	37.75	5.25	9.03	3.00	3.45	3.73	0.92	0.61
2017	39.83	8.37	7.35	4.51	4.07	3.25	0.81	0.61
2018	42.31	12.93	10.39	5.72	5.98	2.57	0.66	0.45
2019	41.08	14.96	9.23	5.73	6.24	1.81	0.59	0.23
2020	37.98	21.29	10.26	9.98	7.00	1.03	0.33	0.10
P-value	0.0003	<.0001	<.0001	0.0013	<.0001	0.85	0.076	<.0001

*P-value evaluated the trend in the proportion of expenditures over 10 years.

Table 2. Antidiabetic agents' expenditures trend by payment category (in billions)

	Sources of Payment Category							
Year	Total	Out-of-pocket	Medicare	Medicaid	Private Insurance	TVAC	Other Government Sources	Other sources
2011	27.15	5.67	7.12	2.65	9.91	0.75	0.33	0.12
2012	31.53	5.96	9.52	2.73	11.18	0.75	0.36	0.04
2013	34.73	5.62	12.23	4.49	10.11	0.65	0.38	0.03
2014	43.97	4.91	17.15	7.43	11.62	1.11	0.69	0.02
2015	59.81	5.58	23.25	5.75	20.44	1.44	1.68	0.20
2016	63.89	6.06	26.12	4.99	21.64	2.12	1.11	0.32
2017	69.00	5.74	26.66	6.44	27.01	1.07	0.71	0.23
2018	81.19	5.67	31.87	6.81	31.62	1.66	2.37	0.21
2019	79.95	5.77	31.35	7.39	32.36	1.51	1.37	0.21
2020	89.17	5.59	38.23	8.86	33.80	1.51	0.81	0.37
P-value*	<.0001	0.87	<.0001	0.0013	<.0001	0.028	0.082	0.0091

*P-value evaluated the trend in the proportion of expenditures over 10 years.

Table A1. Prescribed medicine expenditures trend by drug category, 2011-2020 (USD in billions)

	Drug Category (% in each year)													
YEAR	Metabolic agents	Anti-neoplatics	Immunologic agents	CNS agents	Anti-infectives	Respi agents	Cardio agents	Coagulation modifiers	Hormones/ hormone modifiers	Psycho-therapeutic agents	Topical agents	GI agents	Genitourinary tract agents	Nutritional products	Alternative medicines
2011	58.66 (18.59)	10.09 (3.20)	14.10 (4.47)	44.92 (14.24)	17.60 (5.58)	26.64 (8.44)	28.27 (8.96)	31.18 (9.88)	14.03 (4.45)	27.92 (8.85)	12.43 (3.94)	20.61 (6.53)	3.66 (1.16)	4.12 (1.31)	1.29 (0.41)
2012	59.78 (19.47)	9.28 (3.02)	11.98 (3.90)	45.60 (14.85)	17.64 (5.75)	26.73 (8.71)	29.28 (9.54)	27.08 (8.82)	13.94 (4.54)	27.20 (8.86)	12.20 (3.97)	18.48 (6.02)	3.15 (1.03)	3.72 (1.21)	0.97 (0.32)
2013	62.85 (20.31)	10.60 (3.42)	19.68 (6.36)	48.03 (15.52)	15.64 (5.05)	28.16 (9.10)	31.50 (10.18)	7.98 (2.58)	16.67 (5.39)	29.98 (9.69)	12.90 (4.17)	18.67 (6.03)	2.77 (0.89)	3.26 (1.05)	0.78 (0.25)
2014	73.41 (20.72)	12.29 (3.47)	12.11 (3.42)	50.40 (14.22)	35.03 (9.88)	26.32 (7.43)	30.01 (8.47)	23.55 (6.65)	19.41 (5.48)	30.32 (8.55)	14.62 (4.13)	19.83 (5.59)	2.86 (0.81)	3.16 (0.89)	1.04 (0.29)
2015	88.29 (23.30)	6.66 (1.76)	14.96 (3.95)	57.59 (15.20)	49.73 (13.13)	26.99 (7.12)	31.37 (8.28)	10.03 (2.65)	21.99 (5.80)	27.37 (7.22)	16.08 (4.25)	20.41 (5.39)	3.93 (1.04)	2.47 (0.65)	0.97 (0.26)
2016	91.85 (24.86)	13.23 (3.58)	22.10 (5.98)	52.98 (14.34)	25.70 (6.96)	29.29 (7.93)	34.40 (9.31)	12.65 (3.42)	17.30 (4.68)	26.21 (7.09)	16.30 (4.41)	20.16 (5.46)	4.29 (1.16)	2.31 (0.63)	0.69 (0.19)
2017	89.80 (23.74)	22.01 (5.82)	28.03 (7.41)	55.18 (14.59)	38.38 (10.15)	29.55 (7.81)	27.54 (7.28)	13.11 (3.46)	16.87 (4.46)	20.63 (5.45)	13.36 (3.53)	16.96 (4.48)	4.38 (1.16)	2.05 (0.54)	0.41 (0.11)
2018	101.71 (24.28)	25.37 (6.06)	31.82 (7.60)	62.22 (14.86)	38.58 (9.21)	33.81 (8.07)	27.67 (6.61)	16.32 (3.90)	17.45 (4.17)	23.90 (5.71)	15.00 (3.58)	17.68 (4.22)	4.41 (1.05)	2.55 (0.61)	0.34 (0.08)
2019	96.35 (24.69)	30.87 (7.91)	32.17 (8.24)	51.53 (13.20)	28.35 (7.26)	30.23 (7.74)	24.29 (6.22)	21.94 (5.62)	16.57 (4.24)	21.69 (5.56)	16.54 (4.24)	12.80 (3.28)	3.74 (0.96)	2.76 (0.71)	0.47 (0.12)
2020	100.08 (24.67)	53.96 (13.30)	39.92 (9.84)	37.33 (9.20)	31.19 (7.69)	30.62 (7.55)	24.74 (6.10)	22.65 (5.58)	15.88 (3.91)	15.56 (3.83)	14.15 (3.49)	13.82 (3.41)	3.33 (0.82)	2.28 (0.56)	0.20 (0.05)
P-value	<.0001	<.001	<.0001	0.700	0.145	<.001	0.113	0.510	0.569	<.001	0.068	<.001	0.219	<.001	0.000

*P-value evaluated the trend in the proportion of expenditures over 10 years.

CONCLUSIONS

- An increasing trend in total prescription medicine was observed in the analysis of the MEPS data for the term 2011-2020.
- During the study period, distribution of payment category varied with increasing trend in Medicare and Private Insurance; decreasing trend in Out-Of-Pocket; and no trend in other payment categories.
- During the study period, metabolic agents remained the most costly drug class while the total prescribed medicine expenditure maintained an increasing trend.
- The dominance of metabolic agents is primarily due to increases in antidiabetic agent expenditure, as insulin cost remained costly.
- The total antidiabetic agent expenditure as well as the respective amounts for Medicare, Medicaid, Private Insurance, TVAC, and other sources, increased between 2011 and 2020.
- Insulin comprised the largest expenditure above other antidiabetic agents for the duration in Out-of-pocket, Medicare, Medicaid, Private Insurance and Other Government Resources.

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