Out-of-Pocket Spending on Epinephrine Auto-Injectors Among the Privately Insured, 2015–2019

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INTRODUCTION

For patients at risk of anaphylaxis, cost-sharing for epinephrine auto-injectors could impede access to a life-saving treatment. Between 2007 and 2014, the list price of the dominant auto-injector, the branded EpiPen™, tripled, and annual out-of-pocket spending among the privately insured doubled.[1,2] Using commercial claims, we assessed out-of-pocket spending on epinephrine auto-injectors between 2015 and 2019, a period during which the branded EpiPen™ faced increasing competition from several lower-priced products, including its own authorized generic.

METHODS

This cross-sectional analysis used the 2015–2019 IBM MarketScan Commercial Database, which contains claims from 27 to 29 million patients with employer-sponsored insurance each year.[3] Claims report out-of-pocket spending (sum of deductibles, co-insurance, and co-payments). This quantity reflects the amount plans charge patients. Because data are de-identified, the University of Michigan exempted analyses from review.

In each study year, we included patients aged 0–64 years with continuous enrollment throughout the year and ≥ 1 epinephrine auto-injector fill. We limited to the 5 most common products: branded EpiPen™, branded Auvi-Q™, the authorized generics of EpiPen™ and Adrenaclick™, and Teva's generic auto-injector. We excluded patients with negative annual out-of-pocket spending for epinephrine auto-injectors or coordination of benefit payments from an additional insurer.

In each year, we assessed use of each product, mean annual out-of-pocket spending on epinephrine auto-injectors per patient, and the distribution of this spending. We stratified analyses by age (children aged 0–17 years versus adults aged 18–64 years) and enrollment in a high-deductible health plan (HDHP). To contextualize results, we calculated median out-of-pocket spending per two-pack of each product in 2019. Moreover, we assessed characteristics and use patterns of patients with annual out-of-pocket spending exceeding $200 in 2019, approximately three times the mean. In all analyses, we inflated out-of-pocket spending to 2019 dollars using the Consumer Price Index for All Urban Consumers.[4] Analyses used SAS 9.4.

RESULTS

Of 658,817 patients meeting inclusion criteria, 1004 were excluded. The remaining 657,813 patients contributed 990,629 patient-years of data. Of these patient-years, 457,414 (46.2%) were contributed by children, 534,683 (54.0%) by females, and 194,371 (19.6%) by HDHP enrollees. During 2015–2019, children and adults had a mean (SD) of 1.5 (0.9) and 1.1 (0.5) epinephrine auto-injector fills per year, respectively.

In 2015, 95.3% of fills were for branded products (EpiPen™ or Auvi-Q™), compared with 11.2% in 2019. Non-branded products were seldom used in 2015–2016 but accounted for 58.0% of fills in 2017, the year after the authorized generic of EpiPen™ was released (Fig. 1a). Mean annual out-of-pocket spending peaked in 2016 at $115.8 ($235.0) and decreased to $75.8 ($326.4) in 2019. This spending was consistently higher in children and HDHP enrollees (Fig. 1b; Table 1).

In 2019, median out-of-pocket spending per two-pack was $736 for Auvi-Q™, $63 for branded EpiPen™, and $10 for each non-branded product. Annual out-of-pocket spending across epinephrine auto-injector fills in 2019 was $0–$20 for 96,073 (60.9%) patients but exceeded $200 for 11,863 (7.5%). Among these two groups of patients, the median annual number of auto-injector units dispensed was identical (2 units, 25^{th}–75^{th} percentile: 2–4).

Among the 11,863 patients with annual out-of-pocket spending exceeding $200 in 2019, 7509 (63.3%) were children, 7411 (62.5%) were HDHP enrollees, and 7640 (64.4%) only used non-branded products. Among these 7640 patients, mean annual out-of-pocket spending was $657.4 ($1016.8) and was comprised of deductibles (73.0%), co-insurance (15.2%), and co-payments (11.8%).

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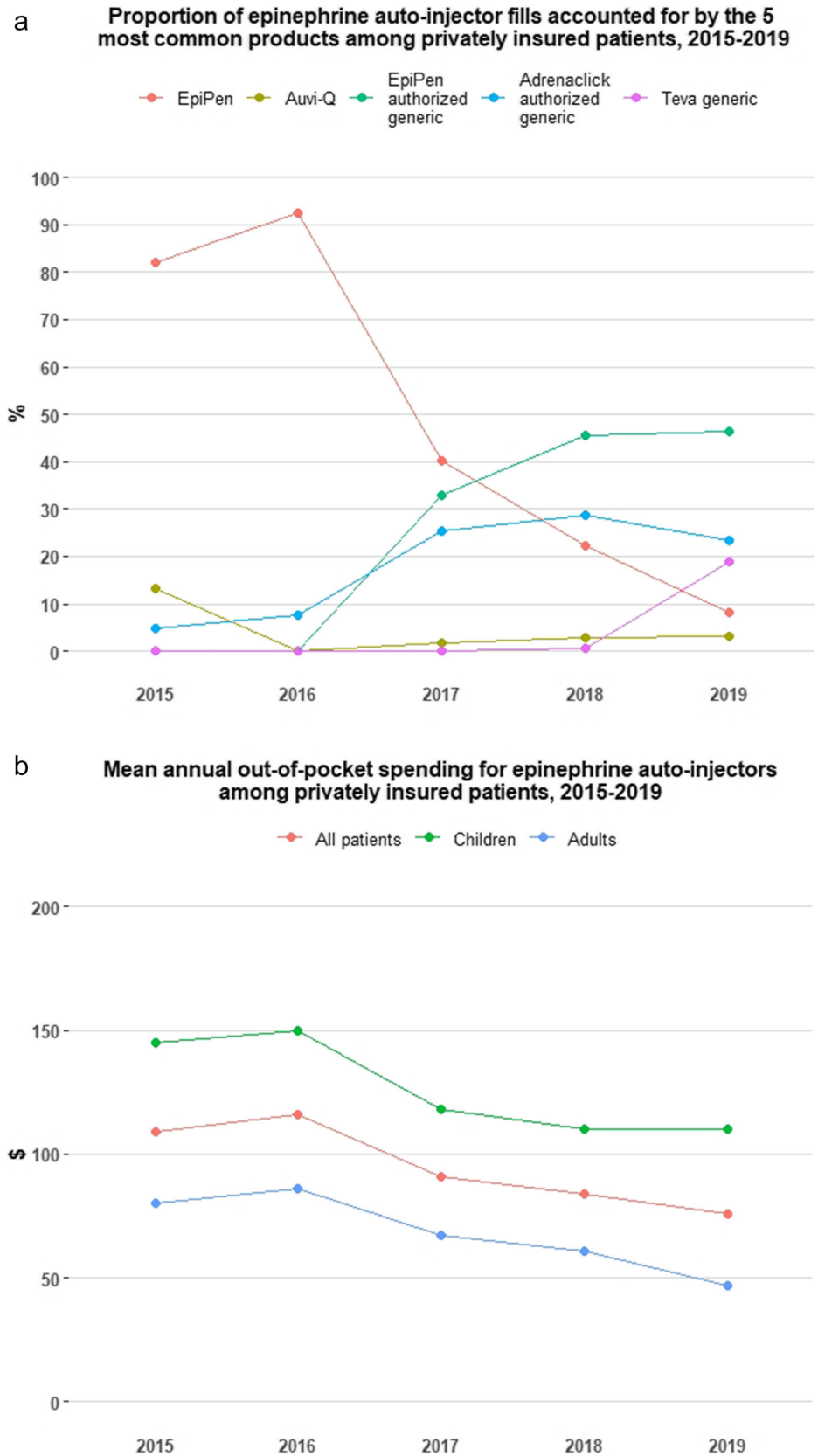

Figure 1 Trends in use of and out-of-pocket spending for epinephrine auto-injector products among privately insured Americans, 2015–2019 IBM MarketScan Commercial Database. (a) Proportion of epinephrine auto-injector prescription fills accounted for by the 5 most common products. (b) Mean annual out-of-pocket spending for epinephrine auto-injectors. Key events during this time period include the withdrawal of Auvi-Q™ owing to safety concerns in 2015, the release of the authorized generic of EpiPen™ in late 2016, the relaunch of Auvi-Q™ in 2017, and the release of Teva's generic auto-injector in 2018.

Table 1 Trends in Epinephrine Auto-Injector Use and Out-of-Pocket Spending Among Privately Insured Patients Aged 0–64 Years, 2015–2019 IBM MarketScan Commercial Database

Outcome	2015	2016	2017	2018	2019
Epinephrine auto-injector use[a]					
# continuously enrolled patients	19,278,411	19,203,264	18,338,044	18,356,002	16,891,677
Patients with ≥ 1 epinephrine auto-injector fill, no. (%)[b]	234,478 (1.2)	230,166 (1.2)	196,553 (1.0)	171,769 (0.9)	157,663 (0.9)
Total # fills across all patients	320,391	290,406	248,850	214,138	197,130
Mean (SD) # fills per patient					
Overall	1.4 (0.9)	1.3 (0.7)	1.3 (0.7)	1.2 (0.7)	1.3 (0.7)
Children aged 0–17 years	1.6 (1.1)	1.4 (0.8)	1.4 (0.8)	1.4 (0.8)	1.4 (0.8)
Adults aged 18–64 years	1.2 (0.6)	1.1 (0.6)	1.1 (0.5)	1.1 (0.5)	1.1 (0.5)
Patients enrolled in HDHP[c]	1.4 (1.0)	1.3 (0.8)	1.3 (0.7)	1.2 (0.6)	1.2 (0.6)
Patients not enrolled in HDHP[c]	1.4 (0.9)	1.3 (0.7)	1.3 (0.7)	1.3 (0.7)	1.3 (0.7)
Product used, no. (% of all fills)					
Branded EpiPen™	262,725 (82.0)	268,014 (92.3)	100,288 (40.3)	47,833 (22.3)	16,043 (8.1)
Auvi-Q™	42,480 (13.3)	18 (0.01)[d]	4118 (1.7)	5977 (2.8)	6194 (3.1)
EpiPen™ authorized generic	0 (0.0)	86 (0.03)	81,793 (32.9)	97,664 (45.6)	91,344 (46.3)
Adrenaclick™ authorized generic	15,186 (4.7)	22,288 (7.7)	62,651 (25.2)	61,607 (28.8)	46,058 (23.4)
Teva epinephrine auto-injector	0 (0.0)	0 (0.0)	0 (0.0)	1057 (0.5)	37,491 (19.0)
Annual out-of-pocket spending					
Mean (SD), $					
Overall	109.4 (170.2)	115.8 (235.0)	91.1 (224.2)	84.3 (255.0)	75.8 (326.4)
Children aged 0–17 years	145.0 (216.3)	150.4 (234.7)	117.5 (281.8)	111.0 (322.0)	110.4 (438.6)
Adults aged 18–64 years	80.0 (110.7)	86.4 (231.3)	67.2 (150.8)	60.7 (172.5)	47.0 (183.0)
Patients enrolled in HDHP[c]	221.1 (273.0)	234.0 (294.2)	172.7 (35.8)	185.2 (443.3)	199.9 (625.7)
Patients not enrolled in HDHP[c]	85.6 (126.8)	88.4 (209.8)	69.2 (171.4)	57.8 (164.9)	43.4 (164.3)
Median (25^{th}–75^{th} percentile), $					
Overall	55.0 (27.5–110.0)	54.0 (27.0–108.0)	42.4 (12.7–95.4)	31.2 (10.4–78.0)	15.0 (8.0–50.0)
Children aged 0–17 years	77.0 (33.0–154.0)	64.8 (32.4–138.9)	53.0 (21.2–116.6)	39.5 (10.4–104.0)	20.0 (10.0–68.0)
Adults aged 18–64 years	44.0 (27.5–88.0)	43.2 (27.0–86.4)	32.5 (10.6–78.2)	26.0 (10.4–62.4)	10.0 (6.0–37.1)
Patients enrolled in HDHP[c]	101.4 (55.0–347.1)	108.0 (54.0–335.9)	84.8 (23.3–188.1)	83.2 (20.8–188.2)	46.4 (10.0–150.0)
Patients not enrolled in HDHP[c]	49.5 (27.5–93.5)	43.8 (27.0–89.7)	37.1 (10.6–78.3)	26.0 (10.4–57.2)	11.0 (8.0–35.0)
Distribution, no. (% of patients)					
$0–$20	29,142 (12.4)	33,111 (14.4)	57,354 (29.2)	64,817 (37.7)	96,073 (60.9)
$20.01–$50	78,569 (33.5)	75,664 (32.9)	48,675 (24.8)	42,869 (25.0)	25,133 (15.9)
$50.01–$100	60,052 (25.6)	56,206 (24.4)	44,876 (22.8)	29,812 (17.4)	13,852 (8.8)
$100.01–$200	36,756 (15.7)	35,414 (15.4)	26,732 (13.6)	19,476 (11.3)	10,742 (6.8)
$200.01–$500	14,228 (6.1)	13,093 (5.7)	12,544 (6.4)	10,482 (6.1)	8455 (5.4)
> $500	15,731 (6.7)	16,678 (7.3)	6372 (3.2)	4313 (2.5)	3408 (2.2)

[a]*We limited analyses to the 5 most commonly filled epinephrine auto-injector products. We did not include Symjepi™, which was seldom filled and is a pre-filled syringe rather than an auto-injector. We also did not include Twinject™, which was discontinued before 2015, or the branded Adrenaclick™, which was filled less than 100 times during the study period by patients in our database*

[b]*The decreasing prevalence of epinephrine auto-injector use may be related to manufacturer shortages during 2017–2019*

[c]*HDHP, high-deductible health plan. This included qualified high-deductible health plans and consumer-driven health plans. The latter typically combines a preferred provider organization plan with a health retirement account and high deductible*

[d]*Auvi-Q™ was pulled from the market in late 2015 owing to safety concerns and was reintroduced in 2017*

DISCUSSION

Out-of-pocket spending for epinephrine auto-injectors decreased among privately insured patients in 2017, coinciding with increased use of lower-priced non-branded products. In 2019, most patients paid $20 or less for epinephrine auto-injectors, but 1 in 13 paid more than $200. Among the latter, 64.4% only used non-branded products. For these patients, out-of-pocket spending was dominated by deductibles and co-insurance, cost-sharing mechanisms that expose patients to drug list prices.

Limitations include lack of data on use of co-pay coupons. As these coupons are seldom used for non-branded products[5], reported out-of-pocket spending for these products likely reflects actual amounts paid. Analyses may underestimate out-of-pocket spending among all privately insured patients because the database over-represents large employers, which typically provide more generous plans than small employers.[6]

Findings suggest patients who only use non-branded epinephrine auto-injectors can still face substantial cost-sharing if plans employ deductibles and co-insurance in pharmacy benefits. To improve affordability for these patients, Congress could consider capping cost-sharing for non-branded products.

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Declarations:

Conflict of Interest: *Dr. Chua reports receiving honoraria from the Benter Foundation outside of the submitted work. Dr. Conti has no conflicts of interest to report.*

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