Evaluation of Industry Payments to Allergists and Clinical Immunologists in the United States during the COVID-19 pandemic: A Seven-year analysis of the Open Payments Database from 2014 to 2020

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Conflicts of interest:

Dr. Saito received personal fees from Taiho Pharmaceutical Co. Ltd outside the scope of the submitted work. Drs. Ozaki and Tanimoto received personal fees from Medical Network Systems, a dispensing pharmacy, outside the scope of the submitted work. Dr. Tanimoto also received personal fees from Bionics Co. Ltd,

a medical device company, outside the scope of the submitted work. Other remaining authors declared no financial conflicts of interest. Regarding non-financial conflicts of interest, all are engaged in ongoing research examining financial and non-financial conflicts of interest among healthcare professionals and pharmaceutical companies in Japan and the United States.

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To the Editor: In the global movement to enhance transparency in financial relationships between physicians and healthcare industries, almost all payments from pharmaceutical and medical device companies to physicians in the United States has been publicly disclosed in the Open Payments Database since 2013.[1] Allergists and clinical immunologists are experts receiving one of the largest general payments in the country in 2015.[2] The COVID-19 pandemic might have limited an financial interaction between pharmaceutical companies and these experts, but few study investigated the trend in industry payments relating to allergology and immunology during the COVID-19 pandemic.

This cross-sectional study examined the trend in financial relationships between the industry and allergists and clinical immunologists in the United States during the COVID-19 pandemic, using the relevant data extracted from the Open Payments Database. All general payments made to the physicians whose specialty was categorized as allergology or clinical immunology between 2014 and 2020 were used. Trends in payments before and during the COVID-19 was evaluated by the interrupted time series (ITS) analysis using population-averaged generalized estimating equation (GEE) models with panel-data of monthly payments at the physician level. As the payments were highly skewed, negative binomial regression GEE model for the payments per physician and linear log-linked regression GEE model with Poisson distribution for the number of physicians with payments were employed.[3] As the national emergency concerning the COVID-19 pandemic was declared in the United States on March 13, 2020, we divided the study period into before (January 2014 to February 2020) and during the pandemic (March to December 2020). To adjust seasonality of the payments, we included the month variable in the ITS models. Furthermore, descriptive analysis was conducted for annual and aggregate payments. Average relative annual changes in payments were also estimated by the GEE models with panel-data of annual payments per physician.[3] As this study only included publicly available information, informed consent was waived by the Ethics Committee of the Medical Governance Research Institute.

There were 6046 allergists and clinical immunologists receiving 754,338 general payments with a total of $115,593,275 from 632 companies between 2014 and 2020. The monthly payments and number of physicians receiving payments decreased by -53.6% (95% confidence interval [95% CI]: -59.5% – -46.9%, p<0.001) and -38.5% (-40.1%– -36.9%, p<0.001) at the beginning of the pandemic. (Figure 1) Although the number of physicians receiving payments increased during the pandemic with average monthly change rate of 3.5% (95% CI: 3.2% – 3.9%, p<0.001), there was no clinically meaningful change in the payments per physician within the pandemic.

For annual payments, about eighty percentage of all allergists and clinical immunologists received the payments in each year. The payments per physician increased from $315 (interquartile range [IQR]: $95 – $1,051) in 2014 to $457 (IQR: $125 – $1,305) in 2019, with the average relative annual change rate of 8.3% (95% CI: 5.3% – 11.4%, p<0.001). (Table 1) However, the payments per physician decreased by -50.8% (95% CI: -56.4% – -44.4%, p<0.001) to $336 (IQR: $82 – $1,160) in 2020 compared with 2014 to 2019.

Despite several limitations including no inclusion of physicians without payments and unmeasured confounding factors as in other studies,[4,5] this study is the first to demonstrate that the COVID-19 pandemic potentially led to the decreased financial relationships between the allergists and clinical immunologists and the industries in the United States, by approximately half in payments per physician. An increase of the allergists and clinical immunologists receiving the payment since the inception of pandemic may have suggested a gradual resumption of promotional activities by the pharmaceutical companies in this field, but the information is lacking on whether these activities would recover to the level before the pandemic in the long

term. Future studies should investigate a long-term trend of the pharmaceutical payments to clarify how the promotional activities would bias the patients' care in this field in the foreseeable future.

References

1. Marshall DC, Jackson ME, Hattangadi-Gluth JA. Disclosure of Industry Payments to Physicians: An Epidemiologic Analysis of Early Data From the Open Payments Program. *Mayo Clin Proc.* 2016;91(1):84-96.

2. Tringale KR, Marshall D, Mackey TK, Connor M, Murphy JD, Hattangadi-Gluth JA. Types and Distribution of Payments From Industry to Physicians in 2015. *JAMA.* 2017;317(17):1774-1784.

3. Kusumi E, Murayama A, Kamamoto S, et al. Pharmaceutical payments to Japanese certified hematologists: a retrospective analysis of personal payments from pharmaceutical companies between 2016 and 2019.*Blood Cancer Journal.* 2022;12(4):54.

4. Putman MS, Goldsher JE, Crowson CS, Duarte-García A. Industry Payments to Practicing US Rheumatologists, 2014–2019. *Arthritis & Rheumatology.* 2021;73(11):2138-2144.

5. Annapureddy A, Murugiah K, Minges KE, Chui PW, Desai N, Curtis JP. Industry Payments to Cardiologists. *Circulation: Cardiovascular Quality and Outcomes.* 2018;11(12):e005016.

Figure 1. Monthly trend in general payments per physician and number of physicians with payments between 2014 and 2020 in allergology and clinical immunology in the United States

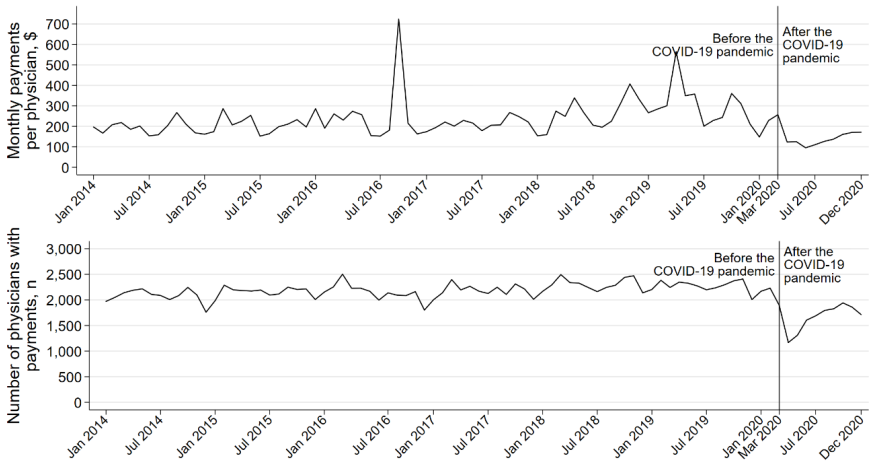

Table 1. Characteristics of annual general payments to allergists and clinical immunologists between 2014 and 2020

Variables	Year	Year	Year	Year	Year	Year	Year	Relative change rate (95% CI), %	Relative change rate (95% CI), %
	2014	2015	2016	2017	2018	2019	2020	Average annual change	2014-2019 vs 2020

Variables	Year	Year	Year	Year	Year	Year	Year	Relative change rate (95% CI), %	Relative change rate (95% CI), %
Total payments, $	14,148,080	14,894,043	18,690,857	15,511,329	18,882,943	22,247,387	11,218,636	–	–
Number of physicians with payments, n (%)+	3846 (83.8)	3786 (81.8)	3793 (NA)	3772 (79.0)	3893 (NA)	3868 (78.9)	3273 (NA)	0.3 (-0.2 – 0.8)	-15.4 (-17.1 – -13.6)***
Payments per physician, $									
Median (IQR)	315 (95–1,051)	367 (112–1,103)	375 (112–1,100)	378 (116–1,065)	441 (125–1,289)	457 (125–1,305)	336 (82–1,160)	8.3 (5.3–11.4)***	-50.8 (-56.4 – -44.4)***
Average (SD)	3,679 (14,031)	3,934 (15,023)	4,928 (52,598)	4,112 (19,881)	4,850 (21,606)	5,752 (25,123)	3,428 (12,925)		

*P<0.05, **P<0.01, ***P<0.001

Abbreviations: 95% confidence interval (95% CI), interquartile range (IQR), SD (standard deviation), and NA (not available)

+ The percentage of allergists and clinical immunologists receiving payments were estimated using the workforce report issued by the Association of American Medical Colleges in 2015, 2017, and 2019. The number of active allergists and clinical immunologists in 2016, in 2018, and 2020 were not available from the workforce reports.