

# Financial conflicts of interest for authors of neurology clinical practice guidelines in Japan: observational study of payments from pharmaceutical industry

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**Introduction**

Over the past three decades, clinical practice guidelines (CPGs) have increasingly played instrumental roles in standardizing the diagnostic and treatment processes based on the best available evidence. CPGs are now essential tools for endorsing evidence-based medicine in clinical practice.<sup>1,2</sup> However, the trustworthiness of CPGs could be compromised by conflicts of interest (COIs) between CPG authors and the pharmaceutical industry. Over the past decade, accumulating evidence has shown prevalent financial relationships between CPG authors and the healthcare industry.<sup>3-9</sup> While not all financial interactions necessarily lead to problematic relationships or harmful influences on patients and physicians' clinical practice, some can introduce bias into CPG recommendations, potentially compromising patient-centered care.<sup>2,10,11</sup> A recent systematic review indicated that CPGs and advisory committee reports with COIs were more likely to make favorable recommendations for pharmaceutical companies.<sup>12</sup>

To mitigate concerns about the undue influence of the healthcare industry on CPG recommendations, many national and international professional organizations have implemented strict COI management policies for trustworthy CPG development.<sup>1,2,5,11,13-15</sup> Given the significant impact of CPGs on patients, clinicians, and

other stakeholders, stringent COI management—including full disclosure, minimization of COIs among authors and organizations, and the appointment of COI-free chairpersons for CPGs—is essential. This approach could foster reliable CPGs and advances patient-centered care in the field of neurology and beyond.<sup>2,3,5,11,16-18</sup> Nevertheless, the extent of financial COIs among neurology CPG authors has not been thoroughly investigated to date. Utilizing a publicly accessible database containing payments to physicians from pharmaceutical companies, this study aims to evaluate the potential financial COIs among neurology CPG authors in Japan.

## Methods

This retrospective study examined the size and proportion of personal payments made by pharmaceutical companies to all authors of CPGs published by the Japanese Society of Neurology between 2016 and 2020. Major pharmaceutical companies affiliated with the Japan Pharmaceutical Manufacturers Association (JPMA), the largest pharmaceutical industry trade organization, were mandated to disclose payments made to physicians for lectures, consultancy services, and manuscript and pamphlet writing, including individual physicians' names, on their company webpages.<sup>19</sup> These payments, disclosed by the companies on their respective webpages, were voluntarily collected by an independent research organization and published in a searchable online database (<https://yenfordocs.jp/>). The latest version of this database contained payment data from 2016 to 2020. We extracted data on payments for lecturing, consulting, and writing compensations made to the CPG authors from 2016 to 2020. The total amounts of payments and the number of CPG authors receiving payments were calculated. Descriptive analyses, including mean, standard deviation (SD), median, and interquartile range (IQR), were performed on the payment data collected from the companies between 2017 and 2020. As this study was a retrospective analysis of publicly available data and met the criteria for non-human subjects research, institutional board approval was not required.

## Results

We identified 284 unique authors from the 10 CPGs published by the Japanese Society of Neurology between 2016 and 2020. Among these authors, 34 (12.0%) contributed to the development of two different CPGs, 241 (84.9%) were male physicians, and 73 (25.7%) held full professorships at their affiliated universities. Of these authors, 236 (83.1%) received one or more personal payments from pharmaceutical companies between 2016 and 2020 (Table 1). The total amount of payments to 273 authors was \$13.9 million, encompassing 14,596 transactions over the five years. The mean and median personal payments per author were \$49,274 (SD: \$81,146) and \$15,255 (IQR: \$1,138–\$58,737), respectively. Over the five years, 28.2%, 16.2%, and 4.6% of authors received more than \$50,000, \$100,000, and \$250,000, respectively. All 10 CPG chairpersons and 9 vice chairpersons received personal payments, with a mean of \$118,450 (standard deviation: \$153,378). The mean payment amounts were significantly higher for CPG chairs and vice chairpersons than for other authors (\$118,450 vs. \$44,593,  $p < 0.001$  in the Mann-Whitney U test).

Table 2 describes the payments by guideline. Of the 10 CPGs, all had more than 50% of their authors receiving personal payments, with percentages ranging from 72.6% to 100%. All authors of the spinocerebellar degeneration and multiple system atrophy CPG received payments from the companies. The mean personal payments were highest for the Parkinson's disease CPG (\$160,441), followed by epilepsy (\$78,110), dementia (\$72,431), and spinocerebellar degeneration and multiple system atrophy (\$44,989).

## Discussion

This study represents the first comprehensive analysis of personal payments to all neurology CPG authors from major pharmaceutical companies in Japan. We demonstrated that over 80% of neurology CPG authors received nearly \$14.0 million in personal payments over five years. These payments were for lectures at company-sponsored events, consulting services, and supervising pamphlets about the companies' products distributed to physicians and patients. Notably, all CPG chairpersons and vice chairpersons had substantially financial ties with pharmaceutical companies.

These close financial relationships between Japanese neurology CPG authors and pharmaceutical companies raise concerns about the Japanese Society of Neurology's management of financial COIs for CPG authors.

This situation may also pose a risk to the credibility and integrity of neurology CPGs in Japan. The high proportions of CPG authors receiving personal payments and the substantial payments to CPG chairpersons during the CPG development and/or a few years after CPG publication indicate clear deviations from international COI policies. According to recommendations by the U.S. National Academy of Medicine and the Guidelines International Network,<sup>1,2</sup> medical societies and organizations responsible for producing CPGs should maintain a majority of authors free from financial COIs and appoint chairpersons without such conflicts. However, our findings reveal that none of the CPGs developed by the Japanese Society of Neurology met these recommendations.

The deviations of Japanese CPGs from international COI policies are not unique to neurology but are also evident across specialties in Japan, as previously reported.<sup>3-7,18,20-26</sup> Studies have shown that the proportion of CPG authors with financial COIs ranged from 86.4% in cardiology<sup>27</sup> to 91.3-100% in rheumatology.<sup>4,28</sup> These high proportions may be attributed to less transparent and rigorous COI management policies among Japanese professional medical societies,<sup>4,5</sup> including the Japanese Society of Neurology. The Japanese Society of Neurology only required authors to declare payments exceeding \$4,682 (500,000 Japanese yen) per year per company for activities such as lecturing, consulting, and writing. Thus, payments below this threshold were not mandated to be declared, despite the majority of US and European medical societies requiring disclosure of all payments regardless of amount.<sup>14</sup> Given the significant influence of CPGs on clinical practice and patient care, more transparent and rigorous COI management policies as well as enforcement of the policies are essential for future CPGs developed by the Japanese Society of Neurology.

This study has limitations. The payment data were extracted from a secondary database maintained by an independent research organization. As the organization acknowledged, the study cannot rule out the possibility of errors or misreporting in the payment data reported in the database. Additionally, payments from pharmaceutical companies not affiliated with the JPMA were not disclosed, preventing assessment of the full extent of financial relationships between CPG authors and non-JPMA affiliated companies.

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## **A competing interests statement**

The authors declare that there were no conflicts of interest for this study.

## **A funding statement**

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors

## **Ethics approval statement:**

As this study was a retrospective analysis of publicly available data and met the definition of non-human subjects research, no institutional board review and approval were required. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline.

## **Patient consent statement**

Not applicable

## **Permission to reproduce material from other sources**

Not applicable

## **Clinical trial registration**

Not applicable

## **Declaration of generative AI in scientific writing**

During the preparation of this work, the authors used ChatGPT version 4.0 to check and correct grammatical and spelling errors. After using this tool, the authors carefully reviewed and edited the content as needed and take full responsibility for the content of the publication.

## Contributions:

Anju Murayama: conceptualization; methodology; resource; software; formal analysis; investigation; writing - original draft; writing - review & editing; visualization; study administration

Yuki Senoo: conceptualization; methodology; investigation; writing - original draft; writing - review & editing

## A data sharing statement

All data used in this study is available from Yen For Docs database run by Medical Governance Research Institute (<https://yenfordocs.jp/>) and each pharmaceutical companies belonging to the Japan Pharmaceutical Manufacturers Association. The datasets generated during and/or analyzed during the current study are not available due to the privacy restriction of individual guideline authors.

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Table 1. Summary of personal payments to Japanese neurology guideline authors between 2016 and 2020

Variables	Values
Total amount of payments, \$	13,993,788
Mean payments per author (standard deviation), \$	49,274 (81,146)
Median payments per author (interquartile range), \$	15,255 (1,138 – 58,737)
Maximum, \$	616,579
Authors with payments (N=284), n (%)	
Any payments	236 (83.1)
>\$10,000	159 (56.0)
>\$50,000	80 (28.2)
>\$100,000	46 (16.2)
>\$250,000	13 (4.6)
Top 5 companies making the largest payment amounts (%), \$	
Eisai	1,857,121 (13.3)
Takeda Pharmaceutical	1,434,193 (10.2)
Daiichi Sankyo	1,416,524 (10.1)
Sumitomo Pharma	1,123,221 (8.0)
Novartis Pharma	1,060,114 (7.6)

Table 2. Personal payments to authors of neurology clinical practice guidelines published by the Japanese Society of Neurology

Diseases targeted by clinical practice guidelines (publication year)	Number of authors, n	Number of authors receiving p
Myotonic dystrophy (2020)	32	25 (78.1)
Prions diseases (2020)	27	22 (81.5)
HTLV-1 associated myelopathy (2019)	51	37 (72.6)
Dystonia (2018)	26	20 (76.9)
Spinocerebellar degeneration and multiple system atrophy (2018)	23	23 (100)
Epilepsy (2018)	21	18 (85.7)
Parkinson's disease (2018)	19	18 (94.7)
Herpes simplex encephalitis (2017)	18	14 (77.8)
Dementia (2017)	62	55 (88.7)
Multiple sclerosis and neuromyelitis optica (2017)	39	33 (84.6)