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**Pharmaceutical industry-funded events for health  
professionals:  
A cross-sectional analysis of data released under Australian  
transparency rules**

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4 1 **Pharmaceutical industry-funded events for health professionals:**

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6 2 **A cross-sectional analysis of data released under Australian transparency rules**

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3 26 **Word count:** 2208  
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7 27  
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10 28 **Abstract**  
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12 29 **Objectives** To analyse patterns and characteristics of pharmaceutical industry sponsorship of  
13 30 events for Australian health professionals and to understand the implications of changes in  
14 31 reporting standards for payments to health professionals.  
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18 32  
19 33 **Design** Cross-sectional analysis.  
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23 35 **Participants and Setting** 301 publicly available company transparency reports downloaded  
24 36 from the website of Medicines Australia, the pharmaceutical industry trade association, covering  
25 37 the period from October 2011 to September 2015.  
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30 39 **Results** Forty-two companies sponsored 116,845 events for health professionals, on average 608  
31 40 per week with 30 attendees per event. Events typically included a broad range of health  
32 41 professionals: 82.0% included medical doctors and 38.3% trainees. Oncology, surgery and  
33 42 endocrinology were the most frequent clinical areas of focus. Most events (64.2%) were held in a  
34 43 clinical setting. The median cost per event was AU\$ 263 (Interquartile range \$153-\$1,195) and  
35 44 over 90% included food and beverages.  
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42 46 **Conclusions** Over this four-year period, industry-sponsored events were widespread and  
43 47 pharmaceutical companies maintained a high frequency of contact with health professionals.  
44 48 Most events were held in clinical settings, suggesting a pervasive commercial presence in  
45 49 everyday clinical practice. Food and beverages, known to be associated with changes to  
46 50 prescribing practice, were almost always provided. New Australian transparency provisions  
47 51 explicitly exclude meals from the reporting requirements, thus a large proportion of potentially  
48 52 influential payments from pharmaceutical companies to health professionals will disappear from  
49 53 public view.  
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## STRENGTHS AND LIMITATIONS OF THIS STUDY

- Transparency reports exist in Australia where companies report every industry-sponsored event for health professionals.
- From these publicly available reports, we have created a searchable world-first database with details of more than 100,000 industry-sponsored events for health professionals, enabling researchers to analyse the intersection of pharmaceutical marketing and medical education.
- The submission of transparency reports by companies to Medicines Australia is voluntary and we could not verify the accuracy and completeness of data.
- Since the Code of Conduct's transparency reporting requirements applies only to members of Medicines Australia, the available reports likely underestimate the true extent of industry sponsorship of events for health professionals.

## 71 Introduction

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74 Full disclosure of financial relationships between the pharmaceutical industry and health  
75 professionals is a key strategy adopted to make these interactions more transparent. Many  
76 jurisdictions have recently introduced transparency provisions, including the United States (US)  
77 and the European Union, but the extent of the disclosure obligation varies. For example, meals  
78 and drinks fall outside the scope of disclosure obligations under new voluntary transparency  
79 provisions introduced by the European Federation of Pharmaceutical Industry Associations.(1)  
80 At the same time, in the US, over 100 medical societies recently backed a bill that would exempt  
81 pharmaceutical and medical device companies from reporting an entire category of payments to  
82 doctors: those related to continuing medical education.(2)

83

84 Australia was one of the first countries to move towards public reporting of these payments.  
85 Since 2007, Medicines Australia, the trade association of the prescription medicines industry, has  
86 required member companies to provide detailed reports of sponsorship of events for health  
87 professionals, including hospitality and travel for attendees, room rentals, speaker honoraria, and  
88 food, with reports published on the Medicines Australia website.(3) These disclosure provisions  
89 were a condition for approval of Medicines Australia's Code of Conduct by the Australian  
90 Competition and Consumer Commission and were upheld following a legal appeal by  
91 industry.(4) Reports include events for all registered healthcare professionals, making Australia  
92 one of the few countries with transparency extending to non-physicians.(5,6) Changes to this  
93 policy were introduced in 2015, with the focus on events replaced by disclosure of payments to  
94 individuals.(3) Moreover, the new Code no longer requires reporting of payments for food and  
95 beverages.

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97 At a time when disclosure policies are being debated and revised in several settings, Australian  
98 data can provide valuable insights into patterns of industry sponsorship and on characteristics of  
99 transparency provisions that are needed to capture expenditures of pharmaceutical companies on  
100 health professionals. Apart from two analyses of data from the first six months of the Australian

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3 101 disclosure scheme,(5,7) and one brief report on events involving nurses,(6) no comprehensive  
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5 102 longer-term analyses have been conducted.  
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9 104 The objectives of this study are: to describe the nature and frequency of industry-sponsored  
10 105 events for health professionals; to create an open-access searchable database of these events; and  
11 106 to estimate the information that will be lost under newly introduced reporting standards.  
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## 17 109 **Methods**

### 20 110 21 111 *Data Sources*

22 112  
23 113 We downloaded all the available reports from the Medicines Australia website  
24 114 ([www.medicinesaustralia.com.au](http://www.medicinesaustralia.com.au)) in PDF format. The 301 PDF reports of approximately 15,000  
25 115 pages covered the period October 2011 to September 2015. The PDFs had been originally  
26 116 created in Microsoft Excel. We requested the original Excel files from Medicines Australia but  
27 117 were refused on the basis that member companies had not given permission for their release. We  
28 118 converted the PDF files into Excel format using free, online converter programs, cleaned the data  
29 119 to address errors introduced during file conversion, and ensured consistency of reporting in each  
30 120 column.  
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### 33 122 *Coding*

34 123  
35 124 We designed a coding scheme based on the available data and variables of theoretical interest  
36 125 based on the literature on industry-professional interactions.(8,9) The research team iteratively  
37 126 developed a set of keywords to define each variable of interest (Supplementary File 1). Using  
38 127 Excel's filter function, we used the keywords to search the unstructured descriptive text and to  
39 128 dichotomously code event features as "present/absent", including:

- 40 129 • sponsoring companies, grouped based on mergers and acquisitions as of March 31<sup>st</sup> 2016;
- 41 130 • geographical location by Australian state or overseas location;

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4 131 • professional status of attendees (e.g. specialists, nurses, trainees);  
5 132 • clinical focus based on clinical specialty of attendees and event description (e.g.  
6 oncology, endocrinology, cardiology);  
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9 134 • type of event (e.g. journal club, workshop, in-services);  
10 135 • type of hospitality provided (e.g. breakfast, lunch, dinner)  
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14 137 *Statistical analysis*  
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18 139 We present frequency tables for the characteristics of the events, and median spending levels per  
19 140 event and company. Cost variables are reported in AU\$. As the data were not normally  
20 141 distributed, we used Mann-Whitney U tests for the differences between medians. Analyses were  
21 142 performed using SPSS-Version 22.  
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3 144 **Results**  
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7 146 *General Overview*  
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11 148 From October 2011 to September 2015, 42 pharmaceutical companies in Australia sponsored  
12 149 116,845 events involving health professionals. On average, there were 2,434 events per month  
13 150 and 608 events per week. Each year, the number of events sharply decreased in December  
14 151 through February, likely reflecting the holiday season.  
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18  
19 153 Table 1 provides illustrative examples of sponsored events as presented verbatim in the company  
20 154 reports, chosen to reflect variations in reporting and event type. Events varied greatly in scope  
21 155 and intensity, ranging from a half hour journal club with sandwiches in a hospital meeting room,  
22 156 to a several day conference with overseas flight, accommodation and hospitality provided. The  
23 157 professional status was sometimes described generically as “healthcare professionals” or  
24 158 contained a list of the professions in attendees. The level of detail companies reported regarding  
25 159 the program’s content and the extent of explicit product promotion also varied; most of the event  
26 160 descriptions were disease-focused (e.g. “Journal Club on Chronic Obstructive Pulmonary  
27 161 Disease”) but in some cases the events mentioned specific drug names (e.g. “Introducing Zoely  
28 162 and other Emerging Trends in Contraception”).  
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3 164 *Attendees*  
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6 166 Over this four-year period, there were 3,481,750 individual attendances at industry-  
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8 167 sponsored events. On average there were 30 participants (SD=137.12) per event;  
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10 168 97.2% (n=113,595) of the events had fewer than 100 attendees and 0.2% (n=210) had  
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12 169 more than 1000 participants. Over 40% (n=47,084) of events included participants  
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14 170 from multiple professions. Table 2 lists the professional status of attendees and the  
15  
16 171 most frequent clinical areas of focus for the events. Events were most frequently  
17  
18 172 oncology-related, while otolaryngology and andrology were least represented.  
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20 174 *Location and characteristics of sponsored events*  
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23 176 Three quarters of events were held in the three Australian states with the largest  
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25 177 populations: New South Wales (30.7%, n=35,888), Victoria (26.9%, n=31,448), and  
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27 178 Queensland (18.8%, n= 21,963), and few were held overseas (1.9%, n= 2,262).  
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29 179 Nearly two thirds of events (64.2%, n=74,998) were held in a clinical setting, such as  
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31 180 hospitals, clinics or doctors' offices. Non-clinical venues included restaurants, hotels  
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33 181 and convention centres. One third of the events were described as a generic "meeting"  
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35 182 (37.5%, n=43,810) while others were described as journal clubs (28.5%, n=33,281),  
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37 183 clinical meetings (3%, n=3,533), grand rounds (3.8%, n=4,472), in-services (2.6%,  
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39 184 n=3,038), or workshops (2.6%, n=3,029). Only 4.2% (n=4,290) were described as  
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41 185 scientific meetings (e.g. conferences or congresses).  
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43 186  
44 187 *Costs and hospitality*  
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47 189 Reporting companies spent AU\$ 286,117,928 on events for health professionals. On  
48  
49 190 average, companies spent AU\$ 2,449 per event (SD \$15,020) while the median cost  
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51 191 was AU\$ 263 (Interquartile range (IQR)\$153-\$1,195). The median cost per person  
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53 192 was AU\$ 14 (IQR \$10- \$68). In 81.7% of the events (n=95,483) the costs were below  
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55 193 AU\$ 100 per attendee and in 2.1% (n=2,438) the costs were over AU\$ 1000 per  
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57 194 attendee.  
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3 196 Table 3 shows the median cost per person by characteristics of events. The median  
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5 197 total cost per person was significantly higher when the event format was a scientific  
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7 198 meeting (AU\$ 93, IQR \$33-659) compared with other event types ( $p<0.001$ ), for  
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9 199 events held overseas (AU\$ 710, IQR \$91-7,300) compared with events held in  
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11 200 Australia ( $p<0.001$ ) or outside the clinical settings (AU\$ 91, IQR \$28-154) as  
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13 201 compared with events in the clinical setting ( $p<0.001$ ).  
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15 202  
16 203 Reported “hospitality or financial support” provided to attendees included registration  
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18 204 fees, travel, accommodation, parking and food and beverage. Food was provided at  
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20 205 90.4% ( $n=105,667$ ) of events: 22.2% included lunches ( $n=25,935$ ), 17.0% dinners  
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22 206 ( $n=19,873$ ), 12.0% teas ( $n=14,067$ ), 11.0% breakfasts ( $n=12,806$ ), 2.7% were all-day  
23  
24 207 events with meals ( $n=3,113$ ), and for 25.6% ( $n=29,873$ ), type of food and beverage  
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26 208 was unspecified. Total cost of food was more than AU\$ 84 million (AU\$ 84,862,791),  
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28 209 accounting for 29.7% of the total cost of these functions. However, for 65%  
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30 210 ( $n=75,949$ ) of events, the total listed cost for food and beverage was equal to the listed  
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32 211 total cost of the event, indicating that the company’s sponsorship extended to food  
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34 212 and beverage only. The median cost of food per person was AU\$ 12 (IQR \$8-\$20).  
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### 36 213 37 214 *The top companies*

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39 216 Of the 42 pharmaceutical companies that provided reports, the top five in terms of the  
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41 217 numbers of sponsored events were AstraZeneca, Novartis, Merck Sharp & Dohme,  
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43 218 Roche, and Pfizer (Table 4). Boehringer Ingelheim had the highest cost per event with  
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45 219 a median cost of AU\$ 2,007 (IQR \$1,308-\$2,654), while Eli Lilly spent the least with  
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47 220 a median cost per function of AU\$ 145 (IQR \$62-\$455). Table 4 provides an  
48  
49 221 overview of event sponsorship by the top 20 companies, representing 87.8% of  
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51 222 events.  
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### 53 223 54 224 *Availability of database*

55 225 The analysable dataset in CSV file format we have created is available at: doi [to be  
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57 226 inserted prior to publication]  
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3 228 **Discussion**  
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6 230 Pharmaceutical industry-funded events for health professionals were frequent and  
7  
8 231 pervasive with almost three and a half million individual attendances at over 116,000  
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10 232 events in the four-year period between 2011 and 2015. As a frame of reference, in  
11 233 2014 there were 610,148 registered health professionals in Australia,(10) suggesting  
12  
13 234 that there was wide exposure to these events. Events typically included a broad range  
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15 235 of professionals and multidisciplinary teams, including most commonly: medical  
16 236 specialists, nurses, trainees and primary care doctors. Nearly two-thirds of events  
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18 237 were held in clinical settings. Average costs per person were modest and the vast  
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20 238 majority of events (90.4%) included the provision of food and beverages.  
21 239 Additionally, for most events (65%), the only funding provided was for food and  
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23 240 beverages. Thus, our analysis suggests that the new Australian and European  
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25 241 transparency rules will decrease transparency because hospitality in the form of food  
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27 242 and/or beverages will be exempt from reporting.(1,3)  
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32 244 Although professional education is critical for improving patient care, previous  
33 245 studies of internal pharmaceutical industry documents have shown that sponsored  
34 246 events have been effectively used as a marketing tool.(11,12) A systematic review  
35 247 from 2010 found that with rare exceptions, exposure to pharmaceutical industry  
36 248 information is associated with either no effect on prescribing or with adverse effects  
37 249 such as lower prescribing quality, higher frequency or costs.(13) More recently,  
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39 250 analyses of the Open Payments database in the US, have shown that payments for  
40 251 educational training and even the provision of low cost free meals, commonly  
41 252 provided at sponsored events, are associated with increased prescribing of promoted,  
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43 253 costly, brand-name medications.(14,15)  
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50 255 Finally, we also found a high prevalence of trainee attendance at these events.  
51 256 Targeting medical trainees can lead to a process of normalisation and enculturation  
52 257 while trainees develop their professional identity. (16) This has been described as an  
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54 258 effective strategy “to influence physicians from the bottom up.”(12) Medical school  
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56 259 policies limiting trainee-industry interaction have been associated with a shift in  
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3 260 attitude (17) and reduced prescribing of costly new medicines without therapeutic  
4 261 advantages.(18)  
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9 263 Our study has a number of limitations. Firstly, we relied on reports submitted by  
10 264 companies to Medicines Australia and could not verify the accuracy and completeness  
11 265 of data. Secondly, since the Code of Conduct's transparency reporting requirements  
12 266 applies only to members of Medicines Australia, the available reports likely  
13 267 underestimate the true extent of industry sponsorship of events for health  
14 268 professionals. For example, non-member manufacturers of prescription medicines and  
15 269 manufacturers of generic medicines, over-the-counter medicines and medical devices  
16 270 are not covered by these rules. Thirdly, with regard to the coding scheme, the research  
17 271 team identified a set of keywords to define each variable of interest and it is possible  
18 272 that some synonyms were missed due to variability in the data provided. Fourthly, we  
19 273 did not assess the content of events due to the unstructured and variable nature of  
20 274 reporting. Fifthly, our analysis focuses on industry sponsorship of events and did not  
21 275 examine differences in how event organizers manage potential influences. And  
22 276 finally, costs were not adjusted for inflation as this would likely have a limited impact  
23 277 on the Australian dollar over such a short time period. Notwithstanding these  
24 278 limitations, we have conducted a cross-sectional analysis of the only publicly  
25 279 available data on industry-sponsored events for health professionals.  
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29 281 In conclusion, our findings have several international implications for future research  
30 282 and policy initiatives. While Australian transparency reports are difficult to analyse  
31 283 due to their format, we have created an open-access searchable world-first database  
32 284 with details of more than 100,000 industry-sponsored events, enabling researchers to  
33 285 analyse the intersection of pharmaceutical marketing and medical education.  
34 286 Similarly, individual institutions such as hospitals or universities may use the data to  
35 287 see what industry-sponsored activities are happening within their own backyards, and  
36 288 whether they meet contemporary expectations for transparency and independence.  
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39 290 At the policy level, at a time when new rules are being debated and revised globally,  
40 291 our findings underscore the need for more disclosure, not less. Transparency rules  
41 292 should be as inclusive as possible with regard to the type of companies required to  
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3 293 report and also in terms of the scope of payments and categories of health  
4 294 professionals covered. The onus of reporting should not be on the industry only; for  
5 295 example, public sector hospitals could be required to report meal subsidies from  
6 296 pharmaceutical and device manufacturers. A stronger policy option, already  
7 297 implemented at several academic medical centres in the US, would be to eliminate the  
8 298 provision of free food by manufacturers.<sup>(19)</sup> In the long term, ways of expanding  
9 299 funding for independent continuing professional education should be explored. In the  
10 300 short term, health professionals should be more aware of the independent sources of  
11 301 information on drugs that are already available (e.g. NPSMedicineWise, the  
12 302 Australian Medicines Handbook and the independent drug bulletins).

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22 304 Finally, our findings show decision-makers the extent of industry-sponsored activity  
23 305 which will be hidden if “free food” fails to be included in future transparency  
24 306 regimes.

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18 380 **Contributors:** AF, QG, BM, RM, LB conceived of the study. AF, QG, BM, RM, EW  
19 381 designed the coding scheme. AF, QG and SS acquired and analysed all data. AF  
20 382 drafted the manuscript. All the authors contributed to the writing of the paper and  
21 383 approved the final version. AF is the guarantor.  
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32 388 conduct of the study; collection, management, analysis, and interpretation of the data;  
33 389 preparation, review, or approval of the manuscript; and decision to submit the  
34 390 manuscript for publication.  
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40 392 **Competing interests:** All authors have completed the ICMJE uniform disclosure  
41 393 form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) (available on request from the  
42 394 corresponding author). Dr. Mintzes reports that she was an expert witness on behalf of  
43 395 plaintiffs in a Canadian class action suit concerning cardiovascular risks of a  
44 396 testosterone gel. This testimony included an analysis of promotion of testosterone to  
45 397 health professionals; there was no specific relationship to the current study. The  
46 398 authors declare no other relationships or activities that could appear to have  
47 399 influenced the submitted work.  
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401 **Ethical approval:** Not required.

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403 **Data sharing:** Upon acceptance for publication, the full dataset will be made  
404 available as a CSV file with a link in the publication.

405

406 **Access to the data:** All authors had full access to all of the data (including statistical  
407 reports and tables) in the study and can take responsibility for the integrity of the data  
408 and the accuracy of the data analysis.

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### Tables and Boxes

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412 Table 1. Illustrative examples of industry sponsored events

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Company	Date	Event content	Venue	Profession als Present	Hospitality	Total Costs and Costs of hospitality per head
Astrazene ca	Sep. -15	Educational Event - Dinner meeting Going for Goal: Optimising Treatment in Type 2 Diabetes and Incretin Based Therapies; and On the Road to Glycemic Control. 2 hours	Hotel Realm Barton, ACT	32 General Practice Nursing Endocrinol ogy	Dinner with Alcoholic and Non Alcoholic Beverages	\$3,305.45 includes 1 speaker fee for \$1,218.18 Hospitality per head: \$65.23

		educational content				
Astrazene ca	Mar. -15	Educational Event - Lunch meeting Restless Legs. 1 hour educational content	The Golden Horse Footscr ay, VIC	10 General Practice Respiratory Medicine	Lunch	\$848.82 includes speaker fee \$600 Hospitality per head: \$24.88
Novartis	Feb. -15	Sponsorship of Journal Club on: Chronic Obstructive Pulmonary Disease 1 hr educational content	Gold Coast Univer sity Hospit al Southp ort, QLD	20 Medical Students, Nurses, Pharmacists	Afternoon Tea	\$184 Hospitality per head: \$9.20
Novartis	Mar. -14	Sponsorship of Day Seminar on:  Immunosuppressa nt 8 hrs educational content	Alfred Health Melbo urne, VIC	120 Cardiologis ts, Nurses, Registrars, Renal Physicians, Surgeons, Transplant Physicians	Breakfast, Coffee, Lunch, Afternoon Tea, Light Refreshmen ts, Morning Tea, Non- Alcoholic Beverages	\$2,665 Includes Speaker Meal Costs (for 8 speakers): \$167 Hospitality per head: \$20.82
Merck Sharp & Dohme Australia	Oct. - 11	Oncology Journal Club [hours of education = 1]	Mercy Wome n's Hospit	5 Oncologists , Nurses	Food & beverages	\$19.64, Hospitality per head: \$3.92

			al, Heidel berg, VIC			
Merck Sharp & Dohme Australia	Oct. - 11	Evening educational meeting "Introducing Zoely and other Emerging Trends in Contraception" [hours of education = 2.5]	Boatho use by the Lake, Barton, ACT	25 Obstetricia ns and Gynaecolog ist	Food & beverages	Total Cost \$2180.15 Includes speaker fee 688.36, speaker food & bev \$59.07, Hospitality per head: \$57.31
Roche Products	Apr. -14	Multi Disciplinary Breast Cancer Clinical Review Meeting Educational Content = 1hr	Royal Adelai de Hospit al North Terrac e Adelai de, SA	13 Surgery Doctor Oncology Doctor Oncology Nurse Pathology Doctor	Lunch	\$247 Hospitality per head: \$19
Roche Products	Jan. - 13	Grand Rounds Educational Content = 1 hr 15 mins	Bunbur y Region al Hospit al Bussell Highw ay Bunbur	20 Hospital Healthcare Professiona ls	Lunch	\$272 Hospitality per head \$13.60

			y,WA			
Pfizer Australia	Apr. -13	Pfizer Australia provided Sponsorship for Healthcare Professional to attend The European Congress of Clinical Microbiology and Infectious Disease (ECCMID) 2013. Educational Content - 33.75 hr(s).	International Congresses Centre, Berlin, Germany	1 Infectious Disease Specialist	Registration Fee, Travel, Accommodation	Total cost \$10,855.00 Includes Registration Fee (1 attendee \$878), Travel (Flights \$8,196, Transfers \$219), Accommodation (6 Room Nights \$1,562)
Pfizer Australia	Jun. - 15	Journal Club - Chronic Pain, Educational Content - 1 hr(s).	Peter MacCallum Cancer Centre, East Melbourne, VIC	15 Palliative Care Nurse; Palliative Care Physician	Meal / Drinks	\$156 Hospitality per head \$10.40

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417 Table 2. Professional status of attendees and clinical areas of focus for the events (n =  
418 116,845).

Characteristic	Number of events	Percent
<b>Professional status of attendees*</b>		
Medical specialist	80,060	68.5%
Nurses	46,214	39.6%
Trainees	44,774	38.3%
Primary care doctors	24,662	21.1%
Pharmacists	9,781	8.4%
<b>Clinical areas of focus**</b>		
Oncology	22,987	19.7%
Surgery	13,306	11.4%
Endocrinology	12,655	10.8%
Cardiology	9,033	7.7%
Haematology	8,200	7.0%

419 \*percentages do not add to 100 because multiple types of professionals could attend an event.

420 \*\*data are presented for the 5 most frequent areas of focus so percentages do not add to 100.

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423 Table 3. Characteristics of events and median cost per person

	<b>Number of events</b> <b>n=116,845</b> <b>(%)</b>	<b>n</b>	<b>Median total cost per</b> <b>person*(Interquartile Range)</b> <b>\$ AU</b>
<b>Location</b>			
Overseas	2,262 (1.9%)		\$ 710 (91-7,300)
Within Australia	114,583 (98.1%)		\$ 14 (10-62)
<b>Setting</b>			
Clinical setting	74,998 (64.2%)		\$ 12 (9-15)
Non-clinical setting	41,847 (35.8%)		\$ 91 (28-154)
<b>Event type</b>			
Scientific meeting (e.g. congress, conferences)	4,920 (4.2%)		\$ 93 (33-659)
Other types of events	111,925 (95.8%)		\$ 14 (10-60)

424 \*Includes hospitality as well as other costs (e.g. venue hire, speaker honoraria, audiovisual  
425 hire)

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428 Table 4. The top twenty companies in terms of number of sponsored events.

Company	Number of events	Number of attendees	Total cost of food and beverage (AUS)	Total cost of function* (AUS)	Median total cost per event (IQR) (AUS)
<b>AstraZeneca</b>	13,968	435,686	12,725,027	31,766,776	318 (165-2,261)
<b>Novartis</b>	10,120	244,069	6,600,503	27,467,246	270 (167-1,154)
<b>Merck Sharp &amp; Dohme</b>	9,142	214,621	5,388,247	18,352,116	341 (180-1,182)
<b>Roche</b>	7,383	174,878	2,891,426	16,625,126	186 (129-284)
<b>Pfizer</b>	7,125	188,439	3,740,677	18,464,785	236 (141-573)
<b>Sanofi</b>	6,764	261,089	3,243,420	13,668,127	240 (149-600)
<b>Amgen</b>	5,562	117,767	4,545,874	11,145,245	192 (117-332)
<b>Eli Lilly</b>	5,419	138,765	2,270,896	7,949,786	145 (62-455)
<b>Servier Lab</b>	4,245	145,111	4,347,268	14,002,283	482 (196-2,252)
<b>Mundipharma</b>	4,168	135,517	2,956,613	8,939,046	342 (182-2,394)
<b>Janssen</b>	3,901	140,549	3,168,024	14,643,568	320 (164-1,818)
<b>GlaxoSmithKline</b>	3,706	103,331	2,993,037	6,292,242	254 (161-1,645)
<b>CSL</b>	3,285	138,170	1,337,909	6,000,501	288 (179-1,427)
<b>Bristol Myers Squibb</b>	3,151	138,446	2,492,290	12,755,630	245 (82-1,900)
<b>Bayer</b>	2,964	151,084	1,417,055	8,146,292	396 (194-1,500)
<b>IPSEN</b>	2,802	85,475	984,477	5,163,600	254 (169-454)
<b>Abbott/AbbVie</b>	2,774	59,793	3,291,305	6,437,623	255 (157-1,037)
<b>Boehringer Ingelheim</b>	2,223	56,204	6,050,143	8,724,933	2,007 (1,308-2,654)
<b>Gilead Sciences</b>	2,049	45,510	990,419	7,061,338	245 (160-540)
<b>Merk Serono</b>	1,841	41,809	1,376,023	4,237,372	229 (145-626)

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<b>Total – Top 20</b>	102,592	3,016,313	72,810,634	247,843,635	262 (152-1,199)
<b>All companies</b>	116,845	3,481,750	84,862,792	286,117,928	263 (153-1,195)

429 Abbreviations: IQR, interquartile range  
 430 \* Includes food and drink as well as other costs (e.g. venue hire, speaker honoraria,  
 431 audiovisual hire)  
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For peer review only



## Supplementary File 1. Keywords for coding

Variable name	Keyword search
COMPANY	A. Menarini Australia Pty Ltd; Abbott Australasia Pty Ltd OR AbbVie Pty Ltd; Actelion Pharmaceuticals Australia Pty Ltd; Alexion Pharmaceuticals Australasia PTY LTD; Allergan Australia Pty Ltd; Amgen Australia; Astellas Pharma Australia Pty Ltd; Astrazeneca Pty Ltd; Baxter Healthcare Pty Ltd; Bayer Australia Ltd; Besins Healthcare Australia; BioCeuticals; Biogen Idec Australia Pty Limited; Boehringer Ingelheim Pty Limited; Bristol-Myers Squibb Australia Pty Limited; Celgene Pty Ltd; CSL (includes also bioCSL Australia Pty Ltd and CSL Behring); Eisai Australia Pty Ltd; Eli Lilly Australia Pty Ltd; Fresenius Kabi Australia; Gilead Sciences Pty.; GlaxoSmithKline Australia Pty Ltd; iNova Pharmaceuticals (Aus) Pty Ltd; IPSEN Pty Ltd; Janssen; LEO Pharma Pty Ltd; Lundbeck Australia; Merck Serono Australia Pty Ltd; MSD Australia Pty Ltd; Mundipharma Pty Ltd; Mylan EPD; Norgine Pty Limited; Novartis Pharmaceuticals Australia Pty Limited (includes also Alcon Laboratories); Novo Nordisk

	Pharmaceuticals; Pfizer Australia; Roche Products Pty Limited; Sanofi/Sanofi Aventis Australia Pty Ltd; Servier Laboratories (Australia) Pty Ltd; Shire Australia; Takeda Pharmaceuticals Australia Pty Ltd (includes also Nycomed Pty Ltd Report); UCB Pharma; Vifor Pharma Pty Ltd
LOCATION	
New South Wales	NSW, New South Wales, Sydney, other cities or suburbs, and postal codes of NSW*
Victoria	VIC, Victoria, Melbourne, other cities or suburbs and postal codes of VIC*
Australian Capital Territory	ACT, Australian Capital Territory, Canberra, other cities or suburbs, and postal codes of ACT*
Western Australia	WA, Western Australia, Perth, other cities or suburbs, and postal codes of WA*
South Australia	SA, South Australia, Adelaide, other cities or suburbs, and postal codes of SA*
North Territory	NT, North Territory, other cities or suburbs, and postal codes of NT*
Tasmania	TAS, Tasmania, Hobart, other cities or suburbs, and postal codes of Tasmania*
Overseas	Overseas: outside of Australia**
*Where the state or capital was not listed, events were hand coded based on postal codes, cities or suburbs	
**Events not taking place in an Australian state were hand-coded	

MEALS	
• Lunch	Lunch
• Dinner	Dinner
• Breakfast	Breakfast
• Tea	Afternoon tea, morning tea, light refreshments, light meals, sandwiches & drinks, coffee cart, snack and beverage, sushi
• All day events with meals	Day delegate package*; conference package**
• Food unspecified	food & beverages, meals, drinks, in hospital catering, beverages, wine
• No meals provided	Sponsorship/accommodation only, no hospitality provided, travel/accommodation only (domestic events)
<p>*Note: “day delegate package” consisted of entries where multiple meals were listed ((Lunch, tea), (Breakfast, tea), (Dinner, tea), (Breakfast, lunch, tea))</p> <p>**Note: “conference package” consisted of events lasting multiple days and typically included a day delegate package, often accommodation (food and beverage not reported separately), registration (food and beverage not reported separately), or travel (including flights, registration, airfares, accommodation and food and beverages not reported separately)</p>	
EVENTS HELD IN CLINICAL SETTING	Hospital; clinic; practice; medicare local; health centre; surgery; medical centre; medical; health care centre; specialist centre; cancer centre; cancer care centre; heart centre; medical and dental centre;

	endocrine centre; radiotherapy centre; radiation centre; optical centre; eye centre; renal unit; ward; department; dept; community health; family planning; education centre.
PROFESSIONAL STATUS	
<ul style="list-style-type: none"> <li>Primary care doctors</li> </ul>	GP; general practitioner; family medicine.
<ul style="list-style-type: none"> <li>Nurses</li> </ul>	Nurse
<ul style="list-style-type: none"> <li>Pharmacists</li> </ul>	Pharmacist
<ul style="list-style-type: none"> <li>Trainees</li> </ul>	Registrar; resident; intern; student; advanced trainee; RMO; resident medical officer; JHO; SHO; senior house officer; PHO; principal house officer; fellow
<ul style="list-style-type: none"> <li>Specialty care</li> </ul>	Specialist; consultant; senior medical officer; SMO; visiting medical officer; VMO; general medicine; general physician; *ology physician; *ology doctor;  allergist; allergy physician; anesthesiologist; anesthetist; anaesthesiologist; anaesthetist; andrologist; cardiologist; dermatologist, diabetologist; emergency physician; emergency medicine physician; endocrinologist; epileptologist; gastroenterologist; geriatrician; getriatric physician; gynaecologist; obstetrician; OB/GYN; haematologist; hematologist; hepatologist; immunologist; infectious

	disease physician; infectious disease doctor; internal medicine physician; microbiologist; neonatologist; neurologist; nuclear medicine physician; nephrologist; renal physician; renal doctor; urologist; oncologist; pharmacologist; pulmonologist; psychogeriatrician; ophthalmologist; rheumatologist; radiologist; respiratory physician; respiratory medicine physician; respiratory medicine doctor; palliative care physician; pathologist; sexual health physician; sexual health doctor; psychiatrist; psychiatry doctor; paediatrician; surgeon; surgery doctor; intensive care doctor; intensivist; intensive care physician; cardiothoracic
<b>CLINICAL FOCUS</b>	
• Allergy/Immunology	Allergist; allergy; immunologist; immunology
• Anaesthesiology	Anesthesiologist; anesthetist; anaesthesiologist; anaesthetist; anaesthesiology
• Andrology	Andrologist
• Cardiology	Cardiologist; cardiology
• Dermatology	Dermatologist; dermatology
• Emergency	Emergency
• Endocrinology	endocrinologist; endocrinology; diabetologist; diabetology; diabetes
• Gastroenterology	Gastroenterologist; gastroenterology; Hepatologist; hepatology

• Geriatrics	Geriatrician; geriatric; psychogeriatrician; elderly
• Haematology	Haematologist; haematology; hematology; hematologist
• Infectious Diseases	Infectious disease; microbiologist; microbiology
• Internal Medicine	Internal medicine
• Intensive care	Intensive care; intensivist; critical care
• Neonatology	Neonatologist; neonatology; NICU; neonatal
• Nuclear medicine	Nuclear medicine
• Nephrology	Nephrologist, nephrology; renal; kidney
• Neurology	Neurologist; neurology; epileptologist
• Obstetrics/Gynaecology	Gynaecologist; gynaecology; obstetrician; OB/GYN; obstetrics
• Oncology	Oncologist; oncology; cancer
• Ophthalmology	Ophthalmologist; ophthalmology
• Otolaryngology	Otolaryngology
• Palliative care	Palliative care
• Pathology	Pathologist; pathology
• Pharmacology	Pharmacologist; pharmacology
• Paediatrics	Paediatrician; paediatric*; pediatric*
• Psychiatry	Psychiatrist; psychiatry; mental health
• Radiology	Radiologist; radiology
• Rheumatology	Rheumatologist; rheumatology
• Respiratory medicine	Lung specialist; respiratory; pulmonologist
• Sexual health	Sexual health
• Surgery	Surgeon; surgery; surgical; operating theatre
• Urology	Urologist; urology
*Note: the clinical focus is a proxy variable based on clinical specialty of attendees	

and/or event description.	
EVENT TYPE	
• Meeting (all inclusive/NOS)	Search for generic word “meeting”
• Journal club	Journal club; journalclub
• Inservice	Inservice
• Workshop	Workshop
• Grand rounds	Grand round; grandround
• Scientific meeting	scientific meeting; congress; conference AND NOT videoconference/teleconference
• Clinical meeting	internal meeting; departmental meeting; clinical meeting; case review, case conference; case study meeting; case study conference
• Multidisciplinary meeting	Multidisciplinary meeting

STROBE—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Page 1, 2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 2
<b>Introduction</b>			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 4, 5
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 5
<b>Methods</b>			
Study design	4	Present key elements of study design early in the paper	Page 5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page 5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	Page 5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 5,6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Page 5,6
Bias	9	Describe any efforts to address potential sources of bias	Methods: page 5, 6 Limitation: page 11
Study size	10	Explain how the study size was arrived at	Page 5,6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Page 6
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page 6
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	N/A
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A



<b>Results</b>			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Page 7
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 7
		(b) Indicate number of participants with missing data for each variable of interest	N/A
Outcome data	15*	Report numbers of outcome events or summary measures	7-9
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
<b>Discussion</b>			
Key results	18	Summarise key results with reference to study objectives	Page 10
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page 11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 10,11
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 10-12
<b>Other information</b>			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page 15

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).

# BMJ Open

## A cross-sectional analysis of pharmaceutical industry-funded events for health professionals in Australia

Journal:	<i>BMJ Open</i>
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<b>Primary Subject Heading</b>:	Public health
Secondary Subject Heading:	Health policy, Public health
Keywords:	Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PUBLIC HEALTH, EDUCATION & TRAINING (see Medical Education & Training)

SCHOLARONE™  
Manuscripts

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4 1 **A cross-sectional analysis of pharmaceutical industry-funded events**  
5 2 **for health professionals in Australia**  
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10 4 Alice Fabbri, Quinn Grundy, Barbara Mintzes, Swestika Swandari, Ray Moynihan, Emily  
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67 **Abstract**

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9 **Objectives** To analyse patterns and characteristics of pharmaceutical industry sponsorship of  
10 events for Australian health professionals and to understand the implications of recent changes in  
11 transparency provisions that no longer require reporting of payments for food and beverages.  
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16 **Design** Cross-sectional analysis.  
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20 **Participants and Setting** 301 publicly available company transparency reports downloaded  
21 from the website of Medicines Australia, the pharmaceutical industry trade association, covering  
22 the period from October 2011 to September 2015.  
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27 **Results** Forty-two companies sponsored 116,845 events for health professionals, on average 608  
28 per week with 30 attendees per event. Events typically included a broad range of health  
29 professionals: 82.0% included medical doctors, including specialists and primary care doctors,  
30 and 38.3% trainees. Oncology, surgery and endocrinology were the most frequent clinical areas  
31 of focus. Most events (64.2%) were held in a clinical setting. The median cost per event was  
32 AU\$ 263 (Interquartile range \$153-\$1,195) and over 90% included food and beverages.  
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39 **Conclusions** Over this four-year period, industry-sponsored events were widespread and  
40 pharmaceutical companies maintained a high frequency of contact with health professionals.  
41 Most events were held in clinical settings, suggesting a pervasive commercial presence in  
42 everyday clinical practice. Food and beverages, known to be associated with changes to  
43 prescribing practice, were almost always provided. New Australian transparency provisions  
44 explicitly exclude meals from the reporting requirements, thus a large proportion of potentially  
45 influential payments from pharmaceutical companies to health professionals will disappear from  
46 public view.  
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8 57 **STRENGTHS AND LIMITATIONS OF THIS STUDY**9  
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- From publicly available reports released under Australian transparency rules, we have created a searchable world-first database with details of more than 100,000 industry-sponsored events for health professionals, enabling researchers to analyse the intersection of pharmaceutical marketing and medical education.
- In order to analyse the database, we iteratively identified a set of keywords for each variable of interest, however it is possible that some synonyms were missed.
- We relied upon data as presented in the Medicines Australia transparency reports and we did not verify the accuracy and completeness of data.
- Transparency requirements apply only to member companies, excluding manufacturers of generics, over-the-counter and non-member prescription medicine manufacturers, thus our analysis likely underestimates the true extent of industry sponsorship of events for health professionals.

## 72 Introduction

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75 Full disclosure of financial relationships between the pharmaceutical industry and health  
76 professionals is a key strategy adopted to make these interactions more transparent. Many  
77 jurisdictions have recently introduced transparency provisions, including the United States (US)  
78 and the European Union, but the extent of the disclosure obligation varies. For example, meals  
79 and drinks fall outside the scope of disclosure obligations under new voluntary transparency  
80 provisions introduced by the European Federation of Pharmaceutical Industry Associations.(1)  
81 At the same time, in the US, over 100 medical societies recently backed a bill that would exempt  
82 pharmaceutical and medical device companies from reporting an entire category of payments to  
83 doctors: those related to continuing medical education.(2)

84

85 Australia was one of the first countries to move towards public reporting of these payments.  
86 Since 2007, Medicines Australia, the trade association of the prescription medicines industry, has  
87 required member companies to provide detailed reports of sponsorship of events for health  
88 professionals, which include company-initiated events, sponsored events organised by a third  
89 party, trade displays at educational events and sponsorship of healthcare professionals to attend  
90 events both in Australia and overseas.(3) The reports are published on the Medicines Australia  
91 website and include events for all registered healthcare professionals, making Australia one of  
92 the few countries with transparency extending to non-physicians.(4,5) These disclosure  
93 provisions were a condition for approval of Medicines Australia's Code of Conduct by the  
94 Australian Competition and Consumer Commission and were upheld following a legal appeal by  
95 industry.(6) Changes to this policy were introduced in 2015, with the focus on events replaced by  
96 disclosure of payments to individuals.(3) The reports detailing event sponsorship and aggregate  
97 payments to health professionals have been discontinued, and replaced with reports of payments  
98 to named individuals, similar to the Open Payments database in the US. Moreover, the new Code  
99 no longer requires reporting of payments for food and beverages.

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3 101 At a time when disclosure policies are being debated and revised in several settings,(1,2,3)  
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5 102 Australian data can provide valuable insights into patterns of industry sponsorship and on  
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7 103 characteristics of transparency provisions that are needed to capture expenditures of  
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9 104 pharmaceutical companies on health professionals. Apart from two analyses of data from the first  
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11 105 six months of the Australian disclosure scheme,(4,7) and one brief report on events involving  
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13 106 nurses,(5) no comprehensive longer-term analyses have been conducted.  
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16 108 The objectives of this study are: to describe the nature and frequency of events for health  
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18 109 professionals sponsored by pharmaceutical companies that are members of Medicines Australia;  
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20 110 to create an open-access searchable database of these events; and to estimate the information that  
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22 111 will be lost under newly introduced reporting standards.  
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## 26 114 **Methods**

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### 28 116 ***Data Sources***

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30 118 We downloaded all the available reports from the Medicines Australia website  
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32 119 ([www.medicinesaustralia.com.au](http://www.medicinesaustralia.com.au)) in PDF format. The 301 PDF reports of approximately 15,000  
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34 120 pages covered the period October 2011 to September 2015. The PDFs had been originally  
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36 121 created in Microsoft Excel. We requested the original Excel files from Medicines Australia but  
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38 122 were refused on the basis that member companies had not given permission for their release. We  
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40 123 converted the PDF files into Excel format using free, online converter programs, cleaned the data  
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42 124 to address errors introduced during file conversion, and ensured consistency of reporting in each  
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44 125 column.  
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46 126 The reports cover information on the sponsoring company, timing, venue type, number and  
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48 127 profession of participants, hospitality and travel for attendees, room rentals and equipment, and  
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50 128 speaker honoraria.(3)  
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### 53 130 ***Coding***

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4 131  
5 132 We designed a coding scheme based on the available data and variables of theoretical interest  
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7 133 based on the literature on industry-professional interactions(8,9) and on two previous analyses of  
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9 134 data from the first six months of the Australian disclosure scheme.(4,7) The research team  
10  
11 135 iteratively developed a set of keywords to define each variable of interest (Supplementary File  
12  
13 136 1). Using Excel's filter function, we used the keywords to search the unstructured descriptive  
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15 137 text and to dichotomously code event features as "present/absent", for the following variables:

- 16 138 • sponsoring companies, grouped based on mergers and acquisitions as of March 31<sup>st</sup> 2016;
- 17 139 • geographical location by Australian state or overseas location;
- 18 139 • professional status of attendees (e.g. specialists, nurses, trainees);
- 20 140 • clinical focus based on clinical specialty of attendees and event description (e.g.  
21 141 oncology, endocrinology, cardiology);
- 23 142 • type of event (e.g. journal club, workshop, in-services);
- 25 143 • type of hospitality provided (e.g. breakfast, lunch, dinner)

### 28 145 29 146 *Statistical analysis*

30 146  
31 147  
32 148 We present frequency tables for the characteristics of the events, and median spending levels per  
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34 149 event and company. Cost variables are reported in AU\$. As the data were not normally  
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36 150 distributed, we used Mann-Whitney U tests for the differences between medians. Analyses were  
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38 151 performed using SPSS-Version 22.  
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3 153 **Results**  
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7 155 *General Overview*  
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12 158 From October 2011 to September 2015, 42 pharmaceutical companies in Australia sponsored  
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14 159 116,845 events involving health professionals. On average, there were 2,434 events per month  
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16 160 and 608 events per week. Each year, the number of events sharply decreased in December  
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18 161 through February, likely reflecting the holiday season.  
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20 162

21 163 Table 1 provides illustrative examples of sponsored events as presented verbatim in the company  
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23 164 reports, chosen to reflect variations in reporting and event type. Events varied greatly in scope  
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25 165 and intensity, ranging from a half hour journal club with sandwiches in a hospital meeting room,  
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27 166 to a several day conference with overseas flight, accommodation and hospitality provided. The  
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29 167 professional status was sometimes described generically as “healthcare professionals” or  
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31 168 contained a list of the professions in attendees. The level of detail companies reported regarding  
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33 169 the program’s content and the extent of explicit product promotion also varied; most of the event  
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35 170 descriptions were disease-focused (e.g. “Journal Club on Chronic Obstructive Pulmonary  
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37 171 Disease”) but in some cases the events mentioned specific drug names (e.g. “Introducing Zoely  
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39 172 and other Emerging Trends in Contraception”).  
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3 174 *Attendees*  
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176 Over this four-year period, there were 3,481,750 individual attendances at industry-  
177 sponsored events. The median number of event attendees was 18 (interquartile range  
178 (IQR) 12-25); 97.2% (n=113,595) of the events had fewer than 100 attendees and  
179 0.2% (n=210) had more than 1000 participants. Over 40% (n=47,084) of events  
180 included participants from multiple professions. Table 2 lists the professional status of  
181 attendees and the most frequent clinical areas of focus for the events. Events were  
182 most frequently oncology-related, while otolaryngology and andrology were least  
183 represented.

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185 *Location and characteristics of sponsored events*  
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187 Three quarters of events were held in the three Australian states with the largest  
188 populations: New South Wales (30.7%, n=35,888), Victoria (26.9%, n=31,448), and  
189 Queensland (18.8%, n= 21,963), and few were held overseas (1.9%, n= 2,262).  
190 Nearly two thirds of events (64.2%, n=74,998) were held in a clinical setting, such as  
191 hospitals, clinics or doctors' offices. Non-clinical venues included restaurants, hotels  
192 and convention centres. One third of the events were described as a generic "meeting"  
193 (37.5%, n=43,810) while others were described as journal clubs (28.5%, n=33,281),  
194 clinical meetings (3%, n=3,533), grand rounds (3.8%, n=4,472), in-services (2.6%,  
195 n=3,038), or workshops (2.6%, n=3,029). Only 4.2% (n=4,290) were described as  
196 scientific meetings (e.g. conferences or congresses).

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198 *Costs and hospitality*  
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200 Reporting companies spent AU\$ 286,117,928 on events for health professionals. On  
201 average, companies spent AU\$ 2,449 per event (SD \$15,020) while the median cost  
202 was AU\$ 263 (IQR \$153-\$1,195). The median cost per person was AU\$ 14 (IQR  
203 \$10- \$68). In 81.7% of the events (n=95,483) the costs were below AU\$ 100 per  
204 attendee and in 2.1% (n=2,438) the costs were over AU\$ 1000 per attendee.

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3 206 Table 3 shows the median cost per person by characteristics of events. The median  
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5 207 total cost per person was significantly higher when the event format was a scientific  
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7 208 meeting such as a congress or conference (AU\$ 93, IQR \$33-659) compared with  
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9 209 other event types ( $p<0.001$ ), for events held overseas (AU\$ 710, IQR \$91-7,300)  
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11 210 compared with events held in Australia ( $p<0.001$ ) or outside the clinical settings  
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13 211 (AU\$ 91, IQR \$28-154) as compared with events in the clinical setting ( $p<0.001$ ).  
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15 213 Reported “hospitality or financial support” provided to attendees included registration  
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17 214 fees, travel, accommodation, parking and food and beverage. Food was provided at  
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19 215 90.4% ( $n=105,667$ ) of events: 22.2% included lunches ( $n=25,935$ ), 17.0% dinners  
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21 216 ( $n=19,873$ ), 12.0% teas ( $n=14,067$ ), 11.0% breakfasts ( $n=12,806$ ), 2.7% were all-day  
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23 217 events with meals ( $n=3,113$ ), and for 25.6% ( $n=29,873$ ), type of food and beverage  
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25 218 was unspecified. Total cost of food was more than AU\$ 84 million (AU\$ 84,862,791),  
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27 219 accounting for 29.7% of the total cost of these functions. However, for 65%  
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29 220 ( $n=75,949$ ) of events, the total listed cost for food and beverage was equal to the listed  
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31 221 total cost of the event, indicating that the company’s sponsorship extended to food  
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33 222 and beverage only. The median cost of food per person was AU\$ 12 (IQR \$8-\$20).  
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### 36 224 *The top companies*

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38 226 Of the 42 pharmaceutical companies that provided reports, the top five in terms of the  
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40 227 numbers of sponsored events were AstraZeneca, Novartis, Merck Sharp & Dohme,  
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42 228 Roche, and Pfizer (Table 4). Boehringer Ingelheim had the highest cost per event with  
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44 229 a median cost of AU\$ 2,007 (IQR \$1,308-\$2,654), while Eli Lilly spent the least with  
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46 230 a median cost per function of AU\$ 145 (IQR \$62-\$455). Table 4 provides an  
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48 231 overview of event sponsorship by the top 20 companies, representing 87.8% of  
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50 232 events.  
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### 53 234 *Availability of database*

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55 236 The analysable dataset in CSV file format we have created is available at: doi [to be  
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57 237 inserted prior to publication]  
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3 238 **Discussion**  
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6 240 Pharmaceutical industry-funded events for health professionals were frequent and  
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8 241 pervasive with almost three and a half million individual attendances at over 116,000  
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10 242 events in the four-year period between 2011 and 2015. As a frame of reference, in  
11 243 2014 there were 610,148 registered health professionals in Australia,(10) suggesting  
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13 244 that there was wide exposure to these events. Events typically included a broad range  
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15 245 of professionals and multidisciplinary teams, including most commonly: medical  
16 246 specialists, nurses, trainees and primary care doctors. Nearly two-thirds of events  
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18 247 were held in clinical settings. Average costs per person were modest and the vast  
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20 248 majority of events (90.4%) included the provision of food and beverages.  
21 249 Additionally, for most events (65%), the only funding provided was for food and  
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23 250 beverages. Thus, our analysis suggests that the new Australian and European  
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25 251 transparency rules will decrease transparency because hospitality in the form of food  
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27 252 and/or beverages will be exempt from reporting.(1,3)  
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31 254 Although professional education is critical for improving patient care, previous  
32 255 studies of internal pharmaceutical industry documents have shown that sponsored  
33 256 events have been effectively used as a marketing tool.(11,12) A systematic review  
34 257 from 2010 found that with rare exceptions, exposure to pharmaceutical industry  
35 258 information is associated with either no effect on prescribing or with adverse effects  
36 259 such as lower prescribing quality, higher frequency or costs.(13) More recently,  
37 260 analyses of the Open Payments database in the US, have shown that payments for  
38 261 educational training and even the provision of low cost free meals, commonly  
39 262 provided at sponsored events, are associated with increased prescribing of promoted,  
40 263 costly, brand-name medications.(14,15)  
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44 265 Finally, we also found a high prevalence of trainee attendance at these events.  
45 266 Targeting medical trainees can lead to a process of normalisation and enculturation  
46 267 while trainees develop their professional identity. (16) This has been described as an  
47 268 effective strategy “to influence physicians from the bottom up.”(12) Medical school  
48 269 policies limiting trainee-industry interaction have been associated with a shift in

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3 270 attitude (17) and reduced prescribing of costly new medicines without therapeutic  
4 271 advantages.(18)

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8 273 Our study has a number of limitations. First, we relied on reports submitted by  
9 274 companies to Medicines Australia and could not verify the accuracy and completeness  
10 275 of data. Second, since the Code of Conduct's transparency reporting requirements  
11 276 applies only to members of Medicines Australia, the available reports likely  
12 277 underestimate the true extent of industry sponsorship of events for health  
13 278 professionals. Our analysis included only 42 Medicines Australia member companies;  
14 279 as a frame of reference there are approximately 140 separate firms listed as suppliers  
15 280 to the Australian Pharmaceutical Benefit Scheme.(19) Moreover, non-member  
16 281 manufacturers of branded prescription medicines, generic medicines, over-the-counter  
17 282 medicines and medical devices are not covered by the Medicines Australia Code.  
18 283 Third, with regard to the coding scheme, the research team identified a set of  
19 284 keywords to define each variable of interest and it is possible that some synonyms  
20 285 were missed due to variability in the data provided. Fourth, we did not assess the  
21 286 content of events due to the unstructured and variable nature of reporting. Fifth, our  
22 287 analysis focuses on industry sponsorship of events and did not examine differences in  
23 288 how event organizers manage potential influences. Finally, costs were not adjusted for  
24 289 inflation as this would likely have a limited impact on the Australian dollar over such  
25 290 a short time period. Notwithstanding these limitations, we have conducted a cross-  
26 291 sectional analysis of the only publicly available data on industry-sponsored events for  
27 292 health professionals.

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43 294 In conclusion, our findings have several international implications for future research  
44 295 and policy initiatives. While Australian transparency reports are difficult to analyse  
45 296 due to their format, we have created an open-access searchable world-first database  
46 297 with details of more than 100,000 industry-sponsored events, enabling researchers to  
47 298 analyse the intersection of pharmaceutical marketing and medical education.  
48 299 Similarly, individual institutions such as hospitals or universities may use the data to  
49 300 see what industry-sponsored activities are happening within their own backyards, and  
50 301 whether they meet contemporary expectations for transparency and independence.

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3 303 At the policy level, at a time when new rules are being debated and revised globally,  
4 304 our findings underscore the need for more disclosure, not less. Transparency rules  
5 305 should be as inclusive as possible with regard to the type of companies required to  
6 306 report and also in terms of the scope of payments and categories of health  
7 307 professionals covered. The onus of reporting should not be on the industry only; for  
8 308 example, public sector hospitals as well as universities and professional associations  
9 309 could report meal subsidies from pharmaceutical and device manufacturers. A  
10 310 stronger policy option, already implemented at several academic medical centres in  
11 311 the US, would be to eliminate the provision of free food by manufacturers.(20) In the  
12 312 long term, ways of expanding funding for independent continuing professional  
13 313 education should be explored. There are already case studies showing that  
14 314 independence from industry sponsorship is achievable. For example the University of  
15 315 Michigan, as well as other major medical institutions in the US, no longer accept  
16 316 commercial support for continuing medical education.(21,22) This sets a valuable  
17 317 example that could become a model for other institutions. In the short term,  
18 318 universities and professional associations should make health professionals more  
19 319 aware of the independent sources of information on drugs that are already available  
20 320 (e.g. NPSMedicineWise, the Australian Medicines Handbook and the independent  
21 321 drug bulletins).

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36 323 Finally, our findings highlight that transparency requirements likely capture only a  
37 324 portion of industry sponsorship of events for health professionals. Changes to the  
38 325 transparency requirements will likely exacerbate this issue by excluding common  
39 326 categories of payments. Thus, decision-makers should be aware of the extent of  
40 327 industry-sponsored activity which will be hidden if “free food” fails to be included in  
41 328 future transparency regimes.

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415 **Contributors:** AF, QG, BM, RM, LB conceived of the study. AF, QG, BM, RM, EW  
416 designed the coding scheme. AF, QG and SS acquired and analysed all data. AF  
417 drafted the manuscript. All the authors contributed to the writing of the paper and  
418 approved the final version. AF is the guarantor.

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421  
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423 conduct of the study; collection, management, analysis, and interpretation of the data;  
424 preparation, review, or approval of the manuscript; and decision to submit the  
425 manuscript for publication.  
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3 427 **Competing interests:** All authors have completed the ICMJE uniform disclosure  
4 428 form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) (available on request from the  
5 429 corresponding author). Dr. Mintzes reports that she was an expert witness on behalf of  
6 430 plaintiffs in a Canadian class action suit concerning cardiovascular risks of a  
7 431 testosterone gel. None of the authors received any payments, funding, or other  
8 432 financial support from pharmaceutical manufacturers. The authors declare no other  
9 433 relationships or activities that could appear to have influenced the submitted work.

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18 435 **Ethical approval:** Not required.

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23 437 **Data sharing:** Upon acceptance for publication, the full dataset will be made  
24 438 available as a CSV file with a link in the publication.

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29 440 **Access to the data:** All authors had full access to all of the data (including statistical  
30 441 reports and tables) in the study and can take responsibility for the integrity of the data  
31 442 and the accuracy of the data analysis.

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9 **Tables and Boxes**  
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Table 1. Illustrative examples of industry sponsored events\*

Company	Date	Event content	Venue	Professional status of attendees	Hospitality provided	Total Cost of Hospitality	Number of attendees	Total costs of function
Astrazeneca	Sep. - 15	Educational Event - Dinner meeting Going for Goal: Optimising Treatment in Type 2 Diabetes and Incretin Based Therapies; and On the Road to Glycemic Control. 2 hours educational content	Hotel Realm Barton, ACT	General Practice Nursing Endocrinology	Dinner with Alcoholic and Non Alcoholic Beverages	\$2,087.27	32	\$3,305.45 includes 1 speaker fee for \$1,218.18
Astrazeneca	Mar. - 15	Educational Event - Lunch meeting Restless Legs. 1 hour educational content	The Golden Horse Footscray, VIC	General Practice Respiratory Medicine	Lunch	\$248.82	10	\$848.82 includes speaker fee for \$600

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Novartis	Feb. - 15	Sponsorship of Journal Club on: Chronic Obstructive Pulmonary Disease 1 hr educational content	Gold Coast Universit y Hospital Southport , QLD	Medical Students, Nurses, Pharmacists	Afternoon Tea	\$184 includes Food & Beverages for 20 delegates \$184	20	\$184 includes Total Hospitality : \$184
Novartis	Mar. - 14	Sponsorship of Day Seminar on: Immunosuppressant 8 hrs educational content	Alfred Health Melbourn e, VIC	Cardiologists , Nurses, Registrars, Renal Physicians, Surgeons, Transplant Physicians	Breakfast, Coffee, Lunch, Afternoon Tea, Light Refreshme nts, Morning Tea, Non- Alcoholic Beverages	\$2,498 includes Food & Beverages for 120 delegates : \$2,498	120	\$2,665 Includes Total Hospitality : \$2,498 Speaker Costs: Meal (for 8 speakers): \$167
Merck Sharp & Dohme	Oct. - 11	Oncology Journal Club [hours of education = 1]	Mercy Women's Hospital,	Oncologists, Nurses	Food & beverages	food & bev 19.64, Total	5	Total Costs \$19.64

Australia			Heidelberg, VIC			Hospitality 19.64		
Merck Sharp & Dohme Australia	Oct. - 11	Evening educational meeting "Introducing Zoely and other Emerging Trends in Contraception" [hours of education = 2.5]	Boathouse by the Lake, Barton, ACT	Obstetricians and Gynaecologist	Food & beverages	food & bev 1432.72, Total Hospitality 1432.72	25	speaker fee 688.36, speaker food & bev \$59.07, Total Cost \$2180.15
Roche Products	Apr. - 14	Multi Disciplinary Breast Cancer Clinical Review Meeting Educational Content = 1hr	Royal Adelaide Hospital North Terrace Adelaide, SA	Surgery Doctor Oncology Doctor Oncology Nurse Pathology Doctor	Lunch	247	13	247
Roche Products	Jan. - 13	Grand Rounds Educational Content = 1 hr 15 mins	Bunbury Regional Hospital Bussell Highway	Hospital Healthcare Professionals	Lunch	\$272	20	\$272

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			Bunbury, WA					
Pfizer Australia	Apr. - 13	Pfizer Australia provided Sponsorship for Healthcare Professional to attend The European Congress of Clinical Microbiology and Infectious Disease (ECCMID) 2013. Educational Content - 33.75 hr(s).	Internatio nal Congress Centrum, Berlin, Germany	Infectious Disease Specialist	Registratio n Fee (1 attende e \$878), Travel (Flights \$8,196, Transfers \$219), Accommod ation (6 Room Nights \$1,562)	\$10855	1	\$10,855.00
Pfizer Australia	Jun. - 15	Journal Club - Chronic Pain, Educational Content - 1 hr(s).	Peter MacCallu m Cancer Centre, East	Palliative Care Nurse; Palliative Care Physician	Meal / Drinks	\$156	15	\$156

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459 \*Illustrative examples extracted verbatim from Medicines Australia transparency reports

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462 Table 2. Professional status of attendees and clinical areas of focus for the events (n =  
463 116,845).

Characteristic	Number of events	Percent
<b>Professional status of attendees*</b>		
Medical specialists	80,060	68.5
Nurses	46,214	39.6
Trainees	44,774	38.3
Primary care doctors	24,662	21.1
Pharmacists	9,781	8.4
<b>Clinical areas of focus</b>		
Oncology	22,987	19.7
Surgery	13,306	11.4
Endocrinology	12,655	10.8
Cardiology	9,033	7.7
Haematology	8,200	7.0
Respiratory Medicine	7,659	6.6
Psychiatry	6,252	5.4
Nephrology	6,199	5.3
Gastroenterology	5,643	4.8
Pathology	5,361	4.6
Neurology	4,259	3.6
Urology	4,259	3.6

Radiology	3,667	3.1
Infectious Diseases	3,348	2.9
Geriatrics	3,134	2.7
Anaesthesiology	2,746	2.4
Rheumatology	2,671	2.3
Paediatrics	1,994	1.7
Allergy/Immunology	1,398	1.2
Ophthalmology	1,365	1.2
Palliative Care	1,319	1.1
Intensive Care	1,147	1.0
Sexual Health	955	0.8
Dermatology	913	0.8
Obstetrics/Gynaecology	878	0.8
Emergency	875	0.7
Internal Medicine	418	0.4
Neonatology	363	0.3
Nuclear Medicine	357	0.3
Pharmacology	219	0.2
Otolaryngology	31	0.03
Andrology	18	0.02

464 \*percentages do not add to 100 because multiple types of professionals could attend an event.

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467 Table 3. Characteristics of events and median cost per person

	<b>Number of events n=116,845 n (%)</b>	<b>Median total cost per person*(Interquartile Range) \$ AU</b>
<b>Location</b>		
Overseas	2,262 (1.9%)	\$ 710 (91-7,300)
Within Australia	114,583 (98.1%)	\$ 14 (10-62)
<b>Setting</b>		
Clinical setting	74,998 (64.2%)	\$ 12 (9-15)
Non-clinical setting	41,847 (35.8%)	\$ 91 (28-154)
<b>Event type</b>		
Scientific meeting (e.g. congress, conferences)	4,920 (4.2%)	\$ 93 (33-659)
Other types of events	111,925 (95.8%)	\$ 14 (10-60)

468 \*Includes hospitality as well as other costs (e.g. venue hire, speaker honoraria, audiovisual  
469 hire)

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472 Table 4. The top twenty companies in terms of number of sponsored events.

Company	Number of events	Number of attendees	Total cost of food and beverage (AU\$)	Total cost of function* (AU\$)	Median total cost per event (IQR) (AU\$)
<b>AstraZeneca</b>	13,968	435,686	12,725,027	31,766,776	318 (165-2,261)
<b>Novartis</b>	10,120	244,069	6,600,503	27,467,246	270 (167-1,154)
<b>Merck Sharp &amp; Dohme</b>	9,142	214,621	5,388,247	18,352,116	341 (180-1,182)
<b>Roche</b>	7,383	174,878	2,891,426	16,625,126	186 (129-284)
<b>Pfizer</b>	7,125	188,439	3,740,677	18,464,785	236 (141-573)
<b>Sanofi</b>	6,764	261,089	3,243,420	13,668,127	240 (149-600)
<b>Amgen</b>	5,562	117,767	4,545,874	11,145,245	192 (117-332)
<b>Eli Lilly</b>	5,419	138,765	2,270,896	7,949,786	145 (62-455)
<b>Servier Lab</b>	4,245	145,111	4,347,268	14,002,283	482 (196-2,252)
<b>Mundipharma</b>	4,168	135,517	2,956,613	8,939,046	342 (182-2,394)
<b>Janssen</b>	3,901	140,549	3,168,024	14,643,568	320 (164-1,818)
<b>GlaxoSmithKline</b>	3,706	103,331	2,993,037	6,292,242	254 (161-1,645)
<b>CSL</b>	3,285	138,170	1,337,909	6,000,501	288 (179-1,427)
<b>Bristol Myers Squibb</b>	3,151	138,446	2,492,290	12,755,630	245 (82-1,900)
<b>Bayer</b>	2,964	151,084	1,417,055	8,146,292	396 (194-1,500)
<b>IPSEN</b>	2,802	85,475	984,477	5,163,600	254 (169-454)
<b>Abbott/AbbVie</b>	2,774	59,793	3,291,305	6,437,623	255 (157-1,037)
<b>Boehringer Ingelheim</b>	2,223	56,204	6,050,143	8,724,933	2,007 (1,308-2,654)
<b>Gilead Sciences</b>	2,049	45,510	990,419	7,061,338	245 (160-540)
<b>Merk Serono</b>	1,841	41,809	1,376,023	4,237,372	229 (145-626)

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<b>Total – Top 20</b>	102,592	3,016,313	72,810,634	247,843,635	262 (152-1,199)
<b>All companies</b>	116,845	3,481,750	84,862,792	286,117,928	263 (153-1,195)

473 Abbreviations: IQR, interquartile range  
474 \* Includes food and drink as well as other costs (e.g. venue hire, speaker honoraria,  
475 audiovisual hire)  
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## Supplementary File 1. Keywords for coding

Variable name	Keyword search
COMPANY	<p>A. Menarini Australia Pty Ltd; Abbott Australasia Pty Ltd OR AbbVie Pty Ltd; Actelion Pharmaceuticals Australia Pty Ltd; Alexion Pharmaceuticals Australasia PTY LTD; Allergan Australia Pty Ltd; Amgen Australia; Astellas Pharma Australia Pty Ltd; Astrazeneca Pty Ltd; Baxter Healthcare Pty Ltd; Bayer Australia Ltd; Besins Healthcare Australia; BioCeuticals; Biogen Idec Australia Pty Limited; Boehringer Ingelheim Pty Limited; Bristol-Myers Squibb Australia Pty Limited; Celgene Pty Ltd; CSL (includes also bioCSL Australia Pty Ltd and CSL Behring); Eisai Australia Pty Ltd; Eli Lilly Australia Pty Ltd; Fresenius Kabi Australia; Gilead Sciences Pty.; GlaxoSmithKline Australia Pty Ltd; iNova Pharmaceuticals (Aus) Pty Ltd; IPSEN Pty Ltd; Janssen; LEO Pharma Pty Ltd; Lundbeck Australia; Merck Serono Australia Pty Ltd; MSD Australia Pty Ltd; Mundipharma Pty Ltd; Mylan EPD; Norgine Pty Limited; Novartis Pharmaceuticals Australia Pty Limited (includes also Alcon Laboratories); Novo Nordisk</p>

	Pharmaceuticals; Pfizer Australia; Roche Products Pty Limited; Sanofi/Sanofi Aventis Australia Pty Ltd; Servier Laboratories (Australia) Pty Ltd; Shire Australia; Takeda Pharmaceuticals Australia Pty Ltd (includes also Nycomed Pty Ltd Report); UCB Pharma; Vifor Pharma Pty Ltd
LOCATION	
New South Wales	NSW, New South Wales, Sydney, other cities or suburbs, and postal codes of NSW*
Victoria	VIC, Victoria, Melbourne, other cities or suburbs and postal codes of VIC*
Australian Capital Territory	ACT, Australian Capital Territory, Canberra, other cities or suburbs, and postal codes of ACT*
Western Australia	WA, Western Australia, Perth, other cities or suburbs, and postal codes of WA*
South Australia	SA, South Australia, Adelaide, other cities or suburbs, and postal codes of SA*
North Territory	NT, North Territory, other cities or suburbs, and postal codes of NT*
Tasmania	TAS, Tasmania, Hobart, other cities or suburbs, and postal codes of Tasmania*
Overseas	Overseas: outside of Australia**
*Where the state or capital was not listed, events were hand coded based on postal codes, cities or suburbs	
**Events not taking place in an Australian state were hand-coded	

MEALS	
<ul style="list-style-type: none"> <li>Lunch</li> </ul>	Lunch
<ul style="list-style-type: none"> <li>Dinner</li> </ul>	Dinner
<ul style="list-style-type: none"> <li>Breakfast</li> </ul>	Breakfast
<ul style="list-style-type: none"> <li>Tea</li> </ul>	Afternoon tea, morning tea, light refreshments, light meals, sandwiches & drinks, coffee cart, snack and beverage, sushi
<ul style="list-style-type: none"> <li>All day events with meals</li> </ul>	Day delegate package*; conference package**
<ul style="list-style-type: none"> <li>Food unspecified</li> </ul>	food & beverages, meals, drinks, in hospital catering, beverages, wine
<ul style="list-style-type: none"> <li>No meals provided</li> </ul>	Sponsorship/accommodation only, no hospitality provided, travel/accommodation only (domestic events)
<p>*Note: “day delegate package” consisted of entries where multiple meals were listed ((Lunch, tea), (Breakfast, tea), (Dinner, tea), (Breakfast, lunch, tea))</p> <p>**Note: “conference package” consisted of events lasting multiple days and typically included a day delegate package, often accommodation (food and beverage not reported separately), registration (food and beverage not reported separately), or travel (including flights, registration, airfares, accommodation and food and beverages not reported separately)</p>	
EVENTS HELD IN CLINICAL SETTING	Hospital; clinic; practice; medicare local; health centre; surgery; medical centre; medical; health care centre; specialist centre; cancer centre; cancer care centre; heart centre; medical and dental centre;



	endocrine centre; radiotherapy centre; radiation centre; optical centre; eye centre; renal unit; ward; department; dept; community health; family planning; education centre.
<b>PROFESSIONAL STATUS</b>	
<ul style="list-style-type: none"> <li>• Primary care doctors</li> </ul>	GP; general practitioner; family medicine.
<ul style="list-style-type: none"> <li>• Nurses</li> </ul>	Nurse
<ul style="list-style-type: none"> <li>• Pharmacists</li> </ul>	Pharmacist
<ul style="list-style-type: none"> <li>• Trainees</li> </ul>	Registrar; resident; intern; student; advanced trainee; RMO; resident medical officer; JHO; SHO; senior house officer; PHO; principal house officer; fellow
<ul style="list-style-type: none"> <li>• Specialty care</li> </ul>	Specialist; consultant; senior medical officer; SMO; visiting medical officer; VMO; general medicine; general physician; *ology physician; *ology doctor;  allergist; allergy physician; anesthesiologist; anesthetist; anaesthesiologist; anaesthetist; andrologist; cardiologist; dermatologist, diabetologist; emergency physician; emergency medicine physician; endocrinologist; epileptologist; gastroenterologist; geriatrician; getriatric physician; gynaecologist; obstetrician; OB/GYN; haematologist; hematologist; hepatologist; immunologist; infectious

	disease physician; infectious disease doctor; internal medicine physician; microbiologist; neonatologist; neurologist; nuclear medicine physician; nephrologist; renal physician; renal doctor; urologist; oncologist; pharmacologist; pulmonologist; psychogeriatrician; ophthalmologist; rheumatologist; radiologist; respiratory physician; respiratory medicine physician; respiratory medicine doctor; palliative care physician; pathologist; sexual health physician; sexual health doctor; psychiatrist; psychiatry doctor; paediatrician; surgeon; surgery doctor; intensive care doctor; intensivist; intensive care physician; cardiothoracic
<b>CLINICAL FOCUS</b>	
• Allergy/Immunology	Allergist; allergy; immunologist; immunology
• Anaesthesiology	Anesthesiologist; anaesthetist; anaesthesiologist; anaesthetist; anaesthesiology
• Andrology	Andrologist
• Cardiology	Cardiologist; cardiology
• Dermatology	Dermatologist; dermatology
• Emergency	Emergency
• Endocrinology	endocrinologist; endocrinology; diabetologist; diabetology; diabetes
• Gastroenterology	Gastroenterologist; gastroenterology; Hepatologist; hepatology

• Geriatrics	Geriatrician; geriatric; psychogeriatrician; elderly
• Haematology	Haematologist; haematology; hematology; hematologist
• Infectious Diseases	Infectious disease; microbiologist; microbiology
• Internal Medicine	Internal medicine
• Intensive care	Intensive care; intensivist; critical care
• Neonatology	Neonatologist; neonatology; NICU; neonatal
• Nuclear medicine	Nuclear medicine
• Nephrology	Nephrologist, nephrology; renal; kidney
• Neurology	Neurologist; neurology; epileptologist
• Obstetrics/Gynaecology	Gynaecologist; gynaecology; obstetrician; OB/GYN; obstetrics
• Oncology	Oncologist; oncology; cancer
• Ophthalmology	Ophthalmologist; ophthalmology
• Otolaryngology	Otolaryngology
• Palliative care	Palliative care
• Pathology	Pathologist; pathology
• Pharmacology	Pharmacologist; pharmacology
• Paediatrics	Paediatrician; paediatric*; pediatric*
• Psychiatry	Psychiatrist; psychiatry; mental health
• Radiology	Radiologist; radiology
• Rheumatology	Rheumatologist; rheumatology
• Respiratory medicine	Lung specialist; respiratory; pulmonologist
• Sexual health	Sexual health
• Surgery	Surgeon; surgery; surgical; operating theatre
• Urology	Urologist; urology
*Note: the clinical focus is a proxy variable based on clinical specialty of attendees	

and/or event description.	
EVENT TYPE	
• Meeting (all inclusive/NOS)	Search for generic word “meeting”
• Journal club	Journal club; journalclub
• Inservice	Inservice
• Workshop	Workshop
• Grand rounds	Grand round; grandround
• Scientific meeting	scientific meeting; congress; conference AND NOT videoconference/teleconference
• Clinical meeting	internal meeting; departmental meeting; clinical meeting; case review, case conference; case study meeting; case study conference
• Multidisciplinary meeting	Multidisciplinary meeting

STROBE—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	Page 1, 2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 2
<b>Introduction</b>			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 4, 5
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 5
<b>Methods</b>			
Study design	4	Present key elements of study design early in the paper	Page 5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page 5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	Page 5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 5,6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Page 5,6
Bias	9	Describe any efforts to address potential sources of bias	Methods: page 5, 6
Study size	10	Explain how the study size was arrived at	Page 5,6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Page 6
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page 6
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	N/A
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A

<b>Results</b>			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Page 7
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 7
		(b) Indicate number of participants with missing data for each variable of interest	N/A
Outcome data	15*	Report numbers of outcome events or summary measures	7-9
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
<b>Discussion</b>			
Key results	18	Summarise key results with reference to study objectives	Page 10
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page 11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 10-12
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 10-12
<b>Other information</b>			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page 15

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).

# BMJ Open

## A cross-sectional analysis of pharmaceutical industry-funded events for health professionals in Australia

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4 1 **A cross-sectional analysis of pharmaceutical industry-funded events**  
5 2 **for health professionals in Australia**  
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53 25 **Word count:** 2522  
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3 26  
4  
56 27 **Abstract**

9 28 **Objectives** To analyse patterns and characteristics of pharmaceutical industry sponsorship of  
10 29 events for Australian health professionals and to understand the implications of recent changes in  
11 30 transparency provisions that no longer require reporting of payments for food and beverages.  
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15 31  
16 32 **Design** Cross-sectional analysis.  
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20 34 **Participants and Setting** 301 publicly available company transparency reports downloaded  
21 35 from the website of Medicines Australia, the pharmaceutical industry trade association, covering  
22 36 the period from October 2011 to September 2015.  
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26 37  
27 38 **Results** Forty-two companies sponsored 116,845 events for health professionals, on average 608  
28 39 per week with 30 attendees per event. Events typically included a broad range of health  
29 40 professionals: 82.0% included medical doctors, including specialists and primary care doctors,  
30 41 and 38.3% trainees. Oncology, surgery and endocrinology were the most frequent clinical areas  
31 42 of focus. Most events (64.2%) were held in a clinical setting. The median cost per event was  
32 43 AU\$ 263 (Interquartile range \$153-\$1,195) and over 90% included food and beverages.  
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39 45 **Conclusions** Over this four-year period, industry-sponsored events were widespread and  
40 46 pharmaceutical companies maintained a high frequency of contact with health professionals.  
41 47 Most events were held in clinical settings, suggesting a pervasive commercial presence in  
42 48 everyday clinical practice. Food and beverages, known to be associated with changes to  
43 49 prescribing practice, were almost always provided. New Australian transparency provisions  
44 50 explicitly exclude meals from the reporting requirements, thus a large proportion of potentially  
45 51 influential payments from pharmaceutical companies to health professionals will disappear from  
46 52 public view.  
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8 57 **STRENGTHS AND LIMITATIONS OF THIS STUDY**

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- 11 58
- 12 59 • From publicly available reports released under Australian transparency rules, we have
  - 13 60 created a searchable world-first database with details of more than 100,000 industry-
  - 14 61 sponsored events for health professionals, enabling researchers to analyse the intersection
  - 15 62 of pharmaceutical marketing and medical education.
  - 16 63 • In order to analyse the database, we iteratively identified a set of keywords for each
  - 17 64 variable of interest, however it is possible that some synonyms were missed.
  - 18 65 • We relied upon data as presented in the Medicines Australia transparency reports and we
  - 19 66 did not verify the accuracy and completeness of data.
  - 20 67 • Transparency requirements apply only to member companies, excluding manufacturers of
  - 21 68 generics, over-the-counter and non-member prescription medicine manufacturers, thus
  - 22 69 our analysis likely underestimates the true extent of industry sponsorship of events for
  - 23 70 health professionals.
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## 72 Introduction

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75 Full disclosure of financial relationships between the pharmaceutical industry and health  
76 professionals is a key strategy adopted to make these interactions more transparent. Many  
77 jurisdictions have recently introduced transparency provisions, including the United States (US)  
78 and the European Union, but the extent of the disclosure obligation varies. For example, meals  
79 and drinks fall outside the scope of disclosure obligations under new voluntary transparency  
80 provisions introduced by the European Federation of Pharmaceutical Industry Associations.(1)  
81 At the same time, in the US, over 100 medical societies recently backed a bill that would exempt  
82 pharmaceutical and medical device companies from reporting an entire category of payments to  
83 doctors: those related to continuing medical education.(2)

84

85 Australia was one of the first countries to move towards public reporting of these payments.  
86 Since 2007, Medicines Australia, the trade association of the prescription medicines industry, has  
87 required member companies to provide detailed reports of sponsorship of events for health  
88 professionals, which include company-initiated events, sponsored events organised by a third  
89 party, trade displays at educational events and sponsorship of healthcare professionals to attend  
90 events both in Australia and overseas.(3) The reports are published on the Medicines Australia  
91 website and include events for all registered healthcare professionals, making Australia one of  
92 the few countries with transparency extending to non-physicians.(4,5) These disclosure  
93 provisions were a condition for approval of Medicines Australia's Code of Conduct by the  
94 Australian Competition and Consumer Commission and were upheld following a legal appeal by  
95 industry.(6) Changes to this policy were introduced in 2015, with the focus on events replaced by  
96 disclosure of payments to individuals.(3) The reports detailing event sponsorship and aggregate  
97 payments to health professionals have been discontinued, and replaced with reports of payments  
98 to named individuals, similar to the Open Payments database in the US. Moreover, the new Code  
99 no longer requires reporting of payments for food and beverages.

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3 101 At a time when disclosure policies are being debated and revised in several settings,(1,2,3)  
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5 102 Australian data can provide valuable insights into patterns of industry sponsorship and on  
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7 103 characteristics of transparency provisions that are needed to capture expenditures of  
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9 104 pharmaceutical companies on health professionals. Apart from two analyses of data from the first  
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11 105 six months of the Australian disclosure scheme,(4,7) and one brief report on events involving  
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13 106 nurses,(5) no comprehensive longer-term analyses have been conducted.  
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16 108 The objectives of this cross-sectional analysis are: to describe the nature and frequency of events  
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18 109 for health professionals sponsored by pharmaceutical companies that are members of Medicines  
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20 110 Australia; to create an open-access searchable database of these events; and to estimate the  
21  
22 111 information that will be lost under newly introduced reporting standards.  
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## 26 114 **Methods**

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### 28 116 *Data Sources*

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30 118 We downloaded all the available reports from the Medicines Australia website  
31  
32 119 ([www.medicinesaustralia.com.au](http://www.medicinesaustralia.com.au)) in PDF format. The 301 PDF reports of approximately 15,000  
33  
34 120 pages covered the period October 2011 to September 2015. The PDFs had been originally  
35  
36 121 created in Microsoft Excel. We requested the original Excel files from Medicines Australia but  
37  
38 122 were refused on the basis that member companies had not given permission for their release. We  
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40 123 converted the PDF files into Excel format using free, online converter programs, cleaned the data  
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42 124 to address errors introduced during file conversion, and ensured consistency of reporting in each  
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44 125 column.  
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46 126 The reports cover information on the sponsoring company, timing, venue type, number and  
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48 127 profession of participants, hospitality and travel for attendees, room rentals and equipment, and  
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50 128 speaker honoraria.(3)  
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3 130 Over this four-year period, 47 pharmaceutical companies issued transparency reports and we  
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5 131 grouped them based on mergers and acquisitions as of March 31<sup>st</sup> 2016. Therefore our analysis  
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7 132 included 42 Medicines Australia member companies; as a frame of reference there are  
8  
9 133 approximately 140 separate companies listed as suppliers to the Australian Pharmaceutical  
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11 134 Benefit Scheme.(8)

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13 136

### 16 137 *Coding*

17 138

19 139 We designed a coding scheme based on the available data and variables of theoretical interest  
20  
21 140 based on the literature on industry-professional interactions(9,10) and on two previous analyses  
22  
23 141 of data from the first six months of the Australian disclosure scheme.(4,7) The research team  
24  
25 142 iteratively developed a set of keywords to define each variable of interest (Supplementary File  
26  
27 143 1). Using Excel's filter function, we used the keywords to search the unstructured descriptive  
28  
29 144 text and to dichotomously code event features as "present/absent", for the following variables:

- 30 145 • sponsoring companies, grouped based on mergers and acquisitions as of March 31<sup>st</sup> 2016;
- 31  
32 146 • geographical location by Australian state or overseas location;
- 33  
34 147 • professional status of attendees (e.g. specialists, nurses, trainees);
- 35  
36 148 • clinical focus based on clinical specialty of attendees and event description (e.g.  
37  
38 149 oncology, endocrinology, cardiology);
- 39 150 • type of event (e.g. journal club, workshop, in-services);
- 40  
41 151 • type of hospitality provided (e.g. breakfast, lunch, dinner)
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### 45 153 *Statistical analysis*

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48 155 We present frequency tables for the characteristics of the events, and median spending levels per  
49  
50 156 event and company. Cost variables are reported in AU\$. As the data were not normally  
51  
52 157 distributed, we used Mann-Whitney U tests for the differences between medians. Analyses were  
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54 158 performed using SPSS-Version 22.

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3 160 **Results**  
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7 162 *General Overview*  
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12 165 From October 2011 to September 2015, 42 pharmaceutical companies in Australia sponsored  
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14 166 116,845 events involving health professionals. On average, there were 2,434 events per month  
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16 167 and 608 events per week. Each year, the number of events sharply decreased in December  
17  
18 168 through February, likely reflecting the holiday season.  
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20 169

21 170 Table 1 provides illustrative examples of sponsored events as presented verbatim in the company  
22  
23 171 reports, chosen to reflect variations in reporting and event type. Events varied greatly in scope  
24  
25 172 and intensity, ranging from a half hour journal club with sandwiches in a hospital meeting room,  
26  
27 173 to a several day conference with overseas flight, accommodation and hospitality provided. The  
28  
29 174 professional status was sometimes described generically as “healthcare professionals” or  
30  
31 175 contained a list of the professions in attendees. The level of detail companies reported regarding  
32  
33 176 the program’s content and the extent of explicit product promotion also varied; most of the event  
34  
35 177 descriptions were disease-focused (e.g. “Journal Club on Chronic Obstructive Pulmonary  
36  
37 178 Disease”) but in some cases the events mentioned specific drug names (e.g. “Introducing Zoely  
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39 179 and other Emerging Trends in Contraception”).  
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3 181 *Attendees*  
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6 183 Over this four-year period, there were 3,481,750 individual attendances at industry-  
7  
8 184 sponsored events. The median number of event attendees was 18 (interquartile range  
9  
10 185 (IQR) 12-25); 97.2% (n=113,595) of the events had fewer than 100 attendees and  
11  
12 186 0.2% (n=210) had more than 1000 participants. Over 40% (n=47,084) of events  
13  
14 187 included participants from multiple professions. Table 2 lists the professional status of  
15  
16 188 attendees and the most frequent clinical areas of focus for the events. Events were  
17  
18 189 most frequently oncology-related, while otolaryngology and andrology were least  
19  
20 190 represented.

21 191  
22 192 *Location and characteristics of sponsored events*  
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24 194 Three quarters of events were held in the three Australian states with the largest  
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26 195 populations: New South Wales (30.7%, n=35,888), Victoria (26.9%, n=31,448), and  
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28 196 Queensland (18.8%, n= 21,963), and few were held overseas (1.9%, n= 2,262).  
29  
30 197 Nearly two thirds of events (64.2%, n=74,998) were held in a clinical setting, such as  
31  
32 198 hospitals, clinics or doctors' offices. Non-clinical venues included restaurants, hotels  
33  
34 199 and convention centres. One third of the events were described as a generic "meeting"  
35  
36 200 (37.5%, n=43,810) while others were described as journal clubs (28.5%, n=33,281),  
37  
38 201 clinical meetings (3%, n=3,533), grand rounds (3.8%, n=4,472), in-services (2.6%,  
39  
40 202 n=3,038), or workshops (2.6%, n=3,029). Only 4.2% (n=4,290) were described as  
41  
42 203 scientific meetings (e.g. conferences or congresses).

43 204  
44 205 *Costs and hospitality*  
45 206

46 207 Reporting companies spent AU\$ 286,117,928 on events for health professionals. On  
47  
48 208 average, companies spent AU\$ 2,449 per event (SD \$15,020) while the median cost  
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50 209 was AU\$ 263 (IQR \$153-\$1,195). The median cost per person was AU\$ 14 (IQR  
51  
52 210 \$10- \$68). In 81.7% of the events (n=95,483) the costs were below AU\$ 100 per  
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54 211 attendee and in 2.1% (n=2,438) the costs were over AU\$ 1000 per attendee.  
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3 213 Table 3 shows the median cost per person by characteristics of events. The median  
4 214 total cost per person was significantly higher when the event format was a scientific  
5 215 meeting such as a congress or conference (AU\$ 93, IQR \$33-659) compared with  
6 216 other event types ( $p<0.001$ ), for events held overseas (AU\$ 710, IQR \$91-7,300)  
7 217 compared with events held in Australia ( $p<0.001$ ) or outside the clinical settings  
8 218 (AU\$ 91, IQR \$28-154) as compared with events in the clinical setting ( $p<0.001$ ).  
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15 220 Reported “hospitality or financial support” provided to attendees included registration  
16 221 fees, travel, accommodation, parking and food and beverage. Food was provided at  
17 222 90.4% ( $n=105,667$ ) of events: 22.2% included lunches ( $n=25,935$ ), 17.0% dinners  
18 223 ( $n=19,873$ ), 12.0% teas ( $n=14,067$ ), 11.0% breakfasts ( $n=12,806$ ), 2.7% were all-day  
19 224 events with meals ( $n=3,113$ ), and for 25.6% ( $n=29,873$ ), type of food and beverage  
20 225 was unspecified. Total cost of food was more than AU\$ 84 million (AU\$ 84,862,791),  
21 226 accounting for 29.7% of the total cost of these functions. However, for 65%  
22 227 ( $n=75,949$ ) of events, the total listed cost for food and beverage was equal to the listed  
23 228 total cost of the event, indicating that the company’s sponsorship extended to food  
24 229 and beverage only. The median cost of food per person was AU\$ 12 (IQR \$8-\$20).  
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### 32 230 33 231 *The top companies*

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36 233 Of the 42 pharmaceutical companies that provided reports, the top five in terms of the  
37 234 numbers of sponsored events were AstraZeneca, Novartis, Merck Sharp & Dohme,  
38 235 Roche, and Pfizer (Table 4). Boehringer Ingelheim had the highest cost per event with  
39 236 a median cost of AU\$ 2,007 (IQR \$1,308-\$2,654), while Eli Lilly spent the least with  
40 237 a median cost per function of AU\$ 145 (IQR \$62-\$455). Table 4 provides an  
41 238 overview of event sponsorship by the top 20 companies, representing 87.8% of  
42 239 events.  
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### 49 240 50 241 *Availability of database*

51 242 The analysable dataset in CSV file format we have created is available at: doi [to be  
52 243 inserted prior to publication]  
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3 245 **Discussion**  
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6 247 Pharmaceutical industry-funded events for health professionals were frequent and  
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8 248 pervasive with almost three and a half million individual attendances at over 116,000  
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10 249 events in the four-year period between 2011 and 2015. As a frame of reference, in  
11 250 2014 there were 610,148 registered health professionals in Australia,(11) suggesting  
12  
13 251 that there was wide exposure to these events. Events typically included a broad range  
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15 252 of professionals and multidisciplinary teams, including most commonly: medical  
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17 253 specialists, nurses, trainees and primary care doctors. Nearly two-thirds of events  
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19 254 were held in clinical settings. Average costs per person were modest and the vast  
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21 255 majority of events (90.4%) included the provision of food and beverages.  
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23 256 Additionally, for most events (65%), the only funding provided was for food and  
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25 257 beverages. Thus, our analysis suggests that the new Australian and European  
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27 258 transparency rules will decrease transparency because hospitality in the form of food  
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29 259 and/or beverages will be exempt from reporting.(1,3)  
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31 261 Although professional education is critical for improving patient care, previous  
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33 262 studies of internal pharmaceutical industry documents have shown that sponsored  
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35 263 events have been effectively used as a marketing tool.(12,13) A systematic review  
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37 264 from 2010 found that with rare exceptions, exposure to pharmaceutical industry  
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39 265 information is associated with either no effect on prescribing or with adverse effects  
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41 266 such as lower prescribing quality, higher frequency or costs.(14) More recently,  
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43 267 analyses of the Open Payments database in the US, have shown that payments for  
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45 268 educational training and even the provision of low cost free meals, commonly  
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47 269 provided at sponsored events, are associated with increased prescribing of promoted,  
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49 270 costly, brand-name medications.(15,16)  
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53 272 Finally, we also found a high prevalence of trainee attendance at these events.  
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55 273 Targeting medical trainees can lead to a process of normalisation and enculturation  
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57 274 while trainees develop their professional identity.(17) This has been described as an  
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59 275 effective strategy “to influence physicians from the bottom up.”(13) Medical school  
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276 policies limiting trainee-industry interaction have been associated with a shift in

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3 277 attitude (18) and reduced prescribing of costly new medicines without therapeutic  
4 278 advantages.(19)

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8 280 Our study has a number of limitations. First, we relied on reports submitted by  
9 281 companies to Medicines Australia and could not verify the accuracy and completeness  
10 282 of data. Second, since the Code of Conduct's transparency reporting requirements  
11 283 applies only to members of Medicines Australia, the available reports likely  
12 284 underestimate the true extent of industry sponsorship of events for health  
13 285 professionals. Our analysis included only 42 Medicines Australia member companies;  
14 286 as a frame of reference approximately 140 manufacturers are listed as suppliers to the  
15 287 Australian Pharmaceutical Benefit Scheme.(8) Moreover, non-member manufacturers  
16 288 of branded prescription medicines, generic medicines, over-the-counter medicines and  
17 289 medical devices are not covered by the Medicines Australia Code. Third, with regard  
18 290 to the coding scheme, the research team identified a set of keywords to define each  
19 291 variable of interest and it is possible that some synonyms were missed due to  
20 292 variability in the data provided. Fourth, we did not assess the content of events due to  
21 293 the unstructured and variable nature of reporting. Fifth, our analysis focuses on  
22 294 industry sponsorship of events and did not examine differences in how event  
23 295 organizers manage potential influences. Finally, costs were not adjusted for inflation  
24 296 as this would likely have a limited impact on the Australian dollar over such a short  
25 297 time period. Notwithstanding these limitations, we have conducted a cross-sectional  
26 298 analysis of the only publicly available data on industry-sponsored events for health  
27 299 professionals.

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43 301 In conclusion, our findings have several international implications for future research  
44 302 and policy initiatives. While Australian transparency reports are difficult to analyse  
45 303 due to their format, we have created an open-access searchable world-first database  
46 304 with details of more than 100,000 industry-sponsored events, enabling researchers to  
47 305 analyse the intersection of pharmaceutical marketing and medical education.  
48 306 Although the data included in this analysis are from Australia, pharmaceutical  
49 307 companies are transnational corporations whose practices are likely to be similar  
50 308 across different countries. Moreover, individual institutions such as hospitals or  
51 309 universities may use these data to see what industry-sponsored activities are

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3 310 happening within their own backyards, and whether they meet contemporary  
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5 311 expectations for transparency and independence.  
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8 313 At the policy level, at a time when new rules are being debated and revised globally,  
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10 314 our findings underscore the need for more disclosure, not less. Transparency rules  
11 315 should be as inclusive as possible with regard to the type of companies required to  
12 316 report and also in terms of the scope of payments and categories of health  
13 317 professionals covered. The onus of reporting should not be on the industry only; for  
14 318 example, public sector hospitals as well as universities and professional associations  
15 319 could report meal subsidies from pharmaceutical and device manufacturers. A  
16 320 stronger policy option, already implemented at several academic medical centres in  
17 321 the US, would be to eliminate the provision of free food by manufacturers.(20) In the  
18 322 long term, ways of expanding funding for independent continuing professional  
19 323 education should be explored. There are already case studies showing that  
20 324 independence from industry sponsorship is achievable. For example the University of  
21 325 Michigan, as well as other major medical institutions in the US, no longer accept  
22 326 commercial support for continuing medical education.(21,22) This sets a valuable  
23 327 example that could become a model for other institutions. In the short term,  
24 328 universities and professional associations should make health professionals more  
25 329 aware of the independent sources of information on drugs that are already available  
26 330 (e.g. NPSMedicineWise, the Australian Medicines Handbook and the independent  
27 331 drug bulletins).  
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41 332  
42 333 Finally, our findings highlight that transparency requirements likely capture only a  
43 334 portion of industry sponsorship of events for health professionals. Changes to the  
44 335 transparency requirements will likely exacerbate this issue by excluding common  
45 336 categories of payments. Thus, decision-makers should be aware of the extent of  
46 337 industry-sponsored activity which will be hidden if “free food” fails to be included in  
47 338 future transparency regimes.  
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39 426 **Contributors:** AF, QG, BM, RM, LB conceived of the study. AF, QG, BM, RM, EW  
40 427 designed the coding scheme. AF, QG and SS acquired and analysed all data. AF  
41 428 drafted the manuscript. All the authors contributed to the writing of the paper and  
42 429 approved the final version. AF is the guarantor.

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45  
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53 435 preparation, review, or approval of the manuscript; and decision to submit the  
54 436 manuscript for publication.

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6 438 **Competing interests:** All authors have completed the ICMJE uniform disclosure  
7 439 form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) (available on request from the  
8  
9 440 corresponding author). Dr. Mintzes reports that she was an expert witness on behalf of  
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13 444 relationships or activities that could appear to have influenced the submitted work.  
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21 446 **Ethical approval:** Not required.  
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26 448 **Data sharing:** Upon acceptance for publication, the full dataset will be made  
27 449 available as a CSV file with a link in the publication.  
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32 451 **Access to the data:** All authors had full access to all of the data (including statistical  
33 452 reports and tables) in the study and can take responsibility for the integrity of the data  
34 453 and the accuracy of the data analysis.  
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9 **Tables and Boxes**  
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11 467  
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13 468 Table 1. Illustrative examples of industry sponsored events\*  
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Company	Date	Event content	Venue	Professional status of attendees	Hospitality provided	Total Cost of Hospitality	Number of attendees	Total costs of function
Astrazeneca	Sep. - 15	Educational Event - Dinner meeting Going for Goal: Optimising Treatment in Type 2 Diabetes and Incretin Based Therapies; and On the Road to Glycemic Control. 2 hours educational content	Hotel Realm Barton, ACT	General Practice Nursing Endocrinology	Dinner with Alcoholic and Non Alcoholic Beverages	\$2,087.27	32	\$3,305.45 includes 1 speaker fee for \$1,218.18
Astrazeneca	Mar. - 15	Educational Event - Lunch meeting Restless Legs. 1 hour educational content	The Golden Horse Footscray, VIC	General Practice Respiratory Medicine	Lunch	\$248.82	10	\$848.82 includes speaker fee for \$600

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Novartis	Feb. - 15	Sponsorship of Journal Club on: Chronic Obstructive Pulmonary Disease 1 hr educational content	Gold Coast Universit y Hospital Southport , QLD	Medical Students, Nurses, Pharmacists	Afternoon Tea	\$184 includes Food & Beverages for 20 delegates \$184	20	\$184 includes Total Hospitality : \$184
Novartis	Mar. - 14	Sponsorship of Day Seminar on: Immunosuppressant 8 hrs educational content	Alfred Health Melbourn e, VIC	Cardiologists , Nurses, Registrars, Renal Physicians, Surgeons, Transplant Physicians	Breakfast, Coffee, Lunch, Afternoon Tea, Light Refreshme nts, Morning Tea, Non- Alcoholic Beverages	\$2,498 includes Food & Beverages for 120 delegates : \$2,498	120	\$2,665 Includes Total Hospitality : \$2,498 Speaker Costs: Meal (for 8 speakers): \$167
Merck Sharp & Dohme	Oct. - 11	Oncology Journal Club [hours of education = 1]	Mercy Women's Hospital,	Oncologists, Nurses	Food & beverages	food & bev 19.64, Total	5	Total Costs \$19.64

Australia			Heidelberg, VIC			Hospitality 19.64		
Merck Sharp & Dohme Australia	Oct. - 11	Evening educational meeting "Introducing Zoely and other Emerging Trends in Contraception" [hours of education = 2.5]	Boathouse by the Lake, Barton, ACT	Obstetricians and Gynaecologist	Food & beverages	food & bev 1432.72, Total Hospitality 1432.72	25	speaker fee 688.36, speaker food & bev \$59.07, Total Cost \$2180.15
Roche Products	Apr. - 14	Multi Disciplinary Breast Cancer Clinical Review Meeting Educational Content = 1hr	Royal Adelaide Hospital North Terrace Adelaide, SA	Surgery Doctor Oncology Doctor Oncology Nurse Pathology Doctor	Lunch	247	13	247
Roche Products	Jan. - 13	Grand Rounds Educational Content = 1 hr 15 mins	Bunbury Regional Hospital Bussell Highway	Hospital Healthcare Professionals	Lunch	\$272	20	\$272

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			Bunbury, WA					
Pfizer Australia	Apr. - 13	Pfizer Australia provided Sponsorship for Healthcare Professional to attend The European Congress of Clinical Microbiology and Infectious Disease (ECCMID) 2013. Educational Content - 33.75 hr(s).	Internatio nal Congress Centrum, Berlin, Germany	Infectious Disease Specialist	Registratio n Fee (1 attende e \$878), Travel (Flights \$8,196, Transfers \$219), Accommod ation (6 Room Nights \$1,562)	\$10855	1	\$10,855.00
Pfizer Australia	Jun. - 15	Journal Club - Chronic Pain, Educational Content - 1 hr(s).	Peter MacCallu m Cancer Centre, East	Palliative Care Nurse; Palliative Care Physician	Meal / Drinks	\$156	15	\$156

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470 \*Illustrative examples extracted verbatim from Medicines Australia transparency reports

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473 Table 2. Professional status of attendees and clinical areas of focus for the events (n =  
474 116,845).

Characteristic	Number of events	Percent
<b>Professional status of attendees*</b>		
Medical specialists	80,060	68.5
Nurses	46,214	39.6
Trainees	44,774	38.3
Primary care doctors	24,662	21.1
Pharmacists	9,781	8.4
<b>Clinical areas of focus</b>		
Oncology	22,987	19.7
Surgery	13,306	11.4
Endocrinology	12,655	10.8
Cardiology	9,033	7.7
Haematology	8,200	7.0
Respiratory Medicine	7,659	6.6
Psychiatry	6,252	5.4
Nephrology	6,199	5.3
Gastroenterology	5,643	4.8
Pathology	5,361	4.6
Neurology	4,259	3.6
Urology	4,259	3.6

Radiology	3,667	3.1
Infectious Diseases	3,348	2.9
Geriatrics	3,134	2.7
Anaesthesiology	2,746	2.4
Rheumatology	2,671	2.3
Paediatrics	1,994	1.7
Allergy/Immunology	1,398	1.2
Ophthalmology	1,365	1.2
Palliative Care	1,319	1.1
Intensive Care	1,147	1.0
Sexual Health	955	0.8
Dermatology	913	0.8
Obstetrics/Gynaecology	878	0.8
Emergency	875	0.7
Internal Medicine	418	0.4
Neonatology	363	0.3
Nuclear Medicine	357	0.3
Pharmacology	219	0.2
Otolaryngology	31	0.03
Andrology	18	0.02

475 \*percentages do not add to 100 because multiple types of professionals could attend an event.

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478 Table 3. Characteristics of events and median cost per person

	<b>Number of events n=116,845 n (%)</b>	<b>Median total cost per person*(Interquartile Range) \$ AU</b>
<b>Location</b>		
Overseas	2,262 (1.9%)	\$ 710 (91-7,300)
Within Australia	114,583 (98.1%)	\$ 14 (10-62)
<b>Setting</b>		
Clinical setting	74,998 (64.2%)	\$ 12 (9-15)
Non-clinical setting	41,847 (35.8%)	\$ 91 (28-154)
<b>Event type</b>		
Scientific meeting (e.g. congress, conferences)	4,920 (4.2%)	\$ 93 (33-659)
Other types of events	111,925 (95.8%)	\$ 14 (10-60)

479 \*Includes hospitality as well as other costs (e.g. venue hire, speaker honoraria, audiovisual  
480 hire)

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483 Table 4. The top twenty companies in terms of number of sponsored events.

Company	Number of events	Number of attendees	Total cost of food and beverage (AU\$)	Total cost of function* (AU\$)	Median total cost per event (IQR) (AU\$)
<b>AstraZeneca</b>	13,968	435,686	12,725,027	31,766,776	318 (165-2,261)
<b>Novartis</b>	10,120	244,069	6,600,503	27,467,246	270 (167-1,154)
<b>Merck Sharp &amp; Dohme</b>	9,142	214,621	5,388,247	18,352,116	341 (180-1,182)
<b>Roche</b>	7,383	174,878	2,891,426	16,625,126	186 (129-284)
<b>Pfizer</b>	7,125	188,439	3,740,677	18,464,785	236 (141-573)
<b>Sanofi</b>	6,764	261,089	3,243,420	13,668,127	240 (149-600)
<b>Amgen</b>	5,562	117,767	4,545,874	11,145,245	192 (117-332)
<b>Eli Lilly</b>	5,419	138,765	2,270,896	7,949,786	145 (62-455)
<b>Servier Lab</b>	4,245	145,111	4,347,268	14,002,283	482 (196-2,252)
<b>Mundipharma</b>	4,168	135,517	2,956,613	8,939,046	342 (182-2,394)
<b>Janssen</b>	3,901	140,549	3,168,024	14,643,568	320 (164-1,818)
<b>GlaxoSmithKline</b>	3,706	103,331	2,993,037	6,292,242	254 (161-1,645)
<b>CSL</b>	3,285	138,170	1,337,909	6,000,501	288 (179-1,427)
<b>Bristol Myers Squibb</b>	3,151	138,446	2,492,290	12,755,630	245 (82-1,900)
<b>Bayer</b>	2,964	151,084	1,417,055	8,146,292	396 (194-1,500)
<b>IPSEN</b>	2,802	85,475	984,477	5,163,600	254 (169-454)
<b>Abbott/AbbVie</b>	2,774	59,793	3,291,305	6,437,623	255 (157-1,037)
<b>Boehringer Ingelheim</b>	2,223	56,204	6,050,143	8,724,933	2,007 (1,308-2,654)
<b>Gilead Sciences</b>	2,049	45,510	990,419	7,061,338	245 (160-540)
<b>Merk Serono</b>	1,841	41,809	1,376,023	4,237,372	229 (145-626)

<b>Total – Top 20</b>	102,592	3,016,313	72,810,634	247,843,635	262 (152-1,199)
<b>All companies</b>	116,845	3,481,750	84,862,792	286,117,928	263 (153-1,195)

484 Abbreviations: IQR, interquartile range

485 \* Includes food and drink as well as other costs (e.g. venue hire, speaker honoraria,  
486 audiovisual hire)

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## Supplementary File 1. Keywords for coding

Variable name	Keyword search
COMPANY	A. Menarini Australia Pty Ltd; Abbott Australasia Pty Ltd OR AbbVie Pty Ltd; Actelion Pharmaceuticals Australia Pty Ltd; Alexion Pharmaceuticals Australasia PTY LTD; Allergan Australia Pty Ltd; Amgen Australia; Astellas Pharma Australia Pty Ltd; Astrazeneca Pty Ltd; Baxter Healthcare Pty Ltd; Bayer Australia Ltd; Besins Healthcare Australia; BioCeuticals; Biogen Idec Australia Pty Limited; Boehringer Ingelheim Pty Limited; Bristol-Myers Squibb Australia Pty Limited; Celgene Pty Ltd; CSL (includes also bioCSL Australia Pty Ltd and CSL Behring); Eisai Australia Pty Ltd; Eli Lilly Australia Pty Ltd; Fresenius Kabi Australia; Gilead Sciences Pty.; GlaxoSmithKline Australia Pty Ltd; iNova Pharmaceuticals (Aus) Pty Ltd; IPSEN Pty Ltd; Janssen; LEO Pharma Pty Ltd; Lundbeck Australia; Merck Serono Australia Pty Ltd; MSD Australia Pty Ltd; Mundipharma Pty Ltd; Mylan EPD; Norgine Pty Limited; Novartis Pharmaceuticals Australia Pty Limited (includes also Alcon Laboratories); Novo Nordisk

	Pharmaceuticals; Pfizer Australia; Roche Products Pty Limited; Sanofi/Sanofi Aventis Australia Pty Ltd; Servier Laboratories (Australia) Pty Ltd; Shire Australia; Takeda Pharmaceuticals Australia Pty Ltd (includes also Nycomed Pty Ltd Report); UCB Pharma; Vifor Pharma Pty Ltd
LOCATION	
New South Wales	NSW, New South Wales, Sydney, other cities or suburbs, and postal codes of NSW*
Victoria	VIC, Victoria, Melbourne, other cities or suburbs and postal codes of VIC*
Australian Capital Territory	ACT, Australian Capital Territory, Canberra, other cities or suburbs, and postal codes of ACT*
Western Australia	WA, Western Australia, Perth, other cities or suburbs, and postal codes of WA*
South Australia	SA, South Australia, Adelaide, other cities or suburbs, and postal codes of SA*
North Territory	NT, North Territory, other cities or suburbs, and postal codes of NT*
Tasmania	TAS, Tasmania, Hobart, other cities or suburbs, and postal codes of Tasmania*
Overseas	Overseas: outside of Australia**
*Where the state or capital was not listed, events were hand coded based on postal codes, cities or suburbs	
**Events not taking place in an Australian state were hand-coded	

MEALS	
<ul style="list-style-type: none"> <li>Lunch</li> </ul>	Lunch
<ul style="list-style-type: none"> <li>Dinner</li> </ul>	Dinner
<ul style="list-style-type: none"> <li>Breakfast</li> </ul>	Breakfast
<ul style="list-style-type: none"> <li>Tea</li> </ul>	Afternoon tea, morning tea, light refreshments, light meals, sandwiches & drinks, coffee cart, snack and beverage, sushi
<ul style="list-style-type: none"> <li>All day events with meals</li> </ul>	Day delegate package*; conference package**
<ul style="list-style-type: none"> <li>Food unspecified</li> </ul>	food & beverages, meals, drinks, in hospital catering, beverages, wine
<ul style="list-style-type: none"> <li>No meals provided</li> </ul>	Sponsorship/accommodation only, no hospitality provided, travel/accommodation only (domestic events)
<p>*Note: “day delegate package” consisted of entries where multiple meals were listed ((Lunch, tea), (Breakfast, tea), (Dinner, tea), (Breakfast, lunch, tea))</p> <p>**Note: “conference package” consisted of events lasting multiple days and typically included a day delegate package, often accommodation (food and beverage not reported separately), registration (food and beverage not reported separately), or travel (including flights, registration, airfares, accommodation and food and beverages not reported separately)</p>	
EVENTS HELD IN CLINICAL SETTING	Hospital; clinic; practice; medicare local; health centre; surgery; medical centre; medical; health care centre; specialist centre; cancer centre; cancer care centre; heart centre; medical and dental centre;

	endocrine centre; radiotherapy centre; radiation centre; optical centre; eye centre; renal unit; ward; department; dept; community health; family planning; education centre.
<b>PROFESSIONAL STATUS</b>	
<ul style="list-style-type: none"> <li>Primary care doctors</li> </ul>	GP; general practitioner; family medicine.
<ul style="list-style-type: none"> <li>Nurses</li> </ul>	Nurse
<ul style="list-style-type: none"> <li>Pharmacists</li> </ul>	Pharmacist
<ul style="list-style-type: none"> <li>Trainees</li> </ul>	Registrar; resident; intern; student; advanced trainee; RMO; resident medical officer; JHO; SHO; senior house officer; PHO; principal house officer; fellow
<ul style="list-style-type: none"> <li>Specialty care</li> </ul>	Specialist; consultant; senior medical officer; SMO; visiting medical officer; VMO; general medicine; general physician; *ology physician; *ology doctor;  allergist; allergy physician; anesthesiologist; anesthetist; anaesthesiologist; anaesthetist; andrologist; cardiologist; dermatologist, diabetologist; emergency physician; emergency medicine physician; endocrinologist; epileptologist; gastroenterologist; geriatrician; getriatric physician; gynaecologist; obstetrician; OB/GYN; haematologist; hematologist; hepatologist; immunologist; infectious

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	disease physician; infectious disease doctor; internal medicine physician; microbiologist; neonatologist; neurologist; nuclear medicine physician; nephrologist; renal physician; renal doctor; urologist; oncologist; pharmacologist; pulmonologist; psychogeriatrician; ophthalmologist; rheumatologist; radiologist; respiratory physician; respiratory medicine physician; respiratory medicine doctor; palliative care physician; pathologist; sexual health physician; sexual health doctor; psychiatrist; psychiatry doctor; paediatrician; surgeon; surgery doctor; intensive care doctor; intensivist; intensive care physician; cardiothoracic
<b>CLINICAL FOCUS</b>	
<ul style="list-style-type: none"> <li>Allergy/Immunology</li> </ul>	Allergist; allergy; immunologist; immunology
<ul style="list-style-type: none"> <li>Anaesthesiology</li> </ul>	Anesthesiologist; anaesthetist; anaesthesiologist; anaesthetist; anaesthesiology
<ul style="list-style-type: none"> <li>Andrology</li> </ul>	Andrologist
<ul style="list-style-type: none"> <li>Cardiology</li> </ul>	Cardiologist; cardiology
<ul style="list-style-type: none"> <li>Dermatology</li> </ul>	Dermatologist; dermatology
<ul style="list-style-type: none"> <li>Emergency</li> </ul>	Emergency
<ul style="list-style-type: none"> <li>Endocrinology</li> </ul>	endocrinologist; endocrinology; diabetologist; diabetology; diabetes
<ul style="list-style-type: none"> <li>Gastroenterology</li> </ul>	Gastroenterologist; gastroenterology; Hepatologist; hepatology

• Geriatrics	Geriatrician; geriatric; psychogeriatrician; elderly
• Haematology	Haematologist; haematology; hematology; hematologist
• Infectious Diseases	Infectious disease; microbiologist; microbiology
• Internal Medicine	Internal medicine
• Intensive care	Intensive care; intensivist; critical care
• Neonatology	Neonatologist; neonatology; NICU; neonatal
• Nuclear medicine	Nuclear medicine
• Nephrology	Nephrologist, nephrology; renal; kidney
• Neurology	Neurologist; neurology; epileptologist
• Obstetrics/Gynaecology	Gynaecologist; gynaecology; obstetrician; OB/GYN; obstetrics
• Oncology	Oncologist; oncology; cancer
• Ophthalmology	Ophthalmologist; ophthalmology
• Otolaryngology	Otolaryngology
• Palliative care	Palliative care
• Pathology	Pathologist; pathology
• Pharmacology	Pharmacologist; pharmacology
• Paediatrics	Paediatrician; paediatric*; pediatric*
• Psychiatry	Psychiatrist; psychiatry; mental health
• Radiology	Radiologist; radiology
• Rheumatology	Rheumatologist; rheumatology
• Respiratory medicine	Lung specialist; respiratory; pulmonologist
• Sexual health	Sexual health
• Surgery	Surgeon; surgery; surgical; operating theatre
• Urology	Urologist; urology
*Note: the clinical focus is a proxy variable based on clinical specialty of attendees	



and/or event description.	
EVENT TYPE	
• Meeting (all inclusive/NOS)	Search for generic word “meeting”
• Journal club	Journal club; journalclub
• Inservice	Inservice
• Workshop	Workshop
• Grand rounds	Grand round; grandround
• Scientific meeting	scientific meeting; congress; conference AND NOT videoconference/teleconference
• Clinical meeting	internal meeting; departmental meeting; clinical meeting; case review, case conference; case study meeting; case study conference
• Multidisciplinary meeting	Multidisciplinary meeting

STROBE—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	Page 1, 2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 2
<b>Introduction</b>			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 4, 5
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 5
<b>Methods</b>			
Study design	4	Present key elements of study design early in the paper	Page 5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page 5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	Page 5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 5,6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Page 6
Bias	9	Describe any efforts to address potential sources of bias	Methods: page 5, 6 (cleaning of data and filter function)
Study size	10	Explain how the study size was arrived at	Page 5 (all available reports)
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Page 6
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page 6
		(b) Describe any methods used to examine subgroups and interactions	N/A

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		(c) Explain how missing data were addressed	N/A
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A
<b>Results</b>			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Page 7
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 7
		(b) Indicate number of participants with missing data for each variable of interest	N/A
Outcome data	15*	Report numbers of outcome events or summary measures	7-9
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
<b>Discussion</b>			
Key results	18	Summarise key results with reference to study objectives	Page 10
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page 11
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 10-12
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 10-12
<b>Other information</b>			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page 15

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

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**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).

For peer review only