

Exploring Potential Conflicts of Interest Between Medical Device Firms and Physicians

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Research Questions

- What **patterns** are there in the ways medical device manufacturers pay physicians?
- What is the **relationship** between **payments** and **utilization** of devices promoted by firms?
- What is the **relationship** between **payments** and **negotiated prices** of promoted devices?
- What is the **relationship** between **payments** and **patient health** outcomes?

Presentation Outline

- Background
- Project Overview
- Current Findings
- Reflection

Background

Medical Devices: Doctors have Favorites



#9



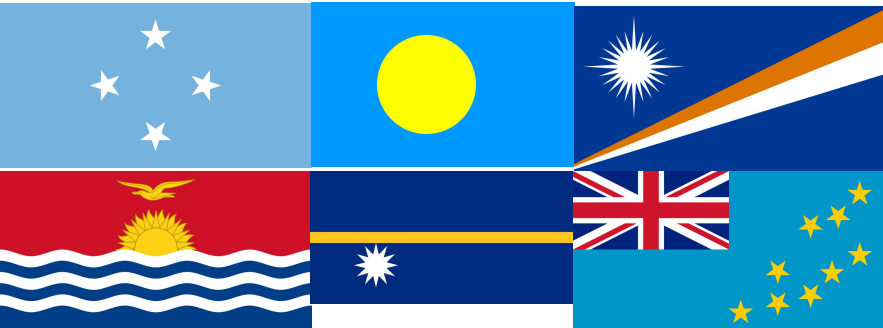
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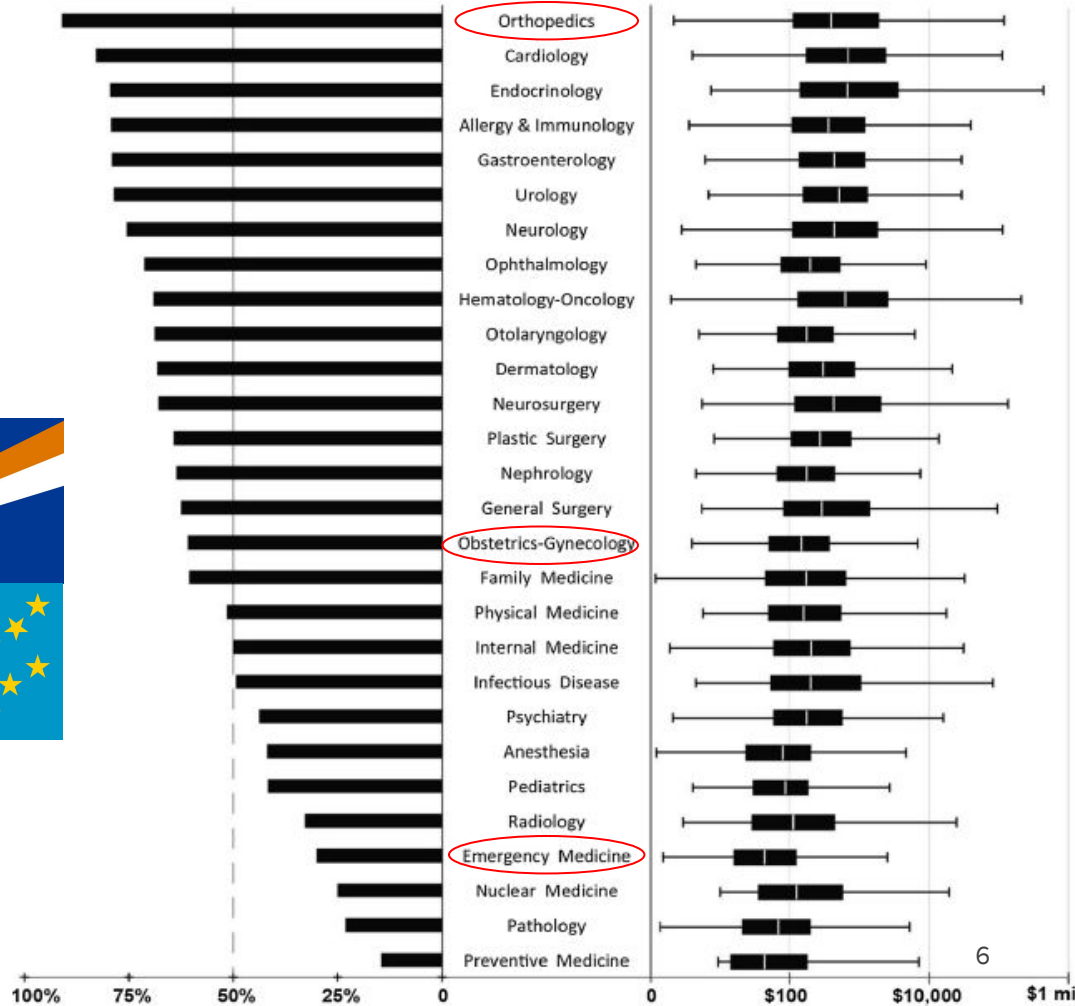
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Money in Medicine

\$1,464,754,652.69



% Physicians Received Payment

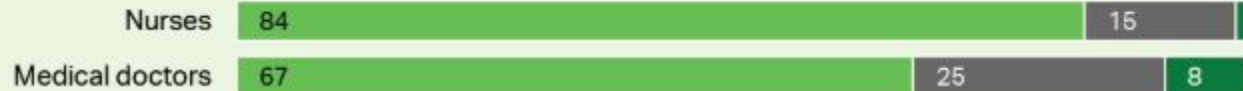


Fleischman et al., 2016;
World Bank, GDP (Current US\$) 2019

Conflict of Interest

— — — Please tell me how you would rate the honesty and ethical standards of people in these different fields -- very high, high, average, low or very low?

■ % Very high/High ■ % Average ■ % Low/Very low ■ % No opinion



“Because of the necessary and comforting trust we bestow on our doctors, we typically do not view health care decisions as business transactions...”

- James Rickert, Founder of The Society for Patient Centered Orthopedics

Pharmaceutical Inducement Literature

- Payments and Prescriptions positively associated
 - Speaker fees and research funding
 - Meals, Honoraria and research funding
 - CME sponsorship
 - Samples
- Association \neq Causality
 - Meals: Prescriptions increased by 73%
 - Patient welfare reduced by 5%



Chren and Landefeld, 1994

Lurie, Rich, and Simpson et al., 1990

Campo, Staebel, Gijbrecchts, and Waterschoot, 2005

Boltri, Gordon, and Vogel, 2002

Grennan et al. 2018

Medical Device Inducement

- Positive associations with Utilization
 - Sponsor Representative in OR
 - Payments
- Causal effect of losing consulting fees
 - -7 percentage points in device utilization



Motivation

- ~50% of all physician payments in 2014
- 25% of inpatient hospital cost growth in early 2000's
- Hospital care: 3x drug health care spending burden



CMS Open Payments, 2019

Maeda et al., 2012

Henry J. Kaiser Family Foundation, 2014

Project Overview

How do Firm Payments Affect Utilization/Prices?

- Focus on PPIs as unit of analysis

$$\ln(q_{jht}) = \beta^{pay} \overset{\bullet \text{ (Pay)ments}}{Pay_{jht}} + x'_{jht} \beta_{jt}^x + \overset{\bullet \text{ Firm-year FE}}{\beta_{jt}} + \varepsilon_{jht}$$

- q = utilization outcome

- p = negotiated price

- x' = Preference relevant factors and population heterogeneity

- LASSO to choose relevant controls

- Per hospital h
- Per branded device j ₁₂
- Per year t

Physician-Firm Nonrandom Interactions

- Firms are strategic about reaching out to physicians

$$Pay_{jht} = x'_{jht} \gamma_{jt}^x + z'_{jht} \gamma_{jt} + \mu_{jht}$$

- CoI Score

Data



- Negotiated Prices
- Utilization



- Payments



- CoI Scores

Data Troubles

Table 1: Subsetting The Open Payments Dataset: Devices

Step	Restriction	Firms		Physicians		Payments	
		Number	Share	Number	Share	Amount ³	Share
1	All firms	2,070	100.00	944,605	100.00	8,325.99	100.00
2	Keep firms with device pmts.	1,208	58.36	826,544	87.50	5,702.67	68.49
3	Drop drug-only pmts.	1,208	58.36	659,284	69.79	4,609.67	55.36
4	Drop drug+device pmts.	1,200	57.97	653,071	69.14	4,557.06	54.73
5	Drop unclassified pmts. made by drug+device firms	1,191	57.54	605,496	64.10	4,083.01	49.04
6	Drop drug+device firms	893	43.14	526,757	55.76	2,837.96	34.09
7	Drop unclassified pmts.	893	43.14	509,994	53.99	2,359.55	28.34

¹ Source: Open Payments data 2014-2017.

² Each row applies an additional restriction on the set of payments included.

³ In millions of dollars.

Table 7: Subsetting by Devices: Matching to ECRI Vendors

Step	Restriction	Firms			Amounts		
		Sample	Matched	Share	Sample	Matched	Share
1	All firms	2,070	394	19.03	8,325.99	4,125.10	49.54
2	Keep firms with device pmts.	1,208	380	31.46	5,702.67	4,122.91	72.30
3	Drop drug-only pmts.	1,208	380	31.46	4,609.67	3,680.98	79.85
4	Drop drug+device pmts.	1,200	380	31.67	4,557.06	3,648.21	80.06
5	Drop unclassified pmts. made by drug+device firms	1,191	378	31.74	4,083.01	3,306.27	80.98
6	Drop drug+device firms	893	264	29.56	2,837.96	2,184.22	76.96
7	Drop unclassified pmts.	893	264	29.56	2,359.55	1,921.74	81.45

¹ Source: Open Payments data 2014-2017.

² Each row applies an additional restriction on the set of payments included.

³ In millions of dollars.

Figure 1: Payments by Association

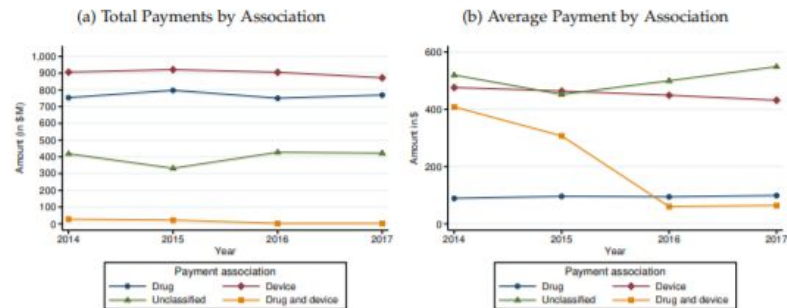
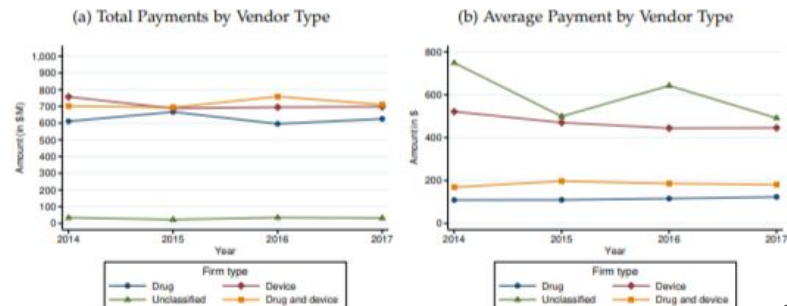


Figure 2: Payments by Vendor Type



Research is Hard!

tr_id	tr_name	vendor_id	vendor_name	key	dup	accept
10790	flexlife health	457626	medicus health	0.69	5	0
10233	florida micro	482657	florida surgical specialties	0.82	1	0
10233	florida micro	494267	floyd brace co	0.79	2	0
10233	florida micro	494050	flownox medical	0.79	3	0
10233	florida micro	999860	flossaid	0.76	4	0
10233	florida micro	272831	frontline medical products	0.76	5	0

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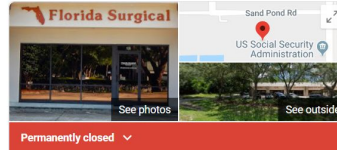
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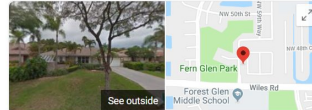
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Findings + Contributions

Summary Statistics

- What patterns are there in the ways medical device manufacturers pay physicians?

Table 6: Payments by Nature and Vendor Type

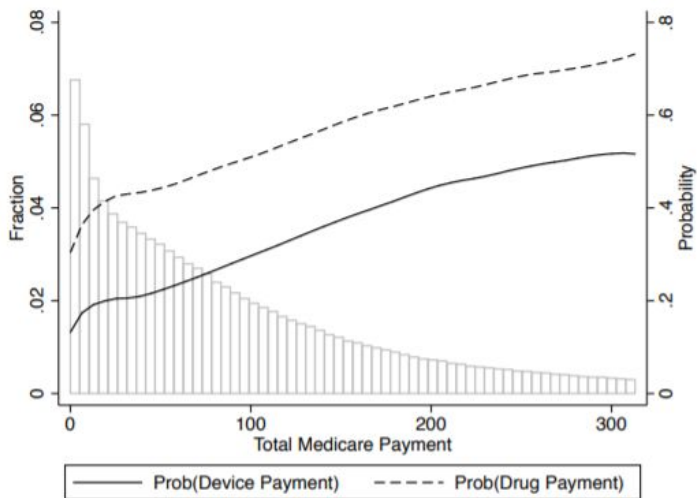
	Device Vendors				Drug Vendors			
	Payments		Physicians		Payments		Physicians	
Charitable Contribution	795	0.03	706	0.13	174	0.01	42	0.01
Speaker/faculty other	378,924	13.35	17,943	3.41	1,020,862	40.86	32,673	5.51
Speaker/faculty nonacc	25,241	0.89	2,406	0.46	26,142	1.05	4,022	0.68
Speaker/faculty acc	16,670	0.59	1,034	0.20	313	0.01	131	0.02
Consulting Fee	421,261	14.84	19,501	3.70	529,618	21.20	49,866	8.41
Ownership/investment interest	96,563	3.40	774	0.15	44,996	1.80	59	0.01
Education	91,024	3.21	52,129	9.90	20,536	0.82	174,425	29.43
Entertainment	2,406	0.08	15,471	2.94	90	0.00	425	0.07
Food and Beverage	210,381	7.41	507,637	96.37	408,654	16.35	563,653	95.09
Gift	23,228	0.82	28,132	5.34	2,775	0.11	12,463	2.10
Grant	51,183	1.80	5,027	0.95	12,913	0.52	1,342	0.23
Honoraria	67,848	2.39	8,610	1.63	106,326	4.26	11,692	1.97
Royalty or License	1,197,685	42.20	2,074	0.39	54,136	2.17	46	0.01
Travel and Lodging	254,753	8.98	88,639	16.83	271,165	10.85	39,842	6.72
Total	2,837,963	100.00	750,083	142.40	2,498,701	100.00	890,681	150.26

¹ Source: Open Payments data 2014-2017.

² All amounts in thousands of dollars.

Current Findings

Figure 3: Probability of Receiving Payment



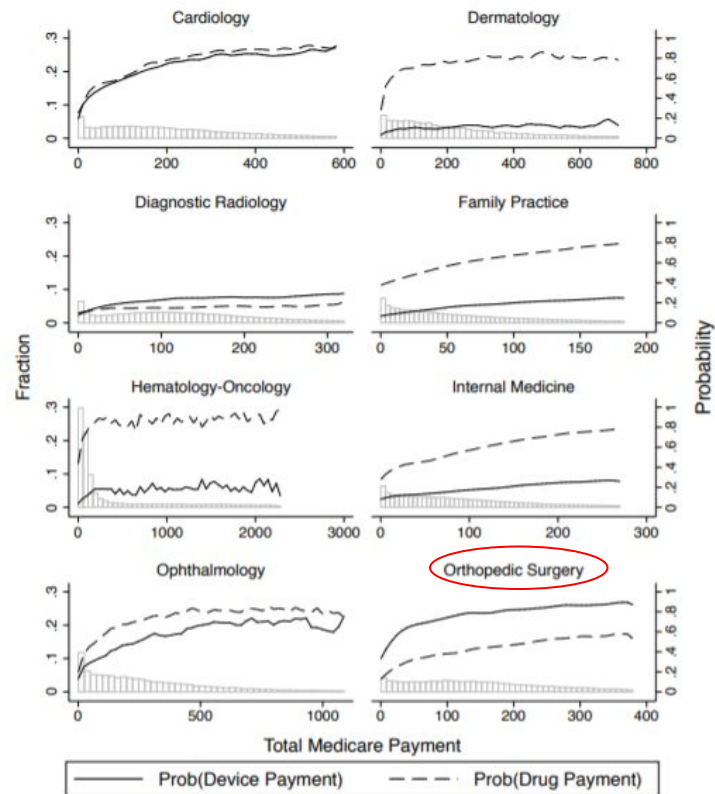
¹ Source: Open Payments data 2014-2017.

² Amounts in thousands of dollars.

³ Each line is an estimate of a local linear regression.

⁴ Plotting the lower 90% of the Medicare payment distribution .

Figure 4: Probability of Receiving Payment by Specialty



¹ Source: Open Payments data 2014-2017.

² Amounts in thousands of dollars.

³ For top-paid specialties, excluding emergency medicine.

³ Each line is an estimate of a local linear regression.

⁴ For each specialty, plotting the lower 90% of the Medicare payment distribution .

Correlations

- What is the relationship between payments and utilization of devices promoted by firms?

Table 2: Correlation Statistics, Focal Firms & Drugs

	Total Payment	Total Payment Per Bed	Share of Payments
Panel A: All Firms			
Total Q.	.44	.26	
Total Q. per Bed	.18	.28	
Panel B: Medtronic			
Q	.38	.27	.23
Q per Bed	.17	.23	.13
Q. Share	.09	.09	.45
Panel C: Boston Scientific			
Q	.19	.12	.18
Q per Bed	.12	.25	.17
Q. Share	.03	.03	.45
Panel C: Abbott			
Q	.44	.36	.23
Q per Bed	.18	.28	.1
Q. Share	.04	.05	.44

Literature Review on Med Device Inducement

Conflicts of Interest : Physicians and Medical
Device Firms Literature Memo

Jonathan Delgadillo Lorenzo

August 13, 2019

1 Introduction

Physicians often receive payments from pharmaceutical and medical device companies in the form of consulting fees, meals, and licensing fees. These relationships prompt questions with regards to potential conflicts of interest. While much literature exists analyzing the effect of pharmaceutical firm payments to physicians on drug utilization, very little exists analyzing the same effects from medical device firm payments on device utilization. This memo will briefly summarize the literature on this topic with regards to utilization effects, payment distribution, and discrepancies in disclosing conflicts.

2 Payment Distributions

The creation of the Open Payments Database has spurred researchers across disciplines to think more critically about the relationships between physicians and both pharmaceutical and medical device firms. In the last few years, several articles have been written breaking down the distribution of payments within medical specialties, and breaking down the types of payments received by the physicians. However, there are no specific breakdowns dedicated to comparing payments from medical device firms and payments from pharmaceutical firms. Despite this, it is still worthwhile to examine how different medical fields compare in the degrees to which financial relationships exist with industry, and how payments are generally distributed within specialties.

- Confirmed small literature on medical device inducement effects
- Loopholes make transparency imperfect
- Food Payments large across industries
- Doctors confused about policy

Summer Progress: Next Steps

- Refine matching process for firms to hospitals
- Continue identifying unique PPIs
 - Purchased by Hospital
 - Sold by specific manufacturers
- Conduct preliminary regressions once data is clean enough

Reflections

Lessons Learned

- Communication is Key!
 - Make Expectations Clear
 - Express Concerns
- Just do it!
- Sharing is Caring



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- SUMR Cohort '19



Q & A

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