

Datta, Anusua, and Dhaval Dave. “Effects of Physician-directed Pharmaceutical Promotion on Prescription Behaviors: Longitudinal Evidence.” *Health Economics* 26.4 (2017).

Effects of Physician-directed Pharmaceutical Promotion on Prescription Behaviors: Longitudinal Evidence

Introduction

The promotion of prescription drugs includes Direct to consumer advertising “DTCA” and Direct to physician promotion “DTPP”.

As pharmaceutical spending continues to escalate, drug safety issues are becoming more common, such as doctor’s communication efforts are increasingly watched by the public. From a public welfare perspective, the question is also whether the interaction between physicians and pharmaceutical companies encourage physicians to prescribe more expensive drugs in the presence of cheaper and equally effective alternatives.

Pharmaceutical promotion received a lot attention in the marketing literature and to a lesser degree in economics literature. The objective of these studies has often been to determine the effect of marketing efforts on sales, to determine the best promotional activities and to measure the returns on investment to firm.

Few studies exploit longitudinal physician level information largely because such data are often proprietary and difficult to obtain for research purposes.

For instance, it is unclear if detailing impacts physician prescribing at the **intensive margin** (increasing the number of prescription by physicians who already prescribing the drug) or **extensive margin** (influencing physicians who had never prescribes the drug).

The purposes of this research are:

- Analyzing the impact of detailing and sampling on the prescribing behavior.
- Exploiting the advantages afforded by longitudinal information and control for physician-level fixed effects.
- Studying the effects of pharmaceutical promotion and how can influence physicians to prescribe the advertised drug instead alternate drugs in the same therapeutic class.

Data

- Studying the effects of DTPP for Famvir on the number of new prescription written for this drug and for competitors.
- For each physician-month record, two primary forms of DTPP; total number of visits by pharmaceutical representatives directly pertaining to Famvir and the number of Famvir samples received by the physician.
- Famvir (Famciclovir) was approved by FDA in 1994 to treat various types of herpes viral infections; Valtrex (Valcyclovir) was approved by FDA in 1995, used also to treat herpes viral infections; Zovirax (acyclovir) is the oldest antiviral medication.
- Famvir and Valtrex can be taken on smaller dose than acyclovir; acyclovir and Valtrex may be preferable to Famvir to treating initial episode genital herpes infection. In 2003, Valtrex also became the only drug to gain FDA approval for reducing the transmission risk of genital herpes with the use of suppressive therapy and safer sex practices.
- The retail cost of treating herpes viral infection is lowest with generic acyclovir, followed by Valtrex and then Famvir.
- Over the sample period; 48, 3% of prescription were written of acyclovir.
- New prescriptions were for the branded drugs: 26.4% for Valtrex, 18.7% for Famvir, and 6.7% for Zovirax.

Methodology

The following request function links Famivir prescriptions to physician led promotional efforts for the drug:

$$NRX_{imt} = \exp (\alpha_0 + \lambda_1 DET_{imt} + \lambda_2 SAMP_{imt} + \mu_i B + \omega_m \Omega + \nu_t \nu + \varepsilon_{imt})$$

- NRX_{imt}: number of new FAMIVIR prescription by physician (i), in month (m) of year (t)/
- α_0 : number of Famvir-related visits by pharmaceutical representatives
- $\lambda_1 DET_{imt}$: detailing
- $\lambda_2 SAMP_{imt}$: number of Famvir samples.

- μ_i : unobserved attributes (age, gender, specialty...)
- ω : set of month
- v : set of year
- ε : disturbance term

Empirical concerns

The link between DTPP and prescribing habits may be altered by other characteristics such as inertia in prescribing, brand loyalty, patient mix, and tolerance for risk and long term for prophylactic purposes.

There are significant differences across physicians who are ever detailed by Famvir reps versus who are never detailed.

The impact of advertising messages (detailing) may persist beyond the time of their presentation.

$$\text{Detailing Stock} = \sum_{i=0}^6 (\text{DET}_{t-i}) (1-d)^i$$

Pharmaceutical company manages the price of drug and promotion to determine sales and maximize profits over the life cycle.

This study assesses the effects at the extensive margin and at the intensive margin and the heterogeneity of the effect of detailing on several measure of observable characteristic of the physician.

The limit of this study is the ignorance of the promotional efforts of competitors.

Results

- DTPP have significantly and positively impact on prescribing habits.
- Detailing is often complemented with sampling, 50% of detailing visits involve some sampling.
- Prior studies have demonstrated that DTCA can expand market size but the detailing effects have confined to brand switching or market share effects with little or no effects on market demand. DTPP cannot induce untreated consumers to visit doctor, so no impact of DTPP on market demand.

- Detailing has a positive effect on prescribing behavior of physicians who are already prescribing Famvir but this effect is smaller compared to the impact on prescribing behavior of physicians who are detailed by Famvir reps previously.
- The effects are also higher for physicians whose patients are privately insured. (Physicians are mindful of the cost to the consumer; when consumer has prescription drug insurers, the physicians are more likely to prescribe expensive branded drug).
- Male physicians are more attractive to DTPP compared to female physicians and younger ones may be less persistent in the prescribing pattern and more influenced by promotional activities than older physicians.
- The effect of detailing on new Famvir prescription is higher in the markets that place a higher demand of such medications and which provides the company an opportunity to shift prescribing habits from competitors to Famvir.
- For the newer entrant Famvir 125mg, the detailing primarily aim to educate physicians about new doses and their characteristics, while for older dosage Famvir 500mg, detailing may mainly remain to sampling and reminder.

Discussion:

Pharmaceutical promotion may play a role in raising healthcare costs and unnecessarily affecting prescribing habits towards more expensive and less cost-effective drugs. Famvir-related detailing raises new prescriptions for Famvir, mostly at the expense of prescriptions for Valtrex and no evidence that such detailing crowds out new prescriptions for generic acyclovir. The estimates regarding the detailing related to Famvir confirm that such detailing of more expensive drugs may shift prescribing habits towards such medications with few clinical improvements, although weak effects are largely silent when accounting for physician heterogeneity and targeting bias.