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Informing the uninformed: How drug advertising affects check-up visits

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ABSTRACT

Direct-to-consumer drug advertising has recently become an important and controversial component of drug marketing. In this paper we examine one of the claimed benefits of drug advertising: encouraging the undiagnosed to seek out medical treatment. We measure how advertising affects an undiagnosed individual's decision to visit a physician for a check-up using detailed person-level panel data on more than 30,000 individuals from the Medical Care Expenditure Panel Survey. We find drug advertising is an important determinant of an individual's decision to get a check-up and that this effect of drug advertising appears to differ by demographic group. While the differences between demographic groups are not statistically different, our point estimates suggest that Blacks and the highly educated are the most responsive to drug advertising.

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1. Introduction

Quickly diagnosing serious medical conditions, such as hypertension, high cholesterol or diabetes, can enhance welfare directly by avoiding or delaying catastrophic health outcomes, and indirectly by lowering future medical care expenditures. Unfortunately, many individuals are unaware that they may have a serious medical condition and subsequently do not receive timely medical treatment. For example, the undiagnosed fraction of the population with hypertension, diabetes and high cholesterol populations are estimated to be 28%, 27%, and 22%, respectively (PhRMA 2008). Some, including the pharmaceutical industry, have suggested that direct-to-consumer (DTC) advertising for prescription drugs can play an important role in encouraging those at risk of serious medical conditions to seek out professional screening.

Despite the potentially large social benefits associated with advertising to the uninformed, the efficacy of drug advertising in informing consumers about health conditions and treatment options remains a controversial topic. Pharmaceutical companies advertise their products to maximize profits, not to provide consumers with information to make optimal health care decisions. Thus, drug manufacturers may face incentives to provide consumers with biased or incomplete information.[1] Because of the disparate interests of industry and consumers, the U.S. Food and Drug Administration (FDA) extensively regulates the content of drug advertisements. Until quite recently, the FDA required extensive disclosures of efficacy and risks in all drug advertisements. These regulations severely limited the efficacy of some forms of advertising, such as television. In 1997 the FDA issued a significant change in its regulatory guidance that simplified the types of statements required in advertisements. Following the change in regulation, drug advertising increased dramatically from roughly 764 million dollars in 1997 to 4.1 billion dollars in 2004. The increase in DTC drug advertising has occurred alongside substantial growth in prescription drug expenditures, from 11% to 19.8% of medical expenditures, over the same period.[2] Coincidentally, a concern that the FDA has not adequately regulated the content of DTC drug advertisements has grown with the increase in prescription drug advertising and expenditures. A recent study by the U.S. Government Accountability Office (GAO) found that "The effectiveness of the FDA's regulatory letters as halting the dissemination of violative DTC materials has been limited" (United States Government Accountability Office, 2006). These concerns regarding the content and effect of drug advertising have led to calls for additional limitations on drug advertising such as banning drug advertising for the first two years a drug is on the market.[3]

To help inform this policy debate, our paper examines one of the key potential benefits of drug advertising: encouraging individuals who are currently undiagnosed with a medical condition to see a physician for a check-up. The check-up visit, by its nature, is a service

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[1] Reiffen (2007) shows that it may not be profitable for a firm to disclose even beneficial information to specific demographic groups if the groups that benefit are small.

[2] Source: Author calculations using the Medical Care Expenditure Panel Survey.

[3] Bart Stupak, Chairman of the House Energy and Commerce Subcommittee on Oversight and Investigations states, "Two years will give the FDA and doctors time to see what safety issues arise once a drug is approved. It will also allow adequate time to educate doctors on how to use the drug." *Time*, February 4, 2009 (Gregory, 2009).

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designed to inform individuals about their health state. The services performed during a check-up are intended to diagnose conditions that patients may be unaware that they have. Not surprisingly, check-up visits are typically an individual's first contact with the medical care system, and are largely responsible for chronic disease diagnoses. In addition, by examining the relationship between DTC advertising effects and check-up visits (rather than advertising and the demand for an advertised drug or the treatment of a specific medical condition) we can address the importance of advertising spillovers that have not been addressed by previous research. For example, advertisements for a cholesterol-reducing medication may result in the patient becoming diagnosed with high-blood pressure (rather than high cholesterol). These types of spillovers may occur if all check-up visits, regardless of the impetus for the visit, involve screenings for both advertised and unadvertised medical conditions. Empirically, these types of spillovers have a potential to be important. Hypertension (high blood pressure) and hypothyroidism (underactive thyroid) are among the ten most prevalent chronic conditions in our data, while neither is among the top 10 most advertised condition.[4] To capture these potential spillovers we estimate how drug advertisements for conditions affecting specific age and sex groupings affect the likelihood individuals in those groups schedule a check-up. For example, advertisements for conditions affecting men (enlarged prostate) should only affect men's behavior, and advertisements for drugs consumed by relatively young women (birth control) should not affect older women's medical care consumption.

Our analysis uses individual level data from the 1997–2004 Medical Expenditure Panel Survey (MEPS). A key feature of the MEPS is the detail provided for those who choose not to consume medical care services. This information is particularly valuable when considering the decision to initiate medical care consumption. We examine how drug advertising affects the likelihood that those over thirty-five years of age with no previously diagnosed medical condition visit a physician's office for a "check-up" visit. We interpret a positive relationship between advertisements and check-up visits as the "informative" effect of advertising; consumers begin consuming health care services in response to drug advertising.

Our direct-to-consumer (DTC) advertising data comes from TNS Media Intelligence, which allows us to construct bi-annual measures of national DTC advertising expenditures in the U.S. during our sample period (1997–2004). Our combined data provide a rich set of health, demographic, labor market, insurance, and advertising data that allow us to measure the differential impact of DTC advertising on many important subgroups of the U.S. including women, minorities and the uninsured.

Our results suggest that direct-to-consumer advertising plays an informative role in affecting consumers' health care decision-making. Overall drug advertising is associated with an economically (and statistically) significant increase in the likelihood that consumers visit a physician for a check-up. We find that if drug advertising were to increase by 10%, an individual is predicted to increase their likelihood of visiting a physician for a check-up by about 6.9%. While the differences between demographic groups are not statistically different, our point estimates suggest that Blacks and the highly educated are the most responsive to drug advertising.

The remainder of the paper is structured as follows. Section 2 provides an overview of important institutional details of prescription drug markets and a brief review of the existing literature on DTC drug advertising. Section 3 presents our empirical specifications, and Section 4 describes the data, variable construction, and estimation sample. Section 5 presents the results, and Section 6 concludes.

[4] See Appendix Table 1 for a list of the top advertised conditions in the United States.

2. Institutional background and literature review

The goal of drug advertising is to increase sales of that drug by either encouraging untreated patients to begin taking the drug, or convincing patients who are taking other drugs to switch therapies. The economics literature has viewed these two aspects of advertising as having two (not mutually exclusive) components: informative and persuasive.[5] Informative advertising provides consumers with information that increases demand generally, and is typically viewed as efficiency enhancing. In contrast, persuasive advertising is typically modeled as affecting the relative position of products within a market without increasing overall market demand. Persuasive advertising may or may not be welfare enhancing. For example, persuasive advertising can be beneficial by better matching consumers and products. However, the social gain resulting from the better matches may be smaller than the resource costs associated with the gain from better matching. Hence, the effect of advertising on consumer welfare is theoretically ambiguous.

Advertising in prescription drug markets differs from other consumer goods because consumers cannot purchase drugs directly. Instead, a physician must authorize the purchase of a drug for every consumer with a prescription. While the physician may prescribe an appropriate drug for an individual, it is not clear that a consumer's preference for a drug will result in a purchase of that drug. Because of this market structure, drug manufacturers must convince both consumers and physicians of the value of their treatment. Consequently, drug companies have incentives to develop advertisements directed at both consumers and physicians. The advertisements directed at consumers attempt to convince them to visit their physician to ask about conditions treated by their drugs. Advertisements and marketing efforts directed at physicians (typically referred to as "detailing") are designed to convince physicians to prescribe a firm's product.[6]

Our study is able to isolate an informative effect of advertising, because we focus on the relationship between direct-to-consumer advertising and check-up visits. The relationship between advertising and other types of outcomes, such as drug consumption, are complicated by the importance of drug detailing.[7] While detailing is an economically important phenomenon, it is unlikely to play an important role in the outcome we are studying. Our paper examines the decision to have a check-up, which is a decision made by patients *prior* to the decision made by physicians to prescribe a specific product. In all likelihood, the consumer may be completely unaware of any detailing that has occurred when making the decision to visit a physician for a check-up, and is therefore influenced only by DTC drug advertising.

The information content of drug advertising likely varies systematically depending on the nature of the condition treated by the drug. A number of important medical conditions often generate no visible symptoms to the individual until a more severe outcome occurs. For

[5] See Bagwell (2007) for a comprehensive review of the advertising literature. Bar and Lillard (2010) develop a model which examines the informative versus persuasive aspects of advertising in drug markets.

[6] The various forms of marketing activities directed at physicians include sales visits, providing physicians free drug samples, and advertisements in professional journals.

[7] Although detail advertising can provide general information to physicians about the efficacy and availability of products to physicians, it is also used to encourage physicians to "switch" patients from one drug to another. Identifying the informative versus persuasive effects of detailing is a difficult exercise, but is an important distinction for the welfare effects attributed to this form of marketing. Brekke and Kuhn (2006), develop an interesting model of drug marketing which predicts that DTC drug advertising and drug detailing are complementary. In related work, Coscelli (2000), Coscelli and Shum (2004), and Crawford and Shum (2005) estimate models of physician learning resulting from previous prescribing experience. Azoulay (2002) examines how information in the scientific literature regarding drug efficacy affects physician prescribing behavior.