Do Doctors Prescribe Antibiotics Out of Fear of Malpractice?

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Abstract

Doctors in the U.S. (and elsewhere) prescribe too many antibiotics. According to recent estimates, more than a quarter and up to one half of all antibiotics prescribed in U.S. ambulatory care are inappropriate (CDC 2013, Shapiro *et al.* 2014). The overuse of antibiotics has severe consequences. Most importantly, it promotes the growth of antibiotic resistance, which is one of the most pressing public health issues that many developed countries face today. At least two million people become infected with antibiotic-resistant bacteria in the U.S. every year, and more than 23,000 die as a direct consequence from these infections (CDC 2013). According to the Centers of Disease Control and Prevention (CDC), the best way to control antibiotic resistance is to decrease the inappropriate use of antibiotics. To achieve this goal, one must first identify the factors that lead to inappropriate prescriptions, which are still largely misunderstood.

One candidate explanation for the excessive use of antibiotics in the U.S. compared to other developed countries is the medical malpractice system. Doctors practicing medicine in the U.S. face considerable legal pressure: more than 7% of all doctors are sued every given year, and the lifetime risk of being sued is north of 75% (Jena *et al.* 2011). In response to this liability pressure, doctors have been found to resort to defensive medicine, i.e., to administer diagnostic tests, treatments, or medications with expected benefits below cost to protect themselves against legal proceedings (Kessler and McClellan 1996). The frequent use of antibiotics may constitute a form of defensive medicine: doctors may feel inclined to prescribe an antibiotic against their own clinical judgement because the antibiotic presents

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a safeguard against serious bacterial infections, which may trigger a malpractice claim if left untreated. Anecdotal evidence and physician surveys support this theory. For instance, of the 824 physicians who participated in a survey in Pennsylvania, 33% reported to prescribe more medications than medically indicated in response to liability pressure (Studdert *et al.* 2005). However, to date, no attempt has been made to examine the influence of liability pressure on antibiotic prescribing in actual clinical decisions.

This paper is the first to systematically examine the relationship between liability pressure and antibiotic prescriptions. Using a simple theoretical model of physician prescribing behavior, I link the effect that a tort reform has on the number of antibiotics prescribed with the clinical appropriateness of these prescriptions. The model can be used to test for whether antibiotics constitute a form of defensive medicine.

Using 19 years of data from the National Ambulatory Care Survey (NAMCS), a nationally representative sample of visits to office-based physicians in the U.S., I estimate the causal effect of liability pressure on antibiotic prescription rates with a difference-in-differences model that exploits the variation in tort law reforms across U.S. states. I allow for heterogenous responses to the malpractice environment across doctors and patients, e.g. based on the patient's type of health insurance. Throughout the analysis, I carefully consider the possibility of legislative endogeneity.

Keywords: Antibiotic overuse; Liability pressure; Defensive medicine
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