



POLICY RESPONSES TO THE GROWING THREAT OF ANTIBIOTIC RESISTANCE

POLICY BRIEF 8

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Flu Season and Antibiotic Overprescription

In June 2009, a 19 year old asthmatic in Los Angeles came down with fever and chills, a killer sore throat, congestion, and cough. Her worried mom called their family doctor; he, in turn, asked the patient to come for an office visit and swabbed her nose for H1N1 “swine” flu virus. When the lab test returned positive, the doctor then prescribed an antiviral drug (in this case, he chose Tamiflu, because Relenza—the sole alternative treatment—is delivered by inhaler and can therefore worsen asthma).

But that’s not all the doctor ordered. In addition to Tamiflu, he also started his newly diagnosed swine flu sufferer on a 10-day course of a broad spectrum oral antibiotic. Remembering tragic stories of 1918 flu victims who perished for lack of antibiotics, he was bound and determined to pull the trigger on bacteria with names like pneumococcus, Haemophilus, and Moraxella before they had a chance to invade his modern-day patient’s flu-damaged lungs.

Now imagine this same scenario unfolding in thousands of communities throughout the United States. What’s wrong with this picture? And why does it strike fear in the hearts of infectious diseases experts preparing for a major blitz of swine flu illness this coming fall?

—Dr. Claire Panosian Dunavan, Division of Infectious Diseases, David Geffen School of Medicine at UCLA

FACT: Flu vaccination rates have plateaued well below national goals.

FACT: Every year, 5 to 20 percent of the U.S. population gets seasonal flu. With the addition of H1N1, the percentage is likely to be a lot higher for the 2009–2010 season, but no one knows yet.

FACT: Some 1 to 2 percent of seasonal flu patients develop bacterial pneumonias—the direct cause of most deaths attributed to the flu. Pneumonias usually occur as the primary influenza symptoms are waning. Effective antibiotics to treat the bacterial infections can be lifesaving for these patients.

FACT: Antibiotic prescriptions follow in lockstep with the rise and fall in influenza cases every year, at levels much higher than can be explained by the numbers of people who have, or might be suspected to have, pneumonia.

“All antibiotic use, effective or not, ‘uses up’ some of the effectiveness of that antibiotic, diminishing our ability to use it in the future.” ([Laxminarayan and Malani 2007](#))

Like the family practitioner in the true story above, doctors all over the country are writing prescriptions for antivirals and antibiotics—not just for H1N1 flu, but also for this year’s seasonal flu. Dozens of news stories have covered antiviral medicines, but there’s been not a peep about antibiotics, even though all the guidelines and medical textbooks recommend antibiotics only for patients with pneumonia symptoms, or at least symptoms suggesting its onset. The very young, the very old, and people with chronic debilitating conditions (asthma included) are of particular concern, but even they shouldn’t be given antibiotics routinely, though it does make sense to start them on antivirals when flu is confirmed.

Whatever the reasons that physicians continue to prescribe antibiotics for cold or flu patients (and we can assume that it *isn’t* because they don’t know any better), they may think it doesn’t make much difference whether their patients do or don’t take an antibiotic. On an individual basis, they are usually right, but even on that point, treating a healthy person may just wipe out susceptible “commensal” bacteria (the nonpathogenic ones that we live with all the time), leaving the more resistant strains to multiply when pneumonia actually does strike, later in the course of disease. And antibiotics, like all drugs, do produce adverse side effects in some people.

Even if patients aren’t harmed individually, when antibiotics are given routinely in “thousands of communities”—the nightmare scenario of Dr. Panosian—society at large takes a hit.

One unnecessary course of antibiotics is too many, but are enough flu-related antibiotic prescriptions written to cause worry? Researchers from Boston decided to find out. From 1995 through 2002, they found that a whopping 26 percent of patients—just over one-quarter of them—who were diagnosed with flu were prescribed antibiotics (Linder et al. 2005). And that *excludes* people whose diagnosis could plausibly include a bacterial infection in addition to or associated with the flu. Somewhat fewer—19 percent—were given an antiviral drug. Between 2 million and 4 million people visit doctors’ offices for flu every year—simple math translates that into 500,000 to 1 million antibiotic prescriptions every year with no possible benefit to patients.

Now consider vaccinating against the flu: It is better for patients than getting the flu (though not everyone gets sick every year), eliminates a lot of office visits, and eliminates a lot of antibiotic and antiviral prescriptions. But Centers for Disease Control and Prevention reports that while immunization levels among adults rose throughout the 1990s, they “have remained below those achieved during the 2003-04 season, before the influenza vaccine shortage of 2004-05, highlighting the difficulties in improving coverage above current levels.” But other than exhorting people to get vaccinated, federal government efforts have been minimal. The flu—which occurs every year—presents two golden opportunities to save antibiotics while improving the health and health care of individuals by:

1. Increasing the proportion of people vaccinated, and
2. Reducing unnecessary and ineffective antibiotic prescribing.

Are one or both of these aims achievable in the United States today? Contemporary successes in the province of Ontario, Canada through increased influenza vaccination and in France through reduced antibiotic prescribing suggest that the answer is “yes—both.”

1. Increasing Vaccination Rates

In Ontario, emergency services were strained every year during flu season. In an attempt to relieve this pressure, in 2000, free influenza vaccinations were offered to everyone over 6 months of age. It wasn’t mandatory—just free. By 2005, the vaccination rates in Ontario were the highest of any province in Canada, and higher than any U.S. state except Colorado for people over 65. In addition to consistently high rates for younger and older people and those at risk because of chronic conditions, many middle-aged, otherwise healthy people were vaccinated. In 2005, 75 percent of the over-65 population was vaccinated, up from 60 percent before the free vaccine program. In the United States, about 66 percent of people over-65 get the vaccine (Fiore et al. 2009)

Increased vaccination for flu had the intended effect: fewer emergency room visits, fewer doctor visits, and fewer deaths from flu-related pneumonia compared with other provinces in Canada (Kwong et al. 2008). That was the expected payoff, but the decline in antibiotic prescriptions was huge: from 18 per 1000 people to just 6 per 1000 per flu season for flu-related antibiotics. Corresponding prescription rates in other provinces didn’t change much at all over the same period.



Figure 1: “Les antibiotiques c’est pas automatique” by the French National Health Insurance

2. Reducing Unnecessary and Ineffective Antibiotic Prescribing

“*Les antibiotiques c’est pas automatique*”—in English, “antibiotics are not automatic”—is a public information campaign launched in France in 2002 and renewed every winter for the October to March flu season. It began because France had the highest antibiotic consumption—and the highest rate of beta-lactam resistant *Streptococcus pneumoniae*—of any country in Europe. The aim was to reduce unnecessary antibiotic use and, eventually, reduce the rates of antibiotic resistance.

The bottom line is that winter antibiotic prescribing was reduced by 26.5 percent from 2002 until 2007, and that reduction occurred in all 22 administrative districts in France and all age groups (Sabuncu et al. 2009). France is not an outlier. The French experience has been analyzed in greater detail, but Iceland noted a similar decrease associated with a campaign in the 1990s and in Belgium, antibiotic prescriptions fell 36 percent from 1999–2000 to 2006–2007. Sweden was successful at reducing antibiotic prescribing without a public campaign. We don’t hear much about the public campaigns that have failed to reduce antibiotic use in England, Greece, Spain, and Australia (Glezen 2009). Clearly, the details matter.

What About the United States?

It would be wrong to say that no efforts have been made to increase flu vaccinations rates or to reduce unnecessary antibiotic prescribing in the United States. But neither issue has been high enough on the priority list to trigger major national action to achieve either goal. Vaccination rates have moved up and down and antibiotic prescribing has decreased some over the years. For vaccination, the lessons from Ontario demonstrate the potential impact of free vaccines. The cost-effectiveness of this approach for the United States would require analysis, but it is worth considering. The success in France (and elsewhere in Europe) in decreasing unnecessary antibiotic prescribing demonstrates the power of a public education campaign that seems to maintain its effectiveness five years into the program.

Policy Recommendations

Every year in the United States we see flat rates of vaccination and spikes in antibiotic prescribing during flu season. **It's clear that patients are better served by vaccination and more controlled prescribing of antibiotics.** When factoring in the added benefit of decreased spread of antibiotic resistance—which these two interventions facilitate—it becomes clear that increased vaccination and controlled prescribing should be given higher priority by our public health (and political) leaders. As Didier Pittet, leader of the World Health Organization's First Global Patient Safety Challenge, said recently, "The real global pandemic today is antibiotic resistance, which is a silent epidemic and a time bomb because tomorrow, we won't have any effective antibiotics." (<http://in.sys-con.com/node/1120095>) Seizing these two opportunities is a win-win for patients and for the global community.

Citations

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