How the threat of antibiotic apocalypse helped a pharmacist find her voice

Kelly Grindrod, BScPharm, ACPR, PharmD, MSc

The issue

On January 24, 2013, I read a newspaper article about a looming antibiotic apocalypse. The Chief Medical Officer of England was warning British members of parliament about widespread antibiotic resistance.¹ She was predicting a time when common infections would no longer be treatable. Her message wasn't new. The World Health Organization had warned us of a post-antibiotic era almost 2 years before, and the term *post-antibiotic era* was first used in 1972.^{2,3} This time, though, the warnings made international headlines.

Truth is, the signs of apocalypse have long been upon us. Outbreaks of superbugs like *Clostridium difficile*, methicillin-resistant *Staphylococcus aureus*, and vancomycin-resistant enterococci are so common in Canadian hospitals they are hardly newsworthy. Superbugs making the news are bigger and scarier now.

In 2011, for example, the source of a 5-year outbreak of beta-lactamase-producing *Klebsiella oxytoca* at Toronto's Mount Sinai Hospital was traced to biofilms in hand-washing sinks—sinks that had to be replaced after they could not be decontaminated.⁴ Also in 2011, Brampton Civic Hospital reported on the first Canadian outbreak of the multi-drug-resistant New Delhi metallo-beta-lactamase (NDM-1) enzyme in strains of *Klebsiella pneumoniae* and *Escherichia coli*.⁵ The NDM-1 enzyme can jump between bacteria and renders nearly all antibiotics useless.

In 2012, the first signs of totally drug-resistant *Neisseria gonorrhoeae* were identified in a Toronto sexual health clinic.⁶ *Totally drug-resistant* means once third-generation cephalosporins

stop working, nothing will reliably treat one of Canada's most common sexually transmitted diseases.⁷ Totally drug-resistant tuberculosis is also emerging as a global threat.⁸ Tuberculosis was almost eradicated, and now emerging strains in Africa and Asia are quickly becoming untreatable.^{9,10}

I've been a pharmacist for 10 years. I've worked in community pharmacies most of those years. I've filled thousands of antibiotic prescriptions, 20% of which were probably for self-limiting viral infections.^{11,12} I did question the indication. Once. It was during the last year of my undergraduate degree. I was humiliated when the physician invited me to the clinic to inform me I was not to question antibiotic prescriptions, as it lowered patient confidence. Aside from doses, interactions and allergies, I never again questioned antibiotic prescribing in the community.

Instead, I did a residency and a PharmD. I worked with specialists and infectious disease experts. I learned to choose antibiotics for resistant infections, stop unnecessary antibiotics and use cultures to switch to narrow-spectrum agents. I also did a research fellowship and a Master's degree in Pharmacy. I worked with the British Columbia Provincial Academic Detailing service that targeted antibiotic prescribing in family practice. I found a position as an assistant professor of pharmacy. I taught students about community-acquired infections.

And still, in all the years I continued to work part-time in community pharmacies, I never called another physician to question antibiotic prescribing for colds, flus, sinus infections,

coughs or sore throats. Sure, I told patients their conditions were likely viral, but I never called a physician again.

But an antibiotic apocalypse is high on my list of things that scare me—even higher than professional conflict.

My campaign

In early January, the host of CBC Radio's Fresh Air program invited one of my colleagues on the show to discuss cough and cold products. My colleague was travelling but asked me to take his place. I declined, saying I was busy. Frankly, it terrified me and I am no expert. But, I am a community pharmacist and professor. I'm expert enough. A few minutes later I reluctantly agreed.

I spent the night reviewing the literature and practising my talking points. The interview went really well. The host used to work as a health reporter and was easy to talk with. She suggested that if I had any good topics for a future interview to let them know.

A couple of weeks later, when I saw the antibiotic apocalypse warning, I e-mailed the host and her producer. We booked a live interview for January 26. I spent the day revisiting the literature on common viral infections. I tried to simplify Cochrane reviews, randomized trials, editorials and guidelines into a cohesive, plain-language message. I wrote a summary sheet and practised my key points over and over.

A few hours before the interview, I realized I had enough material to write an OpEd, a newspaper opinion piece published on the page opposite the editorial (hence, OpEd). With the research I had done for the interview, it only took me an hour to draft something. A member of my family who is a journalist edited the piece and wrote me a bio. I quickly e-mailed it to Canada's most widely read newspaper, the *Toronto Star*.

On the radio I explained the difference between a viral and bacterial infection and emphasized that antibiotics only treat the latter. I mentioned that most common respiratory tract infections are viral, including colds, flus and the majority of cases of bronchitis,¹³ sinusitis¹⁴ and pharyngitis.¹⁵ They are best treated with rest and over-the-counter medicines.

The interview was fast and went well, but a few hours later I got a call no one wants to get. When talking about sore throats, I had said viruses cause 90% of strep throats. I meant that viruses cause 90% of *what people think* to be strep throats.¹⁶

I had focused on simplifying my language for the public and didn't notice my error. But several physicians and microbiologists did.

I was angry with myself for making such an obvious mistake and for diluting the message of antibiotic stewardship. It took me an hour to craft a carefully worded clarification. I corrected my error but emphasized my message in the context of sore throats. Antibiotics are overused and without a throat swab, we cannot assume someone has strep throat or that antibiotics will help that person.¹⁷ And regardless, because strep throat is self-limiting and complications are exceedingly rare, many guidelines are moving away from swabbing or treating the majority of cases.^{15,18,19} When reading my clarification on air, the host emphasized that I supported all my statements with high-quality references.

Afterwards, I was bolstered by an e-mail from the host noting the positive feedback she had received for the overall message of antibiotic overprescribing. A law professor and history professor, both colleagues of mine at the University of Waterloo, had also been listening to the original interview and were surprised that pharmacists were not questioning indications for antibiotic prescriptions. In particular, one pointed to the "invidious position pharmacists are in when they have to fill useless antibiotic prescriptions." An invidious act is one that causes anger or resentment in others. I realized I had always struggled with the invidiousness of some of my responsibilities.

By January 28, 2 days after I submitted the OpEd and did the radio interview, I hadn't heard back from the *Toronto Star*. A year earlier, I had taken Shari Graydon's Informed Opinions workshop where she helps experts tailor their messages for the media. Women, she told us, have difficulty identifying as experts, and it contributes to a gender imbalance in public conversations. I knew I was struggling, so I sent her my OpEd.

Shari made minor edits, added a title and asked me to better explain antibiotics and infections in plain language. The OpEd grew from 400 words to 750. When re-submitting it to the paper, she also suggested I put the OpEd text directly into the body of the e-mail and to follow up immediately with a phone call to the *Toronto Star's* editorial office. The phone call was key.

Three hours after I spoke with the opinion page desk, the *Star* posted my OpEd, unedited,

on its website. It appeared in print the next day.²⁰ The *Toronto Star* reaches almost 2 million readers. By the end of the week, my OpEd was accessed online over 10,000 times and shared on Facebook over 500 times. It quickly became the most popular OpEd in the month of January. Several people also shared it through Twitter and electronic newsletters.

Finally, that same morning, I received e-mails inviting me to speak on a local CTV news program and to a nonprofit seniors' group. Both had seen my message and thought it needed to be shared.

What I learned

Within 7 days of reading the antibiotic apocalypse article, I talked about antibiotic stewardship on the radio and television and had an OpEd published in Canada's leading newspaper. I also made a minor mistake. Publicly. And was criticized. Publicly.

But it was okay. And I would do it again and again and again if asked. My message was clear, evidence based and relevant. Much of the work happened over one weekend when I was on maternity leave. I logged hours in front of my computer as my family slept. Through my multimedia efforts, hundreds of thousands of people heard or read that antibiotics don't treat viral infections and that antibiotics are not indicated for the vast majority of respiratory tract infections. Friends, family and colleagues sent me their support and shared my OpEd.

I learned how difficult it is to tailor a public health message to everyone. Patients need simple, actionable messages, whereas health professionals need explanations. Radio, television and newspapers reach people locally. Social media platforms cross borders and can extend the life of a message. In questioning a common issue related to the delivery of primary care, I should have expected the pushback from the medical profession and I would expect it again—for expert listeners, any mistake can be damning.

In preparing for my radio interview, I ran my message by my husband, who is not a health professional. He helped me to simplify it. If I were to do the interview again, I would also run it by a colleague who could stop me from simplifying too much.

I also learned that, all those years ago, when the physician criticized me for questioning an

antibiotic prescription, I should have been angry. Not humiliated. The prescription may have been appropriate but her criticism of me was not. As a student pharmacist and antibiotic steward, it was my responsibility to question every prescription. I should have walked away determined to improve my approach to physicians, not determined to look the other way. I have worked with enough caring and collegial physicians to recognize that now.

Pharmacists have the right and, yes, the invidious responsibility to question unnecessary antibiotic prescriptions. It is our job and our professional obligation. When I was still in pharmacy school, research by David Latif^{21,22} found that pharmacists who have worked in community practice for many years have lower moral reasoning than students or pharmacists new to practice. We fill prescriptions with no indication and sell medications with no proven benefit and the moral conflict shapes us as practitioners. My early experiences showed me the constant ethical struggles I would face and I looked for a way out.

I still don't know that I am the best person to speak about antibiotic resistance. I'm not a microbiology or infectious disease expert. But I am a pharmacist who has filled too many unnecessary antibiotic prescriptions.

By escaping to the academy I found confidence. I know I have a strong message. I know my pharmacy degrees and infectious disease training give me a valuable perspective. I know my years of practice and teaching qualify me to be a voice from within my profession. I just wish I had known all this 10 years ago.

Maybe one day you'll find yourself in a similar position, when your years of practice or training leave you wondering why the media seem to miss your perspective. You should think about sharing that perspective. Consider taking one of Shari Graydon's Informed Opinions workshops (InformedOpinions.org) or contacting a local radio host. You could start by writing an OpEd for your local paper. Or you could approach the organizers of a public health event and offer to be a speaker. Remember, though, you are an expert and you will be held to a higher standard. Be clear and evidence based. Ask a colleague to review your message.

In the face of apocalyptic threats, I had a perspective only a community pharmacist could have. I took a chance and hoped someone

would listen. Thousands did. Though terrifying, working with the media was one of the most professionally rewarding experiences I've had, easily as rewarding as the hours I have spent teaching future pharmacists to have more courage than I ever did.

And the best part of launching a one-person media campaign? It was the proof that I was expert enough to have a voice. The next time you find yourself in a similar place and time, perhaps you too will find you are expert enough to be heard. ■

From the School of Pharmacy, University of Waterloo, Waterloo, Ontario. Contact kgrindrod@uwaterloo.ca.

Acknowledgments: Thanks to Ms. Shari Graydon and Dr. Vivian Smith for encouraging me to use the media to spread my message of stewardship. Also, thanks to Dr. Zubin Austin for suggesting I write a first-person account and offering reflective feedback.

References

- Rehel J. Antibiotic-resistant 'apocalypse' looms as infections grow stronger: top UK doc. *National Post*. January 24, 2013. Available: <http://life.nationalpost.com/2013/01/24/antibiotic-resistant-apocalypse-possible-as-infections-grow-stronger-u-k-disease-expert> (accessed Jan. 26, 2013).
- World Health Organization. World Health Day 2011: urgent action needed to safeguard drug treatments [news release]. Available: www.who.int/mediacentre/news/releases/2011/whd_20110406/en/index.html (accessed Jan. 26, 2013).
- Vilain R, Lemerle JP, Saffar P. Surgery in the post-antibiotic and medico-legal era [French]. *Nouv Presse Med* 1972;1:1663-5.
- Lowe C, Willey B, O'Shaughnessy A, et al. Outbreak of extended-spectrum β -lactamase-producing *Klebsiella oxytoca* infections associated with contaminated handwashing sinks. *Emerg Infect Dis* 2012;18:1242-7.
- Borgia S, Lastovetska O, Richardson D, et al. Outbreak of carbapenem-resistant enterobacteriaceae containing blaNDM-1, Ontario, Canada. *Clin Infect Dis* 2012;55:e109-17.
- Allen VG, Mitterni L, Seah C, et al. *Neisseria gonorrhoeae* treatment failure and susceptibility to cefixime in Toronto, Canada. *JAMA* 2013;309:163-70.
- Public Health Agency of Canada. Report on sexually transmitted infections in Canada: 2008. Available: www.phac-aspc.gc.ca/std-mts/report/sti-its2008/06-eng.php (accessed Feb. 11, 2013).
- World Health Organization. "Totally drug-resistant" tuberculosis: a WHO consultation on the diagnostic definition and treatment options. March 21-22, 2012. Available: www.who.int/tb/challenges/xdr/xdrconsultation/en/index.html (accessed Feb. 15, 2013).
- Klopper M, Warren RM, Hayes C, et al. Emergence and spread of extensively and totally drug-resistant tuberculosis, South Africa. *Emerg Infect Dis* 2013;19:epub.
- Porwal C, Kaushik A, Makkar N, et al. Incidence and risk factors for extensively drug-resistant tuberculosis in Delhi region. *PLoS One* 2013;8:e55299. doi: 10.1371/journal.pone.0055299.
- Gonzales R. Antibiotic prescribing for adults with cold, upper respiratory tract infections, and bronchitis by ambulatory care physicians. *JAMA* 1997;278:901-4.
- Gonzales R, Malone DC, Maselli JH, et al. Excessive antibiotic use for acute respiratory infections in the United States. *Clin Infect Dis* 2001;33:757.
- Smith SM, Fahey T, Smucny J, Becker LA. Antibiotics for acute bronchitis. *Cochrane Database Syst Rev* 2004;(4):CD000245. doi: 10.1002/14651858.CD000245.pub2.
- Lemienre MB, van Driel ML, Merenstein D, et al. Antibiotics for clinically diagnosed acute rhinosinusitis in adults. *Cochrane Database Syst Rev* 2012;(10):CD006089. doi: 10.1002/146558.CD006089.pub4.
- Spinks A, Glasziou PP, Del Mar CB. Antibiotics for sore throat. *Cochrane Database Syst Rev* 2006;(4):CD000023. doi: 10.1002/14651858.CD000023.pub3.
- Linder JA, Stafford RS. Antibiotic treatment of adults with sore throat by community primary care physicians. *JAMA* 2001;286:1181.
- Aalbers J, O'Brien KK, Chan WS, et al. Predicting streptococcal pharyngitis in adults in primary care: a systematic review of the diagnostic accuracy of symptoms and signs and validation of the Centor score. *BMC Med* 2011;9:67.
- Chiappini E, Reggoli M, Bonsignori F, et al. Analysis of different recommendations from international guidelines for the management of acute pharyngitis in adults and children. *Clin Ther* 2011;33:48-58.
- Medication Use Management Services. *Anti-infective guidelines for community-acquired infections*. Toronto (ON): MUMS Health; 2012.
- Grindrod K. Patients can help avoid looming 'antibiotic apocalypse.' Available: www.thestar.com/opinion/editorial_opinion/2013/01/28/patients_can_help_avoid_looming_antibiotic_apocalypse.html (accessed Feb. 11, 2013).
- Latif DA. The relationship between pharmacists' tenure in community setting and moral reasoning. *J Bus Ethics* 2001;31:131-41.
- Latif DA. Ethical cognition and selection-socialization in retail pharmacy. *J Bus Ethics* 2000;25:343-57.