

Progress and next steps in preserving the value of antibiotic therapy

BC physicians are playing an active role in rethinking antibiotic use. No doubt, our motivation increases as we see the problem of antibiotic resistance, once largely confined to hospitals, affect our patients in community practice. Skin and soft tissue infections from MRSA and drug-resistant urinary tract infections are seen commonly throughout the province.

The 2010 surveillance report from the Do Bugs Need Drugs? program and collaborating laboratories describes several key trends. While macrolide resistance in *Streptococcus pyogenes* may be decreasing, continued high levels of resistance to fluoroquinolones and trimethoprim-sulfamethoxazole are seen in uropathogens such as *E. coli*. So far, despite the introduction of a few very resistant isolates to BC, we see relatively low levels of Enterobacteriaceae spp. producing extended spectrum β -lactamases (ESBL).¹

Antibiotic resistance is a natural biological phenomenon, but is greatly accelerated by excessive selective pressure from antibiotic use. Thus, unnecessary or inappropriate use of these drugs contributes significantly to the waning effectiveness of our antimicrobial arsenal. Reports of the spectrum of resistance caused by the New Delhi metallo- β -lactamase 1 enzyme² highlight the risk if things get much worse. Pathogens carrying such genes are now treatable with only a few compounds. Were these to become prevalent in our communities, we would be close to a return to the pre-antibiotic era.

This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.

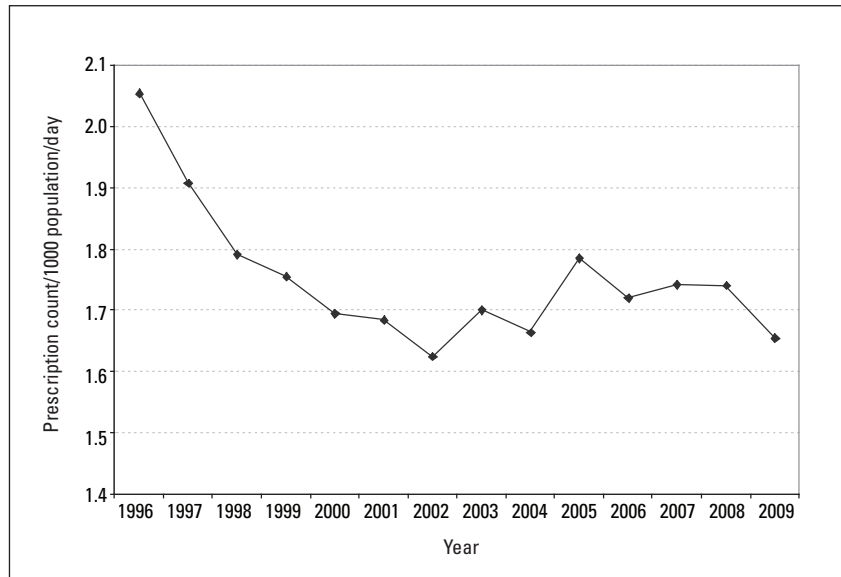


Figure. Overall outpatient antibiotic utilization in BC, 1996–2009.

Upper respiratory tract infections (URTI) drive antibiotic utilization. An estimated 35% of patient visits discharged from emergency departments with URTI in the United States result in an antibiotic prescription.³ BC data show that URTI is the most commonly identified reason for prescription. Current recommendations do not support the use of antibiotics for most acute URTI as these tend to be viral in etiology.

BC's physicians are responding; we have seen a 4% decline in the overall rate of antibiotic prescriptions between 2005 and 2009 (see **Figure**). Greater decreases have been seen in prescriptions to children under 15 years of age. Among babies less than 1, there has been a 27% reduction. The rate per population of antibiotic prescriptions for acute otitis media has declined by more than 20%. The rate of prescription for acute bronchitis declined in 2009, although it remains

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high as this indication should very rarely be treated with antibiotics.

Despite these small declines in population-level consumption of antibiotics, we have yet to see notable decreases in antibiotic resistance in the community. A decrease in the abundance of resistant organisms depends

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- Only 40% of patients who arrived within 3.5 hours of symptom onset received a CT or MRI scan within an hour of arrival.

The study, titled “The Quality of Stroke Care in Canada,” includes data from all health jurisdictions in Canada, and examines the quality of stroke care provided in emergency response, in-hospital care, and in rehabilitation and recovery.

The study can be viewed at www.canadianstrokenetwork.ca.

New genetic mutations discovered in lymphoma study

Scientists at the BC Cancer Agency and Simon Fraser University have uncovered information that could help oncologists prevent non-Hodgkin lymphoma.

A team of 50 BCCA scientists discovered 109 genes with recurring mutations while sequencing the whole genomes of more than 100 diffuse large B-cell lymphoma tumors. They identified 26 of the repeatedly mutated genes as contributors to non-Hodgkin lymphoma based on their mutation patterns. Prior to this study, no one knew that more than two-thirds of the newly identified mutated genes were linked to lymphoma.

Oncologists hope the newly discovered genetic information will advance clinical and research collaboration on preventing the growth of non-Hodgkin lymphoma.

The journal *Nature* has published the study online at www.nature.com/nature/journal/vaop/ncurrent/full/nature10351.html.

Correction

In the In Memoriam article for Dr Gordon Keith Heydon published in the July/August issue (*BCMj* 2011;53:301), Dr Heydon’s year of birth was listed incorrectly. Dr Heydon’s correct birth date is 15 November 1929. The *BCMj* apologizes for this error. —Ed

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We need to be able to benchmark childhood obesity levels in this province so that we’ll know if our programs are having the desired effect. Immediate and strategic actions need to be taken, and BC doctors must work with their patients, community groups, and

government to reverse the obesity trend. If not, we’ve heard numerous times now, our kids may be the first generation to have a shorter life span than their parents. I hope we physicians will play a leading role in helping our overweight and obese patients become healthier.

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on a number of factors, such as the fitness cost of resistance in that species.^{4,5} It will likely take more time to see any real impact, but reducing the selective pressure for these organisms is necessary immediately.

Among the provinces, BC has the second lowest rate of prescription of antibiotics in humans (Quebec has the lowest rate). We are on the right track, but still have a long way to go. The areas where we can likely have the biggest impact right now are decreasing the use of antibiotics for acute URTI, and avoiding the use of antibiotics in older patients with asymptomatic bacteriuria. Reserving the use of respiratory fluoroquinolones for severe refractory illness is crucial to preserve the utility of this important class of drugs.

As the medical community works to reduce unnecessary antibiotic prescribing in humans, efforts are also being directed toward collaborating with the agricultural industry to reduce overuse of antibiotics in a viable way in that sector too.

To assist in explaining the differences between viruses and bacteria to patients, and to support appropriate management of respiratory tract infections, the Do Bugs Need Drugs? program has developed print

material resources that can be ordered free of charge. For more information, or to order material, please visit www.bccdc.ca/dbnd.

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