

National Information Program on Antibiotics (NIPA)

2006 National Report Card on

ANTIBIOTIC RESISTANCE

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Members of NIPA



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Since its inception a decade ago, the National Information Program on Antibiotics (NIPA) has done much to educate Canadians on the appropriate use of antibiotics. Antibiotic resistance is now recognized as a serious global public health threat. Canadians have access to very effective antibiotics, but these powerful medications will lose their effectiveness if they are not used wisely.

While Canada is a world leader in the battle against antibiotic resistance, new data collected by the Canadian Bacterial Surveillance Network (CBSN) in 2005 indicate some trends that are cause for concern.

Dr. François Boucher, pediatric infectious disease consultant at the Centre hospitalier universitaire in Québec and chair of NIPA, notes that, “Even though resistance rates in Canada are still far lower than most other countries, we cannot afford to be complacent. In this our tenth year anniversary of NIPA, we’re seeing increasing resistance to some classes of antibiotics. That should be a wake-up call to become more judicious in our use of antibiotics.”

Penicillin Resistance Rates Stabilizing

For purposes of year-to-year comparison, the CBSN routinely evaluates antibiotic resistance to *Streptococcus pneumoniae* (also known as *Strep pneumo*).

Strep pneumo resistance to penicillin rose slightly from 14.8 percent in 2004 to 15.0 percent in 2005 (Fig. 1). But the good news is that high-level resistance appears to have dropped

substantially. *Strep pneumo* is the main cause of infections such as bronchitis, sinusitis, middle ear infections and pneumonia.¹ Each year in Canada, it accounts for 12,500 cases of pneumonia requiring hospitalization.² Over the past five years, resistance to penicillin has hovered at about 15 percent, suggesting that rates may have stabilized.

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Dr. François Boucher, Chair, NIPA

A new point of concern demonstrated by the 2005 data, however, was the slight increase in the rate of penicillin prescriptions from 22.1 prescriptions per hundred Canadians to 22.7, an increase of almost 3 percent. This represents a departure from the steady downward trend since 1994, which had seen the rate cut almost in half. This increase in penicillin prescriptions should serve as yet another reminder that physicians, pharmacists and patients need to be more prudent about the use of antibiotics.

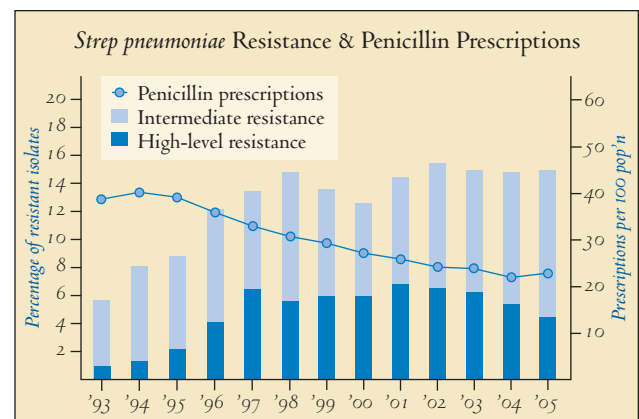


Fig. 1

Canadian Bacterial Surveillance Network (1993-2005)

Macrolide Resistance Rates on the Rise

Of even greater concern is the steady rise in the resistance of *Strep pneumo* to the macrolides, a class of antibiotics used most often to treat respiratory tract infections in both children and adults.

CBSN data demonstrate a steady increase in macrolide resistance since 1999. *Strep pneumo* resistance to erythromycin (a commonly prescribed macrolide) increased from 18.0 percent in 2004 to 19.3 percent in 2005 (Fig. 2).³ In 1999, erythromycin resistance stood at just under 10 percent. The number of macrolide prescriptions increased slightly from 13.9 per hundred Canadians in 2004 to 14.6 in 2005, an increase of 5 percent, although the overall rate has remained quite flat since 1998.

According to Dr. Donald Low, microbiologist-in-chief at Mount Sinai Hospital in Toronto and principal investigator with the Canadian Bacterial Surveillance Network, “the rate of erythromycin resistance has almost doubled in the last six years, a trend that has to be watched closely.”

While the latest macrolide resistance rates are indeed alarming, they still remain considerably lower than those in most other countries, including the United States, Asia and much of Western Europe.

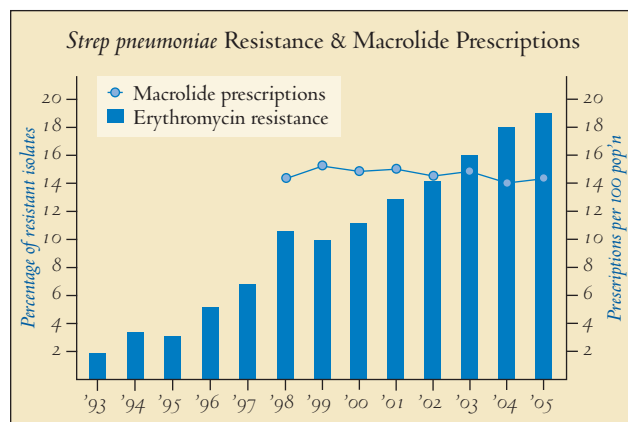


Fig. 2 Canadian Bacterial Surveillance Network (1993-2005)

Quinolone Resistance Rates Puzzling

The respiratory fluoroquinolones, including levofloxacin, are the newest quinolones, a class of broad-spectrum antibiotics used primarily to treat respiratory and urinary tract infections.

Strep pneumo resistance to levofloxacin remained almost unchanged last year, dropping from 1.5 percent in 2004 to 1.4 percent in 2005

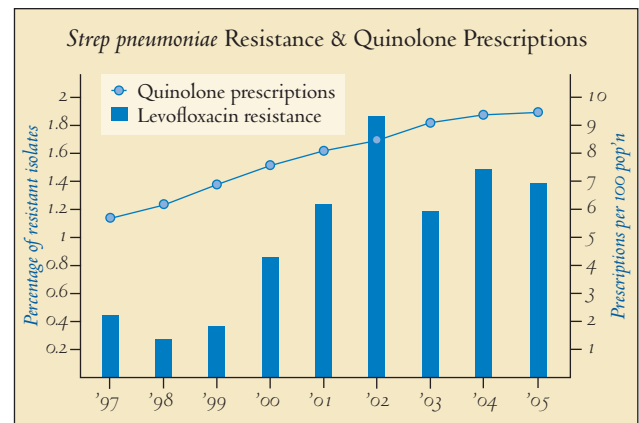


Fig. 3 Canadian Bacterial Surveillance Network (1997-2005)

(Fig. 3).⁴ Resistance to levofloxacin has been inconsistent over the past five years. It is difficult to determine what these resistance patterns mean for the quinolone class.

On the whole, prescriptions for the entire quinolone class of antibiotics, including levofloxacin, have increased marginally from 2004 to 2005, but prescriptions have risen by 26 percent since 2000.

Conclusion

In 1997, Health Canada set a five-year target to reduce community antibiotic prescriptions by 25 percent. To date, prescriptions have decreased by only 9 percent. This Report raises concerns about the increase in the overall rate of antibiotic prescriptions from 61.9 prescriptions per hundred Canadians in 2004 to 63.5 in 2005, an increase of almost 3 percent.⁵

Clearly, there is still much work to do. Antibiotic resistance is a problem that will remain with us for a very long time, which is why it's important to remember that everyone – healthcare professionals, public health authorities, government, the pharmaceutical industry and the public – has a role to play in fighting this serious public health threat.

Data Collection

Clinical laboratories serving Canadian hospitals and communities voluntarily submit bacterial isolates to the Canadian Bacterial Surveillance Network. Testing is done at Mount Sinai Hospital in Toronto. Data is entered into a central database, some elements of which are available on-line at <http://microbiology.mtsinai.on.ca>.

References

1. Combined data from charts: *Strep pneumoniae* Resistance & Penicillin Prescriptions (1993-2005), CBSN, Feb. 2006 and Percentage of Penicillin Non- Susceptible *S. pneumoniae* in Canada (1988-2005), CBSN, Nov. 2005.
2. Data on file at CBSN.
3. Combined data from charts: *Strep pneumoniae* Resistance & Macrolide Prescriptions (1993-2005), CBSN, Feb. 2006 and Macrolide-Resistant Pneumococci (1993-2005), CBSN, Nov. 2005.
4. Combined data from charts: *Strep pneumoniae* Resistance & Levofloxacin Prescriptions (1997-2005), CBSN, Feb. 2006 and Fluoroquinolone-Resistant Pneumococci (1997-2005), CBSN, Nov. 2005.
5. IMS Compuseript data (2005).