

Classes of Antibiotics Used in the Community and Overuse of Quinolones

Choosing Wisely Canada Recommendations

Multiple recommendations exist for not using antibiotics for upper respiratory infections, sore throat and otitis media (because they are usually viral in ethology) or for asymptomatic bacteriuria in pregnant women.

<https://choosingwiselycanada.org/campaign/antibiotics/>

Practice Points

1. The World Health Organization has named antibiotic resistant bacterial disease as one of its top 10 concerns.
2. In 2020, the Public Health Agency of Canada identified community acquired antibiotic resistant organisms as of particular concern including Methicillin-resistant *Staphylococcus aureus*, multi-antibiotic resistant *Neisseria gonorrhoeae*, *Streptococcus pneumoniae*, *E. coli*, and *Clostridium difficile*.
3. In Canada in 2018, >25% of *E. coli* isolates were resistant to Ampicillin, Amoxicillin-Clavulanate, Ciprofloxacin, or Trimethoprim-sulfamethoxazole. In NL, the rate of Ciprofloxacin resistant *E. coli* was 18%.
4. Ciprofloxacin should not be a first line antibiotic except in prostatitis or in the presence of proven/likely *Pseudomonas aeruginosa*.

Methods

Data from the NL Pharmacy Network on all antibiotics prescribed in the province to outpatients from 1 Jul 2017 – 30 Jun 2019 were provided by the NL Centre for Health Information.

The Defined Daily Dose (DDD) is the assumed average maintenance dose/day for an antimicrobial drug used for its main indication in adults. This fixed unit of measurement was calculated because it facilitated examination of trends over time and comparisons between groups.

Results

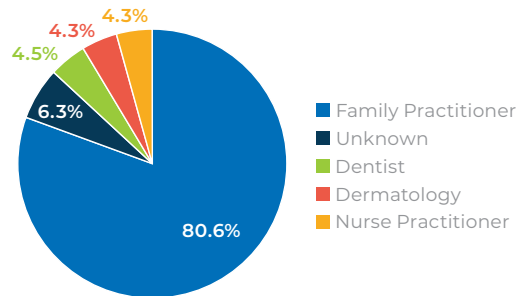


Figure 1. Antibiotic Consumption in the Community by Health Care Provider

- 81% of antibiotics were prescribed by FPs

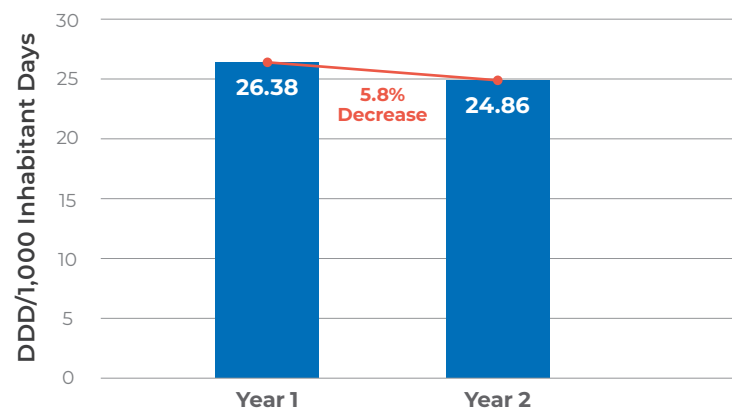


Figure 2. Change in Antibiotic Consumption in the Community From 2017/18 to 2018/19

- In 2017/18, the DDD/1,000 inhabitant days was 28.4; it fell by 5.8% to 24.9 in 2018/19
- Consumption of the quinolones class of antibiotics decreased by 11% in 2018/19 from 2.7 to 2.4.

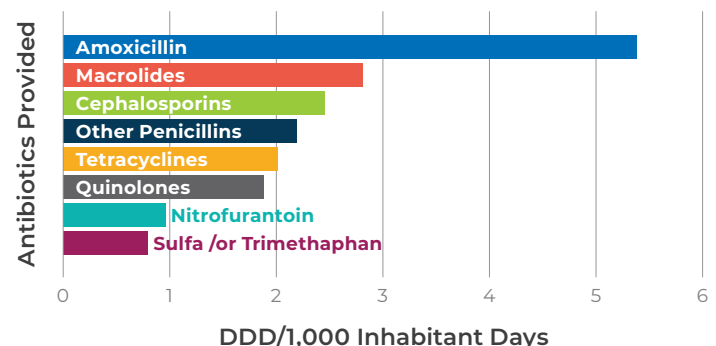


Figure 3. Classes of Antibiotics Provided by Family Practitioners in 2018/19

- The most frequent drugs prescribed by FPs were amoxicillin, Macrolides, Other Penicillins, Tetracyclines, and Quinolones.
- Amoxicillin comprised 85% of antibiotics prescribed by dentists.
- 94% of antibiotics prescribed by dermatologists were Tetracyclines.

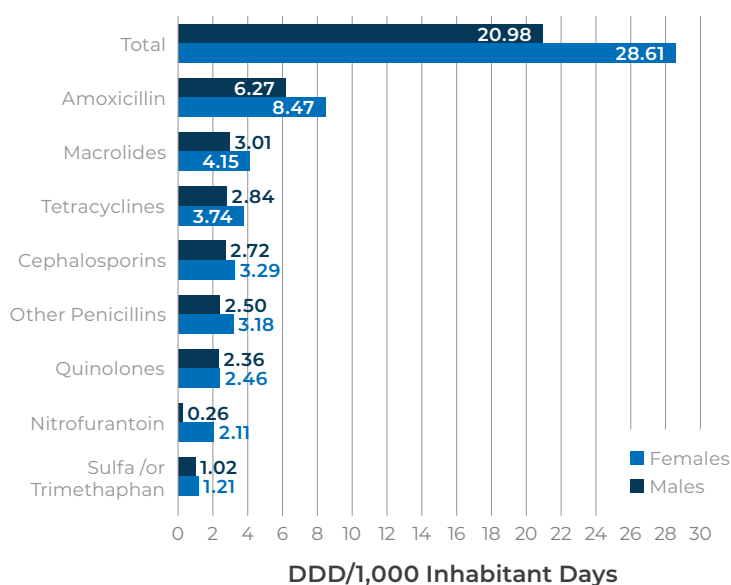


Figure 4. Classes of Antibiotics Consumed in 2018/19 by Males and Females

- The DDD/1,000 inhabitant days was 21.0 in males and 28.6 in females (36% higher).
- The DDD/1,000 inhabitant days for the quinolones class was 2.36 in males and 2.46 in females.

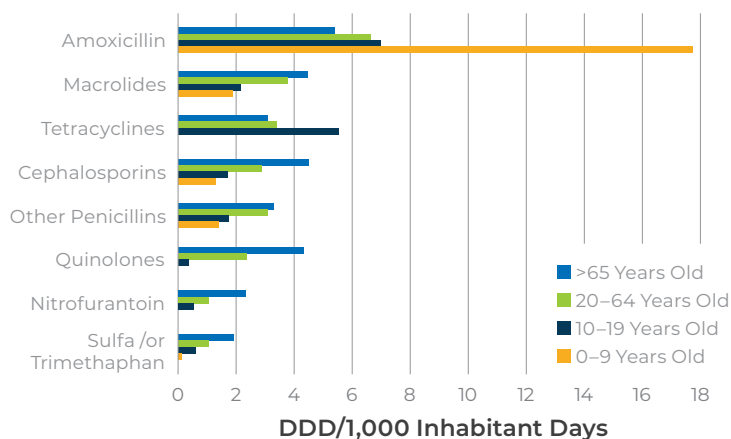


Figure 5. Classes of Antibiotics Consumed in 2018/19 by Age Group

- The DDD/1,000 inhabitant days was 22.6 in children aged 0–9, 19.8 in those aged 10–19 years, 24.4 in those 20–64 years, and 29.4 those ≥65 years.
- The DDD/1,000 inhabitant days for the quinolones was 0.02 in children aged 0-9, 0.4 in those aged 10–19 years, 2.42 in those 20-64 years, and 4.32 in those ≥65 years.
- Amoxicillin comprised 78% of antibiotics provided to children aged 0–9.
- Tetracyclines were most frequently used in children aged 10–19, and comprised 28% of antibiotics prescribed for this group.
- Nitrofurantoin was generally used in females, particularly in those ≥65 years.

Conclusions

1. The prescription of Amoxicillin is high in children aged 0–9 years, likely associated with viral infections. Efforts should be made to reduce use.
2. Quinolones were prescribed to men and women, predominantly in those ≥65 years. In view of the high incidence of Ciprofloxacin resistant *E. coli*, quinolones should not be used as first line agents, other than for prostatitis and *P. aeruginosa* infection.
3. Nitrofurantoin could be reduced if prescribed for asymptomatic bacteriuria.
4. NL has very high use of antibiotics in the community and prescriptions need to adhere to current practice guidelines.