

Antimicrobial Resistant Organism Surveillance in BC

As a component of the Do Bugs Need Drugs? program evaluation, trends in resistance are analyzed and compiled using anonymized, isolate-level antimicrobial susceptibility testing data from Lifelabs (and formerly BC Biomedical), representing 90% of community laboratories in British Columbia (BC). In 2016, the traditional static report that summarised these findings was replaced by a web-embedded and interactive data visualization platform called the BCCDC Antimicrobial Surveillance Tools.

The “Antimicrobial Resistance Dashboard” surveillance tool allows users to examine and manipulate the aforementioned data in an intuitive point-and-click format, and is accompanied by an interactive Executive Summary that highlights overall trends of interest. The tool and summary are viewable here: <http://www.bccdc.ca/health-professionals/data-reports/antimicrobial-surveillance-tools>

Highlights of the 2016 Lifelabs (and formerly BC Biomedical) data obtained in 2017 include:

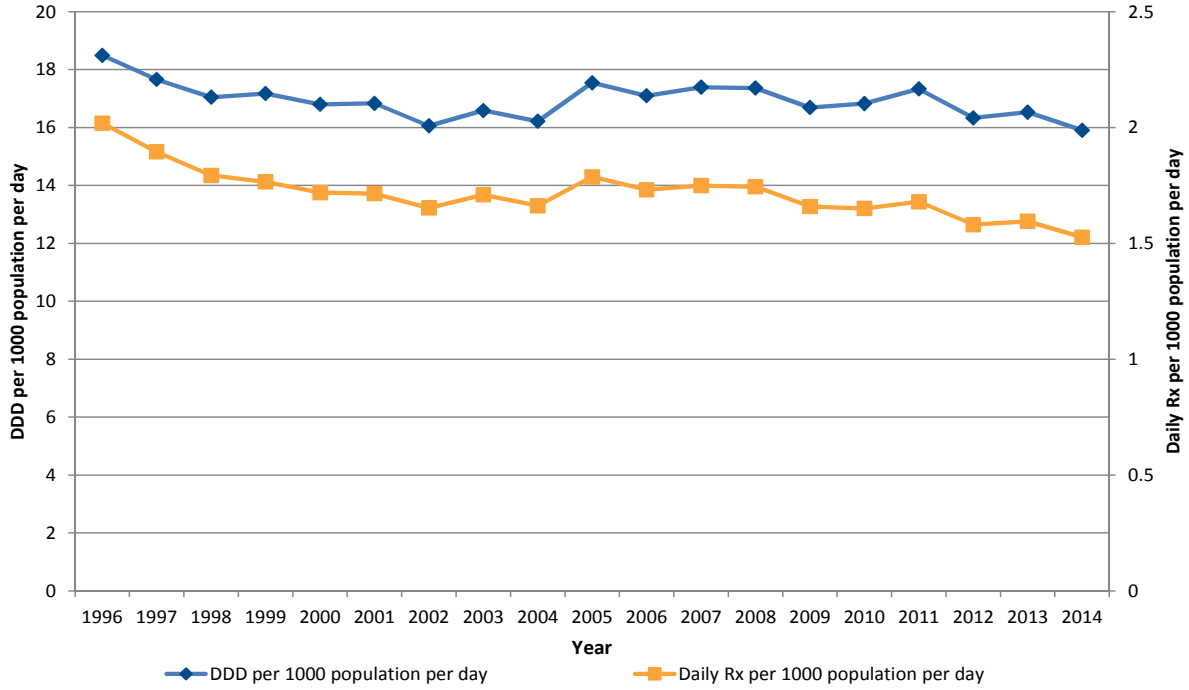
- Among the *Staphylococcus aureus* isolates tested in 2016, 21% were Methicillin Resistant *Staphylococcus aureus* (MRSA) – the susceptibility of MRSA was high for Tetracycline (87%) and Trimethoprim/Sulfamethoxazole (98%). However, 32% isolates were non-susceptible to Clindamycin, 79% to Erythromycin and 95% to Ciprofloxacin.
- In 2016, the susceptibility of *Streptococcus pneumoniae* to Penicillin, Ampicillin, Cefuroxime and Ceftriaxone were approximately 99%. The non-susceptibility to Macrolides (Erythromycin and Azithromycin) was 23%, approximately 6% decrease from 2015.
- Group A *Streptococcus* (GAS) isolates were 100% susceptible to Penicillin, Ampicillin and Amoxicillin/Clavulanate. The non-susceptibility to Macrolides (Erythromycin and Azithromycin) decreased a little since its highest peak in 2015.
- During 2011 to 2015 there was a down trend of non-susceptibility of *Escherichia coli* to Ciprofloxacin for both Lifelabs and BC Biomedical data, but in 2016 this has increased a little.

Data from 1996 – 2014 shows that overall, the rates of antimicrobial utilization and antimicrobial prescription continue to decline. In line with reductions in antimicrobial utilization and antimicrobial prescriptions, total and PharmaCare costs from antimicrobials have also decreased since 2005. In absolute terms, total costs decreased by \$53 million, and PharmaCare costs decreased by \$25 million. The change in adjusted PharmaCare costs was \$15 million, representing an 18.5% decrease from 2005 level.

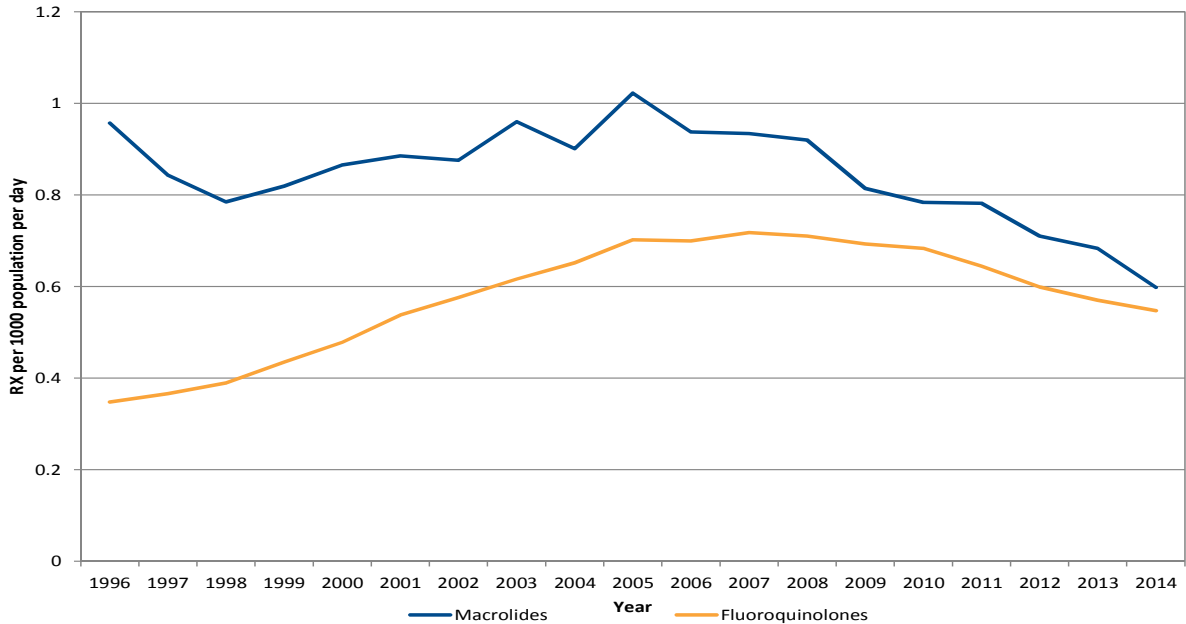
Gender analysis among the residents of the long term care facilities showed a decreasing trend in utilization among female compared to male when comparison was made between 2007 and 2014, and in fact consumption by women was less than men, by 2014. These decreasing trends in prescribing practices may help mitigate the impending threat to emergent of new antibiotic resistant organisms and to reduce the scope of infections with antibiotic resistant organisms especially to the vulnerable populations both at the hospital and community level.

For healthcare-associated infections (e.g. MRSA, CPO, and *C. difficile*), please visit the Provincial Infection Control Network of British Columbia (PICNet) at: <https://www.picnet.ca/surveillance/latest-surveillance-reports/>

5.1 Antibiotics prescribing and utilization trend, 1996 - 2014



5.2 Utilization of antimicrobial classes, 1996-2014



*The Do Bugs Need Drugs program in BC was implemented in 2005
Source: BC Ministry of Health[creator] (2014): PharmaNet. BC Ministry of Health [publisher]. Data Extract. PharmaNet Committee (2009).