

Antibiotic Stewardship: The Imperative to Involve Dentistry

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An agency of the Provincial Health Services Authority



Dr. David Patrick

- No Conflicts of Interest
- Works for UBC and BC Centre for Disease Control
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Learning Objectives

- To overview the growing problem of antibiotic resistance in human health
- To discuss the factors promoting resistance
- To review trends in antibiotic use in BC overall and by profession
- To discuss themes brought forward by dental professionals to explain an increase in prescribing
- To brainstorm about opportunities to reverse the trend

2013:Antibiotic Resistance Declared a Crisis

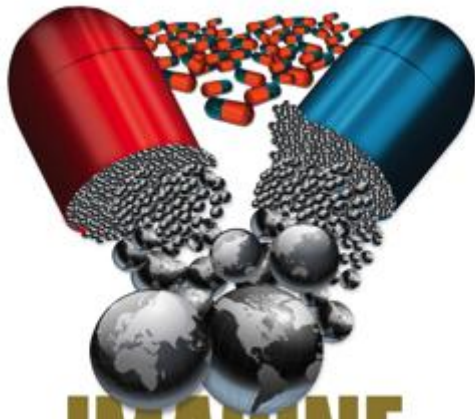
- Deaths USA – 23,000
- Deaths Europe – 25,000
- Canada (Conservatively 2-3,000)
- Tens of thousands of illness episodes in BC
 - Routine UTI harder to treat
 - Skin abscesses harder to treat



<http://www.cdc.gov/drugresistance/threat-report-2013/>

http://ec.europa.eu/health/antimicrobial_resistance/policy/index_en.htm

Where Might This Go?



**IMAGINE
A WORLD WHERE
ANTIBIOTICS
DON'T WORK ANYMORE**

**Use antibiotics wisely so
they continue to save lives**

www.dobugsneeddrugs.org

- Jeopardizes the safety of surgery, transplants, cancer therapy, immunosuppressive strategies
- Increases burden of infectious disease and costs
- Poor control of infections hurts economies

What Drives Emergence?

Before selection



After selection



Final population



Resistance level



- Natural Selection Driven By:
 - Antibiotic use by people/pets
 - Antibiotic use in food production
- Spread of Resistant Organisms
 - Importation
 - Fast spread in dense populations
 - Spread reduced by hygiene, sanitation and infection control in health care





Broad Public Health Approaches

- Timely, ongoing surveillance
- Reduce unnecessary antibiotic use in people and animals
- Limit spread in the community and health care facilities
- Encourage development of new antibiotics

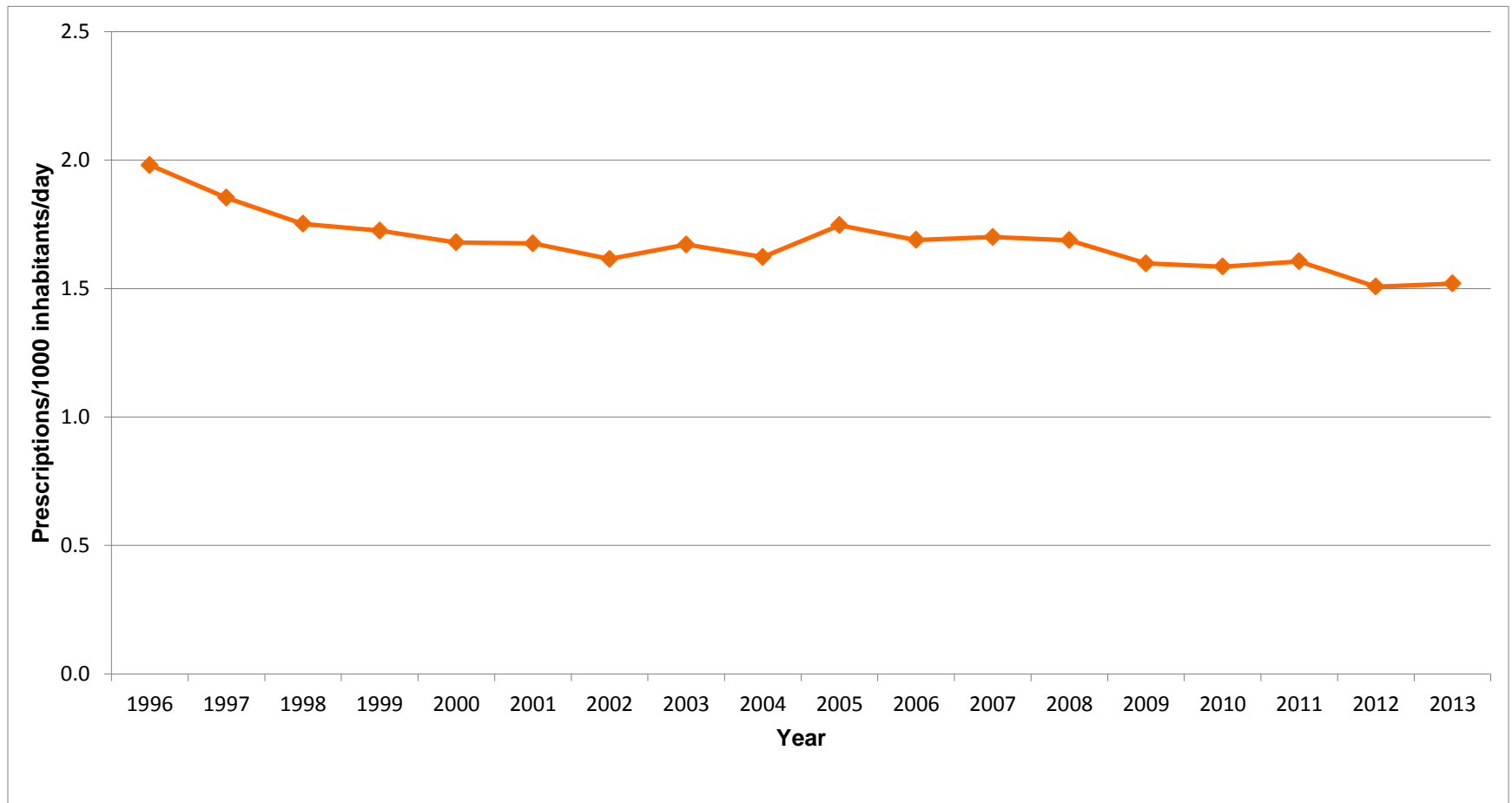
BC Surveillance Methods for AMU

- BC PharmaNet data on oral antibiotics from 1996 to 2013
- Restricted to BC practitioners
- Calculated prescription and utilization rates (DDD) using the BC population

DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults¹

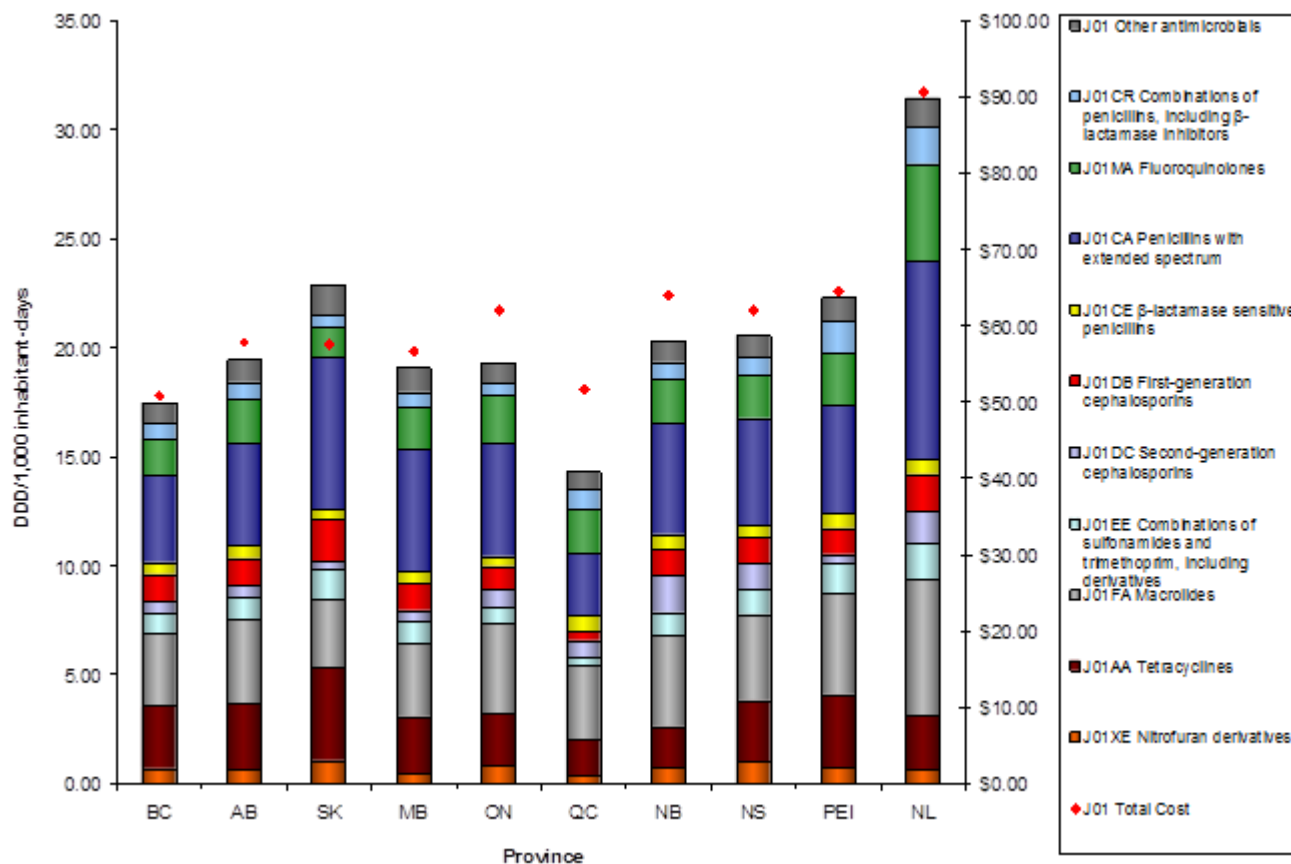
¹WHO Collaborating Centre for Drug Statistics Methodology (2009)

25% Fewer Antibiotic Prescriptions in BC!!!



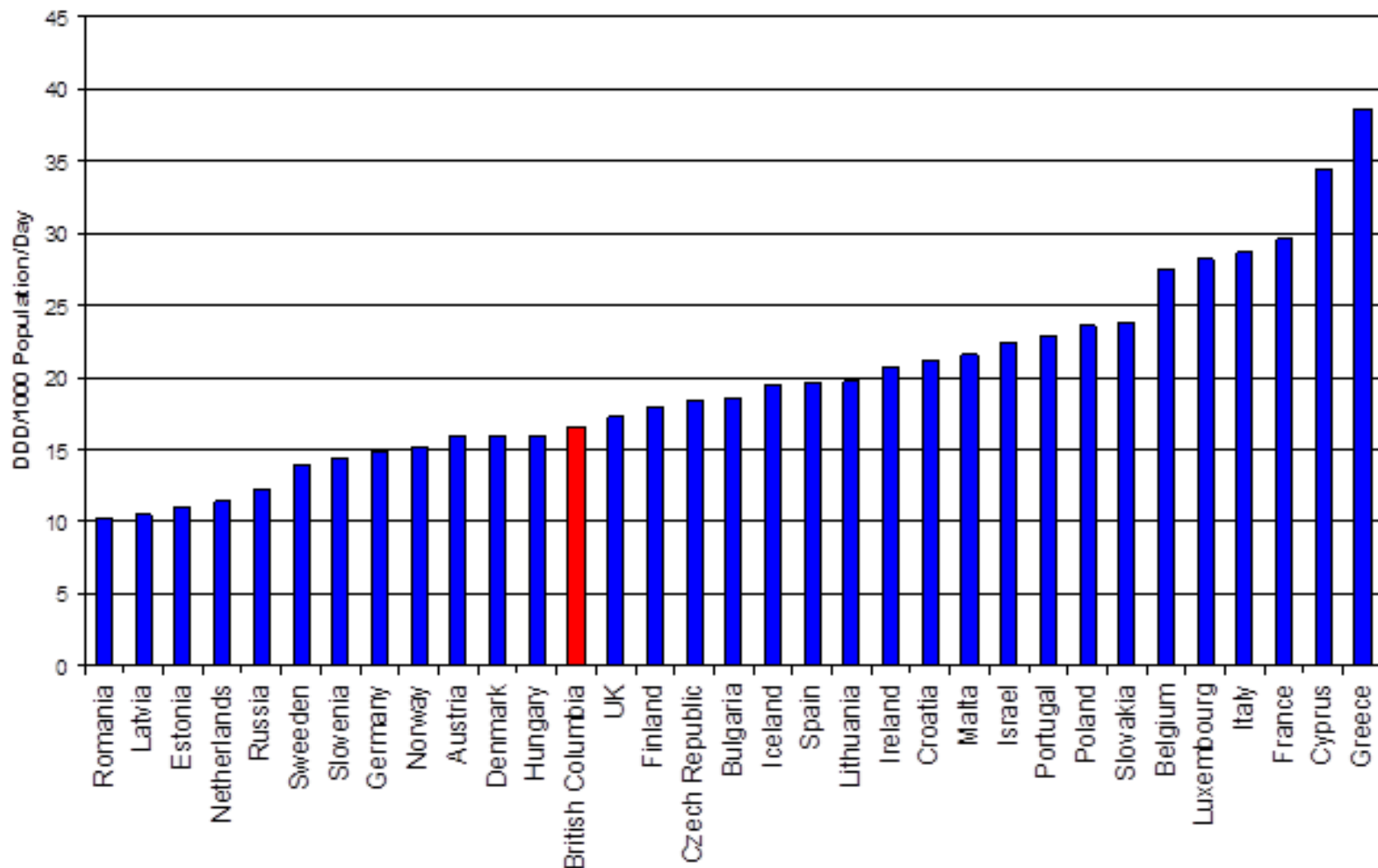
BC PharmaNet Data

BC vs Other Provinces: 2009



Source: Canadian Integrated Program for Antibiotic Resistance Surveillance, PHAC

British Columbian Overall Antimicrobial Use Compared to Use by European Nations in 2009



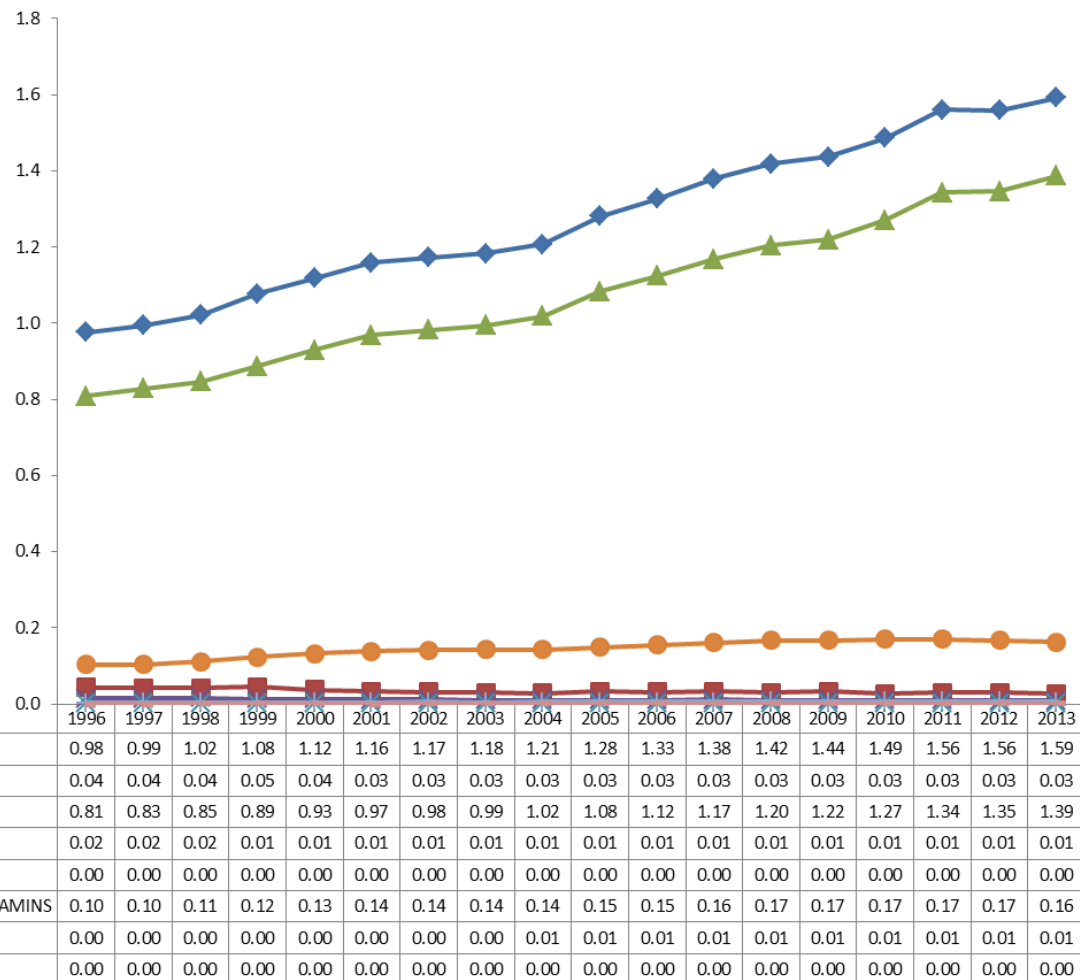
Source: Report on Antibiotic Utilization in BC, BCCDC

Possibly the worst news for the image of dentistry since Little Shop of Horrors



DDD/1000
population/day by ATC
drug class, 1996-2013

DDD/1000 population/day





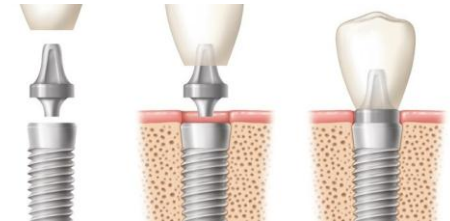
Explaining Increased Antibiotic Prescribing in Dentistry

Themes from an On-line Consultation with Dental Professionals

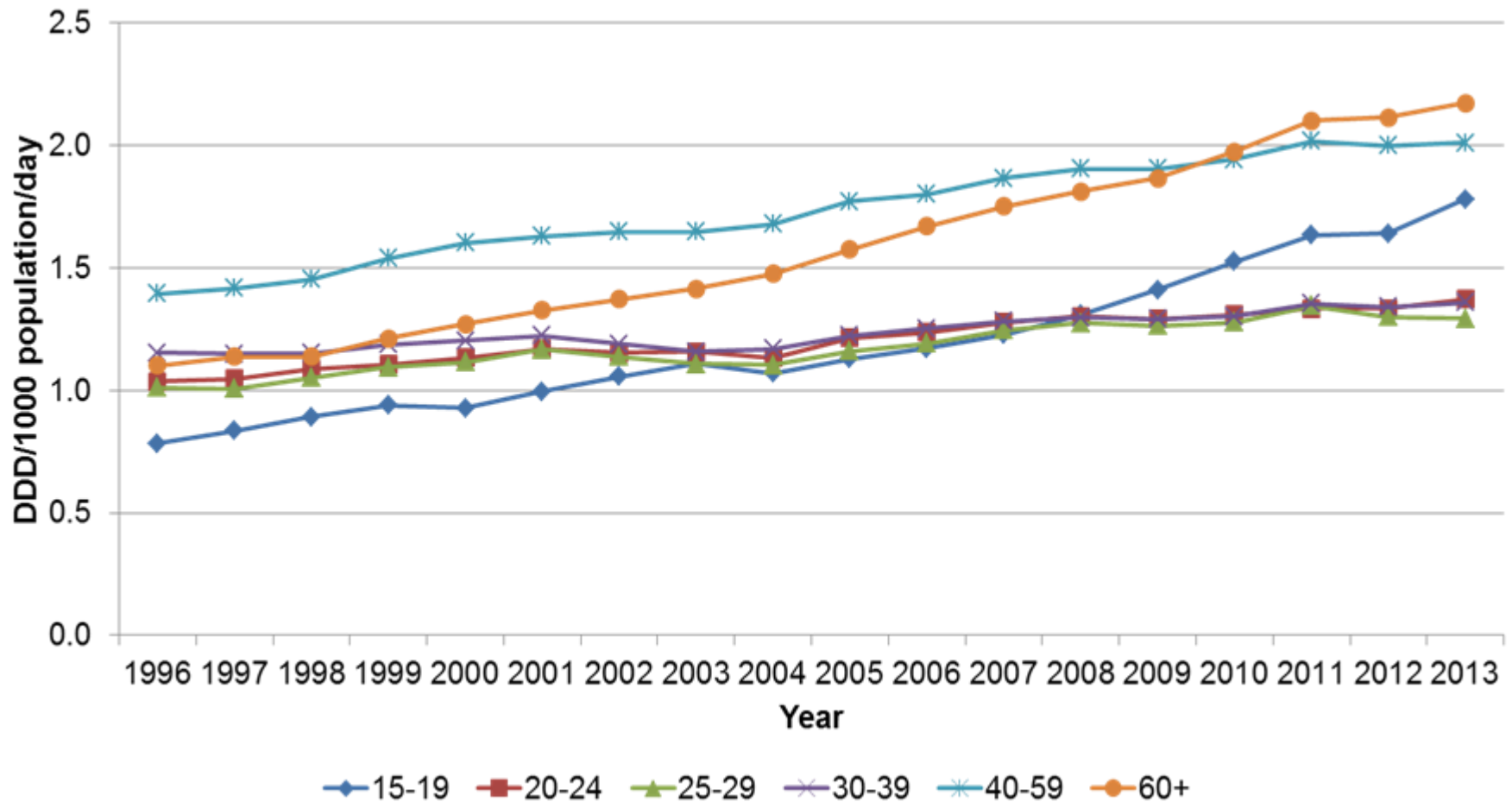
Facilitated by John O'Keefe @ CDA

Main Themes

- Rx for Periapical abscess/irreversible pulpitis
- Increase in dental implants
- Prophylaxis – Prosthetic Joints
- Prophylaxis - Valvular Heart Disease
- Impact of Under-Insurance – Same in Canada as USA
- Aging Population
- More Dental Registrants???



Antibiotic daily utilization rates by age (among dental surgeon prescriptions), 1996-2013



Cosmetic Practice

- Focus on cosmetic practice may be pulling some practitioners further away from evidence-based roots
- Emergency surgical intervention may interfere with patient flow and earnings



"When you said that you'd given me, 'a million dollar smile', I thought you were speaking metaphorically!"

Less Awareness of Resistance and Less Public Scrutiny than MD's

- Media and public focus has rightly been focused on over-prescription by doctors
- Some informants suggested that media activity may be required to motivate change





Opportunities for Change in Dentistry

- What gets measured gets done
- Substantial reduction in indications for perioperative prophylaxis
- Clear meta-analyses indicating that antibiotics add nothing to drainage for periapical abscess
- Similar reviews on periodontitis

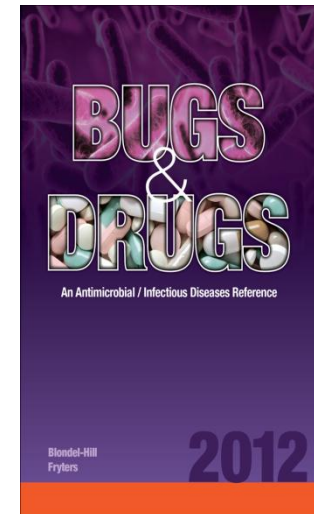


How to Keep Patients Happy

- Recommend appropriate symptomatic relief when not offering antibiotics
- Make it clear that antibiotic treatment carries risks that are not worth it if they do not help
- Keep a stock of materials or urls as parent guides in the office
- Refer families to www.dobugsneeddrugs.org

Bugs and Drugs Guide

- www.bugsanddrugs.ca
- print copy - Amazon.com
- iPhone version - iTunes
- Android version – Google Play



DDD (days of therapy) per prescription by practitioner, 2013

Practitioner	Average DDD/Prescription
Midwives	8.4
Dental surgeons	9.3
Registered nurses	9.7
Physicians and surgeons	10.6
Naturopathic physicians	35.2

Possible explanations?

- Management suspected or confirmed of Lyme disease
 - Does not correlate with incidence of Lyme disease
 - Might account for doxycycline; macrolides are second/third line agents

Response

For Naturopathic Physicians

- Stakeholders were notified
- Review of antibiotic prescribing curriculum with Pharmaceutical Sciences Faculty

For Dentists

- BC Dental Association online course
- Canadian Dental Association discussion Video
- Present data at dental meetings or publish in dental literature (Article in press with JADA)
- New materials for dental offices



Summary

- We need to work with colleagues in other professions, especially when consulting on peri-operative antibiotics or discussing tick-borne infections



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